

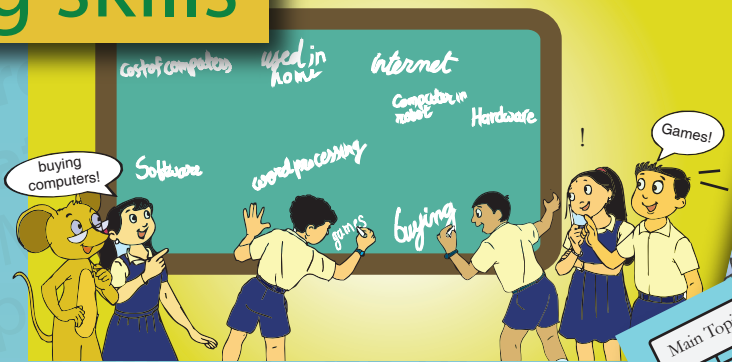
Computer

Masti

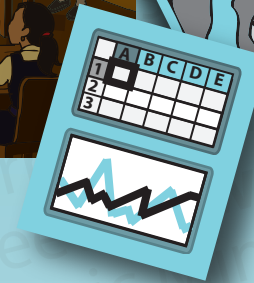
LEVEL

VI

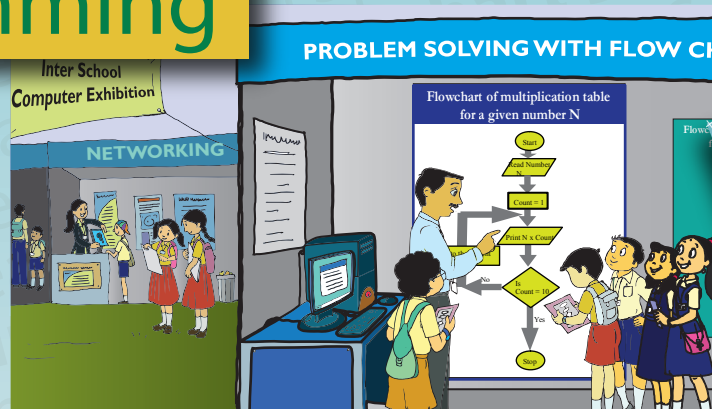
Thinking skills



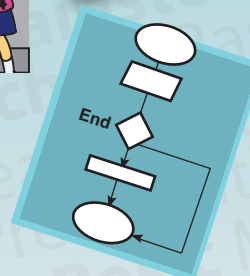
Applications



Programming



```
Circle  
Print Input Rect Circle  
+ / * - + / * -  
Name = "Tejas"  
Print "Hello" + Name  
Hello Tejas  
Start  
Print Input Rect Circle
```





A Collaborative Product from IIT Bombay and InOpen Technologies

Computer *Masti*

Level VI



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About This Book

This book has evolved out of contributions from many authors, bringing together a variety of creative ideas. The salient features of this book are:

- The book is based on a detailed computer science syllabus that has been reviewed by many experts. This syllabus is available for download from www.computermasti.com.
- Establishing clarity of thought and developing computer fluency is the main objective of Computer Masti.
- Fun is an important element of learning.
- The lesson contents are woven around interactions between an imaginary teacher and two students. The teacher mostly asks questions that guide the students to discover and learn topics on their own.
- Each lesson focusses on specific concepts and associated skills. These concepts are selected such that: (i) They lay a strong foundation for learning computers. (ii) They contribute towards general intellectual development, and (iii) They are age appropriate.
- The Worksheets and Activities are designed in such a way that they supplement topics being covered in other subjects, to the extent possible. Group activities are included in each lesson to encourage collaborative learning. Projects are also suggested to reinforce the learning of topics across multiple lessons.
- 21st century skills of critical thinking, collaboration, communication and creativity are addressed in the lesson content and supplementary activities.
- The book meets the standards suggested for continuous and comprehensive evaluation (Right to education).
- The lessons and activities are based on free and open source software. The Computer Masti Toolkit (in the CD) is easy to install on commonly used operating systems.
- The book includes child friendly illustrations that are sensitive to body image and gender issues.
- Each Lesson has a Teacher's Corner section, which gives a lesson plan outline, some dos and don'ts, and pointers to when each worksheet has to be given to students.
- Emphasis of healthy computer practices, including SMART rules of Internet safety, AWARE guidelines for responsible use of Internet resources are addressed in the lesson content and supplementary activities. Poster about these are available on the website. You can put these on the display boards. This would serve as quick reference and memory trigger for the students.
- The online (e-book) version is available freely for individual use, under the conditions described earlier in the Copyright Statement. You may download it from: www.computermasti.com.
- Comments on the book and suggestions may be sent to Sridhar Iyer (sri@iitb.ac.in).

Acknowledgements:

We are thankful to Sahana Murthy for reviewing this book and participating in discussions at various stages. We are grateful to IIT Bombay for support during the creation of this book. Last but not the least, the teachings of Sri Sri Ravishankar have been a major source of inspiration for this book.



How To Use This Book

This book is meant to be used for teaching computers to children in the Sixth standard, in a way that is mostly fun (as indicated by the “Masti” in the title). It is designed so that it can be covered comfortably in one year, with one class (30 to 45 minutes) per week. A weekwise schedule of topics is given below.

Lesson No:	Topic Name	Concepts	Skills	Weeks
1	Revision	<ul style="list-style-type: none"> o Gathering and organizing information o Internet as network of computers o Search engine, search keywords o Communicating through email o Security and privacy of information 	<ul style="list-style-type: none"> o Creating and Using lists and tables o Using a browser to access Internet sites o Creating email account, send and receive email messages o Following Internet SMART rules 	1st- 4th
2	Brainstorming and Mind maps	<ul style="list-style-type: none"> o Brainstorming for generating ideas o Representing information through Mind maps o Analyzing information to get categories and sub-categories 	<ul style="list-style-type: none"> o Apply step wise thinking tools to create mind maps o Categorize and analyze information 	5th- 7th
3	Synthesis of Information: Uses of Computer	<ul style="list-style-type: none"> o Standalone computer application o Internet applications o Embedded applications o Synthesis of data o Multiple ways of categorization 	<ul style="list-style-type: none"> o Apply imaginative skills to come up with probable futuristic uses 	8th –9th
4	Making Presentations	<ul style="list-style-type: none"> o Three stages of presentation creation: Plan: decide outline Execute: create slides Impress: verify content 	<ul style="list-style-type: none"> o Creating slides o Insert pictures in slides o Run a slideshow o Adding animations to slide show 	10th – 13th
Revision				14th -16th
Assessment				17th
5	Multiple Representation of Data: Introduction to Spreadsheet	<ul style="list-style-type: none"> o Spreadsheets as a table of rows and columns o Multiple representation of information through lists tables graphs mind maps 	<ul style="list-style-type: none"> o Creating and entering data in new spreadsheets o Calculating sum, percentage and average of given numerical data o Drawing charts and graphs o Inserting and deleting new rows and columns 	18th – 21st
6	Flowcharts	<ul style="list-style-type: none"> o Flowcharts and symbols o Sequence, selection, repetition structures 	<ul style="list-style-type: none"> o Drawing flowcharts by using the correct symbols and structures 	22nd – 24th
7	BASIC Programming	<ul style="list-style-type: none"> o Programming language syntax o Variables 	<ul style="list-style-type: none"> o Writing syntax based programs o Executing a program to display output 	25th – 29th
Revision				30th -31st
Assessment				32nd

Interactivity is the key to success with these lessons. In the class, ask the students questions, and let many students answer each question. Ensure that the conceptual understanding is mastered before proceeding to the skills. In the computer lab, if they are doing activities in groups, ensure that they switch “drivers” frequently, so that each student gets to do a fair amount of the activities. Use the Group Activities and Projects suggested to stimulate creativity and encourage knowledge sharing.





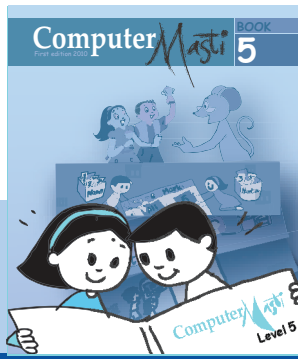
Legends used in the book

Indicator	Explanation
	Blue box with rounded corners, lists the topics covered in the lesson.
	Brown and orange boxes explain the concept discussed in that section of the lesson.
	Purple boxes give step by step instructions to do a task (on the computer) in the application being discussed.
	Pink boxes are general recommendations that help to achieve a certain goal.
	Green boxes have information and/or additional details about a skill or concept.
	Yellow notes list the expected measurable learning objective to be attained by the student after learning the topic.
	Pages with this icon have Worksheets; that test extent to which learning objectives of the lesson are attained.
	Pages with this icon have Activities, which reinforces students' learning.
	This icon represents after class collaborative activities to be presented later in the class for discussion and/or review.
	This image has tasks students can do to gain additional knowledge on the topic of the lesson.
	Pages with this icon gives pointers to the teacher on how to teach the lesson.
	This icon points to a list of websites that can be referred for self learning.
<i>Black Italic text</i>	Search Keyword, examples and Web site address.
Black text	New word introduction.
Orange text	New Technical term introduction.

Contents

Sr. No	Name of the lesson	Page Number
1.	Revision of Level V	2
2.	Brainstorming and Mind maps	22
3.	Synthesis of Information: Uses of Computer	40
4.	Making Presentations	58
5.	Multiple Representation of Data: Introduction to Spreadsheet	76
6.	Flowcharts	90
7.	BASIC Programming	108





1. Revision of Level V

Aim: In this lesson, you will revise the topics from Computer Masti- Level V.

Tejas and Jyoti are back to school after the summer break.

Revision of Information gathering

Moz: How was your summer vacation? You must have had fun with your family and friends.

Tejas: Our teacher gave us an exciting assignment on gathering information, to be completed during our vacation.

Tejas: We were asked to form teams and search for educational games on various topics in Maths, English or Science.

Moz: What was the goal of your assignment?

Jyoti: Tejas and I formed a team. Our goal was to: “Gather information for English Vocabulary games”. We were allowed to take the help of our parents for completing the assignment.

Moz: This is interesting. What were you supposed to submit?

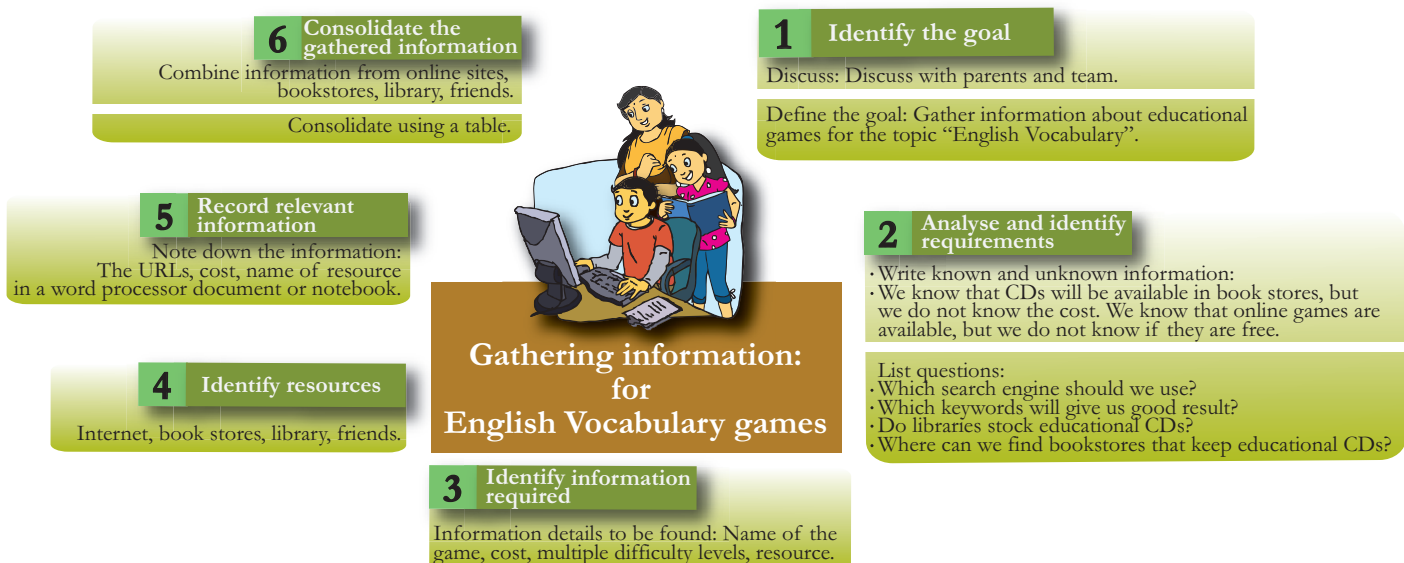
Tejas: We had to gather information on different games, the resources from where to get the games, and the cost (if any). Finally we had to give a list of five games which meet the following conditions:

- If it is an online game, it should be free.
- If it is from a library, the borrowing cost should not exceed Rs. 50.
- If it is purchased from a bookstore, the cost of CD or book should not exceed Rs. 200.

Jyoti: During our search we first compiled a list of English Vocabulary games. Then we selected only those games that satisfied the above conditions.

Moz: Were you able to recall and use the six steps of the lesson “Step-wise gathering of information” of Computer Masti- Level V?

Tejas: Yes, we remembered what we had learnt about gathering information. We knew that Internet and book stores can be our main resources.



Jyoti: I discussed with my mother about how to search for online games. She suggested that we could also ask our friends or go to a library. We consolidated all the information gathered from various resources.

Tejas: While following the six steps for our assignment, we had to skip some sub-steps. For example, in the second step (analyse and identify requirements), we had only one task before gathering information for english vocabulary games. So we skipped the first three sub-steps namely, Identify various subtasks of the goal, Identify requirements related to each subtask and List what you already know about the requirements of each subtask. We went directly to the next sub-steps.

2.4 List known and unknown information.

2.5 List the questions that we need to find answers.

Moz: Good observation. Note that every information gathering activity need not have all the six steps or subtasks. For example, gathering information for a school summer trip will have clear subtasks like booking tickets, prepare schedule and filling forms. Other activities, such as your assignment need not have all sub-steps.

Revision of Lists and Tables

Jyoti: This summer assignment was only one part of our To-Do-list for summer:

Summer To-Do-list

- Work on summer assignment on gathering information.
- Put together a list of all concepts and skills learnt in Computer Masti- Level V, for Internet and safety lessons (use screenshots if needed).
- Attend tennis, painting and pottery classes.
- Finish reading all the story books borrowed from the library.
- Visit grandparents every weekend.
- Organize books and clothes cupboard.
- Watch new animation movies.
- Play in the nearby playground every evening.
- Buy new school dress, bag, shoes and books for the new academic year.

Moz: Your To-Do list, not only has an interesting mix of fun and creativity, but also ensures some discipline and organization of your personal belongings.

Tejas: I recalled the functions of List and Tables and noted them in my notebook.

<p><u>Lists and Tables:</u></p> <p><i>A list helps us to easily remember instructions. It also helps us to check if we have completed all tasks. Lists can be used to organize information sequentially. If the order in which the items listed is important, number the items in the list.</i></p> <p><i>A list is useful to:</i></p> <ul style="list-style-type: none">• Organize information systematically.• Highlight important points in long sentences and paragraphs.• Enhance readability and grab reader's attention.• Remember instructions and announcements.• Find the information that we need faster.• Know the order in which tasks need to be done. <p><i>Lists are used when the information can be contained in a single column while tables are used for information that requires multiple columns. Tables can be represented in multiple ways depending upon how you want to categorize information.</i></p> <p><i>A Table is useful to:</i></p> <ul style="list-style-type: none">• Organize a collection of related data in rows and columns.• Find information easily.• Catch attention of the reader.• Compare information on different categories.

Revision of Internet: Browsing, searching and email

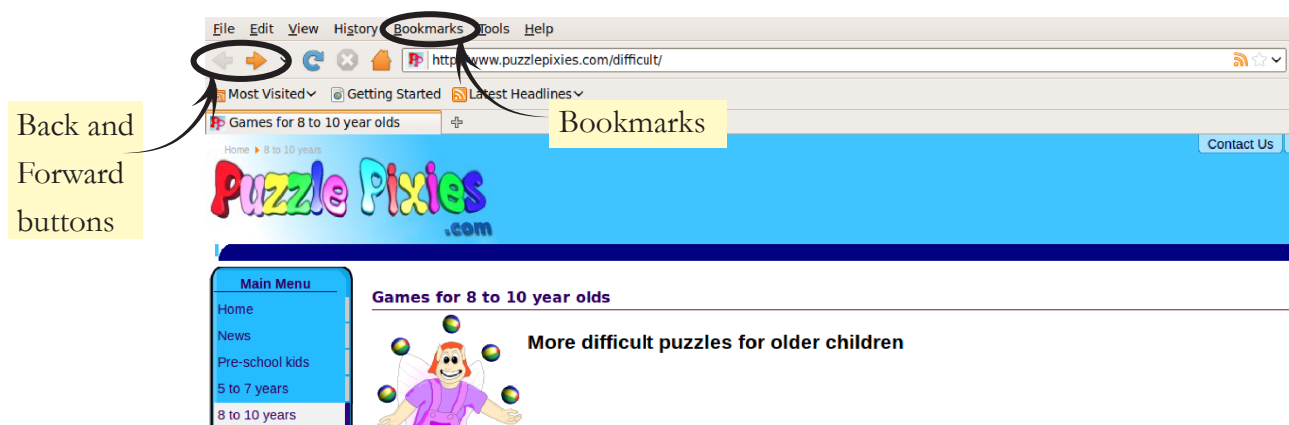
Moz: Now, tell me more about how you searched online for the Vocabulary games?

Tejas & Jyoti: We checked with our parents about using Internet before we started browsing.

Jyoti: As I love crossword puzzles, I wanted to search for vocabulary crossword games. I opened the Google website in the Firefox browser. I first typed the keyword: *crossword* in the search box of Google. The first link displayed was a bookshop named Crossword!

Moz: Can you recall the tips that you learnt to improve the search keywords?

Jyoti: Yes, I tried more specific keywords and typed *vocabulary games*. The search engine displayed many links. But when I visited the links, some games were very simple and others were too complex. I remembered that phrases with relevant words would be helpful and then typed: *vocabulary games for 10 year old children*. This gave me a list of useful links. I visited each one and bookmarked the relevant links for future use.



Tejas: Each website had hyperlinks pointing to different grades or games. It was also easy to navigate these websites using the browser back button or by using the menu on the web site.

Jyoti: While searching for Vocabulary games on the Internet, some of the websites had some pop ups, asking us to fill some personal details like age, name and address. I closed the pop ups. We talked to our parents about these sites, showed them the sites that we were browsing, and confirmed which sites are safe and reliable.

Moz: Did you mail these safe and interesting URLs to your classmates?

Jyoti: We were not sure about spamming their Inbox, so we decided that after the school reopens we will announce in the class. We will note the names of the students who are interested and email the list only to them.

Tejas: We also followed the SMART rules (refer page number 19) while browsing on the Internet.

Moz: How else did your parents help you in this assignment?

Tejas: For some online games, the website said “free download”. We did not know if it was safe to click.

Jyoti: Our parents helped us to download and install those games on our computer. They also took care to check for virus before download.

Moz: What is the advantage of these downloaded games, compared to online games?

Jyoti: Downloaded games are stored on our PC, so we do not need Internet connection while playing these games.

Jyoti: Our next resource for finding vocabulary games was bookstores. So we visited some bookstores with our parents. We took the help of the sales person to identify educational CDs which had vocabulary games. We noted down the cost of each CD.

Tejas: We also checked with our local library and friends to see if they had any information on vocabulary games.

Moz: How did you pick five games for your assignment?

Jyoti: We followed the steps of decision making!

Steps of decision making	
Concept	1. Identify the goal.
	2. Gather and consolidate information regarding available choices.
	3. Identify the constraints (conditions to be satisfied).
	4. Use logical thinking to identify choices that satisfy the constraints.
	5. Take the decision.

Jyoti: Here is a table with the consolidated information that we gathered from various resources. The reason for selecting the five games out of the list is also included:

Name of the game	Resource	Link or company name	Cost	Decision to select	Reason
what-kind-of-noun	Internet	http://www.vocabulary.co.il/parts-of-speech/middle-school/	free	Yes	It is online and free.
240 Vocabulary Words 6th Grade Kids Need To Know	Library	-	Rs. 25/month	Yes	Borrowing charge is less than 50.
50 Brain Builders For English	Book	http://www.learningthings.com	Rs. 850	No	More than Rs. 200/-
Hangman, Word search, crosswords	Internet	http://www.sadlier-oxford.com/vocabulary/games .	free	Yes	It is online and free.
Homophones	Internet	http://www.learninggamesforkids.com/word_games/vocabulary-games/	free	Yes	It is online and free.
Easy English Grammar	CD	http://learnwareindia.com/	Rs.149	yes	Less than Rs. 200/-

Moz: Now that you have learnt new words, and usage where will you apply this new knowledge?

Tejas: It will **facilitate** us to write better English compositions. Conversations with friends can now be **peppered** with new words.

Moz: Wow, you are already using the new words!

Jyoti: Thank you. We are **overjoyed** that you noticed.

Tejas: We had so much fun while searching for and playing these games! We had to be reminded that there were other tasks on our to-do list for summer.



Sharable information on the Internet is called the World Wide Web

Internet is a combined collection of many interconnected computer networks around the world.

A hyperlink is a mechanism by which a web page is linked to another related web page.

If you move your mouse over a hyperlink, it will usually change to the shape of a hand.

If you click the hyperlink you will be taken to a another web page.



Information on a web site is accessed by using the Internet application called the browser.

What is a computer network?

- A computer network is a collection of computers and devices interconnected to one another.
- Devices in a computer network can be shared by users of the network.
- Files, data and information on the computers in a computer network can also be shared by users of the network.

What are the safety measures while sending and receiving emails?

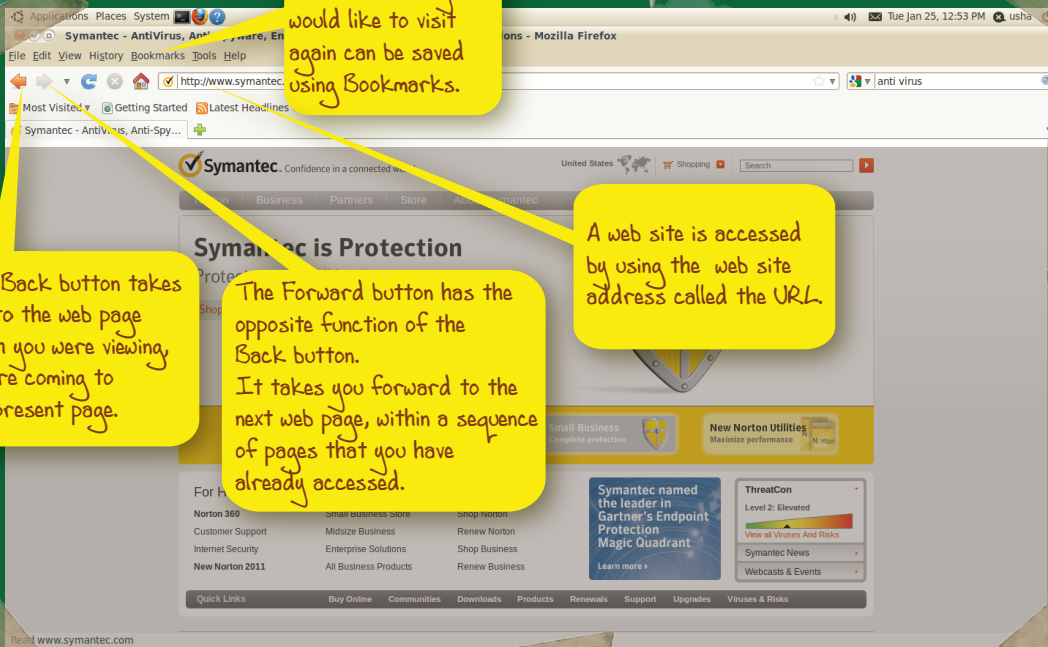
- Do not share your password with anyone, not even your best friend.
- Always check with your parents before reading email from someone you do not know.
- Beware of viruses in attachments. Scan attachments before downloading.
- Always check with elders whom you trust before believing any information mailed to you.
- Send mails to multiple users only if it is absolutely necessary. **Do not Spam.**



What is a computer virus?
 A computer virus is a program that can attach to files and perform actions ranging from annoying (e.g., popping up messages as a joke) to dangerous (e.g., deleting files). To avoid virus attacks on computers, scan the attachments received along with e-mail using a virus protection software.

bing Google YAHOO SEARCH

A web search engine is a web site that helps you search for information on the World Wide Web.



The address of a web site that you would like to visit again can be saved using Bookmarks.

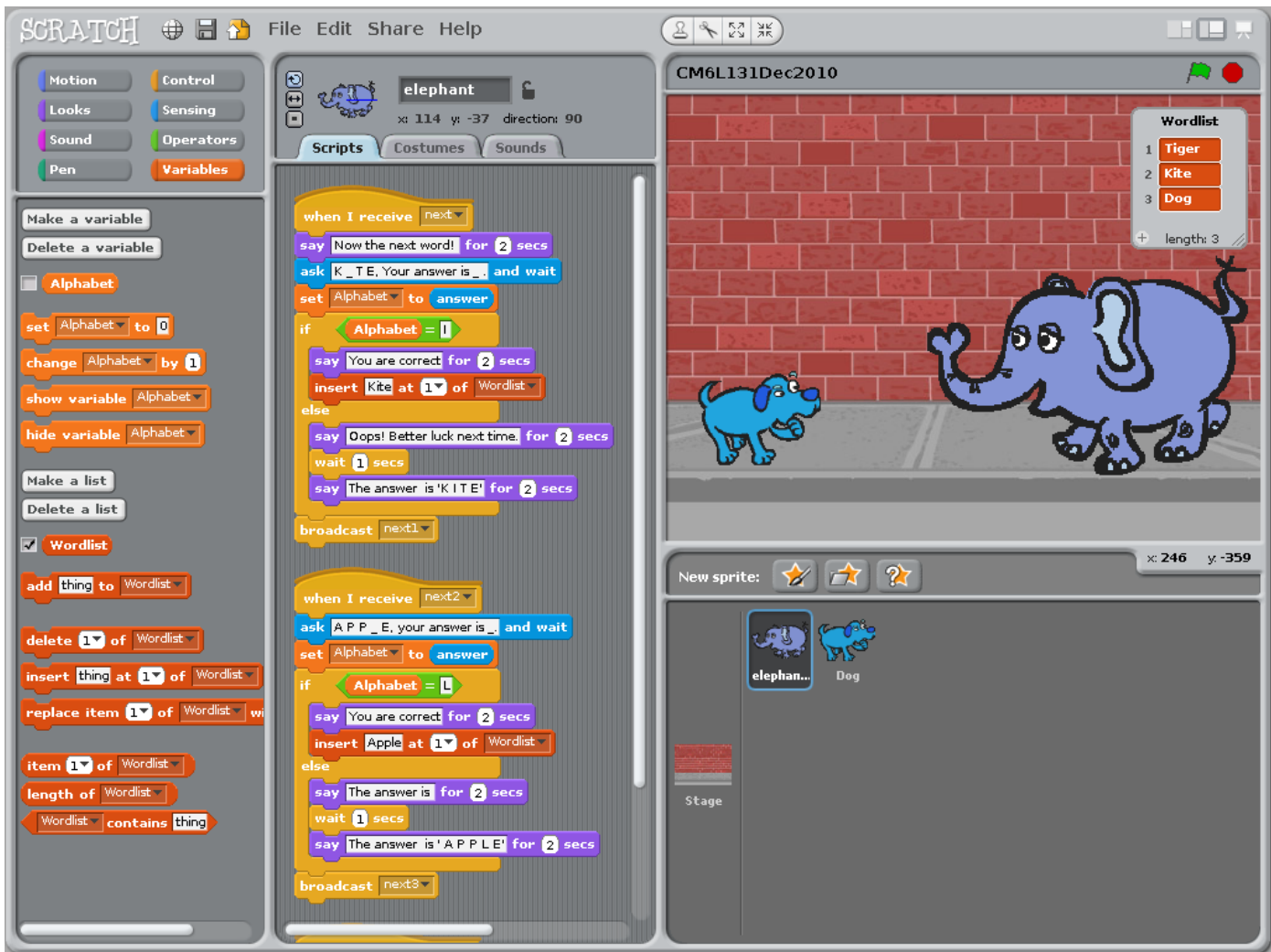
The Back button takes you to the web page which you were viewing, before coming to the present page.

The Forward button has the opposite function of the Back button. It takes you forward to the next web page, within a sequence of pages that you have already accessed.

A web site is accessed by using the web site address called the URL.

A web site is a collection of related web pages of information.

Jyoti: We also had fun by building our own vocabulary games using Scratch. Our teacher has given it as a worksheet for our friends. (See page number 14)



Moz: This year you will learn about how to organize information using mind maps, creating presentations and a new programming language called BASIC. Chin Chinaki...

Gather

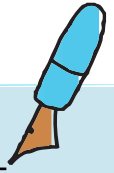
Lists and tables

Internet: Browse, Search, e-mail

Learning Outcome

At the end of this lesson, you will be able to:

- Recall topics learnt in Computer Masti- Level V, such as information gathering, making lists and tables, Internet browsing, searching, e-mail and Scratch programming.



1. Shreya and her family live in Mumbai. They are planning a trip to Mount Abu. They have three options for getting there.
 - a. Take a train from Mumbai to Abu Road station, which will take around 16 hours. Then a 1 hour car journey, which will take them to Mount Abu.
 - b. Fly from Mumbai to Delhi, which will take around 1.5 hours. For the connecting flight to Udaipur, they have to wait for 6 hours. Flight time to Udaipur is another 1.5 hours. It takes 6 hours to Mount Abu from Udaipur by car.
 - c. Fly from Mumbai to Ahemadabad and then another flight to Udaipur. Total flight time is 7.5 hours (including waiting at the airport). From Udaipur take a car to Mount Abu.

Can you help Shreya decide the quickest mode of transport, so that she will reach Mount Abu at the earliest?

Hint: Find the total time taken for each option.

- a. _____
- b. _____
- c. _____

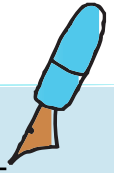
Decision: _____

2. Read the following Scratch script. Two numbers are to be given as the input. From the options given below, select all the possible solutions so that Ducky can reach the fish.

```

when clicked
  go to x: -156 y: -85
  say Hello! Can you help me to reach the fish. for 2 secs
  ask Type number1 and wait
  set Steps1 to answer
  ask Type number2 and wait
  set Steps2 to answer
  if Steps2 + Steps1 < 250
    say Oh! I can't reach the fish. for 2 secs
  else
    move 250 steps
    say Bingo. I have the fish for 2 secs
  
```

- | | | |
|-------------|-------------|-------------|
| a. 125, 130 | c. 100, 120 | e. 125, 125 |
| b. 200, 100 | d. 120, 125 | f. 250, 10 |



3. The following list gives the details of flights flying from Mumbai to Delhi.

Sr No.	Airline	Day of the week	Departure time	Stop over	Cost in Rupees	Food served?
1	Spicejet	Tuesday	8.30 am	Yes	2200	No
2	Jet Airways	Wednesday	9.00 pm	No	3400	No
3	Indian	Friday	9.00 am	Yes	3500	Yes
4	Kingfisher	Saturday	6.00 pm	No	4000	Yes
5	Spicejet	Sunday	10.00 am	No	3000	Yes
6	Indian	Saturday	9.30 am	No	2500	No

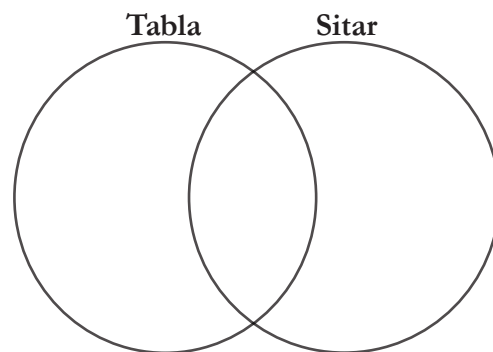
Select the flight which satisfies all the following conditions. The first condition is filled in.

- Cost should be less than or equal to Rs. 3500.
- Departure between 8.00 am to 11 am.
- There should be no stop over.
- The flight should be on a weekend.
- Food should be served on board.

Sr No.	Airline	Cost < 3500	Departure time between 8.00 am to 11 am	No stop over	Weekend?	Food served?
1	Spicejet	✓				
2	Jet Airways	✓				
3	Indian	✓				
4	Kingfisher	✗				
5	Spicejet	✓				
6	Indian	✓				

Decision: _____

4. In a class there are 40 students. Each of them is learning either Tabla or Sitar. Out of this, 20 are taking only Tabla classes. 5 are taking both Sitar and Tabla classes. Using the venn diagram solve the following:

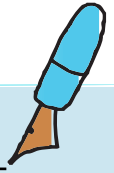


a. How many students are taking only Sitar classes?

Ans. _____

b. How many students are taking Tabla classes?

Ans. _____



5. Given below are some search keywords.

Cricket news Science projects Cricket scores Holiday plans
 CBSE results Christmas holidays Project ideas 10th standard results

a. Group the keywords into four categories.

Cricket Cricket news, _____
 Results _____
 Holidays _____
 Projects _____

b. Read the following hyperlinks and identify which keyword would display this link.

Sl. No.	Displayed Hyperlinks
L 1	www.holidays.net/christmas/
L 2	www.cisce.org/examresults
L 3	www.cricinfo.com/
L 4	www.live.skysports.com/
L 5	http://www.sciencebuddies.org/
L 6	www.thomascook.com/holidays/
L 7	http://www.results.nic.in
L 8	http://news.bbc.co.uk/sport2/hi/cricket/default.stm
L 9	http://www.cbseresults.nic.in/
L 10	www.teletextholidays.co.uk/
L 11	http://www.energyquest.ca.gov/projects/index.html
L 12	http://www.sciencemadesimple.com/
L 13	www.results.icbse.com
L 14	www.lastminute.com/site/travel/holidays/
L 15	http://www.scienceprojects.in/
L 16	cricketnews.in/

Cricket

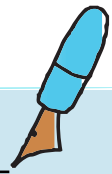
Cricket news, _____

L3, L4

Results

Holidays

Projects



6. Meena's Birthday is coming up and she has arranged a party at her home. She wants to invite her friends: Riya, Anna, John, Aryan, Raju and Priya. They exchange emails as given below:

1. Meena has emailed the invitation to all of them.
2. Riya, Priya and Raju replied to all saying that they will be coming for the party.
3. John is out of town, so he mailed back to Meena saying that he cannot make it.
4. Aryan is coming for the party and has sent an email reply only to Meena.
5. Anna replied to Meena, Priya and John saying that she will be coming for the party.

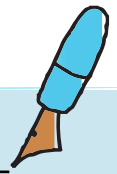
Represent the above mail exchange in the table given below. Then calculate how many mails each of them received in total?

Sender	Receiver →						
	Meena	Riya	Anna	John	Aryan	Raju	Priya
Meena	✗	✓	✓	✓	✓	✓	✓
Riya		✗					
Anna			✗				
John				✗			
Aryan					✗		
Raju						✗	
Priya							✗
Total							

7. Study the following Script. The user has to select fruits by clicking on them.

The user has already selected bananas and cherries (see the list items). If he now clicks on pineapple, what will happen?

- a. 'pineapple' is added to the list.
- b. The message 'You can select only 2 fruits' is displayed.
- c. Length of the list is increased to three.
- d. 'banana' is removed from the list.



8. In a Tennis competition there are five finalists. Every finalist played once with every other finalist. Each time they played there were three possibilities: Win(W), lose(L) or draw(D). The table below gives the summary of the results.



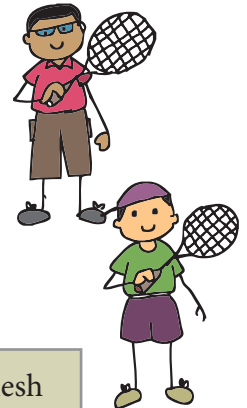
	Mahesh	Sharukh	Sidharth	Michael	Sachin
Won	0	1	4	1	2
Lost	3	2	0	1	2
Draw	1	1	0	2	0



a. Represent the above results in another table and show the results for each pair. Use W to represent a Win, L for a Lose and D for a Draw. For example, the game details of Sidharth is filled up for you.



Sidharth	Sharukh
W	L



Sidharth	Michael
W	L

Sidharth	Sachin
W	L

Sidharth	Mahesh
W	L

Mahesh	Sachin

Michael	Sachin

Sharukh	Michael

Sharukh	Sachin

Mahesh	Michael

Mahesh	Sharukh

b. Using the above data answer the following questions.

i. What is the total number of games played?

Ans. _____

ii. What is the total number of games played by each player?

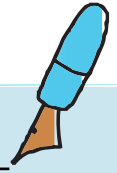
Ans. _____

iii. Which player won all the matches he played?

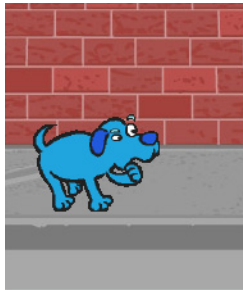
Ans. _____

iv. Which player did not win any of the matches he played?

Ans. _____



9. Here is the vocabulary game written by Tejas and Jyoti using Scratch. Given below are the Scripts for the dog Sprite and the elephant Sprite. Study it and answer the questions.



Script for dog Sprite

```

when green flag clicked
  delete all of Wordlist
  say Look at the word and fill in the missing letter. for 2 secs
  ask D _ G, Your answer is _ and wait
  set Alphabet to answer
  if Alphabet = 0
    say You are correct for 2 secs
    insert Dog at 1 of Wordlist
  else
    say Oops! Better luck next time. for 2 secs
    wait 1 secs
    say The answer is 'D O G' for 2 secs
  broadcast next

```

```

when I receive next1
  ask T I _ E R, your answer is _ and wait
  set Alphabet to answer
  if Alphabet = G
    say You are correct for 2 secs
    insert Tiger at 1 of Wordlist
  else
    wait 1 secs
    say The answer is 'T I G E R' for 2 secs
  broadcast next2

```

- a. What does the following construct do?

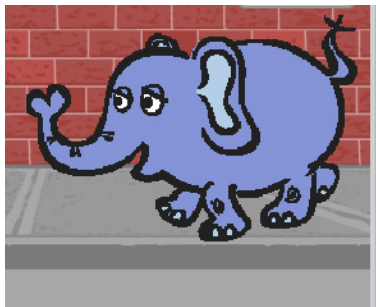
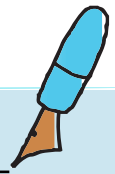
```
delete all of Wordlist
```

Ans. _____

- b. If the correct answer is given by the user; what will be the value of the variable Alphabet?

```
ask D _ G, Your answer is _ and wait
set Alphabet to answer
```

Ans. _____



Script for elephant Sprite

```

when I receive next
say Now the next word! for 2 secs
ask K _ T E, Your answer is _ and wait
set Alphabet to answer
if Alphabet = I
say You are correct for 2 secs
insert Kite at 1 of Wordlist
else
say Dops! Better luck next time. for 2 secs
wait 1 secs
say The answer is 'K I T E' for 2 secs
broadcast next1

when I receive next2
ask A P P _ E, your answer is _ and wait
set Alphabet to answer
if Alphabet = L
say You are correct for 2 secs
insert Apple at 1 of Wordlist
else
say The answer is for 2 secs
wait 1 secs
say The answer is 'A P P L E' for 2 secs
broadcast next3

when I receive next3
say You have completed the test for 2 secs
say join You have got join length of Wordlist Correct answers! for 2 secs
    
```

c. In this program, which construct is used to coordinate the actions of elephant and dog Sprite?
 Ans. _____

```

when I receive next3
say You have completed the test for 2 secs
say join You have got join length of Wordlist Correct answers! for 2 secs
    
```

d. If the user got two correct answers out of five questions; what will be the value of the construct? `length of Wordlist`

Ans. _____



ACTIVITY

Level VI | Lesson 1

1. KGeography:

Explore the map by clicking on different locations. You can test yourself on location of countries/states, their capitals, flags, etc. To do this activity, open the KGeography application and select the option- 'Open Map'. Now select, what location you want to study. 'Explore map' by clicking on different locations, to study them. For example, you can do a study of India's neighbouring countries. To test your knowledge, select the nature and number of questions you seek to answer.



- Design a daily schedule for yourself for one week. List down what activities you want to do and the timings for each. Allot appropriate time for study, exercise, playing games and so on. You would have a different schedule for holidays and school days. Follow this schedule from tomorrow. You earn one star for every day that you stick to your schedule. At the end of the week, compare the number of stars each of your classmates earned.

TIME TABLE

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
7.00-8.00 am							
8.00-10.00 am							
10.00-12.00 am							
12.00-2.00 pm							
2.00-4.00 pm							
4.00-6.00 pm							
6.00-8.00 pm							
8.00-9.00 pm							



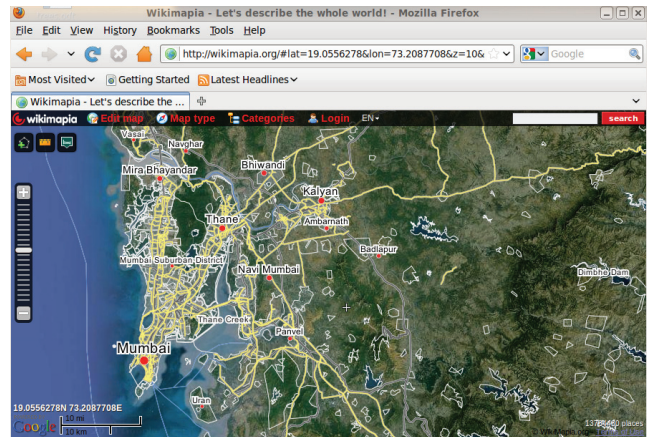
ACTIVITY

Level VI | Lesson 1

Group activity

3. Wikimapia:

1. Search for Wikimapia website using a search engine. Locate your city, mark the location of your residence and your school.
2. To do this activity, form groups of students according to area. Students staying in one locality form one group. Select a suitable group name.
3. For students who do not belong to any group, join the group nearest to your locality.



A salute to the night workers.

This project can be done by a group of 5 students together.

Select a profession in which people may have to work in the night. For example firemen, doctors, pilots, security guards, drivers of transport vehicles, people working in call centers or news paper reporters. Find out what do they do at night and why do they have to work at night? How do they manage to work during the day and night? When do they sleep? When do they eat?

- Write an introduction about professions where people have to work in the night.
- Collect details of the profession that interests you.
- Gather information about how the person manages his/her day and night schedules.
- Include images and any interesting anecdotes from people whom you interview and prepare a report about the same.

Give an interesting title to your report. Provide catchy sub titles while you write about various aspects of the topic. Use images, videos, Websites references in your report. Use all the formatting concepts that you have learnt to make your report interesting to read. (This can also be made into a skit about a night worker)



1. Create a table in which each row has a different colour.
2. To save a document you can use shortcut keys (ctrl+s). Explore the shortcut keys used for actions like: Zoom in, cut, copy, paste, switch between opened applications.

- The purpose of this lesson is to revise the topics covered in Computer Masti- Level V. Teacher should allot sufficient time to explain and practice the concepts and skills taught in the previous level.
- The first section of the lesson revises the steps of gathering information with an example of a summer assignment done by students. You can ask students to role-play the situation. In order to further reinforce the learning of this topic, you can ask students to propose a new situation where information gathering would be required. Typically students would give examples such as planning a picnic, visit to a place, doing class projects and so on. Select a variety of examples and ask students to form groups and write how the six steps would be applied in that situation. Alternatively, you can ask one student from each row to state each step of gathering information and ask another student to explain how that step will be applied in the given example. Use this opportunity to revise the skills of making a list and table. You can ask students to prepare a check list of items to be carried in their luggage or required for project presentation. Question them on how the list can be further organized – sequentially or alphabetically and so on. To reinforce the skill of reading data represented in a table, you can ask students to solve worksheet question 8 as homework.
- Revise the decision making skills as well. Ask students to solve worksheet question 3, you can give question 4 as homework. You can select another example, such as buying a gift. Ask students to imagine that they have Rupees 200 with them and they want to purchase a birthday gift for their father. How will they apply the steps and decide what gift to buy?
- In the lab session, you can revise the Internet skills learnt earlier. Begin with asking them to start an Internet application and open an educational website (they can open the URLs of games mentioned in the book). Let them navigate through the website and click on the hyperlinks. Question them on how do they know if something was hyperlinked. Now ask them to go on the previous page using the back button and bookmark the page. Revise the concepts of computer network, World Wide Web and website. Now begin solving question 5(b) in class, after students have gained confidence give the remaining as homework.
- To continue the revision of Internet skills, ask students to open a search engine and do the activity of Wikimapia mentioned in the activity section. The site will ask them to register in order to flag a particular location. Use this opportunity to revise the safety measures for Internet browsing and searching.
- Give a homework assignment to draft a letter to the local police inspector. You can also give a choice of professions such as, taxi driver, nurse, plumber, lawyer, electrician, doctor, cobbler, engineer; requesting him to visit the school and address the students on details about his profession. Form groups of students and allow each group to select a particular profession. In the lab session, ask the students to imagine that they are sending an e-mail to that person and enter the letter as an e-mail. Emphasize that they need to select an appropriate subject line, salutation and end the mail courteously. Highlight that it is important to spend enough time to read the mail draft and check if all the entries are correctly entered before sending the mail. Ask them to attach a photograph of their school (the teacher keeps this on the desktop). Question them on what would happen if several students send a mail to the same person. Revise the concept of spamming and safety measures for sending and receiving email. Send the mail without the address entered and ask students to recheck their e-mail Inbox to find out what happens.
- Revise the programming concepts learnt while writing projects in Scratch do worksheet questions. Do worksheet questions 2 and 7 in class, you can give question 9 as homework. Tell students that they will learn a new programming language this year.

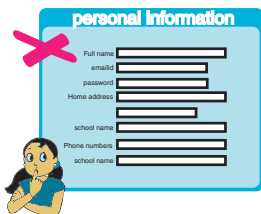


Further Reading:

http://raisingchildren.net.au/articles/internet_safety.html

Internet Safety Rules

S



Keep *Safe*

Keep safe by not revealing personal information while using Internet. Personal information includes email Id, house address, photos, phone number and password.

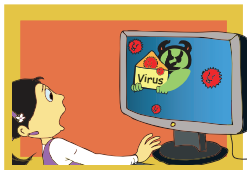
M



Do not *Meet up*

Meet online friends only in the presence of an adult family member.

A



Do not *Accept*

Accept e-mails and messages only from people whom you know. Be aware of viruses and spam messages.

R



Check for *Reliability*

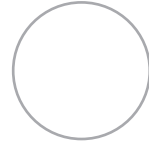
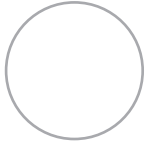
All the information on the Internet may not be correct. Check the reliability of the information with other resources - books, websites or someone who knows.

T



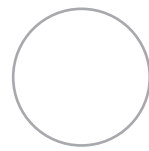
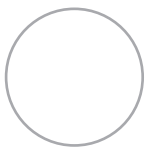
Tell

Tell your teachers/adult family member if you or someone you know is uncomfortable about an online communication.

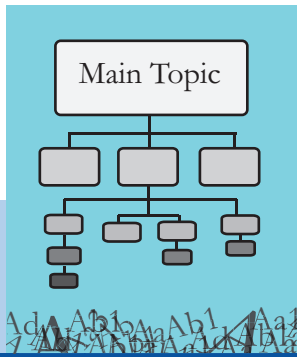


Apply glue in the circles given
and paste this poster near
your computer.

Computer Masti



Notes:



2. Brainstorming and Mind maps

Aim: In this lesson, you will learn to:

- Brainstorm for idea generation.
- Categorize ideas.
- Represent ideas through mind maps.
- Analysis and decision making.

Tejas, Jyoti and friends are discussing about computers with Moz.

Tejas: We have to prepare a presentation about computers for the inter school competitions.

Jyoti: Five of us have formed a group and we are planning to gather information about various aspects of computers.

Moz: Which aspects of computer are you planning to do the presentation on?

Jyoti: We have not yet decided. We want to discuss some of the ideas.

Moz: Good. Let us do a **brainstorming** session to generate ideas.

Tejas: What is brainstorming?

Moz: Whenever you have to do tasks such as making a presentation, creative writing, problem solving or doing projects, you start recalling information about the topic. As you do so, many new ideas form in your mind. In a brainstorming session everyone in the group speaks out their ideas. These are all written down.

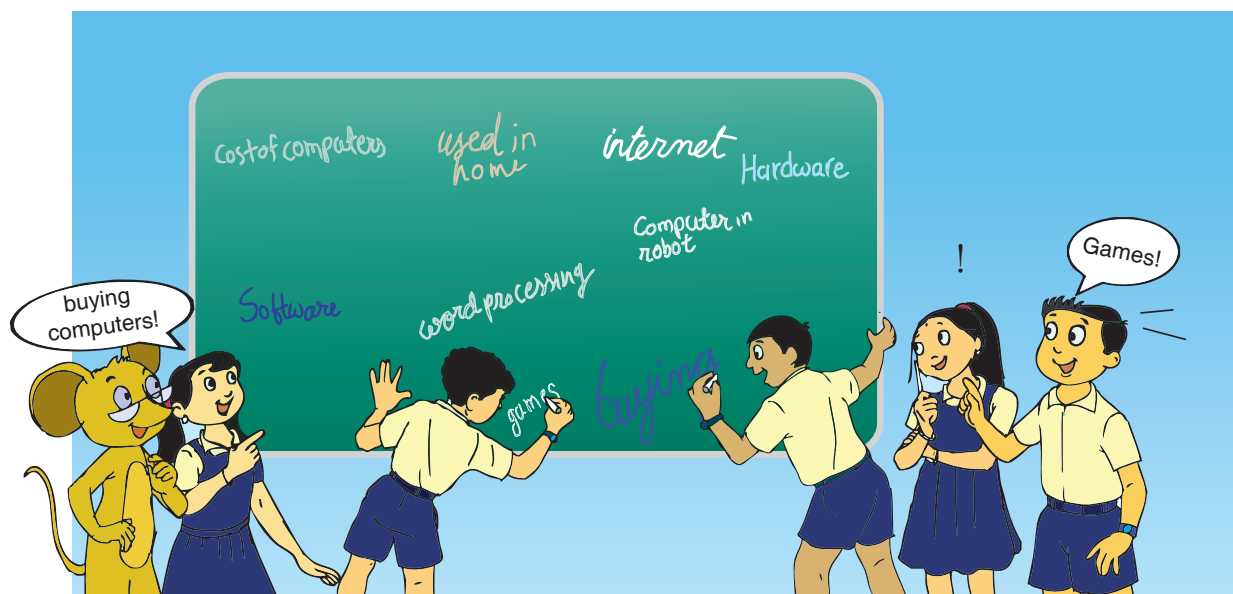
Jyoti: Suppose the group feels some ideas do not fit into the topic. Should we drop them?

Moz: The ideas are not discussed during a brainstorming. The discussion comes later. Simply describe the idea or topic briefly. Let the ideas come in from everyone in the group, just like a storm.

After the brainstorming session is over, discuss each idea, find relationships with the topic and organize these ideas by categorizing and analyzing.

Tejas: This is fun. Let us start brainstorming.

Ideas flow in from the students and two of them note down the ideas on the board.



Brainstorming

Concept

- Brainstorming is a strategy for **generating ideas**.
- A group of people sit together and think about a given topic.
- Each person comes up with some ideas or prior knowledge or questions about the given topic.
- During brainstorming the ideas, knowledge, questions from each person are noted, without discussion on their merits.

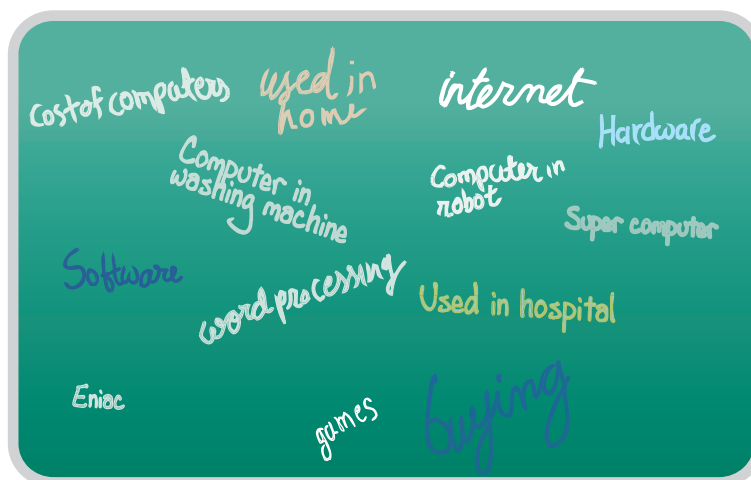
Brainstorming

Guidelines

Given a topic or an activity to be done, you need:

- Some space where brainstorming can be conducted.
- Something on which the ideas can be written down.
- One or two persons to note down the ideas generated, without discussion or criticism.
- A relaxed atmosphere, so that each person can express his/her ideas without fear. One person speaks at a time.
- When the group feels that enough ideas have been generated, the brainstorming session ends.

Moz (Sees the ideas noted on the board given below): Good. Many aspects of computer are covered.



Tejas: Some of these ideas are related. We need to list them so that the related ones are together.

Moz: You can use mind maps to identify the relationships and then organize the ideas for the presentation.

Jyoti: What are mind maps?

Moz: Mind maps are graphical representation of ideas and their relationships.

Moz: Let us understand mind maps using an example. Pick up one of the ideas “word processing”. How is this related to computers?

Jyoti: We can use computers for word processing.

Tejas: Word processing on computers is one of the useful applications.

Moz: Are there any other applications in the ideas from brainstorming?

Tejas: “Internet”. We use a computer to access applications on Internet.

Jyoti: “Games”. We use a computer to play games.

Moz: What is the common feature of all these ideas that you picked up.

Tejas: These are all applications which are used for some purpose or the other.

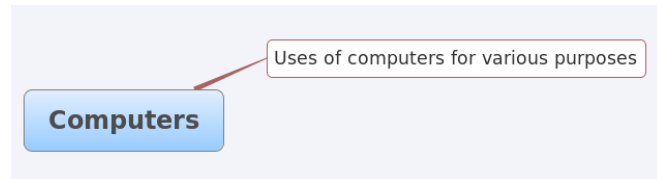
Jyoti: We use a computer for many such purposes.

Moz: Can we group all these ideas under one category?

Tejas: Since all these are used for some purpose or the other, can we call this category “Use of computers for various purposes”?

Moz: Yes. You have identified one of the main categories of computers “Uses of computers for various purposes”.

Moz: In a mind map the categories are linked to the main topic using lines or arrows. Go ahead and start your mind map by linking the category that you have identified.



Jyoti: Currently we have used brainstorming to note the ideas. So should we link them to the main topic by finding the relationships between these ideas?

Moz: Right. Mind maps can follow brainstorming or mind maps can also be done without brainstorming.

Tejas: Are mind maps helpful in organizing the ideas into a presentation?

Moz: Yes. At a glance, you can view the overall structure of the topic. This will help you to identify information that needs to be added, or dropped for a particular task. You can then finally organize the information for the task.

Jyoti: Based on the mind map can we prepare an outline for our presentation?

Moz: Yes. Mind maps are helpful in preparing an outline for presentations, writing reports and also for writing essays.

Mind map	
Concept	<ul style="list-style-type: none">• Mind map is a visual representation of the information related to a topic.• In a mind map words, tasks, ideas, information belonging to a topic are categorized and linked together.• A mind map is useful to:<ul style="list-style-type: none">○ Create a structure of the identified categories and sub categories.○ Organize related information under a category.○ Visualize and understand the available information at a glance.○ Recall additional information.○ Identify missing categories and information.

Mind map	
Guidelines	<ul style="list-style-type: none">• Start in the centre with the main idea.• While the main idea sits in the middle all the other ideas radiate out from the centre.• Connect the main or first level ideas to the central idea. Then connect the second-level branches to the first level and so on.• Each branch should have only one idea associated with it.• Images and different colours can also be used in a mind map.• The lines must be connected, starting from the central image. The central lines are thicker which becomes thinner as they radiate out.• Keep the mind map clear by using radiant hierarchy, numerical order or drawing outlines.

Moz: Identify other categories similarly by first finding items with some common feature and giving an appropriate label to the category.

Categorization

Concept

- Organize information or items based on common features, into various groups or categories.
 - Find out the common features in information or items. For example: colour, size, function, location etc.
 - Group the items with the same feature or related ideas into a category.

Jyoti: I recall from Computer Masti- Level IV, that Eniac was one of the first general purpose computers. This is part of the “history of computers”.

Tejas: Hospitals, libraries are places where computers are used. These are all places where computers are used. This category can be called, “Uses of computers in various places”.

Jyoti: CPU and memory are parts of a computer.

Moz: Yes. These items belongs to ‘hardware of a computer’. You will learn more about these later.

Jyoti: Let us call this category ‘Hardware of computers’.

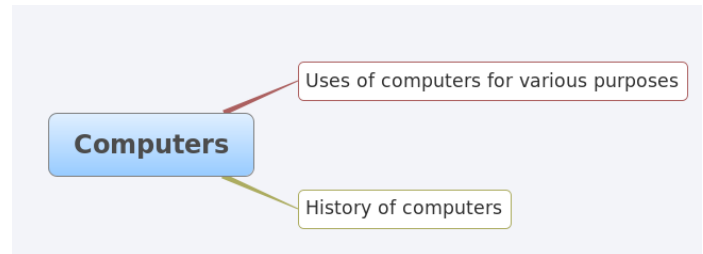
Jyoti: I have seen my aunt use a computer on a cell phone.

Tejas: My father said that there is a small computer that also controls the various functions of a washing machine!!

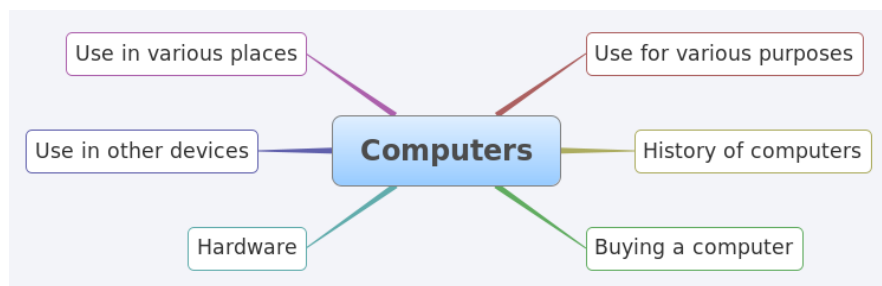
Moz: Yes. Computers are used in such devices.

Tejas: Since these are devices in which computers are a common feature let us call this category ‘Uses of computer in other devices’.

Jyoti: Last category is ‘buying of computers’.

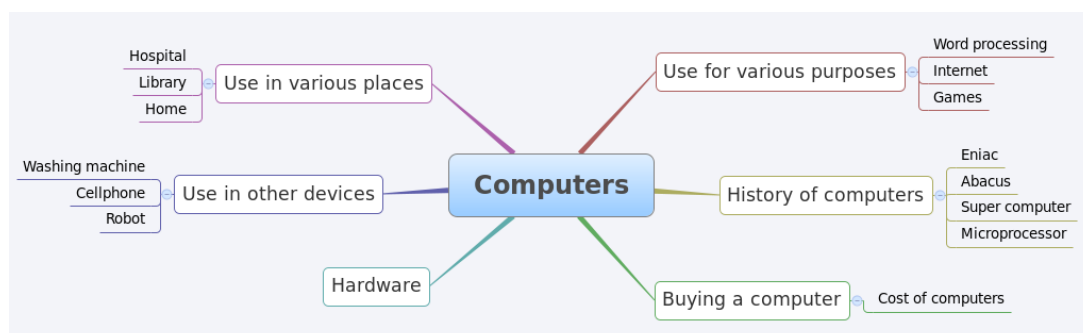


Preliminary mind map with categorization



Moz: Good. This is called a preliminary categorization. Next, list the items in the second level for each category in the mind map.

Preliminary mind map with second level of each category



Moz: Now let us examine the categories. Some can be merged and some can be dropped entirely.

Tejas: Computers are used in various places for various purposes. When we talk about one of these categories we will be talking about other categories too.

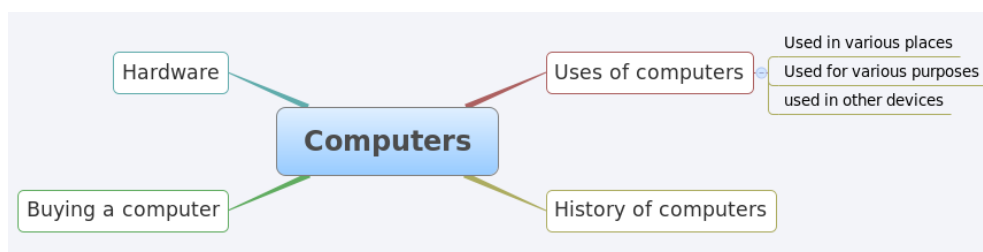
For example we can say that word processing can be used at home for the purpose of preparing documents.

Moz: You are right. You can merge these two categories and put it under one category “Uses of computers”.

Jyoti: Uses of computers in other devices can also be categorized under “Uses of computers”.

Moz: Yes. You are right.

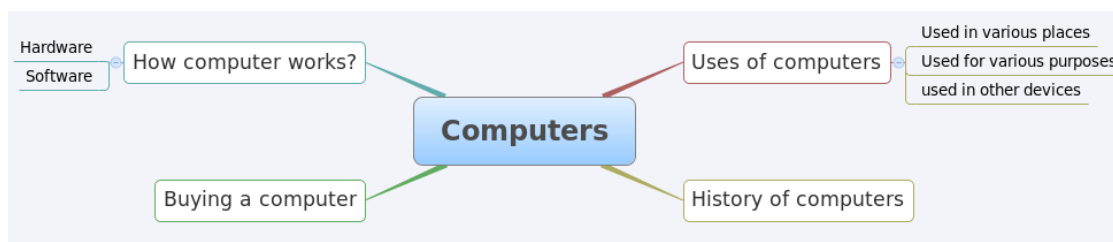
Mind map with some categories merged



Jyoti: When we talk about computers, we can talk about “How a computer works”. The category “Hardware” cannot explain this.

Moz: That is a good observation. What you will need is “software” too. So you can change the category to “How computer works” and explain the “hardware” and “software” of a computer. You will learn about these two terms later on.

Mind map with one category modified



Tejas: In our presentation we need not talk about Buying a computer. We may not have much time for so many topics.

Moz: Yes. You can drop this topic as it is not the most important category for your presentation.

Tejas: In our final mind map we have three categories. We can now distribute these topics amongst ourselves to gather information.

Moz: Let us now summarize what you have done to arrive at the final categories.

Tejas: We examined each category and discussed them.

Jyoti: Some categories were merged, one category was changed to include more information, and one category was dropped.

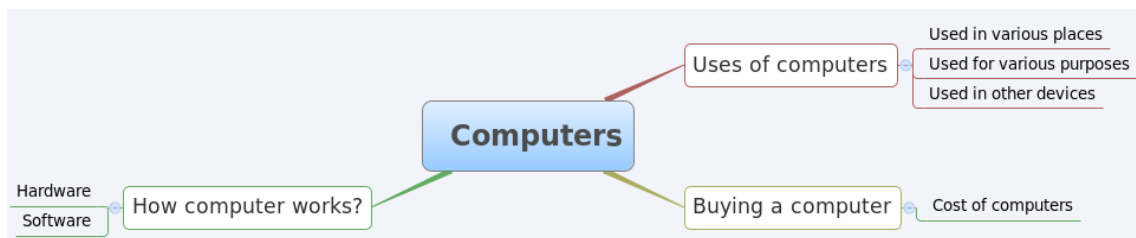
Moz: Good. This is called analyzing and deciding the final categories. Currently your goal is preparation of a presentation on computers.

Analyze and Decide

Concept

- Examine each category and its subcategories.
- Analyze the information and finalize the categories, subcategories relevant to the goal, by:
 - Decision to merge some categories.
Example: *Uses in various places, used for various purposes* and *used in various devices* merged under *uses of computers*.
 - Decision to drop some categories or subcategories.
Example: dropping *buying of computers*.
 - Decision on whether more information is required.
Example: addition of *how computers work*.

The final mind map



Tejas: Now we have to gather information about the three categories and sub categories.

Jyoti: We can use mind maps to categorise the information that we gather. We can also use some mind maps in our presentation.

Moz: Good idea.

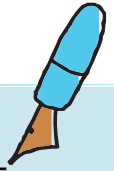
Tejas: Thanks Moz. Steps of gathering information and mind maps will help us in preparing our presentation on time. Chin Chinaki...



Learning Outcome

At the end of this lesson, you will be able to:

- List ideas resulting from a brainstorming session.
- List the common features among the ideas and categorize under appropriate label.
- Draw mind maps to show the links between main topic, categories and subcategories.
- Update the mind map based on the analysis and decision making process.

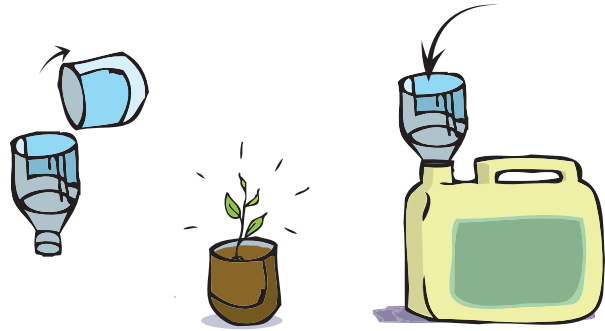


1. Do a brainstorming (by yourself) and find alternative uses for some of the common objects given below. Find as many uses as you can (at least five). One example of alternative uses of a bottle is partially answered.

a. An empty bottle:

Use as a funnel _____

Use as a flower pot _____



b. A house brick:



c. Tooth paste:

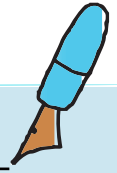


d. The wheel tube of a big truck:

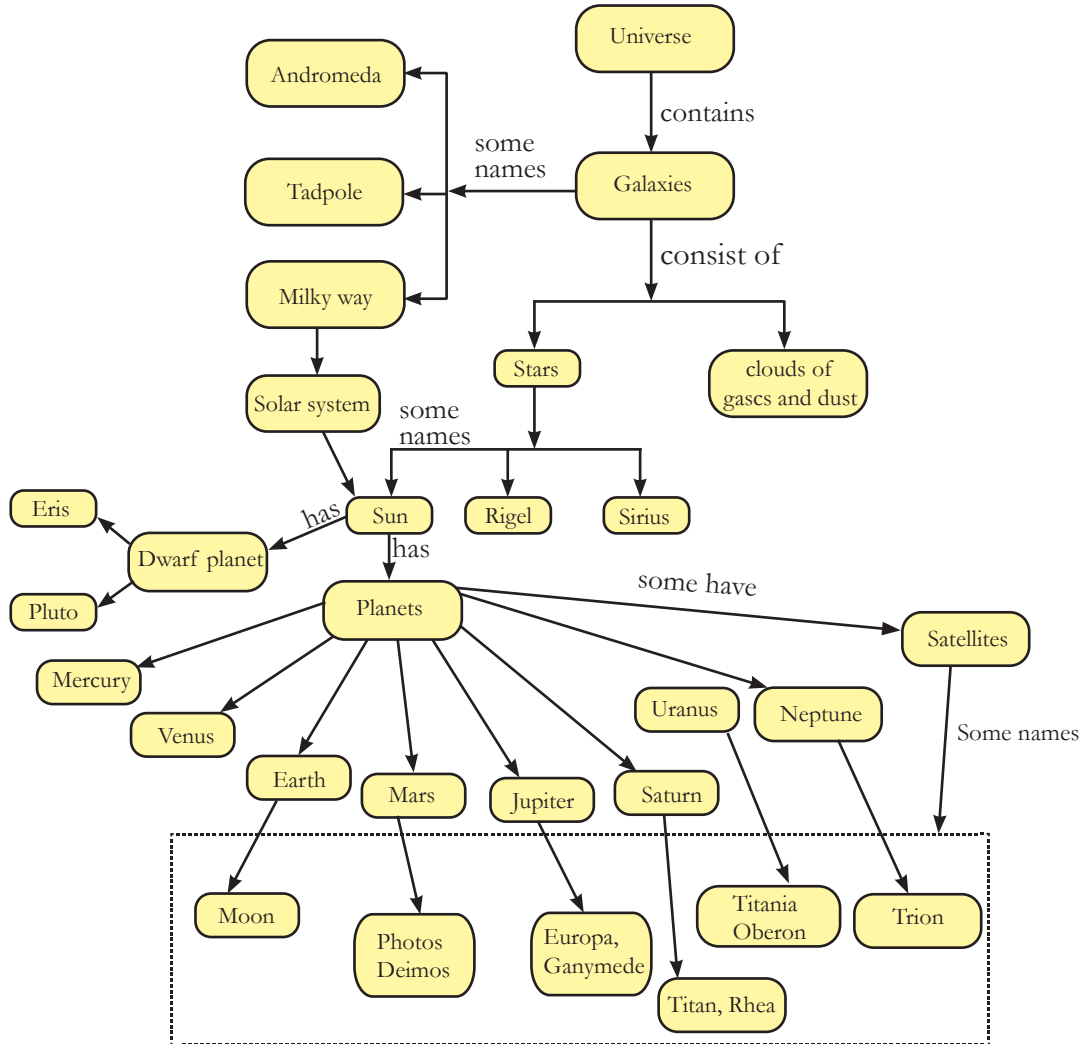


e. Pen:





2. A mind map is given below. Look at it and answer the questions that follow.



1. Name three galaxies.

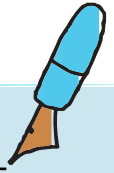
2. How many planets does the Sun have (exclude dwarf planets)?

3. Name a dwarf planet of the Sun, other than Pluto.

4. Name two satellites of Uranus.

5. Which planets in the solar system do not have Satellites?

6. What do galaxies consist of?

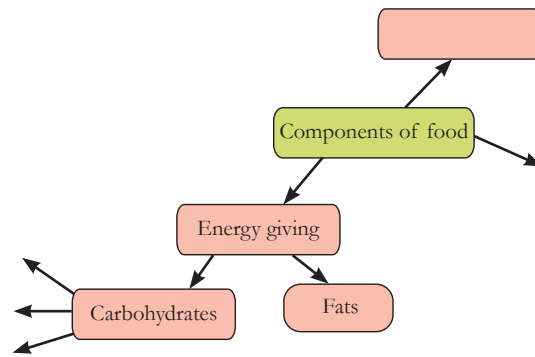


3. A mind map is a great way to remember things.

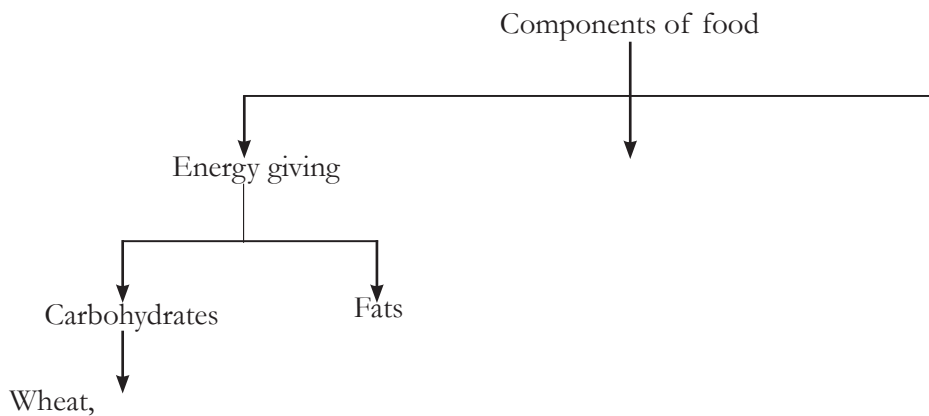
- a. A passage about the various components of food is given below. You need to represent it as a picture. Two partially completed pictures are given below. Complete any one.**

Our body gets energy from the food we eat. Food can be classified according to their functions, namely; energy giving, body building and body protecting. For doing various physical activities and physiological functions (sleep, respiration, thirst, speech, perspiration, etc.), our body needs energy. This energy is got from carbohydrates and fats. Some sources of carbohydrates are wheat, potato and rice. Some sources of fat are ghee and oil. Due to constant wear and tear in the body, new cells are built in our body to repair the damaged parts. Proteins like milk, eggs, meat, cheese and dal, help in building of our body. Another category are vitamins and minerals, whose absence can cause deficiency diseases like rickets and beriberi. Vegetables like carrot, spinach and fruits like papaya, lemon and guava are rich in vitamins and minerals.

Representation 1

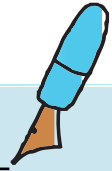


Representation 2

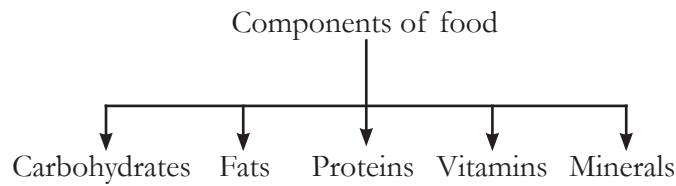


- b. Lists of some food items are given below. Refer the passage and circle the odd one out in each list.**

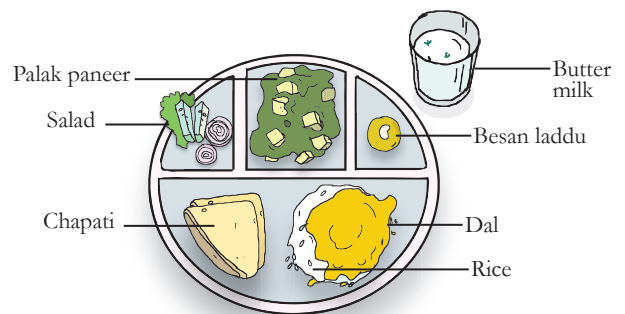
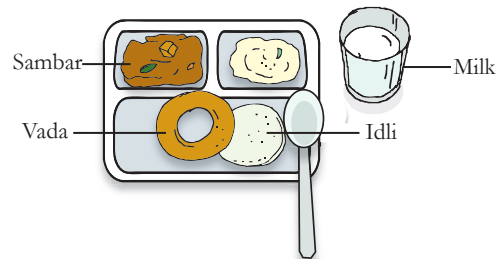
- | | |
|--------------------------|--------------------------------|
| a. Rice, Potato, Dal | d. Apple, Orange, Sweet potato |
| b. Papaya, Spinach, Milk | e. Fish, Wheat, Paneer |
| c. Egg, Milk, Ghee | |



- c. To be healthy, we should have a balanced diet which supplies all the 5 components of food, namely carbohydrates, fats, proteins, vitamins and minerals. Labeled figures of the items taken in breakfast and lunch are shown. The following table gives the name of the food item and the corresponding food component you get from them. Fill in the missing data.



Food item	Component of food
Palak paneer (Palak, paneer and vegetables)	Proteins, vitamins and minerals
Butter milk	
Vada (Dal)	
Milk	
Sambar (Dal, vegetables)	
Salad (Vegetables, fruits)	
Chapati (wheat)	
Besan laddu (Dal, sugar)	
Idli (Rice, dal)	
Dal	
Rice	



4. Some brainstorming sessions are given below. Identify the guideline that is being followed and one guideline that is not being followed by the group.

- a. Ali, Savani and Aarush are in the middle of a brain storming session to generate ideas for the concept of energy.

Ali: Energy from Sun.

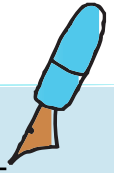
Savani: Moving a table.

Ali: No, that is not a valid point.

Aarush: Conservation.

Guideline followed correctly: _____

Guideline not followed: _____



b. Gurpreet, Maya and Soham are brainstorming to generate ideas on classification of plants.

Maya: Plants with seeds.

Gurpreet: Mango tree.

Soham: Plants without seeds.

Gurpreet: Oh! Shall I change Mango tree to Apple tree?

Guideline followed correctly: _____

Guideline not followed: _____

5. A list of some countries is given below.

India	Australia	Chile	Zimbabwe	Angola	Argentina
Uruguay	Swaziland	Madagascar	Singapore	New Zealand	Burundi
Malawi	Seychelles	Samoa	Bolivia	Somalia	Zambia
Tanzania	Botswana	Thailand	Mauritius	Mozambique	Egypt

a. **Select the countries from the list based on the following criteria:**

1. **Starts with the letter B, M, R, or S.**
2. **Has at least 7 letters in its name.**
3. **Is entirely in the southern hemisphere.**

Answer for 1: _____

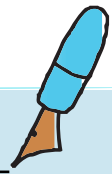
Answer for 1 and 2: _____

Answer for 1, 2 and 3: _____

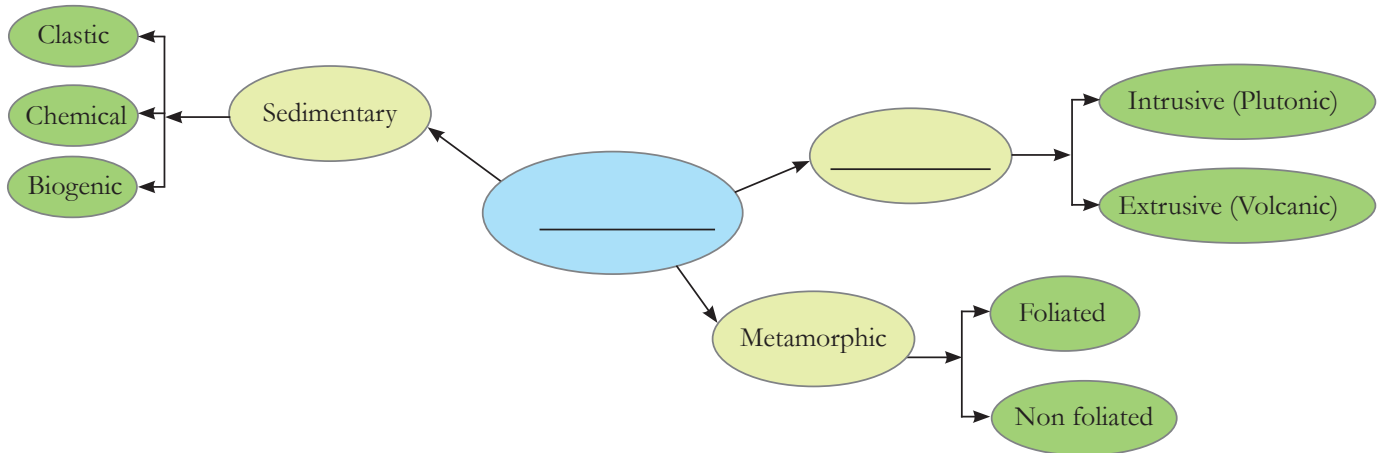
b. **If a fourth criterion is added as follows, find the countries that meet all four criteria:**

4. **The country does not have a coast on any of its borders.**

Answer for all four criteria: _____



6. Fill the name of the main category and one missing sub-category for the given mind map.



7. Here are some ideas generated on the topic of human body during a brainstorming session. Categorise them and draw a mind map.

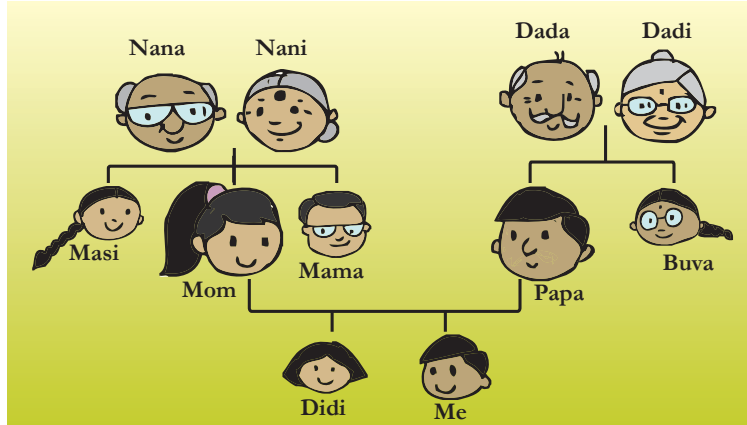
- | | | | | |
|----------|---------|-----------|--------------------|-----------------|
| Bones | Brain | Skull | Digestive system | Large intestine |
| Rib cage | Stomach | Mouth | Esophagus | Nervous system |
| Nerves | Nose | Wind pipe | Respiratory system | Living things |
| Lungs | Air | Femur | Spinal cord | Intestines |



ACTIVITY

Level VI | Lesson 2

1. a. Use the following graphic organizer to represent information about your family. Share it with one person in your class whom you do not know well enough and get to know each other.



- b. Use the following graphic organizer to synthesize information about yourself.

About Me!

Can do well:

Cannot do yet:

Strengths (Good habits):

Weaknesses:

In future I want to:
become a _____
learn _____



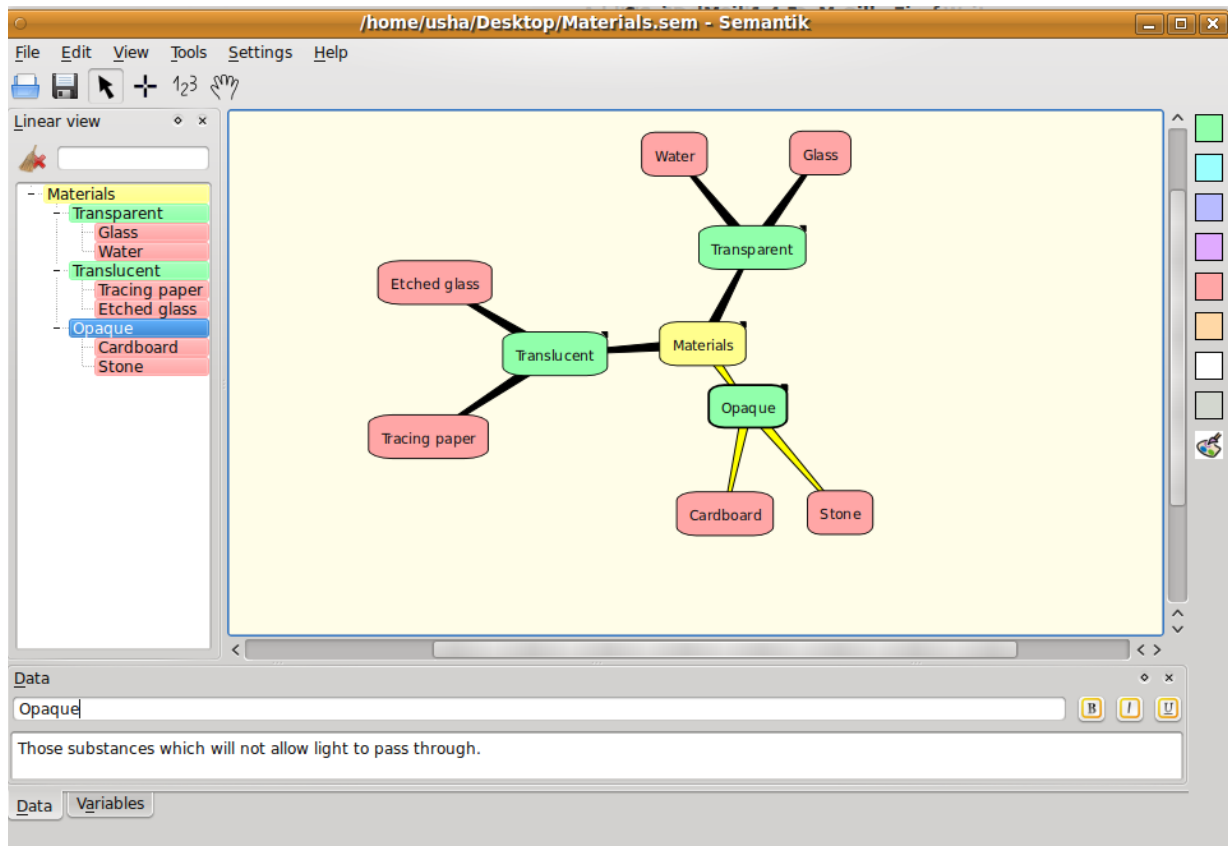
ACTIVITY

Level VI | Lesson 2

2. Semantik:

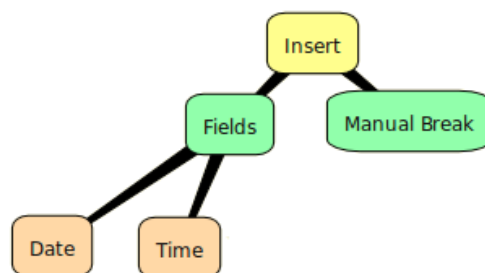
Semantik is an application which helps you to make graphic organizers. In Semantik, the graphic organizer is represented using boxes and connectors. Double click on the workspace to add a concept box for each category and enter the concept name. Double click on the concept box to add a branch. To add details select the category and click on data. An example of graphic organiser of materials is shown below.

To enjoy this activity, do the following: Applications → Office → Semantik.



Using mind maps create the following.

- Open Word processor application and see the various menu bar options available like File, Edit, View, Insert, etc. Under each item there are various options available, for example, under File menu you have options like New, Open, etc. Notice that each option is arranged in a hierarchy. A mind map is partially shown here for the Insert menu bar option. Now create mind maps for other menu bar options available.



- Visit a website and study its site map. A site map is a map of the web site, it can be a list of links for various pages in the web site. Create a mind map for the site map.



ACTIVITY

Level VI | Lesson 2

Group activity

3. Given below are some topics, for making a presentation.

Energy conservation	Maps	Machines
Types of Material	Water	Food

Each group selects one topic and does the following activities.

- Brainstorm on what are the different ideas that can be included in the presentation.
- Identify the related ideas, categorise these appropriately and label these categories.
- Search for graphic organizers on the following Urls.
www.teach-nology.com
<http://www.thinkport.org/technology/template.tp>
- Identify which one you can use for this project.
- Use a mind map to represent this information.



A cell phone for my grandma and grandpa.

Ask people above the age of 60 about the problems that they have while using the ordinary mobiles phones. Ask them what do they want to do with a mobile phone? How would they like the number keys and displays to be?, What are the functions that they would like to use most? Collect this information. Then considering these wishes of elders, brainstorm to get ideas for the design of a mobile for the elders. Categorize the ideas generated and represent them graphically.



- Besides brainstorming, what are some of the other ways to generate ideas?
- Find out about 'think aloud'.
- List five places where graphic representation is used to help find a particular place/item. Example: store locations in Malls, drinking water at station.

Keep Clean



Keep the computer and its nearby area clean.

Share Equally



Take turns for using the Keyboard and Mouse.
Give space to your classmates while using computers.

Correct Posture



Keep your chair at proper height.
Maintain proper distance from the monitor.

Breaks and Exercises



Take a Break



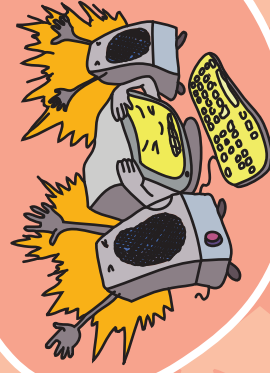
Take regular breaks while using a computer.
Do exercises to keep fit.

Healthy Computer Practices

Do not eat or drink near the computer.



Do not disturb others by playing loud music.

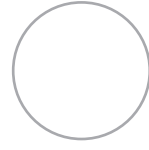
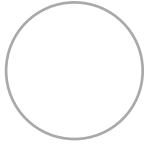


Do not use the computer with an improper posture



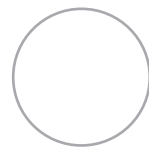
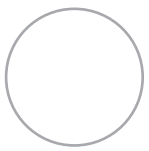
Do not use the computer for more than an hour per day.





Apply glue in the circles given
and paste this poster near
your computer.

Computer Masti



- The purpose of this lesson is to teach students: (a) One strategy for generating ideas while working in groups, namely brainstorming (b) Organize and represent the ideas graphically, using mind maps.
- Begin the class by writing the name of one topic (for example, computers) on the board and ask students to mention what are the different ideas that come to their mind. To motivate the student to speak out their mind without hesitation, you can say, “Imagine that this topic is creating a storm of ideas in their brain (head). Now tell me what different ideas come to you”. Allow multiple students to talk and call out the words spontaneously. You can write these on the board. Summarize the discussion and teach them the guidelines to be followed during a brainstorming session. Towards the end of the session, do two questions of worksheet 1 and give remaining as homework. Worksheet question 4 can also be done at this time. Do 4(a) in class and you can give 4(b) as homework.
- Now review the listed ideas to identify which of these are related to each other. Ask students to label these appropriately. If you find that students are not able to name the categories appropriately, ask appropriate questions, but let them discover these on their own. If they are stuck, give the names of the category and ask them to identify which of the listed ideas belong to this category. Teach students the concept of categorization. Tell them that they are applying logical reasoning skills to analyze the ideas in order to categorize them. You can ask students to do worksheet question 5.
- Draw a mind map to represent the different categories and items within each category. Refer the diagrams included in the lesson for this. Mention that the same ideas can be represented differently depending upon how you categorize the listed ideas. For example, you may find that several of the uses can be further categorized according to location of use or purpose of use. Explain the concept of graphic organizer and inform the students about its benefits. Do worksheet 3(a) in the class so as to give a practice of identifying items belonging to a given category and representing it graphically. Give questions 3(b) and 3(c) as homework. Give activity 1(a) as homework so as to reinforce use of graphic organizer. Worksheet questions 6 can also be given as homework.
- In the next class, do activity 2 so that they are comfortable with drawing graphic organizers on the computer. Do activity 2(a) for drawing graphic organizer and activity 2 (b) can be given as a homework.
- Students need to acquire the skills of reading information presented in a graphic organizer. For this, you can ask them to solve worksheet question 2.
- Summarize the lesson and towards the end highlight the importance of categorizing (e.g. it introduces an order into randomly generated ideas) and presenting ideas visually in a mind map (e.g. it facilitates reading and recall of information).
- To reinforce all the concepts learnt in the lesson, activity 3 can be done. Begin the activity in the class and continue it as after class assignment or homework.



Further Reading:

http://www.eduplace.com/kids/hme/k_5/graphorg/

<http://www.graphic.org/goindex.html>

http://scifiles.larc.nasa.gov/text/kids/Research_Rack/tools/brainstorm_rules.html

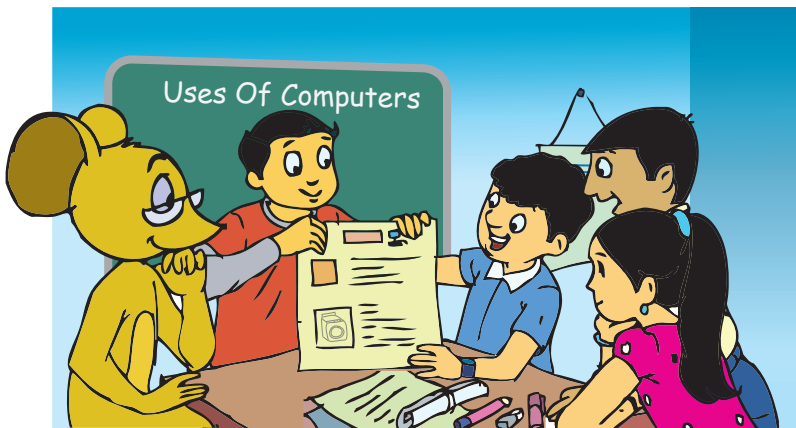
http://www.ehow.com/list_6905041_brainstorming-tools-kids.html



3. Synthesis of Information: Uses of Computers

Aim: In this lesson, you will learn:

- Uses of computers in various fields, purposes, products.
- Types of computers used for different purposes.
- Synthesis of information .

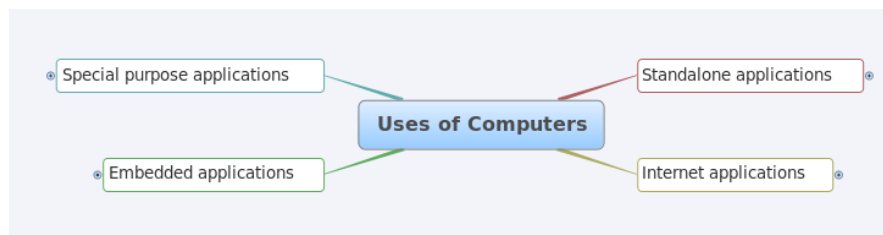


Tejas and Jyoti have collected information about various uses of a computer. They are enthusiastically discussing with Moz.

Tejas: While gathering info we found that there are many types of computers. We also found that some applications such as email need Internet, while others such as paint can be used independently.

Jyoti: There are some applications which are used to control devices such as washing

machines, and some applications which are used for special purposes such as weather forecasting. Based on these relationships we have drawn a mind map and have come up with the four categories.



Moz: Well done. I see that you have grouped the gathered information on ‘Uses of computer’, neatly into four categories.

Tejas: Our teachers helped us to identify suitable names for these categories.

Jyoti: But this is only one way of categorization. My friends have created different categories and also represented it differently. We will show their work after we describe our work.

Moz: Ok, tell me more about how you categorized the information?

Jyoti: In our school, some of the computers do not have Internet. So we first listed activities which can be done even without Internet connectivity.

Tejas: For example, if we have to write text documents, paint, or play some educational games, we do not need Internet. That means applications such as Open office (word processor), Tux paint (paint), and GCompris (games), can be used without an Internet connection. Our teacher told us that such applications are called *Standalone applications*, because these applications can run on their own independently (alone) on a desktop.

Jyoti: Next we grouped the activities that need Internet connection. This category includes uses such as communicating (e-mail) or browsing, searching the Internet. The label for this category is *Internet applications*.

Jyoti: We learnt that devices like smart phones, digital camera, robots and some toys, have a small computer inside them. Our teacher told us that such applications which are used in other devices are called *Embedded applications*. A small computer with the application is embedded (put) into the device.

Tejas: We also found there are special computers and software that are used for specific purposes like defence, space and medical tests. We grouped these uses under *Special purpose applications*.

Moz: Good. Your categorization is based on types of applications and the purpose of these applications. Now let us expand the mind map for each of the categories.

Jyoti and Tejas: Yes, now let us discuss each category in detail.

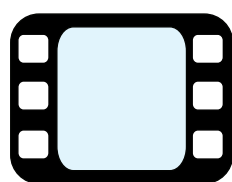
Category 1: Standalone applications.

Jyoti: *Office applications* are used to write documents, reports and make presentations. For example Open office writer and MS word are used for making documents. We can save our documents on the computer and retrieve and edit them. The file extensions for Open office document is ‘.odt’ and for MS word is ‘.doc’. We learnt these in Computer Masti- Level IV. We can install and use these applications on a computer without Internet connectivity.

Tejas: *Multimedia applications* that are installed on the desktop can be used to edit videos, music, make animations and presentations.

Moz: Why are the applications called multimedia applications?

Tejas: Video has sound and moving images. Since there are more than one media, and there is movement in the applications, these are called multimedia applications.



Moz: Right. Did you use any of these applications?

Tejas: I took a video of my pet. I loaded the video on my computer at home. Using Movie maker, I edited the video and removed parts that I did not want. I copied the video onto a CD to show to my friends.

Moz: What about *programming applications* such as Scratch? Does this also come under standalone applications?

Jyoti: Yes. Scratch is also an application which can run independently on a desktop. After Scratch is installed on a computer, we can create many programs like animations, stories, quizzes, games using Scratch blocks.

Moz: Are there some other uses you can recall which do not involve the use of Internet?



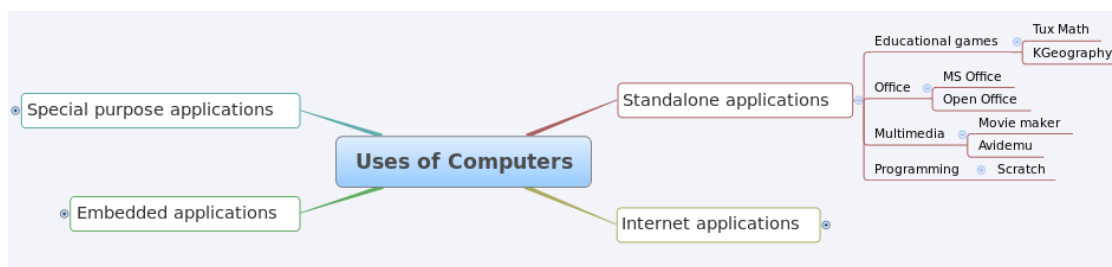
Tejas: Our teacher sometimes asks us to play educational games on Maths, Science, Geography and English. These games are available on our school computer and we do not need internet connectivity to play these games. Therefore, educational games applications that are available on desktop also belong to this category.

Moz: To summarize, all the applications that do not require Internet connectivity and can run independently on a desktop, can be grouped together in a category labelled Standalone Applications. Some examples of such applications are office, multimedia, programming and educational games.

Concept

Standalone applications

- A computer which can be used without a network connection is called a standalone computer system.
- The applications and programs that can be installed and used on such a system are called standalone computer applications.



Examples of Category 1: Standalone applications		
Applications	Nature of use	Name of application
Office	Writing documents, doing calculations, preparing presentations,	Open Office (http://www.openoffice.org) Xmind for mindmapping and brainstorming (http://www.xmind.net)
Multimedia	Drawing and painting, listening to music, composing music, editing photographs and videos, view documentaries, educational CDs	Audacity (audacity.sourceforge.net) Avidemux for video editing (http://fixounet.free.fr/avidemux)
Programming	Write programs using software	Scratch (http://scratch.mit.edu) Alice a 3D programming language (http://www.alice.org)
Educational games	Practice and test of knowledge of other subjects	Kbruch, Tux math Kgeography (http://edu.kde.org)

Moz: Does every desktop computer always have all the applications that you have listed under standalone applications?

Tejas: I do not think so. I observed that some of the applications on the school computer are not available on my home computer.

Moz: Yes. A desktop will have some common applications, like text editor installed by default (which means that application need not be downloaded and installed specifically). If we want other applications beyond these, they have to be installed additionally on the computer.

Jyoti: I can request my parents to install all the educational games on my home computer as well.

Moz: You can search on the Internet and find these applications and their installation guidelines. For example, you can go to website- <http://scratch.mit.edu/> to download and install Scratch. Note that you need Internet only to download these applications. These applications can be run in standalone manner.

Downloading application from Internet

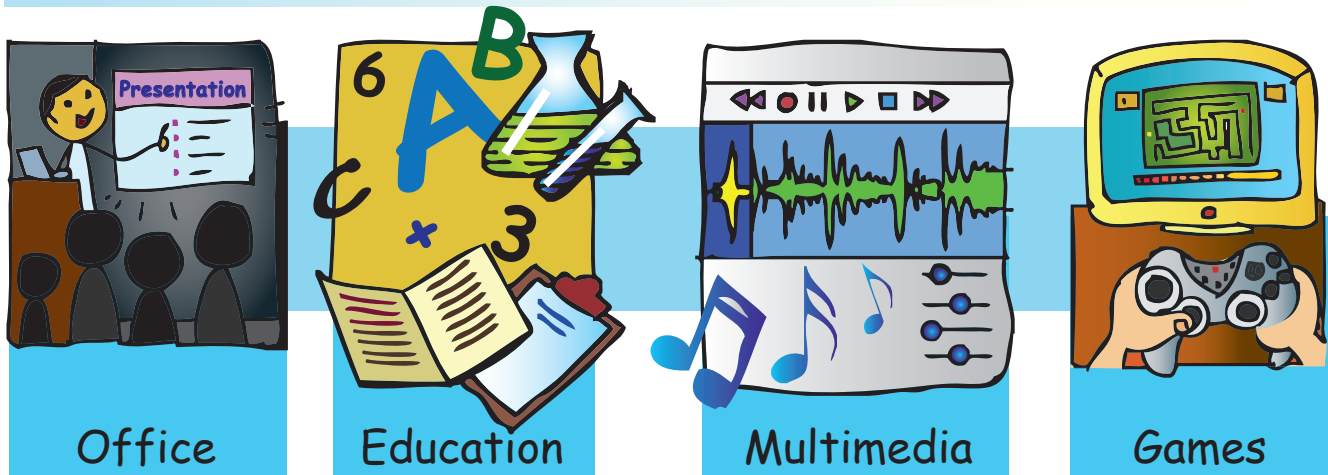
Info

Many useful applications are available free of cost on the Internet. The software can be downloaded from the Internet and installed on the desktop and used.

Some useful links for finding free education applications are:

- Open source and free software for school environment:
<http://www.schoolforge.net/>
- Open source applications. For example: *Ubuntu operating system, Blender.*
<http://sourceforge.net>

Some examples of Standalone applications



Category 2: Internet applications

Tejas: We need internet connectivity to check our emails. Gmail, Yahoo, Rediffmail and AOL are some of the email service providers. We can get an email account with any of the email service providers and communicate with our friends and family.

Jyoti: I talk to my cousins staying in different cities using Skype. Some applications like chat and skype can also be used for video conferencing.



Moz: Yes. There are various modes of communicating like email, video conferencing and chat on the internet. Using chat one can talk to a person using text, audio or video. Internet is widely used for *communication*.



Tejas: We can find information on various topics on the Internet using search engines like Google, Ask Jeeves, Yahoo.

Jyoti: Using appropriate keywords in the search engines, we can find information quickly and conveniently.

Tejas: We can even search for current news, weather, recipes, tourist places, maps of places and more such topics.

Moz: Yes. Browsing and searching for information is used extensively on Internet for various purposes.



Jyoti: We can buy books, tickets (Example: railway tickets from www.irctc.co.in) and products ranging from clothes to musical instruments on the Internet from some websites. These are delivered to our address within 24 hours.

Tejas: Yes. I recall that I wanted to read a book which was unavailable in our library and local book shop. My parents searched and purchased the book from an Internet site Flipkart which sells books.

Jyoti: One of my uncles sent me a gift for my birthday. He ordered the gift through the Internet and asked them to deliver it to me at my home.

Moz: Making online purchase of goods and payment is called *online transactions*.

Jyoti: I have seen websites such as oscar.iitb.ac.in, www.attanolearn.com, where the lessons in our school textbook are explained with some animations. This site also evaluates if we have understood the lesson.



Many more other topics can also be learnt from such web sites.

Moz: Internet is a good place for educating yourself about many topics. There are also some sites where you can read books.



Google earth

Jyoti: Using Google earth, which is an application that can be downloaded from Google, we can see maps, see monuments in 3D. We can see Mount Everest, and we can even see the sky, some stars and galaxies like Andromeda galaxy. This makes it very interesting to learn about various continents, the stars, planets and galaxies.

Tejas: At home we watch cricket, football online during the weekends.

Jyoti: On YouTube we can watch magic, movies, dance, music videos. There are some very good ones. My grandparents listen to classical music on YouTube. Yesterday they were listening to Mrs. Subbalakshmi and Pandit Jasraj.



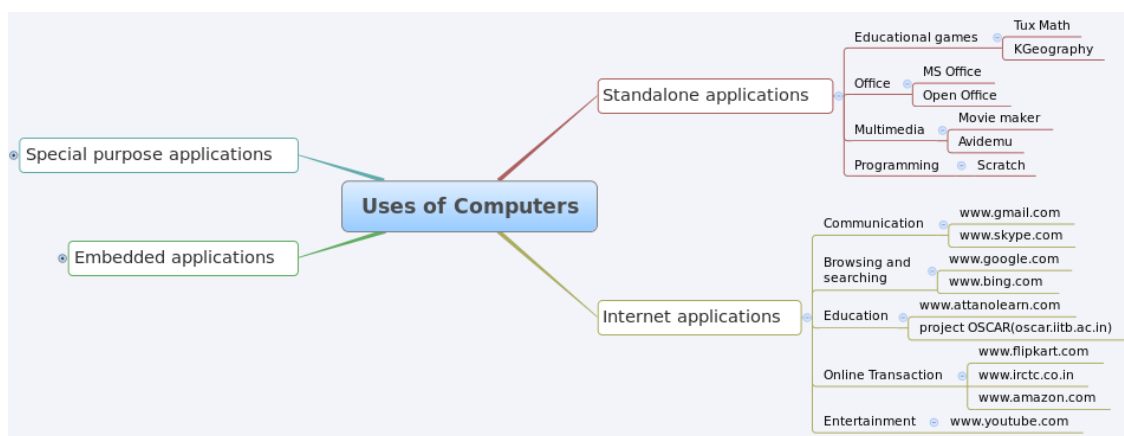
Tejas: Along with educational games, we also enjoy playing games for fun. I find these online. All these activities can be categorised as *entertainment* using the Internet.

Moz: To summarize, all applications that require Internet connectivity can be grouped together in a category labelled *Internet applications*. Some examples of such applications are communication, browsing, online transaction, education and entertainment.

Internet applications

Concept

- Applications which require Internet connectivity are called Internet applications.
- Some Internet applications, such as search, can be accessed by simply using a browser.
- Others, like video conferencing require software to be downloaded on the desktop.
- Some Internet applications, such as transactions, require registration before using them online.



Examples of Category 2: Internet applications

Purpose	Nature of use	Name of application
Communication	Sending e-mail, instant messaging	www.gmail.com http://www.skype.com
Browsing	Searching for information, reading newspapers, exploring the world, galaxy	www.google.com http://www.bing.com www.blackle.com http://www.google.com/earth
Transaction	Booking tickets, ATM machines, purchasing books	www.ircct.com www.amazon.com www.flipkart.com
Education	Reading e-books, viewing animations, educational videos, use online editable map	http://www.readbookonline.net/ http://www.edheads.org http://wikimapia.org/ http://www.gutenberg.org
Entertainment	Watch movies, play games, listen to music	http://www.youtube.com/



Tejas: There are some places like airports, railway station and some hotels where we can connect to Internet using a mobile, laptop. How is this possible?
Moz: These places have a wireless network device mounted on the wall, which provides Internet connectivity within a limited area around it.

Jyoti: In our school there is a point on the wall, to which a cable from our computer is connected.

Moz: This is called a wired connection. Nowadays you also get a network connection on wireless USB (Broadnet looks like a pen drive). Connecting this device to a laptop or a computer also provides Internet connectivity.



Internet: Types of connections

Info

There are two ways by which we can connect to the Internet.

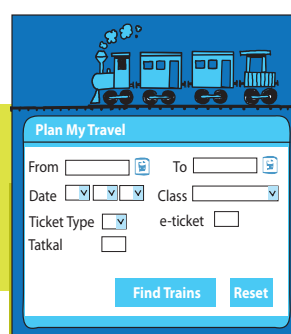
- Wired (through a cable connected to a router).
- Wireless (a wireless router in the vicinity or a wireless USB device).

Connection to Internet is similar to telephone or mobile. One has to subscribe and pay bills for using Internet.

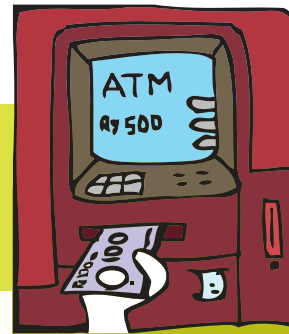
Some examples of Internet applications



Skype



Ticket booking

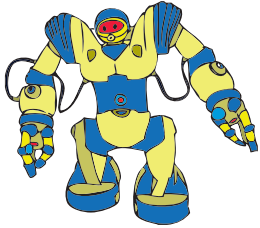


Transaction

02/04/2010	03/04/2010	04/04/2010
Thursday	Friday	Saturday
23° 30°	23° 28°	25° 30°

Browsing

Category 3: Embedded Applications



Tejas: I have seen my father use a cell phone to send e-mails. I think some phones can also be used as a computer. Can we use this embedded computer for other purposes also?

Moz: The term embedded means that the computer is installed inside the device. A small computer is *embedded* (put into) as part of a complete device, to perform one or a few specific functions related to that device. This computer cannot be programmed or used to do any other task, excepting performing the functions related to that device.

Jyoti: Now I understand that several appliances such as digital camera, DVD players, and videogame consoles and robots, have embedded computers.

Tejas: I have seen my mother use a credit card to make payments in shops. Is that also an embedded computer?

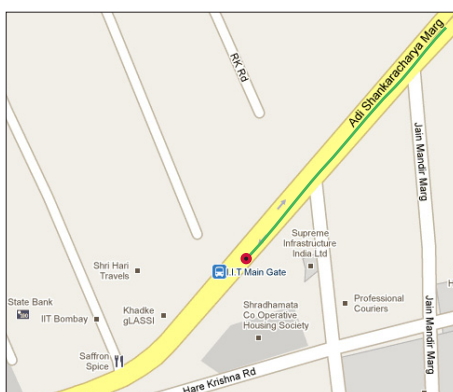
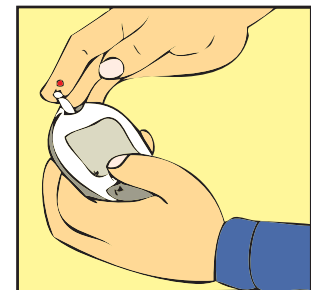
Moz: Most credit cards have a magnetic strip to record information. The credit card machine connects to your bank computer to authorize payment. Some cards, called Smart cards have a small chip embedded that stores and authenticates data. For example, a bus pass has details of a person, details of the routes where the person can use the bus pass, and the valid date till which the person can travel on the pass. The smart card can also have the photograph of the person.

Moz: Can you think of more places where embedded computers are used?

Tejas: There are some devices which can record blood glucose levels at home for those who are diabetic.

Moz: There are many such Self diagnostic testing devices which are useful embedded applications.

Jyoti: I have seen my brother use a kit and build a robot in his college. The robot is helping the college clean the campus. A toy car that moves when we make sound must be having sensors to catch the sound and then take the action.



GPS Tracking

Tejas: When we travel to new locations, my parents carry a device that shows directions to drive to the destination.

Jyoti: Our teacher used her cell phone for getting location details while we went trekking. The teacher said it is called global positioning system (GPS).

Tejas: We can also find directions to someone whom we want to visit using GPS.

Moz: GPS is a very useful application. You get the details of the location wherever you are, and also provide you directions to other locations.

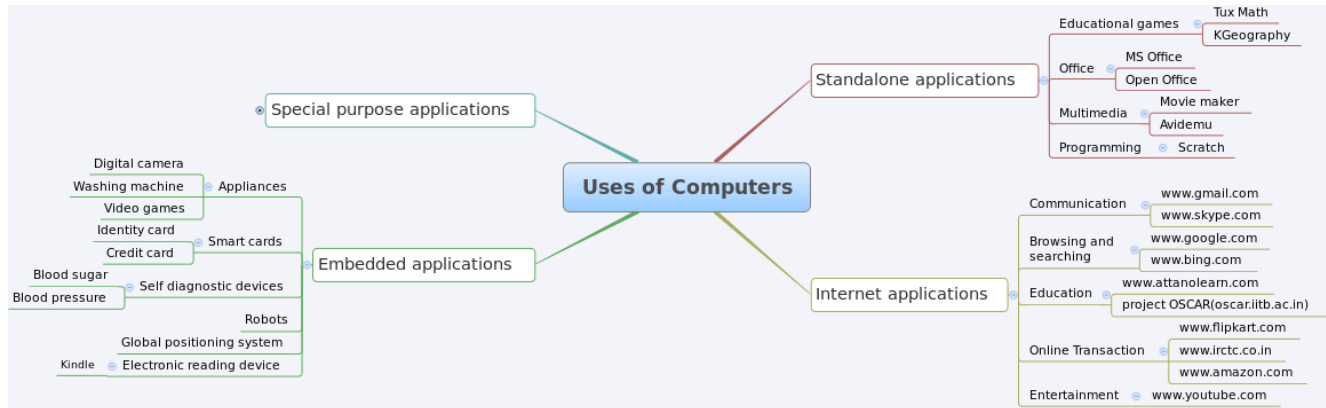
Jyoti: I have seen a hand held device called Kindle. We can read books, magazines, news on this device. It is wireless. We can buy and download electronic books on to the device and read.

Moz: You are right. To summarize, applications which are embedded into a device and perform specific functions are called as embedded applications. Some examples are household appliances, smart cards, self diagnostic devices, robots, global positioning devices and electronic reading devices.

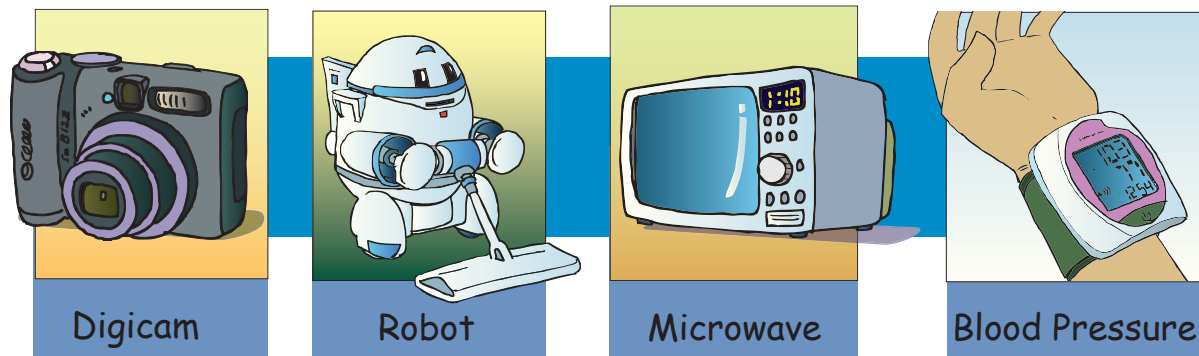
Embedded applications

Concept

- Functions of some electronic devices are controlled by a small computer embedded in the device.
- The software on the small computer is called an embedded application.
- The embedded application can be used to control the device in which it has been embedded only.



Some examples of Embedded applications



Category 4: Special Purpose applications

Moz: I am eager to know more about the next category. How are computers used by doctors?

Tejas: We have seen medical equipment like X-Ray machines, sonography machines connected to computers.

Jyoti: These computers have applications to generate test reports which assist the doctor in diagnosing the patient's condition.

Tejas: I notice that some devices are used to record blood glucose levels at home. It seems that these are also examples of embedded application as well as special purpose applications.

Moz: Very good. Tejas has made important observations. Many of the applications in embedded are special purpose applications as they are used for a specific purpose. One item may be in multiple categories.

Tejas: Special applications in a field like weather forecasting can be very useful to give timely warnings about tsunamis, cyclones, etc. This can avoid loss of human lives by taking proper precautions.

Moz: Can you think of more fields for which specific applications are developed?

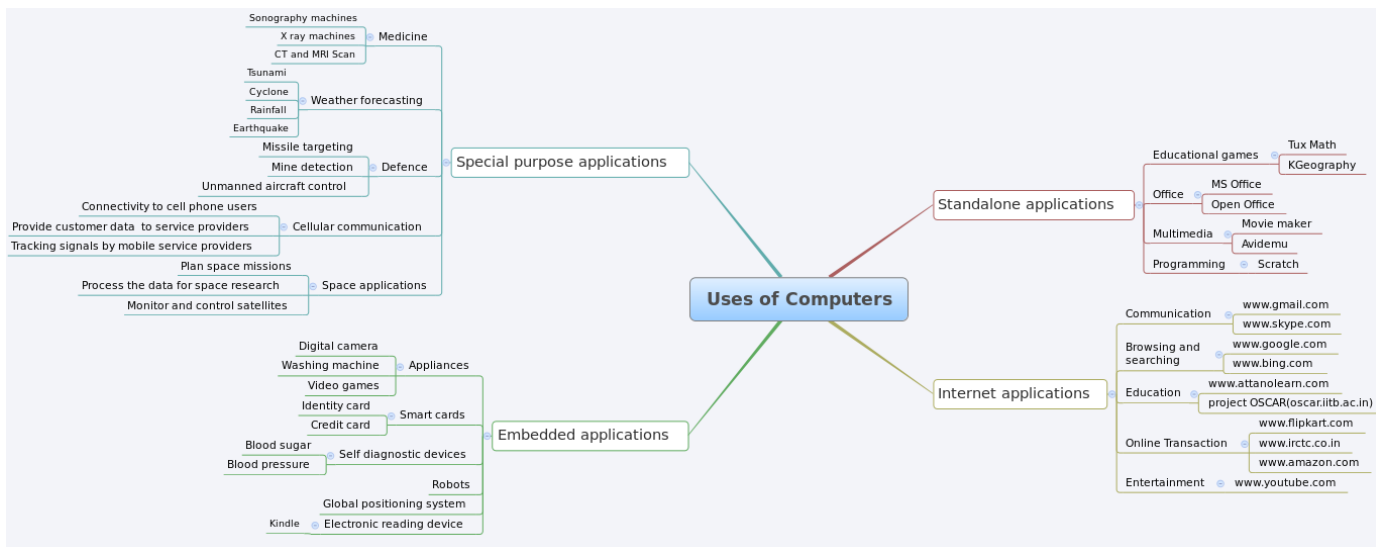
Tejas: I have seen mobile towers at several places. These towers are used to provide us mobile phone communication. We also learnt that these towers transmit data to special applications that help mobile service providers to track mobile phone usage and record how many users are connected at any given point of time.

Moz: This is an example of cellular communication. Such applications are also special purpose applications which need specific software and infrastructure.

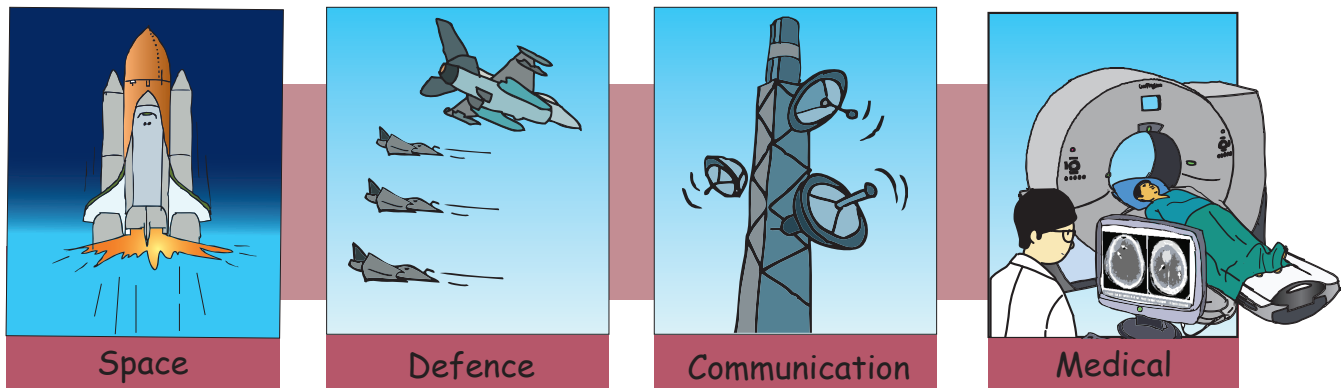
Jyoti: I found that space agencies also use specific applications to gather data on satellite positions.

Tejas: Space missions also use particular applications for controlling movements of the spacecraft.

Moz: To summarize, applications where data is collected from other resources (like medical devices and satellite), for processing and providing information for further action are called special purpose applications. Some examples of special purpose applications usage are in health care, weather, defence, cellular communication and space.



Some examples of special purpose applications



Moz: Well done. You have completed the full cycle of gathering information about uses of computer and synthesizing the information gathered.

Tejas: What does synthesizing mean?

Moz: You followed a step by step process and logical reasoning to organize the vast data that you gathered from various resources. This whole process is called Synthesis.

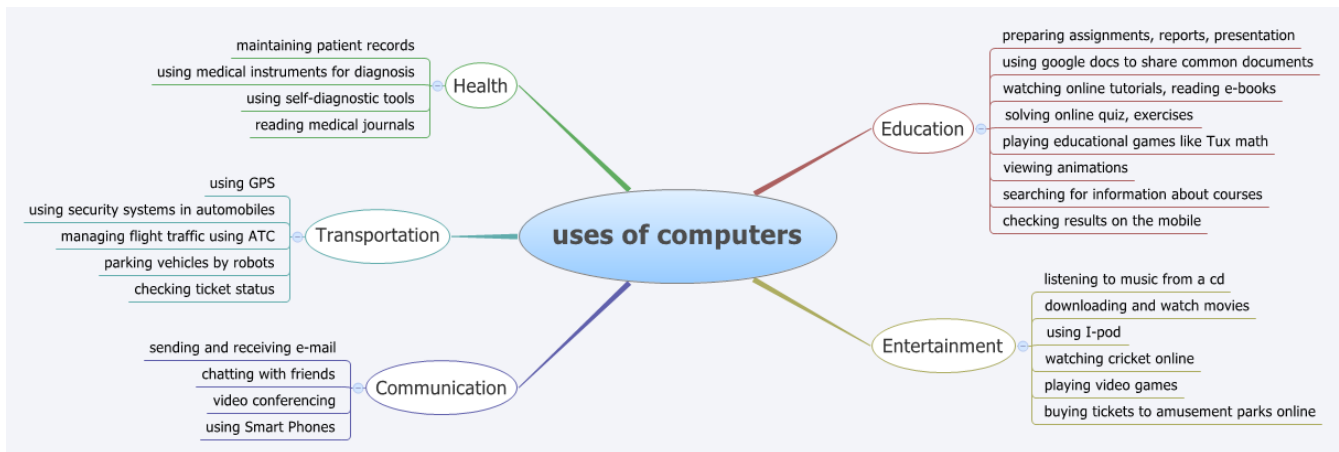
Synthesis of data

Synthesis of data involves two steps:

1. Gathering information
2. Organizing the information by :
 - i. Categorization using mind maps to find the main categories (standalone, Internet, embedded and special purpose applications).
 - ii. Analyzing the information to identify which information belongs to which category. Example: Internet is required for email. Hence it belongs to Internet applications.

Concept

Tejas: One more group has gathered information about the same topic. They have, five categories based on the purpose of use, which are, education, entertainment, communication, health, and transportation. The following mind map summarizes their categorization.



Moz: Synthesis of data by both the groups is done well. You have done the categorization using the types of applications and the purpose for which these are used. The other group has categorized the data based on the main areas (domains) in which computers are used. Both these categorizations are valid. They are correct and useful. To summarize, there can be multiple categorization schemes, multiple number of categories and multiple representations for the same information.

Multiple ways of categorization

Concept

- Information is grouped and categorized for better understanding and recall.
- Information can be categorized in multiple ways based on the features and relationships identified in the data.
- There is no one correct way for categorization. As long as your reason for grouping items in one way or the other is clear, the number of categories can vary.
- Labels for each category can be selected based on the common features of items within the category.
- One item can also belong to multiple categories.

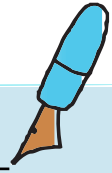
Tejas: We now have to learn how to make a presentation for this synthesized information.

Moz: We will use this synthesized information for making presentation on uses of computers. More on that in the next lesson. Chin Chinaki...

Learning Outcome

At the end of this lesson, you will be able to:

- List the uses of a standalone computer and a networked computer.
- List specialized usage of computers in particular fields.
- Identify embedded computers (in various products) and state their functions.
- Categorize information in multiple ways.



1. Categorize the following uses of computers. Two labels are already filled in, fill in the third label.

Write online exams	Target missiles	Register for science Olympiad
Control unmanned aircrafts	Play TuxMath	View animations to learn fractions
Track submarines	Monitor pulse rate	Surf for information on science projects
Analyze blood samples	Keep patient records	Perform surgeries

Defence	Education	_____
Target missiles		Monitor pulse rate

2. Find the odd one out and give reasons why you think so:

- i. a. Computer in robot.
b. Computer in a microwave oven.
c. Computer as a desktop.
d. Computer in a washing machine.

Reason: _____

- ii. a. Missile targeting.
b. Word processing.
c. Medical imaging.
d. Weather forecast.

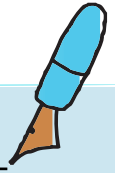
Reason: _____

- iii. a. Facebook
b. Gmail
c. Youtube videos
d. Spreadsheets

Reason: _____

- iv. a. Word processing
b. Watching movies
c. Listening to music
d. Playing games

Reason: _____



3. I AM EMBEDDED!

- i. I am an embedded computer sitting on a tap. What are the different functions you want me to perform?

Example:

- a. Neena forgot to turn off the knob after washing hands. So I would sound an alarm "Bip, Bip, Bip" and shout "close me".
- b. When the tap is turned on I will give the purity of water.



- ii. I am embedded into a wall, What are the different functions you want me to perform?

- a. Rekha chews pan and spit on me. So I would _____
- b. _____

- iii. I am embedded into a identity tag. The tag is attached to a bag deposited at airport check in. What are the different functions you want me to perform?

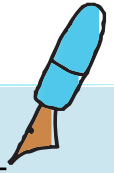
- a. Harry lost his baggage at the airport. So I would _____
- b. _____

- iv. I am embedded into a collar of a pet. What are the different functions you want me to perform?

- a. Zareen's cat, Fiona is having fever. So I would _____
- b. _____

- v. I am embedded in a shopping cart. What are the different functions you want me to perform?

- a. Suzanne has to purchase groceries of Rs. 1000/-. She has picked up items that cross her budget. So I would _____
- b. _____



4. Your friend says that there is no difference between her desktop computer and the computer inside a washing machine, as both are computers. Do you agree with your friend? Explain your reasons.

5. Data on the topics from in computer books from grade one to five is given. Convert it to a mind map.

Grade	Theme		
	Familiarity with computers	Dos and Don'ts and Ethics	Thinking skills
Grade 1	Basic parts of computer	Cleanliness around the computer	Step wise thinking
Grade 2	Input , output devices	Correct postures	Logical reasoning
Grade 3	Hard copy, softcopy	Exercises to avoid injury	Algorithmic thinking
Grade 4	Storage devices	Sharing resources	Information gathering
Grade 5	History of computers	Safety rules while browsing	Decision making

6. Frame a question.

(In this problem, try to frame a question, which will have the answers given below).

Question: _____

- Sending and receiving emails.
- Chatting online with friends.
- Using video conferencing tools.



ACTIVITY

1. Given below is a list of different kinds of books.

Books – autobiography, comics, current events, general knowledge, dictionary, picture book, health, spiritual, jokes, thesaurus, biography, professional, mystery and thriller, picture book, literature, nature, history, science fiction, puzzles, recipe book, technical, encyclopaedia.

- a. Give at least two different ways of categorising them.
- b. Use two different representations for showing the categorised items.

Group Activity

2. Mehul’s uncle has a sweet shop. In the festive season, he has many customers and he finds it difficult to manage the shop even with a helper. Mehul helps his uncle in the shop whenever he has time. Now his uncle wants to start using a computer to manage the day to day activities of the shop. The activities in a typical day are:



General:

- The helper opens the shop and cleans it.
- Customers come and select the sweets.

Sales:

- Salesperson weighs the sweets.
- Salesperson puts the sweets in the bag.
- Manager collects the cash and hands over the bill and sweets.

Records:

Manager keeps record of:

- Cash transactions.
- Stock of sweets.
- Raw materials needed.

Call center:

- Get orders through the phone.
- Do home delivery of sweets.
- Occasionally, compare the prices with the current market rate and do necessary price corrections.

List atleast 5 activities from the above for which Mehul’s uncle can use a computer. Give an example of how to use a computer for the five activities.

Activity: Helper opens the shop and cleans it. Mehul’s uncle can use a cleaning robot.



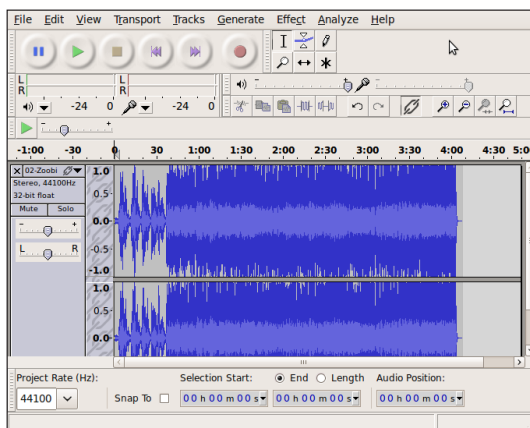
ACTIVITY

Level VI | Lesson 3

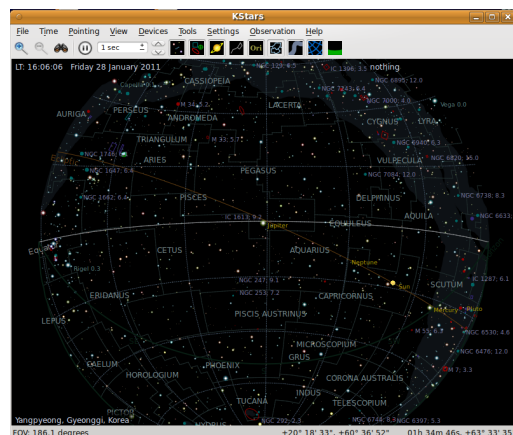
3. Following is a list of some applications/games. Each group can select one of the following application and attempt to use it. Write a short paragraph on what is the utility of the application.

(Hint: Click on help option and read its contents)

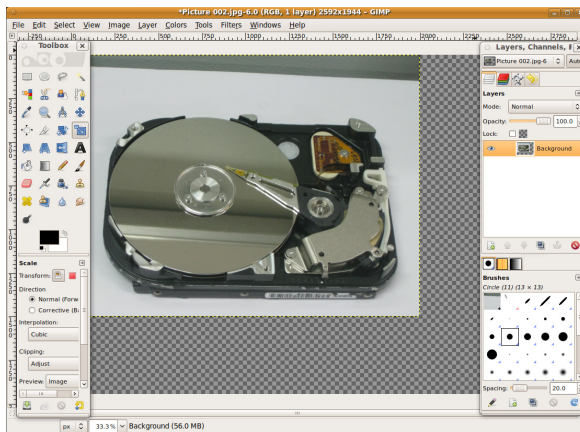
- ACM aerial combat simulator
- Shotwell Photomanager
- Scribus
- GIMP image editor
- Audacity
- Kstars
- Classroom control
- Homebank



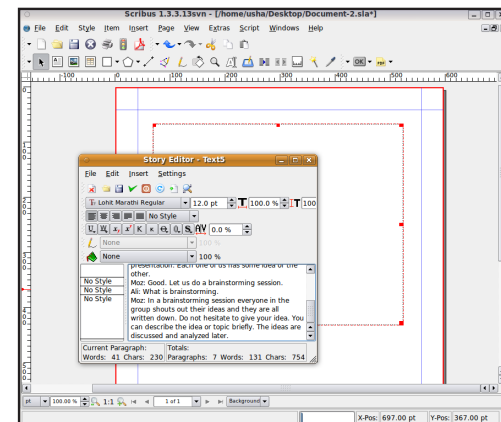
Screenshot of Audacity



Screenshot of Kstars



Screenshot of GIMP image editor



Screenshot of Scribus



ACTIVITY

Level VI | Lesson 3



How different is it?

Divide the class into four groups. Each group takes up one category from the list given below.

- Personal use: Word processing, playing entertainment games, learning car driving.
- Internet and Networking: Video conferencing, email, information gathering.
- Special purpose applications in various fields: weather analysis, communication in defence, healthcare and service.
 - Uses in other devices: remote of TV, robots used in assembling cars, mobiles.

For each item in the category assigned to your group:

1. Find out how this task is/was done without computers.
2. Brainstorm about the advantages and disadvantages of this task being done with and without computers.
3. Each group enacts a skit in the class about the task, which shows how the task is done without computers and with computers, the advantages and disadvantages.

Example: Buying a railway ticket – Look up a railway timetable booklet or go to the railway station and find out about the trains, schedules. If on the date that the family decides to travel, if the tickets are not available, find out alternative dates when tickets are available, communicate the same to family, buy the tickets and come home.

With computer: Sit at home or in a cybercafe. Browse the railway ticketing site. Select and buy tickets.



1. Find software that will allow you to compose music/ edit photos/ record audio.
2. Find out different purposes for which computers can be used in a news channel .
3. Find out if computer based devices can be used to treat certain medical conditions, example: pace maker, artificial limbs.



Teacher's Corner

Level VI

Lesson 3

- The purpose of this lesson is to teach students how to synthesize information and use multiple representations to showcase it. At the same time, students are educated about different uses of computers. Two alternative categorization schemes are applied – one according to kind of computer used and another according to the purpose of use. Examples of applications for each kind are included.
- Begin the lesson with recap of the different points about uses of computer that came up during the previous brainstorming session on computers. Revise the concept of categorization and mention that they will learn about different ways of categorization. You can write the names of the different kinds of computers as given in the lesson. Explain what is meant by each by referring to the appropriate concept boxes. Ask them to read the table and look at the pictures for each of the category.
- Students are already aware of standalone and Internet applications. You can ask them to give examples of these categories. Students may have seen special purpose application of computers in some fields such as medicine. Ask them to describe how computers would be useful in hospitals to monitor patients. Describe the other special purpose uses mentioned in the lesson. Show the students pictures or short clips of these to facilitate understanding of how computers are used in various fields.
- To teach uses of computers in other devices, ask the students to mention the different gadgets that they have used or seen others use. Now, question them on how do you think it operates. Mobile phone and toys would be the most commonly mentioned items. Teach them about how computers are used in other devices. If possible, get one or two embedded devices to the classroom for demonstration. Do worksheet questions 1 in class and give question 2 as homework. Solve two/three questions from worksheet 3 in class and give the remaining as homework. In the next class, you can discuss the answers of students and give feedback. You can do worksheet question 4 in class.
- Draw attention to the overlap of one example across the different categories. Games could be the most suitable illustration for this. Give example of games that are standalone, online (Internet), or embedded (in Smart Phones). Tell them that within a single categorization scheme, one item can belong to different categories.
- Now show the graphic organizer categorization, scheme for uses and ask them to read it. Let students figure out on what basis is this categorization done. Most likely they will come with the right answer. Ask them to note that in the previous case, tables were used to synthesize information, while here graphic organizers are used. Teach them about multiple categorization schemes and multiple representations. Refer the appropriate concept box in the lesson for this. Do worksheet questions 5 (grade-theme) and activity 3 in the class to further reinforce this point. You can begin solving worksheet 7 (C1, C2) and give the remaining as homework. Students may not be familiar with answering worksheet 6 kind of question. Spend enough time to ensure students comprehend the task and are confident in attempting such questions.
- End the lesson by summarizing the different uses of the computer. Ensure that you have mentioned all the uses covered in the lesson. Emphasize that this is not an exhaustive list and there are many more uses of the computer.



Further Reading:

http://www.ehow.com/facts_4813487_uses-computers-education.html

<http://www.brighthub.com/science/space/articles/77045.aspx>



4. Making Presentations

Aim: In this lesson, you will learn:
To create presentations systematically.

Tejas: The inter-school competition is only two weeks away. We have to create a presentation about computers.

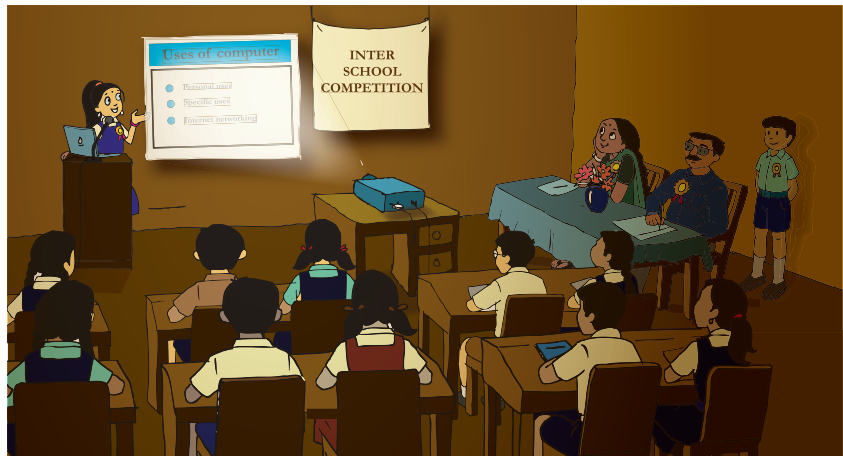
Jyoti: We already have a lot of information on uses of computers. We know that applications like Impress, Kpresenter, or Power Point are used to create presentations. How do we start? Shall I switch on the PC and open the application?

Moz: Wait! Creating presentations is not just about opening the application

and typing the content. It requires some initial work in terms of thinking and planning. This can be done on a paper, to avoid getting distracted by the features of the application.

Tejas: We have collected so much information about uses of computers now. Planning what to present in the 20 minute slot given to us is very challenging. Our presentation may have almost 100 pages!

Moz: The presentation pages are called **Slides**. Before we discuss about how to create slides, observe that creating presentations involves 3 main stages (or steps):



Concept	Create presentation
	Creating presentations primarily involves 3 main stages: Stage 1: Plan: Decide an outline for the presentation. Stage 2: Execute: Create the slides. Stage 3: Impress: Verify content, add visual effects and practice.

Info	Presentation
	<ul style="list-style-type: none"> Presentations are used by students and people in many professions to convey their ideas. Individual pages of a presentation are called Slides. Slides can contain text, images, charts, graphs, tables, audio and video. Some of the presentation applications are: Impress (Open office), KPresenter (KOffice), Power Point (MSOffice), Keynote(Apple Mac) Some of the presentation file extensions are: .ppt (Power Point), .odp (Impress), .key(Keynote).

STAGE 1: Plan: Deciding an outline for the presentation.

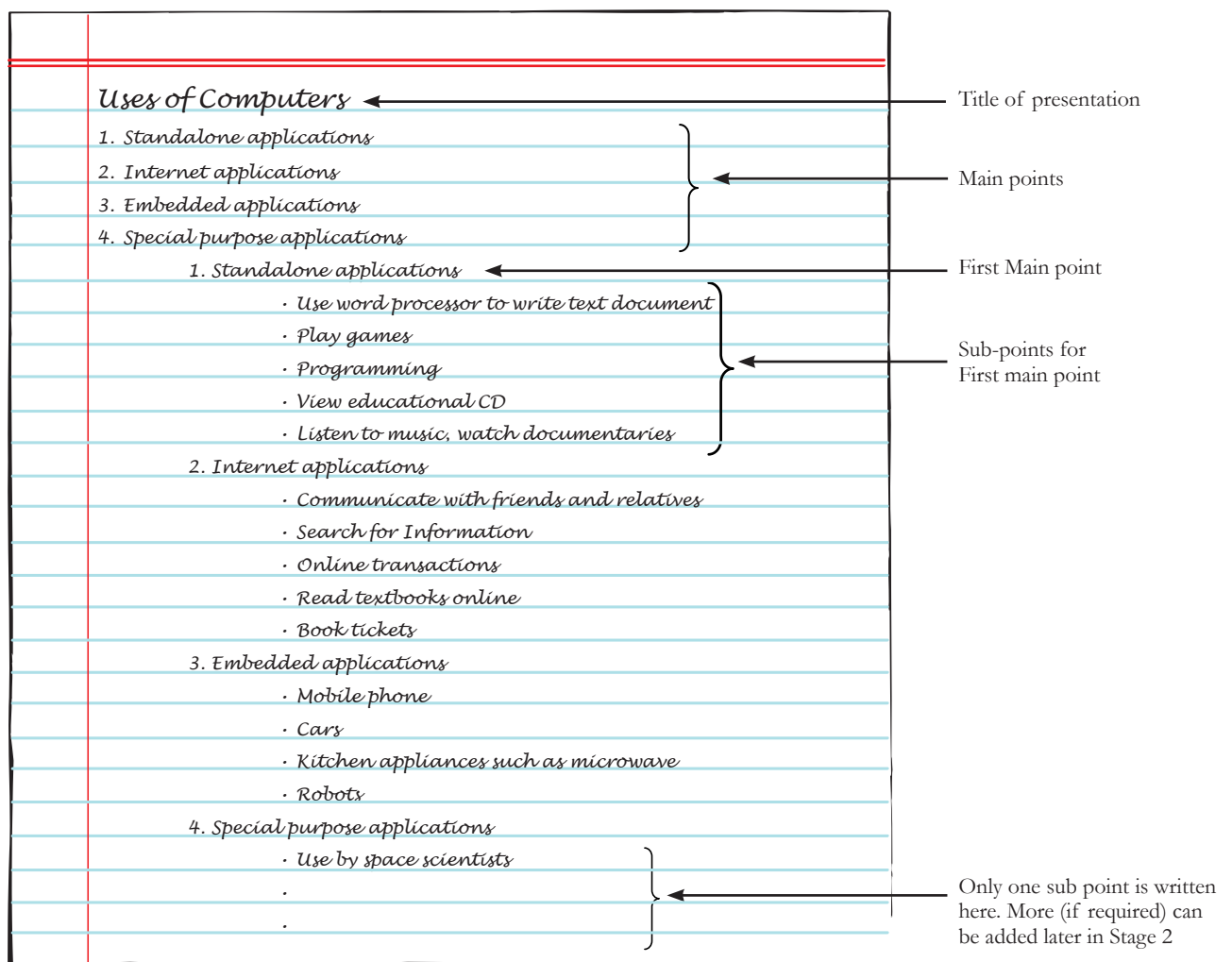
1. Gather information for the given topic and choose an appropriate title for the presentation.
Example: If you already have content on “Uses of Computers”. The title can be “Uses of Computers”.
2. Go through the information that you have collected. Group related information and list the main points you want to present.
Example: “Communication through email” and “online games” can be grouped together as “Internet applications” (refer chapter 3 on Uses of computers) This can be one main point.
3. For each main point list its sub-points.

At the end of Stage 1, you have the outline of your presentation!

The above outline can also be represented by using mind maps.

Moz: Let us see Jyoti’s outline of the presentation.

Jyoti’s outline for “Uses of Computer”



Guidelines

Creating the slides

- Gather information systematically. To do this, recall the six steps of gathering information and the five steps of taking decisions (Computer Masti- Level V).
- To identify the main points, recall and apply steps of categorization (Lesson 3).
- If you cannot think of sub-points for any of the main point, move on to the next main point. You can add sub-points in Stage 2 also.

Moz: Let us now start an application for creating presentations. You will see a new presentation file with a blank slide. For typing in the content, use the **Layouts** panel.

Tejas: Layouts, what is this?

Moz: Layout means the placement of slide contents, such as, title, bullets and other text, images and charts. There are several layout options for creating a slide, as you can see.

Jyoti: For each slide, we can choose a suitable layout option depending on the content of the slide.

Moz: Let us now see the steps to be followed in Stage 2.

STAGE 2: **Execute:** Creating the Slides

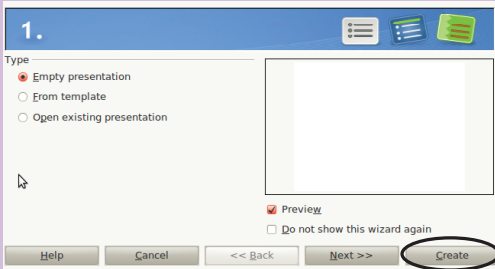
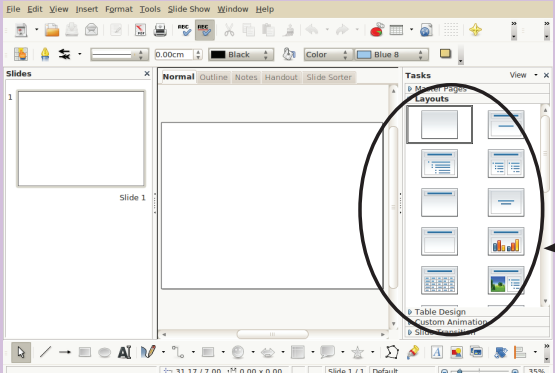
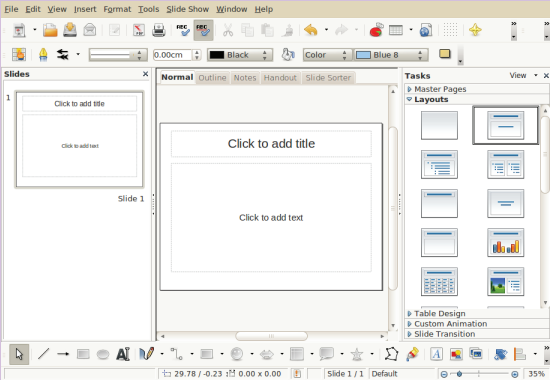
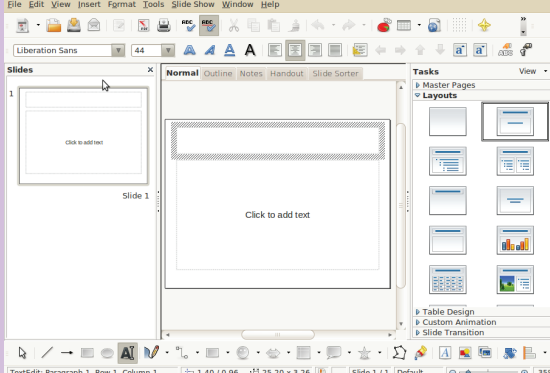
1. Open any presentation application and create a new presentation. Title of the outline becomes the title of the presentation.
2. Create a new slide for each main point in the outline. Add list of sub points for the respective main points. Expand each sub-point by adding more information like text, images, graphs, tables etc.
3. Save the presentation file created by giving a file name.

Note: The presentation is created using the default template.

At the end of stage 2, the outline in the textual representation is translated to a draft presentation.

Skill

Create New Presentation

1. On the desktop, go to Applications → Office → Openoffice.org Presentation
2. The following screen is displayed.

3. In the displayed screen, select the appropriate slide layout.

4. For the first slide of the presentation select any one of the title slide layout.

5. Click on the slide to add the title or text.


Presentation

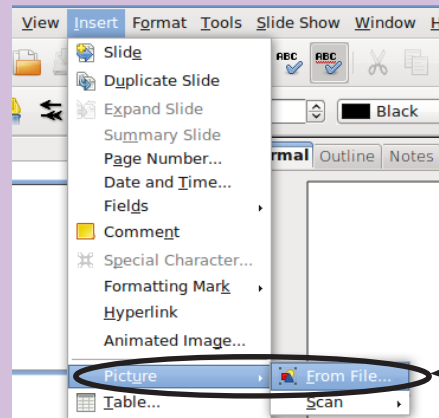
Info

- A slide template is used to give a uniform look to the slides.
- Choose a template to suit your subject of the presentation.
- The application template has preset values for font sizes for title and text.
- The template can also be customized.

Insert pictures

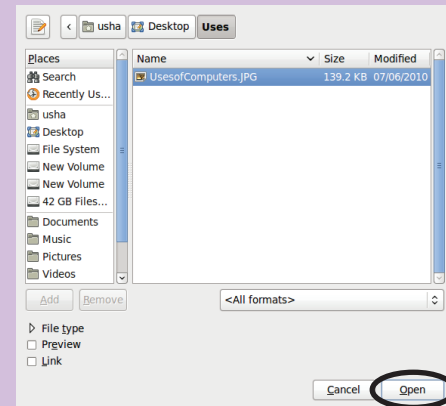
Skill

1. From the main toolbar select Insert. The following dropdown is displayed.



Select the option
Picture and then
From File option.

2. Select the picture to be inserted and click Open.



Creating the slides

Guidelines

- Each slide should have a title.
- Each slide should ideally have not more than 5 sub-points.
Note: Ideally a slide with 5 sub-points takes 2 minutes to explain.
- Avoid writing paragraphs of information in the slide. Instead write crisp points.
- If the time allotted for the presentation is known, create the slides appropriately.
For 20 minutes of presentation time, you should create around 10 slides.
- Make sure that the images, graphs used in the slides are not 'distracting'.
- Be AWARE of copyright issues while using content from various resources.

AWARE

A- Awareness about Copyright

Copyrighted (©) contents cannot be copied or reused without permission from the copyright owner. Check for copyright before using any content from any source.

W- Watch for CC (Creative Commons license)

Refer and prefer content available with creative commons license

A- Acknowledge source of information

If you use content from other sources, always acknowledge the sources.

R- Reject Plagiarism

Word to word copying parts of someone else's work and presenting it as your own is called plagiarism. It is unethical as it takes away the effort of the other person.

E- Explain in your own words

Content taken from different sources need to be explained in your words.

(Refer poster on page number 73.)

STAGE 3: **Impress**: Verify content, add visual effects and practice

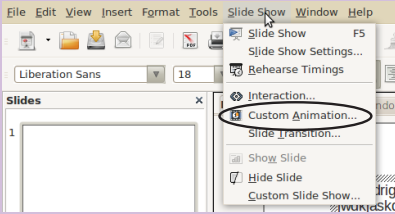
Stage 3: Verify content, add visual effects and Practice:

1. Verify content by doing the following:
 - a. Check if order of slides has a logical flow and also if sub-points are correctly placed.
 - b. Check if information is accurate, adequate and follows AWARE rules.
 - c. Check for content spellings and grammar.
2. Add visual effects by doing the following:
 - a. Ensure Font type and Font size are easy to read and alignment is uniform (Refer point **a** in guidelines box on visual style).
 - b. Use colours to highlight important points (Refer point **b** in guidelines box on visual style).
 - c. Add animation, slide transition effects wherever appropriate (Refer point **c** in guidelines box on visual style).

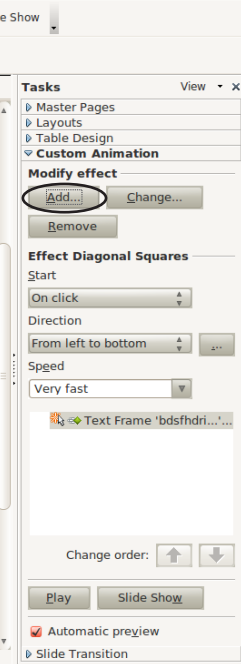
Skill

Adding animation to the presentation

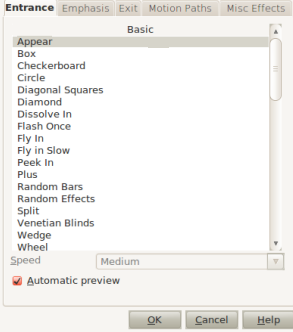
1. From the toolbar, under Slide Show select Custom Animation.



2. Side panel is displayed. Select the content on the slide which is to be animated and click on Add.



3. The following screen is displayed. We can select various effects for the slide content. Click OK.



3. Practice by giving a Mock presentation:
 - Check if the number of slides can be comfortably covered within given time. Reorder if required.
 - Boost your confidence level to face the audience by practice in front of friends.
 - Speak clearly and make eye contact with audience.
 - Do not just read out the slide but explain the points.

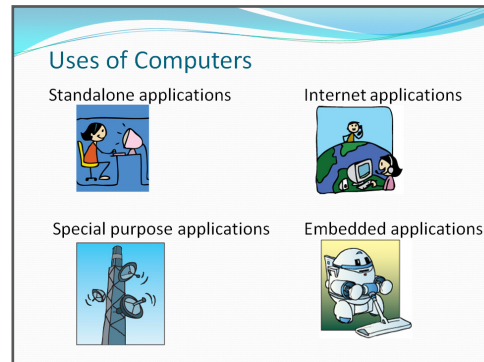
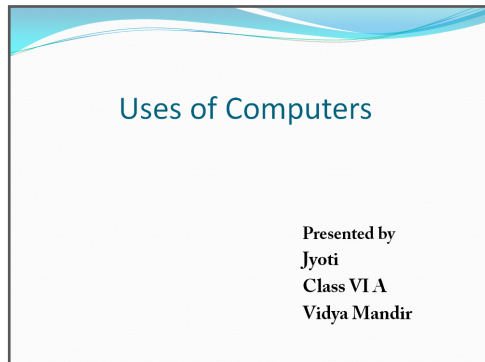
Slide Show

Info

- See the full screen slide Show, by pressing F5 or select option slide Show under 'view'.
- Use arrow keys to navigate between the slides.

Moz: Let us see some sample slides now.

Sample slides:



Visual style

Guidelines

- a
 - Ensure uniform font is used in the entire presentation. Avoid using more than one font in a presentation.
 - Check that the font sizes of titles are bigger than font size of text in the slide.
 - Follow only one alignment style in a slide and across the presentation. Ensure that the text/images do not touch the borders of the slide.
 - Do not use ALL CAPITAL LETTERS in the content.
- b
 - Text font colour should be in contrast with the background color so that the visibility is ensured. Example: *Black text on white background*.
 - Avoid using more than three different colors in a single slide. Example: *one color for title, background and text each*. (For more information on color selection refer <http://www.thinkingoutsidetheslide.com>)
- c
 - Slide elements like text, graphics, etc can be animated to emphasize the content. Customization options are also available apart from the preset animations.
 - Adding transitions between the two slides: Transitions provide a visual and logical changeover from one slide to the other. Use from the custom animations available.
 - Use animations sparingly as they can also distract the viewer and also impact the presentation time.

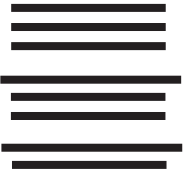
Moz: You have now learnt the basics of presentation. Explore further (on your own) about how to animate the slides, include custom animation, record narration, rehearse timings, insert background images and various options available in the presentation software.

Tejas: We are now confident to make a good show at the inter school competition. Thanks.

Moz: All the best. In the next lesson, we will discuss a new topic called Spreadsheets. Chin Chinaki...

Plan

Main Points



Execute



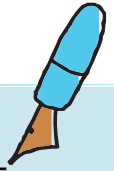
Create



Learning Outcome

At the end of this lesson, you will be able to:

- Write an outline for a given topic.
- Enter content into the presentation application.
- Check content for consistency (font, grammar, spellings) and use design options.
- Follow guidelines for creating presentations.



1. a. Following are a set of jumbled slides of a presentation. Rearrange the slides by numbering them.

Water Pollution – Effects

- Long term exposure to water pollution can be harmful to our health.
- Water pollutants are often harmful for aquatic animals and those who eat them.
- Oil is insoluble in water, it forms a film on the water surface, obstructing sunlight to the marine life.

Water Pollution – What we can do?

- Don't throw paints, oils or other forms of litter down the sink or drain.
- Don't overuse pesticides and fertilizers.
- Prevent runoffs of fertilizers and chemicals into water bodies by planting more trees.
- Always throw litter in dustbins. Help clean up any litter you see on beaches or in rivers and lakes.

Water pollution

It is the contamination of water, especially surface water, by the discharge of sewage effluent, industrial chemical discharge, fertilizer runoff, etc.

Types:

Point Source Pollution: If the pollution comes from a single source. Example: an oil spill

Nonpoint-source pollution: If the pollution comes from many sources. Example: The leaching out of nitrogen containing fertilizers from agricultural land

Water - Elixir of life

- Water covers over 70% of the Earth's surface
- It is a very important natural resource and cannot be replaced by any other resource
- It is absolutely necessary for life
- It is important to conserve water

b. From the above slides can you give the two types of water pollution?

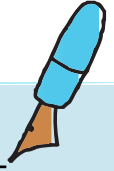
c. If you have a title slide what will be the title you will give it?

d. Following is a slide which needs to be inserted in the presentation. Where will it fit?

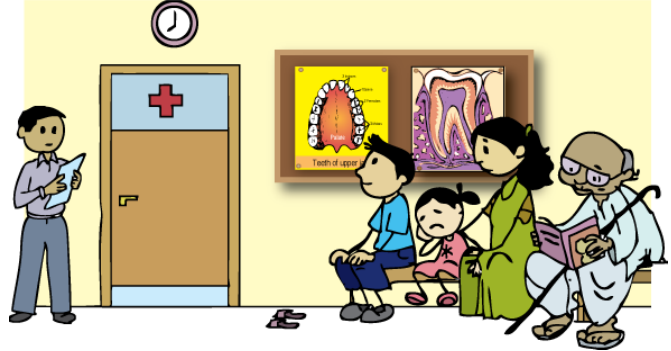
Why should we conserve water?

- Only 1% of the water available on Earth's surface is fresh and usable.
- Ninety-seven percent of the Earth's water is saltwater and other two percent is "locked up" in ice caps and glaciers.
- So it is important that we save water and avoid water pollution.

Between slide numbers _____ and _____.



2. Presentations are great way to tell people about your work, passions and other interests. For example: Rahul is anxious when he visits the dentist. In the clinic, he sees a presentation about the different types of teeth, care of the teeth and how dentists help to keep our teeth clean and healthy. The dentist's idea of using presentations to tell visitors about care of teeth, reduced Rahul's anxiety. Now, Rahul also knows the importance of visiting the dentist.



What are the various purposes for which presentations can be used in the following locations?

Railway stations: _____

Electronic bill boards: _____

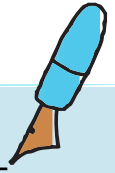
School Notice board: _____

3. Midhun is writing a report on the birds commonly seen in India. To make his report more attractive he wants to put some colourful pictures of birds. He searched the Internet and downloaded some pictures. Can he use them in his report?

If yes, give your reasons.

If no, what else can he do?

4. Priya is giving a presentation the on the importance of saving electricity. In the presentation she used information from the site [http://library.thinkquest.org/06aug/00442/homeelectricity htm](http://library.thinkquest.org/06aug/00442/homeelectricity.htm). At the end of the presentation she acknowledged the site as an information source. Did she do the right thing by doing so? give your reasons.
- _____
- _____



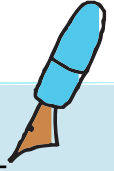
5. Meena has to make a presentation of 3 -5 slides based on the following passage:

The Earth, our planet is the third nearest planet to the Sun. In size, it is the fifth largest planet. The Earth goes around the Sun in an elliptical orbit. The Earth has two types of motion, namely Rotation and Revolution. The movement of the Earth on its own axis is known as **Rotation**. The Earth takes 24 hours (one day) to complete one rotation around its axis. As the earth is spherical in shape, only half of it is in sunlight at a time. This part (facing the Sun) experiences day and the other half (facing away from the Sun) experiences night. It is due to rotation we have day and night. The movement of the Earth around the sun in a fixed path or orbit is called **Revolution**. It takes 365 and 1/4 days (one year) to revolve around the Sun. The axis of the Earth is tilted 23.5° to its orbital plane. We have different seasons due to this tilt of the Earth's axis.

i. Draw a mind map for the above passage.

ii. What is the appropriate title of the presentation?:

iii. Follow the first stage of creating a presentation; write the outline in the space given below. (Note: Your presentation can have 3 or 4 or 5 slides.)



6. A group of students have collected information on the life cycle of a butterfly. The conversations between two of the members is given below.

Tanya: We should first prepare an outline and then only start making the slides on the computer.

Jasmine: We have got a lot of information. Making an outline will take a lot of time. Let us start making the slides directly using the information gathered. Then we can complete this quickly.

- a. Which student is suggesting the correct sequence of making a presentation?

- b. Why is the other student's suggestion not correct? Explain in a sentence.

7. For each of the presentation slides given below find if there are any drawbacks. If yes, provide an improved slide. An example is shown below.

a.

India

Out country, India is bounded by mighty Himalayas in the north, the Arabian Sea in the west, the Bay of Bengal in the east and the Indian Ocean in the south.

We share our border with seven neighbouring countries. These are pakistan, Afganistan, China, Nepal, Burma, Bangladesh and Bhutan.

Our country has 28 states and 7 union territories. Delhi is the national capital. The states in our country are formed mainly on the basis of languages. Rajasthan is the largest state and Goa is the smallest state in terms of area.

Drawbacks:

Content in the slide should not be written in paragraphs.

Slides after improvement (Note: Multiple slides can be created from a single slide):

You can improve the slide in various ways. One way is shown below.

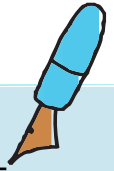
India – National Capital & states

- India has has 28 states and 7 union territories.
- Delhi is the national capital.
- The states in India are formed mainly on the basis of languages.
- Rajasthan is the largest state and Goa is the smallest state in terms of area.

India – Boundaries and Neighbours

Boundaries:
 The Himalaya mountains in the north
 The Arabian Sea in the west
 The Bay of Bengal in the east
 The Indian Ocean in the south

Our neighbouring countries:
 Pakistan, Afganistan, China, Nepal, Burma,
 Bangladesh, Bhutan



b.

Some PLANT FIBRES used to make clothes

COTTON: This cotton wool is also used for filling mattresses, quilts or pillows. Cotton comes from cotton plants. It is grown in the fields having black soil and warm climate. When the fruits of the plant matures, the fibres are separated from the seeds by combing. This process is called ginning of cotton.

JUTE: Jute fibre is obtained from the stem of the jute plant. The plant is harvested when the plant is in the flowering stage. The stems are immersed in water for a few days. When the stem decays, the fibre is separated by hand. It is cultivated during the rainy season

Drawbacks:

Slides after improvement:

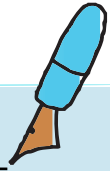


C.

- When two or more things are mixed together then we get a mixture.
- Mixtures contains more than one substance in its pure form.
- Mixtures can be homogeneous or hetrogeneous.
- Homogeneous mixtures: Mixtures which has a uniform composition throughout are called homogeneous mixtures or homogeneous solutions. Salt dissolved in water is a homogeneous mixture.
- Hetrogeneous mixtures: Mixtures with that do not have uniform composition throughout their matter are called hetrogeneous mixtures. A mixture of salt and sand is a hetrogeneous mixture.
- Methods of separation: Some simple methods of separating substances that are mixed together are hand picking, seieving, winnowing, filtration, evaporation, etc.

Drawbacks:

Slides after improvement:



d.

Components of food: Our body gets energy from the food we eat. Food can be classified according to their functions namely; energy giving, body building and body protecting. For doing various physical activities and physiological functions (sleep, respiration, thirst, speech, perspiration, etc.) our body needs energy. This energy is got from carbohydrates and fats. Some sources of carbohydrates are wheat, potato and rice. Some fat sources are ghee and oil. Due to constant wear and tear in the body, new cells are built in our body to repair the damaged parts. Proteins like milk, eggs, meat, cheese and dal help in building of our body. The third are vitamins and minerals, whose absence can cause deficiency diseases like rickets, beriberi etc. Vegetables like carrot, spinach and fruits like papaya, lemon, guava are rich in vitamins and minerals.

Drawbacks:

Slides after improvement:

8. If we want to make the slides of a presentation consistent, we have to

- a. Use an outline of the content.
- b. Apply a template to the presentations.
- c. Add custom animation to all the slides.
- d. Add background images to each slide.



ACTIVITY

Level VI | Lesson 4

1. A passage is given below. Read it carefully.

Trees are woody stemmed plants which grow tall. Trees vary in size and shape. According to the tree species, the various parts; namely, roots, leaves, flowers and fruits, can be different. Some examples are mango, coconut, peepal and banyan. Trees give us food, clothing, shelter, and shade. As we breathe we take in oxygen and give out carbon-dioxide. Trees and other plants take in carbon-dioxide and give out oxygen, during the process of photosynthesis. Trees also help to cool the earth. They give out moisture into the air through their leaves. The roots of a tree grow deep into the soil, hold the soil together, and help prevent soil erosion. Trees gives us a variety of food products such as fruits, spices, and nuts. The wood of trees yields thousands of useful products, including paper, lumber, medicines and other chemicals. From the bark of some trees we can get substances like cork, tannins, and cinnamon. Trees like coconut, give us fibers to make rope and mats. The sap of rubber tree is another useful product. Nowadays, trees in the forests are cut in a massive scale. This clearing of Earth's forests is termed as deforestation. Forests are cut down for many reasons. One reason of deforestation is agriculture. Farmers cut forests to plant crops or for grazing livestock. Overgrazing also prevents the growth of young trees. Another reason of deforestation is our need for wood and paper products. Not all deforestation is intentional. Some are caused natural factors like wildfires and subsequent. One way to check deforestation is to reduce cutting down trees. We also can carefully manage forest resources. The cutting should be balanced by the planting of enough young trees to replace the older ones.

Make a presentation for the above passage, following the three stages outlined in the lesson.

Group Activity

2. For the following topic, prepare a presentation using the three stages: Plan, Execute, Impress.

- Safety measures and exercises to be followed while using a computer.
- Share your presentation with your classmates.

[The teacher can get printouts of selected presentation].



A virtual tour of the Earth:

Use Google Earth to view details of any place that you wish to see in the world. You can see 3D buildings, images and terrains of the location that you choose. Form groups of five students.

Each group Identifies and notes

- i. Locations mentioned in Geography text book.
- ii. The place and street where each one in the group lives.
- iii. Location of the School and it's neighbourhood.

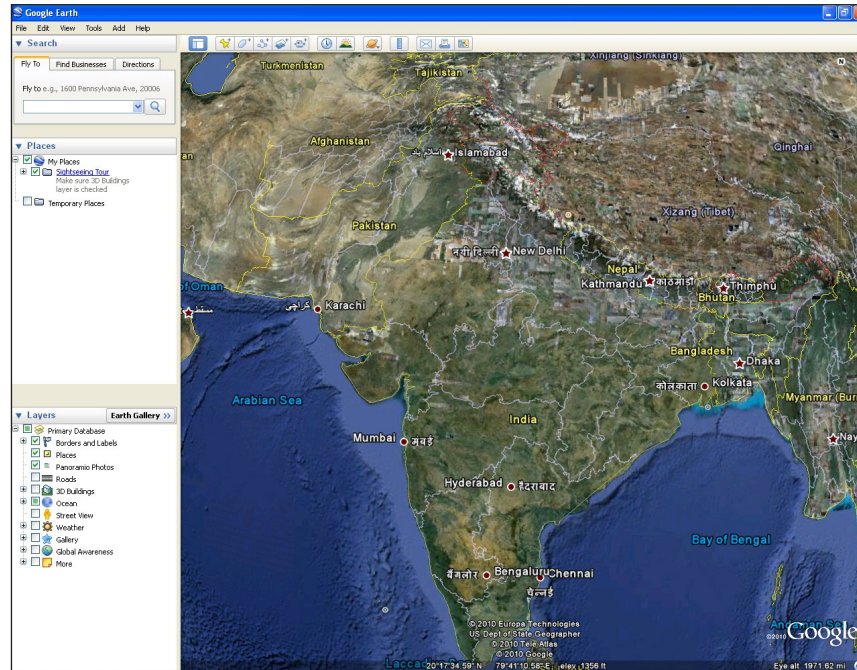
Each group prepares a ten minute presentation on any one of the above, based on the information from Google Earth, and the information that you already know about these locations. Share the presentation with other groups.



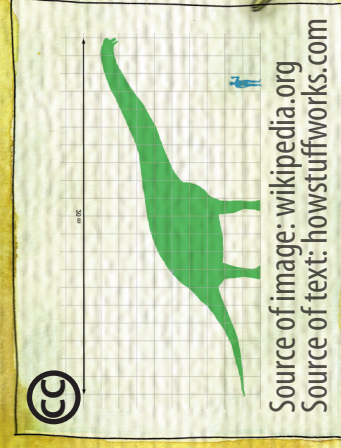
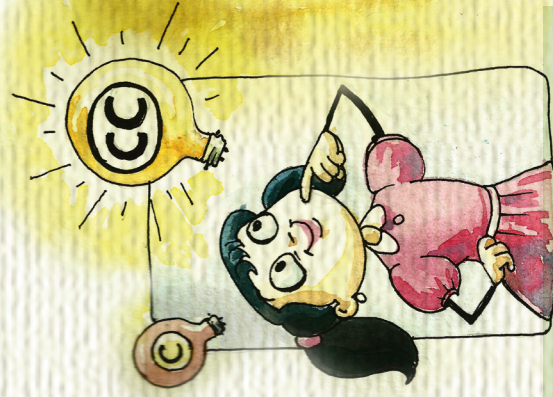
ACTIVITY

Level VI | Lesson 4

Screenshot of Google Earth



1. Explore different views (Notes page, Outline, Slide Sorter) and Master layouts available in the presentation application.
2. Explore how slides can be hidden during a slide show and when is this option used?
3. Explore the various animation effects available in the presentation application.
4. Explore what is a handout of a presentation?



A

AWARENESS about Copyright

- A lot of content is under 'Copyright' indicated by ©. This means that the content cannot be copied or reused without permission from the copyright owner. The content could be images, text, audio, video, applications, operating system.
- Check for copyright before using any content from any source.

W

WATCH for CC

- (Creative Commons license)
- CC license allows people to share and build upon each others' work. This is indicated by CC.
 - Refer and prefer CC material.

A

Acknowledge source of information

- If you use content from other sources, always acknowledge the sources. Not doing so is plagiarism. If you have to use copyright content, ensure that --- you use it for educational purposes and take permission from the copyright owner.

R

Reject Plagiarism

- Word to word copying parts of someone else's work and presenting it as your own is called plagiarism. It is unethical as it takes away the effort of the other person.

E

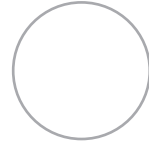
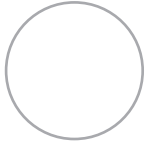
Explain in your own words

- Content taken from different sources need to be explained in your words. This can be done with paraphrasing.

A fun way to
learn computers

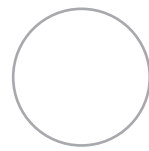
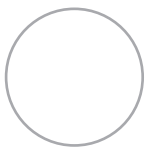
ComputerMasti

www.computermasti.com



Apply glue in the circles given
and paste this poster near
your computer.

Computer Masti



- The objective of this lesson is to teach students how to plan and prepare a presentation on the computer.
- Begin the lesson by asking students if they have seen presentations on the computer. Refer the info box on presentation in the lesson to introduce this application. Show them the icon of the application. Tell the students that just as word processor consists of pages, presentation software consists of slides. All the content that one needs to present is populated in different slides. Worksheets question 2 provides students with an opportunity to apply their knowledge and imagination for listing the uses of presentation in different locations. Do one of the locations in class and give others as homework.
- It is important that students do not jump to use the presentation software or get distracted by animation effects before giving sufficient thought on purpose and theme of presentation. Refer the concept box on creating presentation in the lesson to explain that creating presentation involves three stages. Tell them to apply their skill of making mind maps for creating an outline of the presentation.
- Use this opportunity to revise step wise thinking and ask the students how they would apply it while preparing a presentation. Remind them to apply the steps of gathering information for collecting necessary details about the topic of their presentation. Refer the description of stage I and teach students how to prepare an outline of the presentation. Worksheets question 5 provides an exercise for this. Worksheets question 6 can also be done as it reinforces the importance of preparing an outline before making presentation.
- Now open a presentation application and demonstrate how to select a template and layout of the slide. Mention that the title of each slide should be chosen carefully, such that it gives the viewer a clear idea of the content of the slide. Teach them the importance of arranging the slides in appropriate order so that the ideas to be communicated are brought out clearly. Now ask students to do worksheets question 1. Ask questions to lead the students to note that the different options of the menu and tool bar are similar to those found in word processor. Teach them the skill of inserting pictures and tables into a slide.
- Emphasize the importance of citing the resources appropriately if they include text/pictures form the Internet. Refer the AWARE poster to educate students about what is copyright, plagiarism. Encourage students to find material that is available for free and/or under creative commons license. Do worksheets questions 3 and 4 to reinforce these concepts.
- Teach the students to review their slides for consistency check. Ask them to read the guidelines included in the lesson. Tell them that the design (colour, font size, font type, background) of the presentation is important as it helps in clarity of communication with the audience.
- Teach students how to apply the different animation effects. Emphasize that they should select an effect that matches the theme of the presentation and that over use of animation interferes with effective communication.
- Mention interesting features of presentation software that students can explore on their own.
- Summarize the different stages of preparing the presentation. Ask students to do activity 1 by following the three stages.



Further Reading:

<http://www.arma.org/learningcenter/facilitator/index.cfm>

<http://classweb.gmu.edu/WAC/somguide/presentationguidelines.htm>

	A	B	C	D	E
1					
2					
3					



5. Multiple Representation of Data: Introduction to Spreadsheet

Aim: In this lesson, you will learn:

How to enter a data in spreadsheet.

To do simple calculations like sum, percentage and average on the given data.

To draw graphs for representing data.



Tejas: We have received answer sheets for the third term exams. I want to keep a record of my performance.

Jyoti: Why don't you make a table in word processor?

Tejas: That is a good idea! My grandparents always ask me to send them a copy of my report. Now I can attach the marks file with an e-mail and send it to them.

Jyoti: Let me help you in making the marks table.

They create a table in a document file using the word processor as shown below:

Title: Third term Performance Record for Tejas

Subject	Marks (out of 100)
English	67
Hindi	57
French	83
Science	78
Mathematics	87
Social Studies	69
Total	441
%	73.5

Jyoti: I used a calculator for computing the total and percentage, and then entered it in the table. On the next day, the teacher told us that our marks in Social Studies have changed.

Tejas: For me, Science marks have also changed, as the teacher did not correct one question.

Jyoti: That means I will have to calculate the total and percentage once again. This is very time consuming.

Moz: Do you want to do such changes automatically? This can be done quickly if you enter this table in a **spreadsheet**.

Jyoti: That is great! It will save our efforts and time.

Tejas and Jyoti: What is a spreadsheet? We would really like to learn more about it.

Moz: Spreadsheet is an Office application. Some examples of similar applications are: Calc, Excel and Numbers.

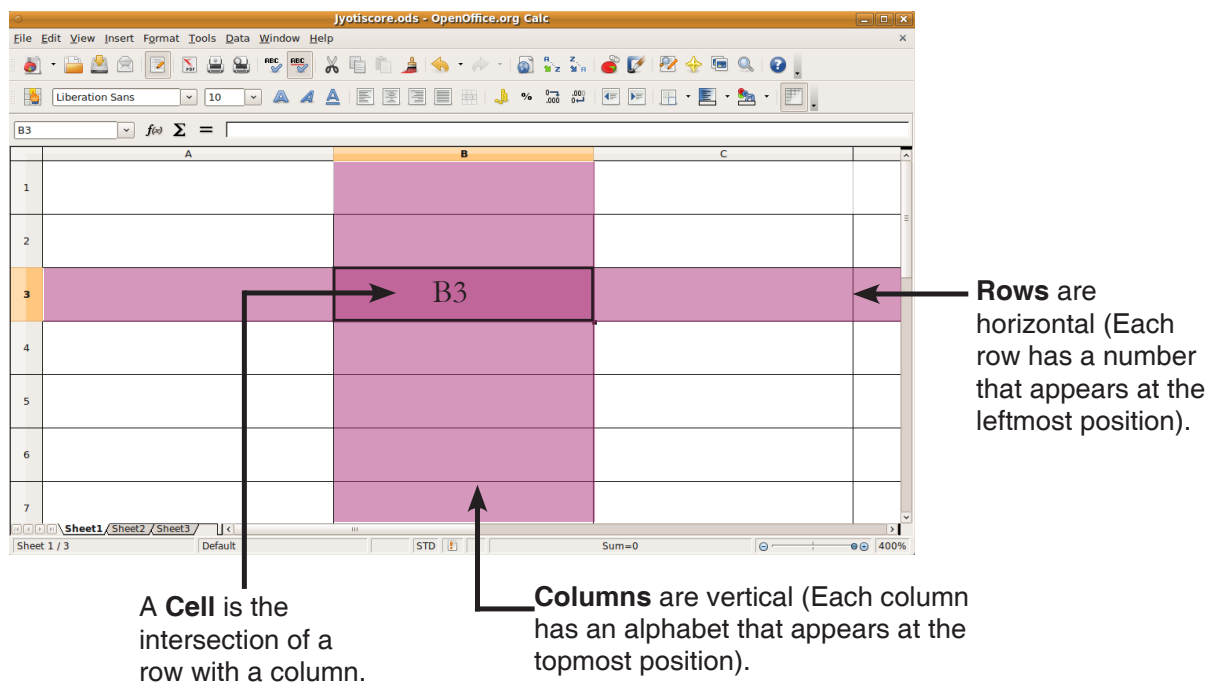
Concept

Spreadsheet

A spreadsheet is a table with many rows and columns. Spreadsheets are generally used to analyze data and make projections based on the data. Spreadsheets also provide various graphical representation (views) of data.

You can use a spreadsheet to:

- Enter data.
- Edit data.
- Format data.
- Perform calculations on the data.
- Draw charts and graphs based on the data.



Moz: Each cell in the spreadsheet has an address (shown in the above screenshot). For example B3 is the cell which is an intersection of column B and Row 3. Often, the cell at the top of each column is used for headings to describe the data in that column.

Info

Spreadsheet

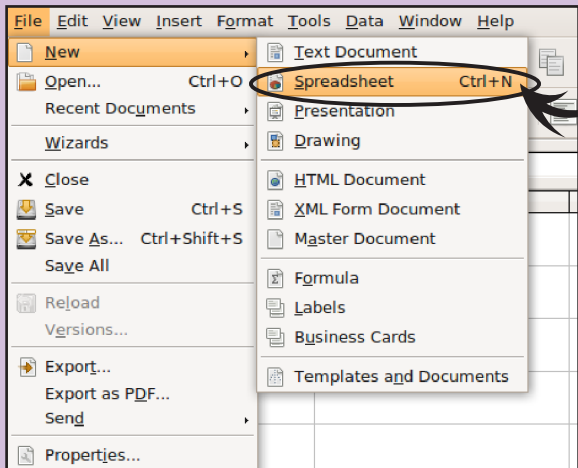
- Spreadsheet is made up of Rows and Columns.
- Data in each cell can be:
 - Text
 - Number
 - Formula (mathematical equations, for example an equation to calculate the sum of data in the cells).
- Some file extension for the file created in spreadsheet application can be .ods, .xls.

Jyoti: Now let us enter the marks table in the spreadsheet. So just like I create a new word file or a presentation file, I will create a new spreadsheet file.

Skill

Create a new spreadsheet

1. From the taskbar on the desktop, select:
Application → Office → OpenOffice.org Spreadsheet.
2. From the toolbar, under File option select New.



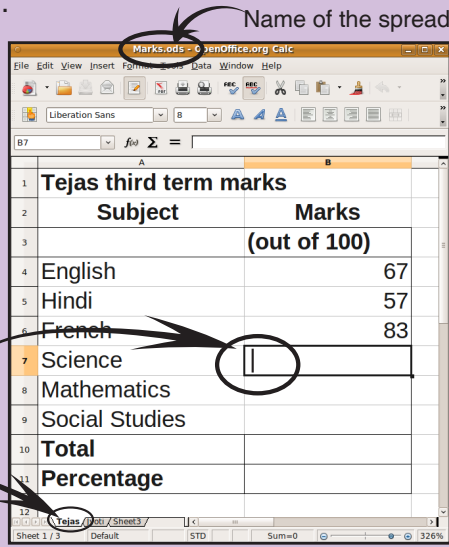
Click on Spreadsheet

Moz: You can start entering the marks in all the subjects from your notebook into the new spreadsheet. You don't have to enter the total and percentage. You can calculate directly in the spreadsheet.

Skill

Entering data into a cell

- Select the cell where you want to enter the data.
- Double click the cell.



Name of the spreadsheet

Name of the sheet

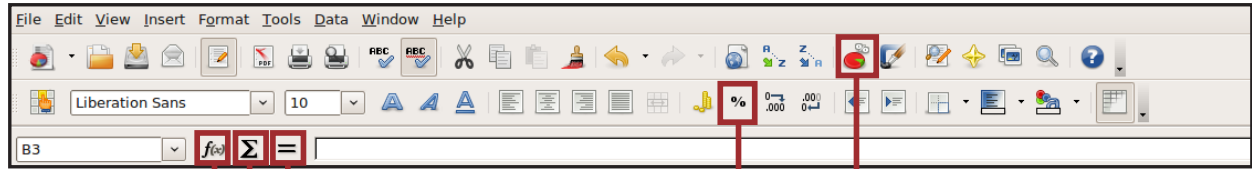
Enter the data from the blinking cursor

Tejas third term marks	
Subject	Marks
	(out of 100)
English	67
Hindi	57
French	83
Science	
Mathematics	
Social Studies	
Total	
Percentage	

- Place the cursor in the next cell to enter data. You can do this by either clicking on 'Tab key' or using a mouse to position the cursor at appropriate location. In the example, in cell B6 we can enter the marks obtained in Science.
- Give title to the table that you have created and sheet on which you enter data. For example, in this example, the spreadsheet is titled Marks and sheet is titled Tejas.

Tejas: I see that the toolbar options are similar to the word processor.

Jyoti: The format options are also similar. But there are new mathematical options that we have not seen in word processor and presentation applications.



To insert a function To enter a function
 To find the sum To calculate Percentage
 To draw a chart

Moz: Good observation. Another point of difference is that you have pages in word processor document and slides in presentation. But a spreadsheet application has a **spreadsheet** with **sheets**.

Calculating the sum

- Select the cells (B4 to B9 in this example) whose sum needs to be found and click on the symbol for sum (Σ) from the toolbar.

Tejas third term marks	
Subject	Marks
English	67
Hindi	57
French	83
Science	78
Mathematics	87
Social Studies	69
Total	=SUM(B3:B8)
Percentage	

- Press Enter key.
- The total is calculated and displayed in the desired cell (B9 in this examples).

Calculating the percentage

- Select the cell where you want to display the percentage. (Percentage = (Given amount/total amount) multiplied by 100). It is B10 in this example.
- Write the formula. In the given example it would be $(B9/600)*100$. B9 is the address of the cell having sum of the marks.
- Press Enter key.
- The percentage is calculated and displayed in B10.

Tejas third term marks	
Subject	Marks
English	67
Hindi	57
French	83
Science	78
Mathematics	87
Social Studies	69
Total	441
Percentage	=(B9/600)*100

Tejas: This is easy. But now when I change my science marks, do I have to calculate the total and percentage again?

Moz: No, whenever you change the data, the formula is automatically applied to get new values for sum and percentage. See cell B9, B10 in the two screenshots.

Tejas: Wow! Now when I increase my science marks from 78 to 88, the new total and percentage are automatically calculated and displayed!

Tejas third term marks	
Subject	Marks
English	67
Hindi	57
French	83
Science	88
Mathematics	87
Social Studies	69
Total	451
Percentage	75.2

Moz: Tejas, suppose you got 100 in Maths, what would your percentage be?

Jyoti: This is fun, he can just change the Maths marks to 100 in the cell, the total is 464 and the percentage is now 77.3.

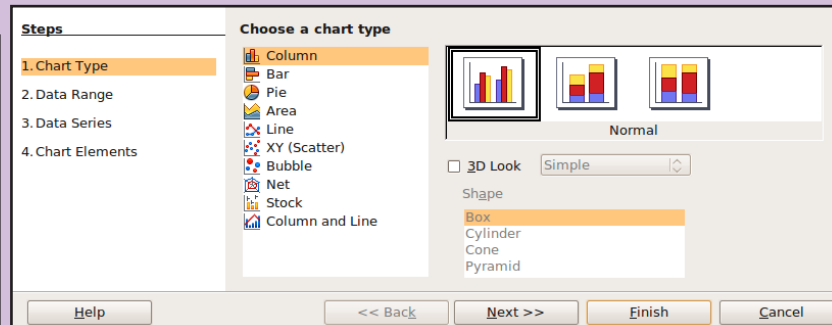
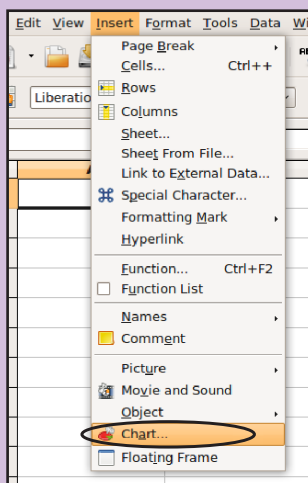
Moz: Spreadsheet is a table. You know that table is one form of representation. What other form can you use to show this data?

Jyoti: A graph or chart?

Moz: Yes, drawing charts and graphs is a very powerful use of spreadsheet application. Now let us see how to draw graphs.

Drawing charts and graphs

1. Select the columns containing data for which graph has to be drawn. In this example, select the two columns: subject and marks.
2. From the toolbar under Insert option, select Chart.
3. From the Chart wizard select the type of the chart. In this example we will select the column graph.



4. Once the graph is created, if it is overlapping the data columns or rows you can drag the chart to the position where you want it to be seen.

Skill

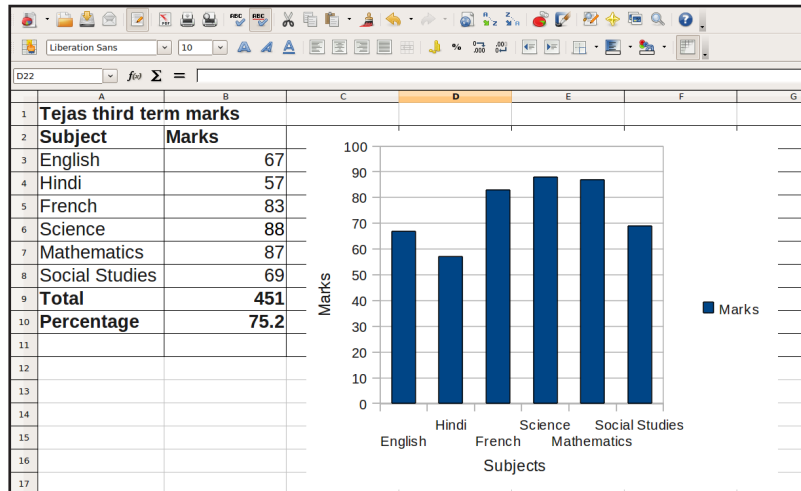
Graphs

Graphs can be formatted to make the following changes:

- Alter the colour of different bars.
- Add labels of x-axis and y-axis.
- Add title of the chart or graph.

You can explore on your own more formatting options. Remember to use the 'Undo' key to resume the previous format.

Info



Jyoti: Looking at the graph, we quickly know that French, Science and Maths are the top scoring subjects for Tejas, and he needs to improve in Hindi subject.

Moz: Jyoti you can start entering your marks on another sheet in the same workbook as used by Tejas. Name the worksheets appropriately, for example: Tejas, Jyoti.

Jyoti: Since I have to enter the 3rd term marks, can I use the same table for entering marks of previous terms.

Moz: Yes, you can insert new columns called 1st term and 2nd term between the old columns Subject and Marks.

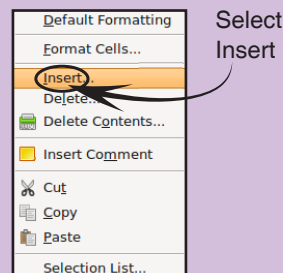
Inserting or deleting a new row or column

If you have to enter a new column in between existing columns, follow these steps:

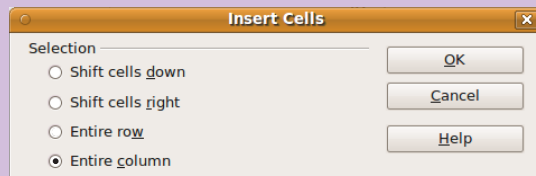
1. Position the cursor on the column where a new column is required.

Subject	3 rd Term	Marks
English		80
Hindi		65
French		85
Science		90
Mathematics		80
Social Studies		80
Total		480
Percentage		80

2. Right click on the mouse. The following drop down is displayed.



3. From the displayed pop up menu, select Entire column.



4. A column is added before the selected column.

Subject	3 rd Term	Marks
English		80
Hindi		65
French		85
Science		90
Mathematics		80
Social Studies		80
Total		480
Percentage		80

To delete a column:

You can also delete columns as required using steps 1 and 2. Now select the delete option and click on appropriate option.

Follow the above steps to add or delete a row.

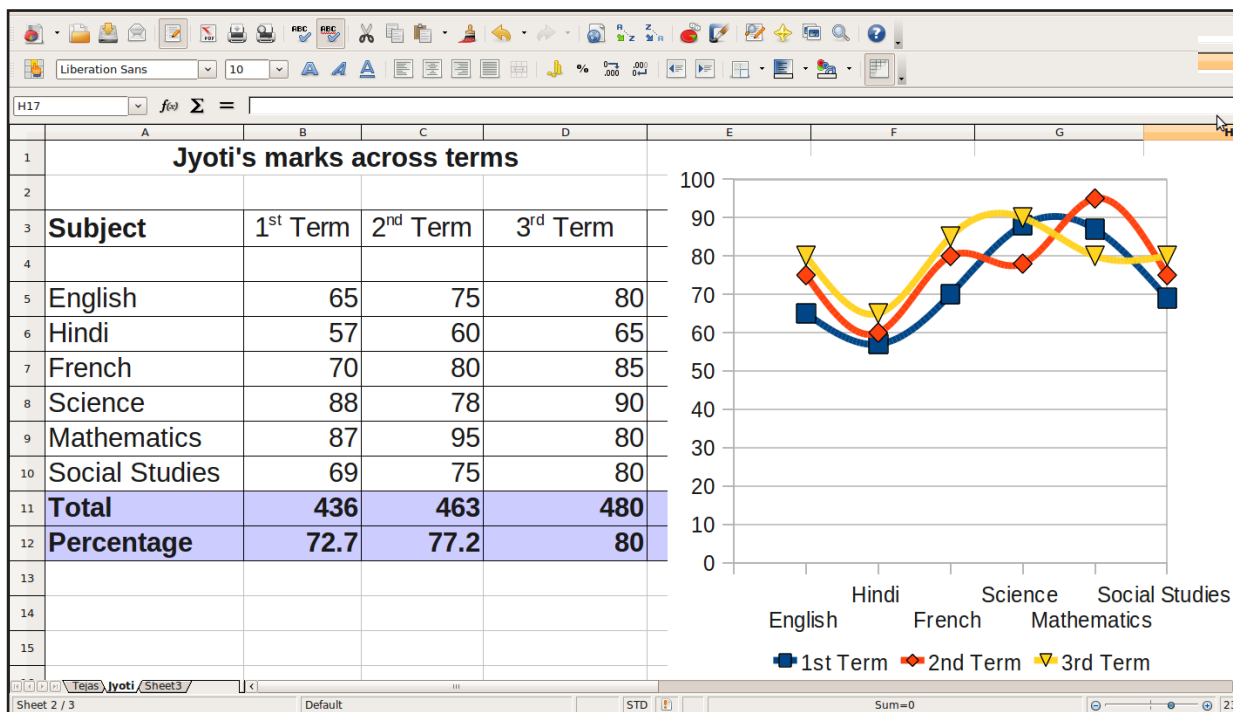
Skill

Jyoti: I have used some formatting options to make the table easy to read by using colours and making text bold. I also inserted a line graph to compare performance in each subjects for the three terms.

Tejas: I created a bar graph to show performance in different subjects for third term but you have created a line graph.

Jyoti: That is because, if we have to make comparisons amongst more than two groups a line graph is more suitable. From this graph I can see that I have to put more efforts in studying mathematics.

Moz: Tables and graphs are different ways of representation. Depending upon our purpose, one form of representation may be more suitable than the other.



Multiple representation

- Information can be represented in multiple ways. Some examples of multiple representations are lists, tables and graphic organizers.
- There is no single way for representation.
- Choose a form of representation that provides a quick and clear understanding of the information.

Moz: How is your final result calculated after the three terms?

Jyoti: For every subject, the average is calculated. The formula is: (1st term marks+2nd term marks+ 3rd term marks) divided by 3.

Tejas: It must be so tedious for our teacher to do these calculations for all the students of our class. I think it may be easy to do such calculations in a spreadsheet.

Moz: Yes, it can be done in only three steps!

To calculate the average

1. Select the cell (here E5) where you want to write the average. (Average of 'n' number of items = sum of the 'n' items/n).
2. In the given example, the average of English subject is the sum of 1st term + 2nd term + 3rd term marks divided by 3 that is $(B5+C5+D5)/3$ where B5, C5 and D5 are the cell addresses of the respective marks.
3. Press Enter key.

Note: You need not repeat the steps for all subjects.

To do this computation for all the subjects, perform the following steps:

1. Go to the right corner of the cell for English average [give cell number].

	A	B	C	D	E	F
1		Jyoti's marks across terms				
2					Average	
3	Subject	1 st Term	2 nd Term	3 rd Term	$(1^{st}+2^{nd}+3^{rd})/3$	
4						
5	English	65	75	80	73	
6	Hindi	57	60	65		
7	French	70	80	85		

Drag the handle to copy

2. You see a + sign which is called a handle.
3. Drag the handle down the column to calculate the average for all subjects.

	A	B	C	D	E	F
1	Jyoti's marks across terms					
2					Average	
3	Subject	1 st Term	2 nd Term	3 rd Term	$(1^{st}+2^{nd}+3^{rd})/3$	
4						
5	English	65	75	80	$=(B5+C5+D5)/3$	
6	Hindi	57	60	65	61	
7	French	70	80	85	78	
8	Science	88	78	90	85	
9	Mathematics	87	95	80	87	
10	Social Studies	69	75	80	75	
11	Total	436	463	480	460	
12	Percentage	72.7	77.2	80	76.6	
13						

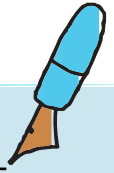
Moz: Now print the spreadsheet and show it to your parents. In your next level you can learn more advanced functions available in spreadsheets like sorting, filtering and using more formulae. Chin Chinaki...



Learning Outcome

At the end of this lesson, you will be able to:

- Read data given in a spreadsheet.
- Enter data and do basic calculations using a spreadsheet.
- Draw graphs to represent the data in the table.
- Select appropriate labels for tables and graphs.
- Enter formula to compute average in a spreadsheet.



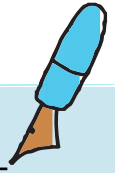
1. Study the following spreadsheet. It has data of the runs scored by some Indian players in an ODI series. Answer the following questions:

	A	B	C	D	E	F	G	H
1	Runs scored by some players in the ODI series							
2	between India and England in 2008							
3	Name	1st ODI	2nd ODI	3rd ODI	4th ODI	5th ODI	Total Runs	Average per ODI
4	G Gambhir	51	70	14	40	0	175	35
5	V Sehwag	85	1	68	69	91	314	62.8
6	SK Raina	43	4	1	0	53	101	20.2
7	Yuvraj Singh	6	25	38	118	138	325	65
8	YK Pathan	0	50	12	6	0	68	13.6
9	MS Dhoni	39	15	29	9	50	142	28.4
10	RG Sharma	11	3	28	0	8	50	10
11								
12								

- a. Tick the 3rd row. Tick column D. Circle cell D3 in the above spreadsheet. What is the data in this cell?
Ans: _____
- b. Who scored maximum runs in the 5th ODI?
Ans: _____
- c. By how many runs did the performance of MS Dhoni improve in 5th ODI from 4th ODI?
Ans: _____
- d. Who scored the minimum total runs in the whole series?
Ans: _____
- e. Whose performance is consistently improving in the whole series?
Ans: _____
- f. What will you do to calculate total runs scored in 1st ODI and show the value in the cell B11?
Ans: _____

- g. Fill the missing data. You have to enter the data or cell number as appropriate by reading the table.

Cell Number	Data
A4	G Gambhir
B7	
	325
G9	
	RG Sharma



2. Following table shows the number of visitors to different stalls at a funfair event.

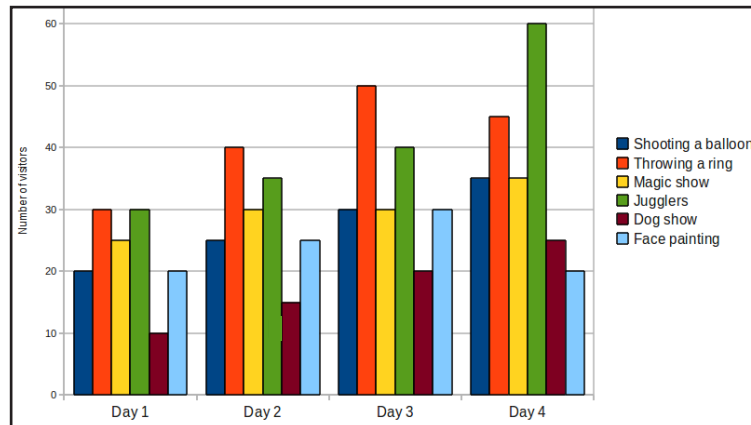
a. Enter this data in a spreadsheet and do the following computations.

Stall	Day 1	Day 2	Day 3	Day 4
Shooting a balloon	20	25	30	35
Throwing a ring	30	40	50	45
Magic show	25	30	30	35
Jugglers	30	35	40	60
Dog show	10	15	20	25
Face painting	20	25	30	20

b. Calculate the total number of visitors for every day.

c. Compute the total number of visitors and average across four days for every stall.

d. Draw a graph as shown below.



e. Study the table and the graph and answer the following questions.

i. Which the most popular stall on Day 2?

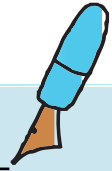
ii. Which stall was least popular on Day 4?

iii. Which stall on which day received the maximum number of visitors?

iv. On day 4, visitors to the Jugglers stall were more than visitors to magic show by what number?

v. Identify the two stalls for which the number of visitors increased by 5 every day from Day 1 to day 4.

f. To answer the above question e (v), which representation did you find easier to use? Why?



- g. Due to the popularity of the fair, it was extended for another day. On this day the number of visitors is as given below. Add this data to your spreadsheet.

Stall	Day 5
Shooting a balloon	35
Throwing a ring	35
Magic show	50
Jugglers	65
Dog show	20
Face painting	15

3. Fill the blank cells in the table :

Purpose	Application	File extensions
		.odt, .doc
Giving Presentations		
	Spreadsheet	
Drawing		

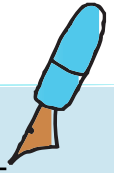
4. Zoya and Mike collected information on what is the most preferred means of transportation from different students. 19 students preferred train, 50 students preferred car and 24 students preferred aeroplane. 12 students chose ship while 38 students chose bus as preferred means of transport.

a. Draw a table to show the count of students for the different means of transport.

b. Draw a bar graph for this data.

c. Enter the table in spreadsheet application.

d. Calculate the total number of students surveyed.



5. The following table shows food items with calories for each.

Food Item		Food Calories
Vegetables (per 100 gms)		
	Cabbage	45
	Carrot	48
	Cauliflower	30
	Cucumber	12
	Peas	93
	Potato (fried)	450
Fast food		
	Cheese burger (1)	610
	Fries(regular)	360
Fruits		
	Apple	56
	Banana	153
	Guava	66
	Papaya	32

- a. Design a meal consisting of 3 food items (1 item from each category). You have to ensure that the meal menu does not add up to more than 700 calories. Show two such meal menus.

Example : Cabbage : 45

Fries: 360

Banana : 153

Total 558 < 700

Meal 1:

Total _____

Meal 2:

Total _____

- b. Study the graph and answer the following question:

i. Which food item provides maximum calories?



ACTIVITY

Level VI | Lesson 5

1. Given below is a table of activities and calories burnt.

Exercises	Food Calories burnt an hour
Climbing stairs	350 - 800
Cycling	300 - 600
Swimming	500 - 900
Dancing	250 - 400

- Enter the above data in a spreadsheet and give a suitable title for the table.
- Format the above table such that: (i) the column headings are in bold (ii) data in first column is centrally aligned (iii) alter the width of column such that the content is easily readable and (iv) borders of the table are seen clearly.
- Plan an exercise regimen for Sumit and Ashmit.
 - Sumit is fond of fast food and is overweight. He has to burn 2000 calories every week with an hour of exercise per day.
 - Ashmit has healthy food. He needs to burn 1000 calories every week with an hour of exercise per day.

(Hint: Calculate average calories burnt with each exercise)

Group Activity

- Open a spreadsheet application and enter names of your classmates. Ask all your classmates to come and enter the number of hours of computer use they do for each week. Calculate average number of hours of computer use for your class. Repeat the same activity after vacation.



I am a data analyst:

Form groups with 5 students in each group. Each student of the group, surveys the locality where he/she lives, and collects the following data about vehicles.

- Kind of vehicle (scooter/car),
- Colour of the vehicle,
- Manufacturer of the vehicle.

Consolidate the data collected by all the members in a group into a table. Use a spreadsheet application to do the following computations and draw graphs. Find out:

- Which kind of vehicle is used more— scooter or car?
- Which is the most preferred colour?
- Which manufacturer is preferred most for scooter?
- Which manufacturer is preferred most for car?



- Explore one more way to find the sum of data in a spreadsheet.
- How to insert a chart made in spreadsheet into a slide?
- How to select a part of the spreadsheet for printing?

- The objective of this lesson is to teach students how to enter and read data presented in a spread sheet and the concept of multiple representations of data.
- Begin the lesson by revising when to use lists and table to represent data. Students already know what is a row, column and cell. Tell them that they will now learn a new application that is useful for doing mathematical calculations and drawing graphs. You can take the example in the lesson and ask students to calculate percentage of marks for the previous test. Doing the calculation manually will enable them to appreciate the convenience provided by spread sheet application.
- You can mention the names of different spread sheet applications such as Calc, Excel, Numbers and associated extensions. Tell them that all spread sheet application consists of a huge sheet that is spread horizontally and vertically.
- Open a spread sheet application and ask students to note how the rows and columns are represented. Students would mention that the row is represented by numbers and columns are represented by alphabets. Ask them to note the similarities and differences in the options under the menu and tool bar of spread sheet applications and presentation and word processor applications.
- Teach students how to read the cell. For example, how to identify what is B5 or C9. Enter the data of examination marks for one of the student on the spread sheet. While you are doing this, revise the concept of selecting appropriate row and column titles and giving suitable names to the table. At this point of time, you can ask students to do worksheets that provide them an opportunity to read data in the table and answer selected questions.
- Teach them how to add an additional column in between existing columns, follow the example included in the lesson. You can ask them to read the skill box for the same and identify the different options on the tool bar.
- Give a demonstration of how to calculate sum and average for the entered data. Get students to read the skill box for these and tell you what you should do/click for this. Ask students to solve worksheets 2(a, b, c) that ask them to enter data and do these calculations. You can ask them to do activity 1 as homework.
- Draw students' attention to the graph icon and give a demonstration of how to draw a graph for the entered data. Emphasize on selecting appropriate labels for the x-axis and y-axis. You can connect to their knowledge of graphs, since they have already learnt how to draw graphs in the mathematics class. Tell them that graphs can be of varied kinds and selection of one kind or the other is according to the purpose for which graph is drawn and data available. Use this opportunity to teach them a concept of multiple representation. Solve worksheets questions 4 and 5 in class. Give worksheet question 3 as a homework.
- Summarize the lesson and instruct students to do worksheet 2(d, e) and activity 2 as after class assignment.

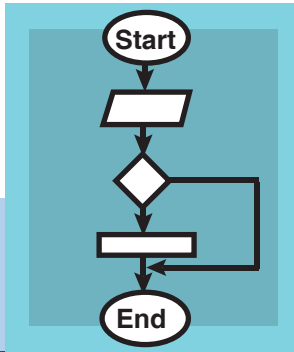


Further Reading:

http://wiki.services.openoffice.org/wiki/Documentation/OOo3_User_Guides/Calc_Guide

<http://www.learnopenoffice.org/tutorials.htm>

http://www.tutorialsforopenoffice.org/category_index/spreadsheet.html

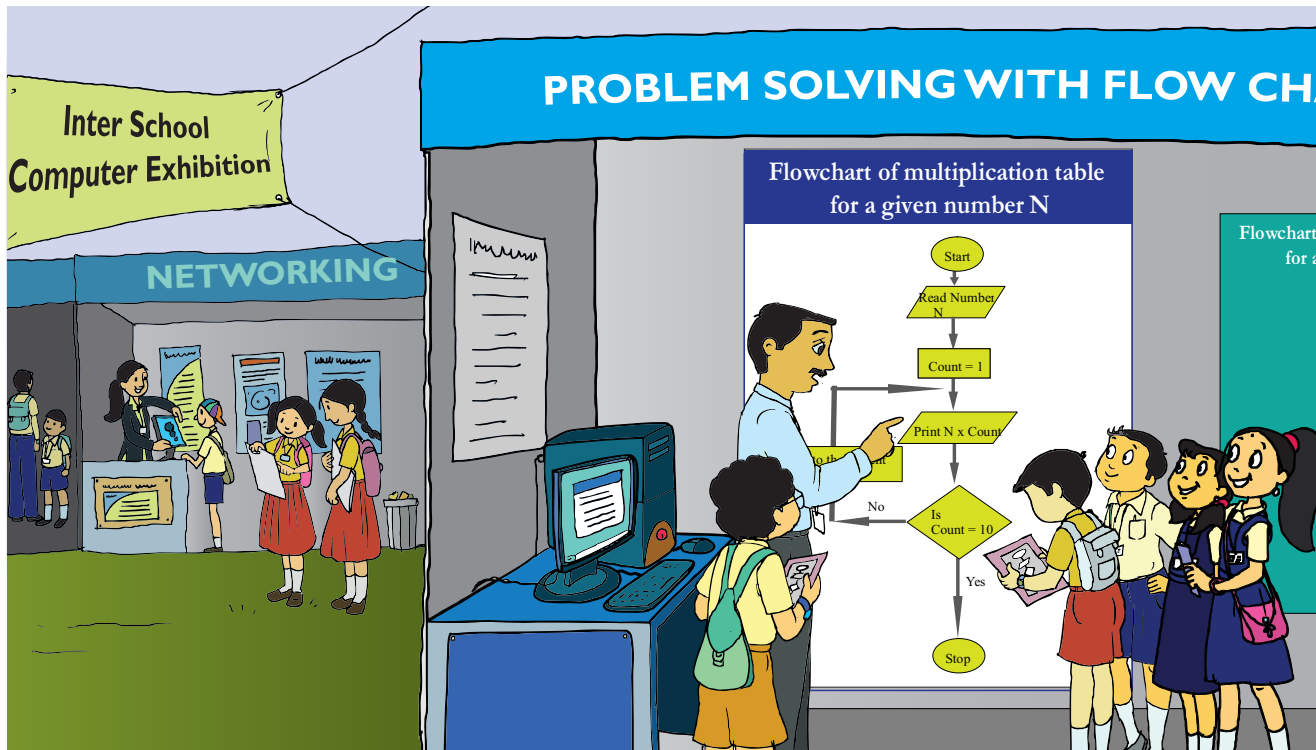


6. Flowcharts

Aim: In this lesson, you will learn:

How to draw a flowchart for problem solving.

Structures of a flowchart.



Tejas: We visited a computer exhibition for school students. We saw a super computer, demonstration of many uses of computer and many interesting applications.

Jyoti: In one of the stalls, we could enter any number as input and the computer was displaying the multiplication table of the number. The picture shown above was used by the person at the stall, to explain the sequence of steps followed by the computer, to display the table.

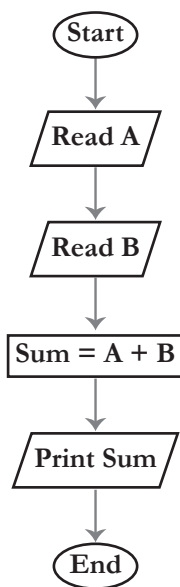
Jyoti: We observed that those who did not know about computers and programming could also understand what was explained by the picture.

Moz: This picture is called a **flowchart**. One of the uses of flowchart is to describe the **sequence** of steps and logic of solving a problem, before writing a computer program. Flowchart also helps in communicating the steps of the solution to others.

Tejas: I see that various geometrical shapes are used in this representation. We are eager to learn about flowcharts.

Moz: Let us start with a simple example. Look at the following flowchart of adding two natural numbers A and B. Let us discuss the problem solution and the geometrical shapes used.

Flowchart - How to find sum of two numbers



Finding sum of 845 and 247

Start
|
A = 845
|
B = 247
|
Sum = 845 + 247
|
Sum = 1092
|
End

Jyoti: Start and also end of the flowchart are shown with an ellipse.

Moz: A flowchart should give a clear indication as to where the problem solving flow starts and where it ends. The *start* of a problem solving process and the *end* are indicated using an **ellipse**.

Tejas: Our goal is addition of two given numbers. So, first we identify the data that is given. In this problem we have the two numbers A and B. Reading the values are represented by parallelograms.

Moz: Right. What would you call *reading in values* in computer terms?

Jyoti: Input.

Moz: The *data or information* that is *available*, (which is called *input*) is represented using a **parallelogram** in the flowchart.

Moz: What is the next step?

Tejas: The next step is to add the numbers, which is called *processing* in computer terms. The details of *processing of data* is represented in a **rectangle**.

Moz: Correct.

Jyoti: The next step is to write the result of the addition, which is *output* in computer terms. This is also specified in a **parallelogram**.

Moz: Right. A parallelogram is used to specify both input and output in a flowchart. What else do you notice in the flowchart?

Tejas: An arrow points from one step to the next step in the flowchart.

Moz: In a flowchart **arrows** are used to *connect the steps* in a sequence and show the flow of the problem solving process.

Jyoti: We learnt *step by step thinking* to solve a problem in Computer Masti- Level III. Using flowcharts we can show the sequence of these steps.

Moz: Yes. The step by step method of solving the problem is specified using a flowchart. This helps you to be clear about the input, processing and output. It also helps you to communicate the solution.

Flowchart

Concept

What is a flowchart?

- A flowchart is a picture (graphical representation) of the problem solving process.
- A flowchart gives a step-by-step procedure for solution of a problem.

Elements of a flowchart:

- Various geometrical shaped boxes represent the steps of the solution.
- The boxes are connected by directional arrows to show the flow of the solution.

Uses of a flowchart:

- To specify the method of solving a problem.
- To plan the sequence of a computer program.
- Communicate ideas, solutions.

Guidelines

Drawing a flowchart

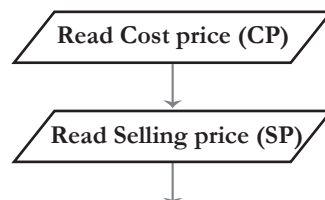
- **Identify** input and output.
- **Apply** logical thinking skills to solve the problem.
- **Draw** the flowchart using the appropriate symbols and arrows to show the sequence of steps in the solution.

Moz: Now consider the following problem and draw the flowchart for its solution.

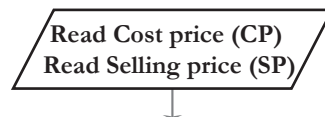
Savani bought a toy for ₹ 325 and sold the same for ₹ 458. Explain how we can find if Savani has made a profit or a loss.

Tejas: In this problem the goal is to find whether Savani makes a profit or loss.

Jyoti: We know the Cost Price and the Selling Price. We can read them as input, so they are represented as parallelograms.



Moz: You can also put both cost price and selling price in a single parallelogram.

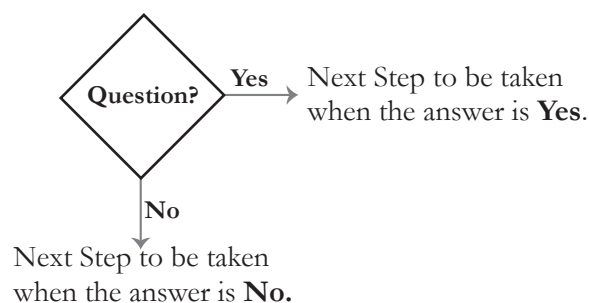


Tejas: Next we have to compare Selling Price and Cost Price to find which price is more. This will tell us whether Savani has made profit or loss. How do we show comparison in a flowchart?

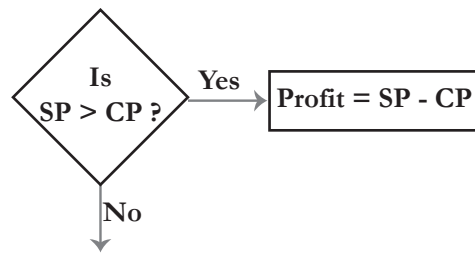
Moz: Can you phrase this step as a question with the two possible answers?

Tejas: We can ask a question “Is selling price more than cost price?”

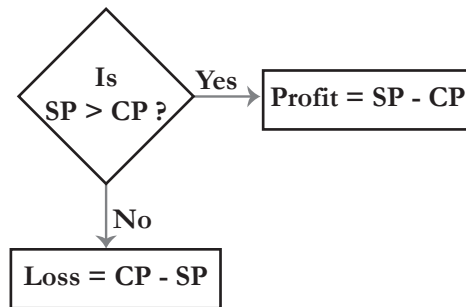
Moz: Right. The answer to this question can be “Yes” or “No”. If, answer is “Yes” we have to calculate profit. If, answer is “no” we have to calculate loss. This *decision taking step* is represented as a **diamond** in a flowchart.



Jyoti: If the answer is “Yes”, it means that selling price is more than the cost price and Savani has made profit. Profit is calculated as *Selling price – Cost price*.

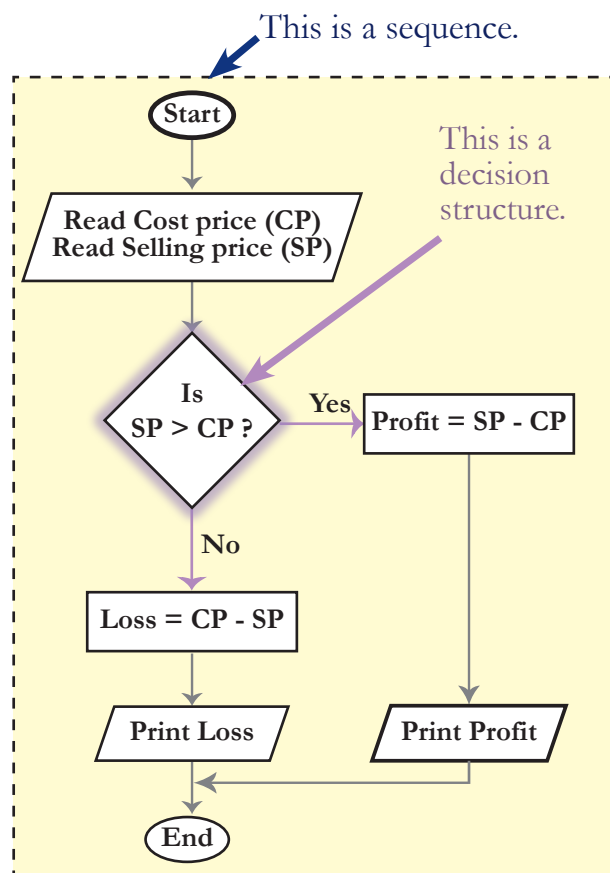


Tejas: If the answer is “No”, it means that cost price is less than selling price and Savani has made loss. Loss is calculated as *Cost price – Selling price*.

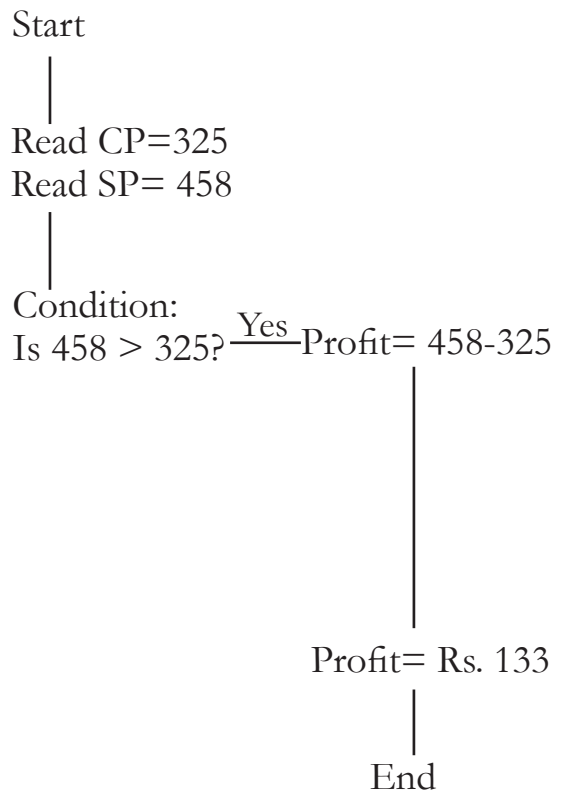


Moz: Good. You have used logical reasoning to solve this problem. Now complete the flowchart.




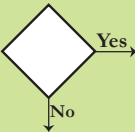
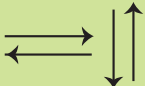
Flowchart - How to find profit or loss.



Finding profit or loss when CP = 325 and SP = 458



Flowchart symbols and their purpose

Flowchart symbols	Geometric shape	Purpose
Ellipse		Ellipse is used to indicate the start and end of a flowchart. Start written in the ellipse indicates the beginning of a flowchart. End or Stop or Exit written in the ellipse indicates the end of the flowchart.
Parallelogram		A parallelogram is used to read data (input) or to print data (output).
Rectangle		A rectangle is used to show the processing that takes place in the flowchart.
Diamond		A diamond with two branches is used to show the decision making step in a flowchart. A question is specified in the diamond. The next step in the sequence is based on the answer to the question which is "Yes" or "No".
Arrows		Arrows are used to connect the steps in a flowchart, to show the flow or sequence of the problem solving process

Moz: Suppose you have to write a Scratch program using the flowchart that you have just drawn. Can you do it now?

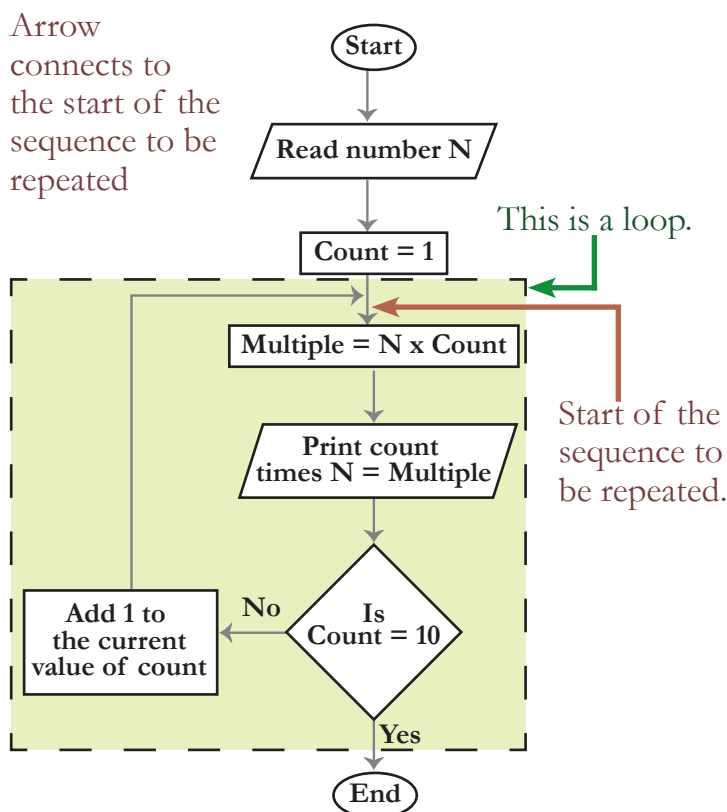
Tejas: Yes. We can!

Jyoti: This is great. We can also plan a computer program using flowcharts.

Jyoti: Sometimes we need to repeat a sequence. How do we represent this in the flowchart?

Moz: Let us consider the multiplication table flowchart that you saw at the exhibition. See how repetition is represented in a flowchart. This is also called a **loop**.

Flowchart of multiplication table for a given number N



Multiplication table of 12

```

Start
|
N = 12
|
Count = 1
|
12 * 1 = 12
Count = 1+1 = 2
12 * 2 = 24
Count = 2+1 = 3
.....
Count = 9+1 = 10
12 * 10 = 120
|
Count = 10
|
End
  
```

Jyoti: The repetition sequence starts with Count=1. N is multiplied with 1 and output is printed. Next since count is not equal to 10 we add 1 to count. N is multiplied with 2 and output is printed. The sequence is repeated next for 3, 4 and so on.

Tejas: The repetition sequence stops when Count=10.

Moz: Correct. A decision structure has been used to start and stop the **repetition**.

Jyoti: In this flowchart there are multiple outputs.

Moz: Good observation. The output need not always be given at the end of a flowchart. Similarly in some flowcharts input need not always be at the beginning of the flowchart.

Moz: Try out another problem how do you find the factorial of a number?

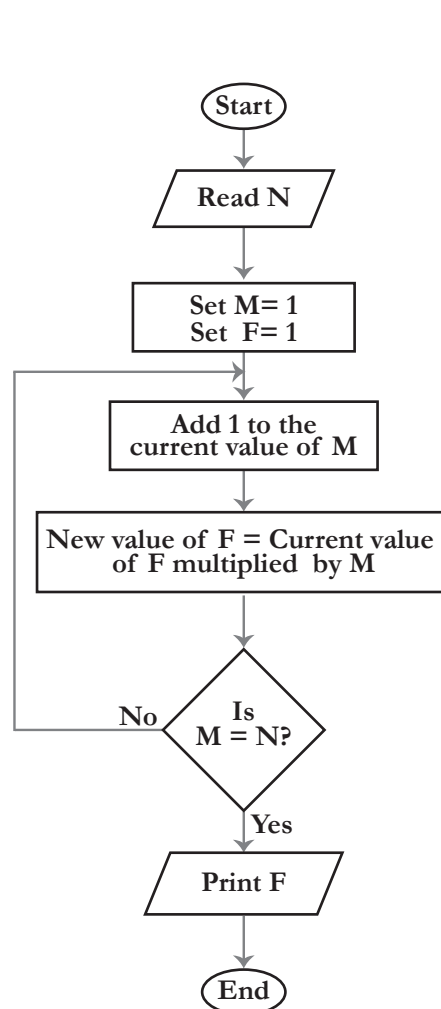
Jyoti: Suppose the number is 10. Then factorial of ten is calculated as

$$10! = 1*2*3*4*5*6*7*8*9*10$$

Moz: Can you draw the flowchart for finding the factorial of any given number?

Jyoti: Yes. We can. We have to use both decision and loop in this flowchart.

Find factorial of a given number N



Finding factorial of 10

Start
 |
 N = 10
 |
 M = 1
 F = 1
 |
 F = 1 * 1 = 1; M < 10; M = 1 + 1 = 2
 F = 1 * 2 = 2; M < 10; M = 2 + 1 = 3
 F = 2 * 3 = 6; M < 10; M = 3 + 1 = 4
 F = 6 * 4 = 24; M < 10; M = 4 + 1 = 5
 |

 M < 10; M = 9 + 1 = 10
 F = 362880 * 10 = 3628800; M = 10
 |
 Factorial of 10 = 3628800
 |
 End

Moz: Explain the logic that is used in the loop and specifically the following processing box of the flowchart.

**New value of F = current value
of F multiplied by M**

Jyoti: N is the number for which we have to calculate the factorial.

At the start of the loop

We start with $F = 1$ and $M = 1$.

Since we have to start with 1 multiplied by 2 we add 1 to M.

Current value of F which is equal to 1 is multiplied by 2 (The new value of M).

The result of this multiplication is equal to 2 (This is set as new value of F).

Since M is less than N we enter the loop again with current value of $F = 2$.

Next we add 1 to M which becomes 3.

Current value of F which is equal to 2 is multiplied by 3.

The result of this multiplication is equal to 6 (This becomes new value of F).

Since M is less than N we enter the loop again with current value of $F = 6$.

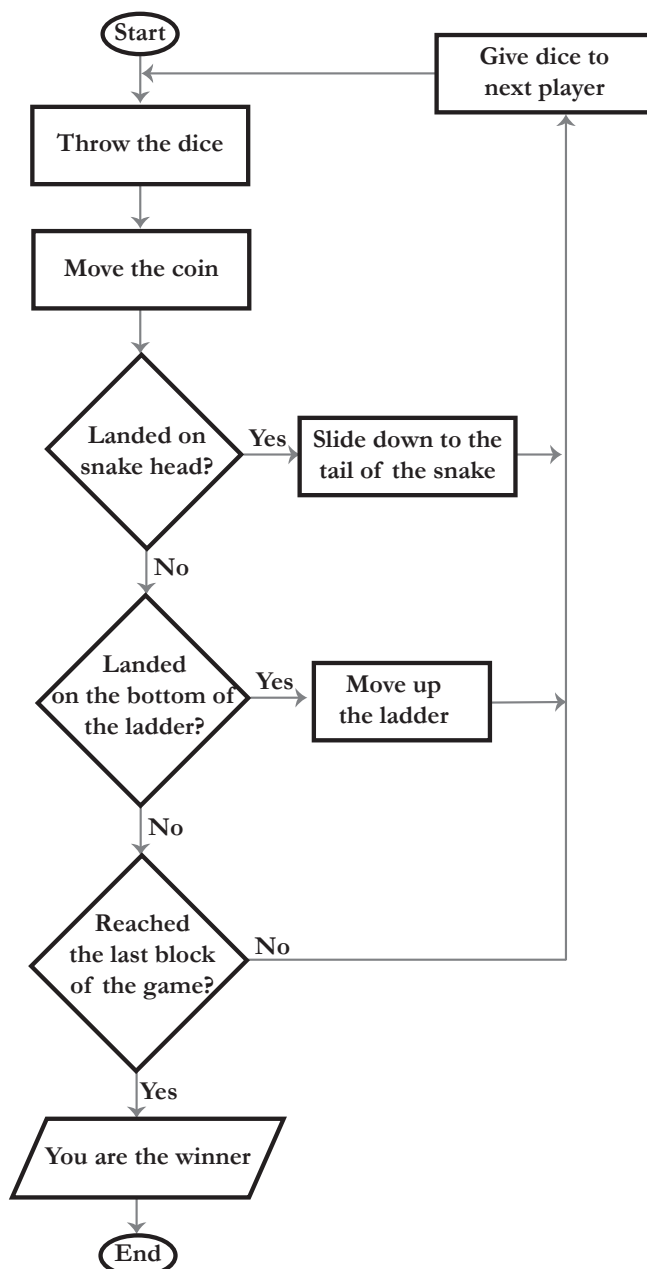
Moz: Good. Now let us consider a game. Do you know the game of snakes and ladders?

Tejas: Yes.

Moz: Ok. Draw a flowchart to show how the game is played.

Tejas and Jyoti draw this flowchart.

Flowchart - Snakes and Ladder game



Snakes and ladders game with two players

Start

Throw the dice: the number indicated by dice is 3.

Move the coin: through 3 blocks on the board.

Landed on snake head?: No.

Landed on the bottom of the ladder?: Yes (See the snakes and ladders board given).

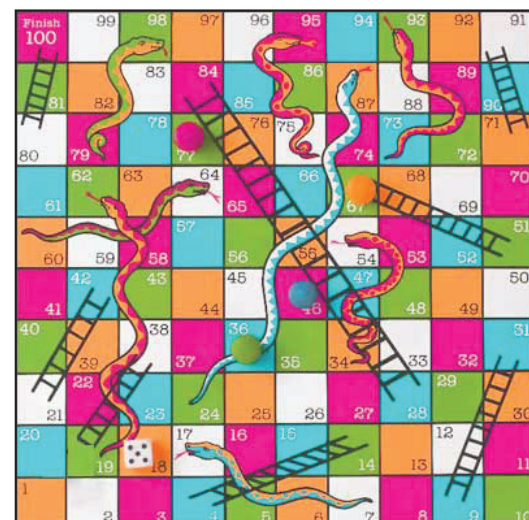
Move up the ladder: reached block 14 on the board.

Reached the last block of the game?: No.

Give dice to next player.

Enter the loop till the last block of the game is reached.

End



Tejas: The flowchart itself can be put into the box of the game so that those who want to play know the rules of the game and can easily understand how they win.

Moz: We have seen some examples where flowcharts are used. There are many more uses of flowcharts. They can be used to communicate ideas effectively.

Uses of flowchart	
Info	<ul style="list-style-type: none">• Describe the sequence of steps and logic of solving a problem.• Communicating ideas.• Show the logic of classification of data.• Graphical representation of instructions- for example games, building models etc.

Tejas: We are eager to learn another programming language.

Moz: Sure. Next you will be learning BASIC where you can use some of the flowcharts that you have drawn in this lesson. Chin Chinaki...

Decision

```
graph TD; Start(( )) --> Q{Question?}; Q -- Yes --> Right[ ]; Q -- No --> Down[ ]
```

Loop

```
graph TD; Start(( )) --> P[Process]; P --> Q{Question?}; Q -- Yes --> End(( )); Q -- No --> P
```

Sequence

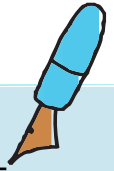
```
graph TD; Start((Start)) --> P[Process]; P --> Q{Question?}; Q -- Yes --> End((End)); Q -- No --> P
```

Learning Outcome

At the end of this lesson, you will be able to:

- List some uses of flowchart.
- List the steps to be followed while drawing a flowchart and apply it to draw a flowchart.
- Recognise various structures like sequence, selection and repetition in a flowchart.
- Draw flowcharts for simple problems.

97



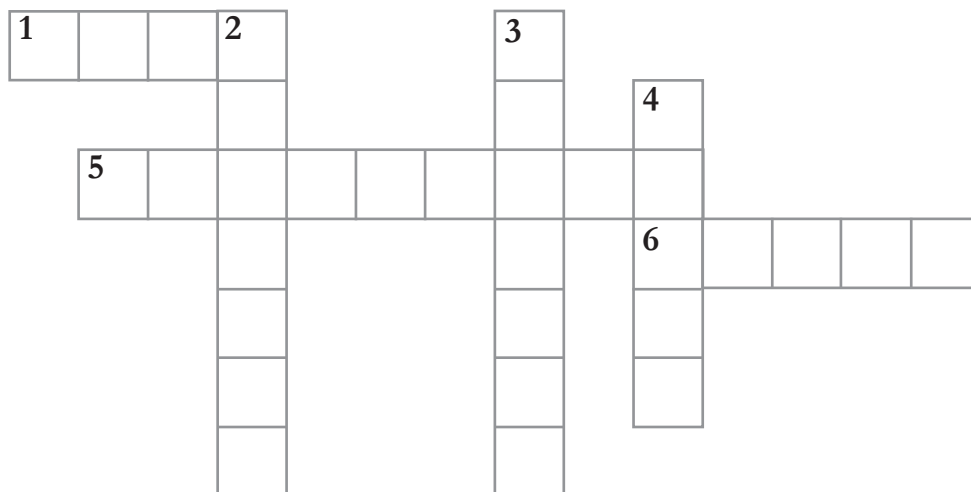
1. Which of the following is not true about the arrows used in a flowchart?

- i. Direction of arrows show the flow in a flowchart.
- ii. Arrows are used show the sequence of the problem solving.
- iii. Arrows are used to connect boxes in a flowchart.
- iv. Arrows can be used to represent an input.

2. Match the elements of a flowchart and their purpose of use in the following:

Purpose	Use
Calculate total of A, B, C.	Loop
Indicate that the problem has been solved.	Start
Find if a number is greater than another.	Process
Repeat a sequence of steps.	Input
Read three numbers.	Stop
Print the total.	Decision
Indicate beginning of a problem solving flow.	Output

3. Complete the crossword puzzle.

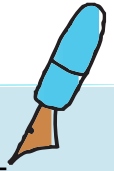


ACROSS

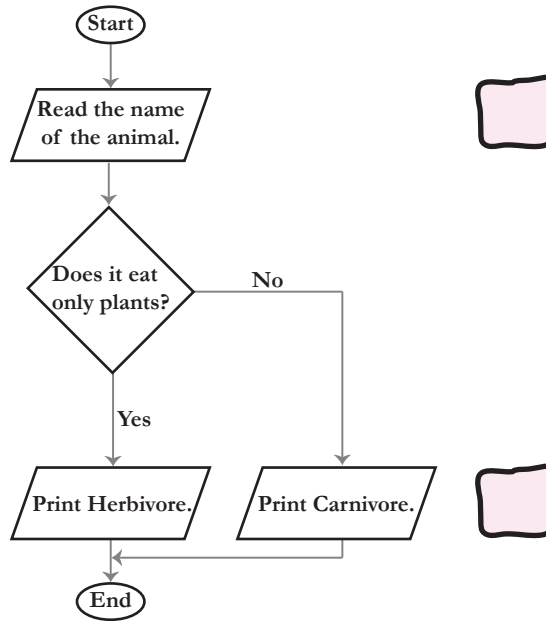
- 1. If you want to repeat a sequence of steps, you use this structure. I am 4 letter word.
- 5. You can use me to communicate ideas, graphically represent a problem solving process.
- 6. I connect two geometrical boxes in a flowchart.

DOWN

- 2. I am a rectangle in a flowchart. What do I represent?.
- 3. When you want to show a decision making step, you can use this box.
- 4. All flowcharts begin with me. I am elliptical in shape.



4. The following flowchart classifies animals as herbivore or carnivore. Lion is a meat eating animal. Elephants eat only plants. Study the flowchart and answer the questions.

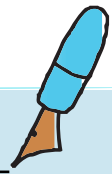


- Indicate each element of the flowchart by putting 'I' for input, 'O' for output in the space provided next to the boxes.
- Put a rectangle around the decision structure and mark 'D' for decision.
Hint: See page number 93 in the lesson.
- What is the condition which classifies an animal as carnivore?

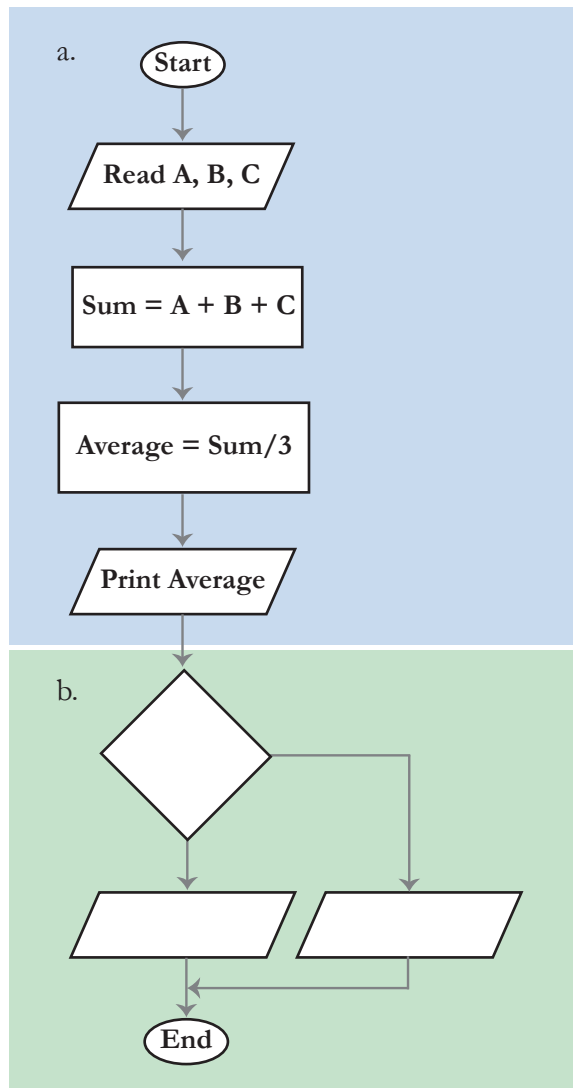
- Write the execution steps if the input is a Lion.

- What is the condition which classifies an animal as herbivore?

- Write the execution steps if the input is an elephant.



5. A, B, C are the marks scored by a student in Science, Mathematics and English. Refer the flowchart and answer the questions.



a. Sweta scored 60 marks in Science, 70 marks in mathematics and 75 marks in English. Use the adjacent flowchart and provide the execution steps in calculating the average marks of Sweta. The first step is given.

60, 70, 75

b. A student whose average marks is above 75 is awarded a star. Fill in the following phrases in the flowchart for finding if a student gets a star or not.

- Yes
- No
- Award a star
- Do better to get a star
- Is average greater than 75

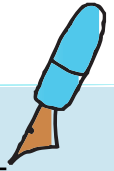
c. Is Sweta awarded a star? Yes or No?

Ans: _____

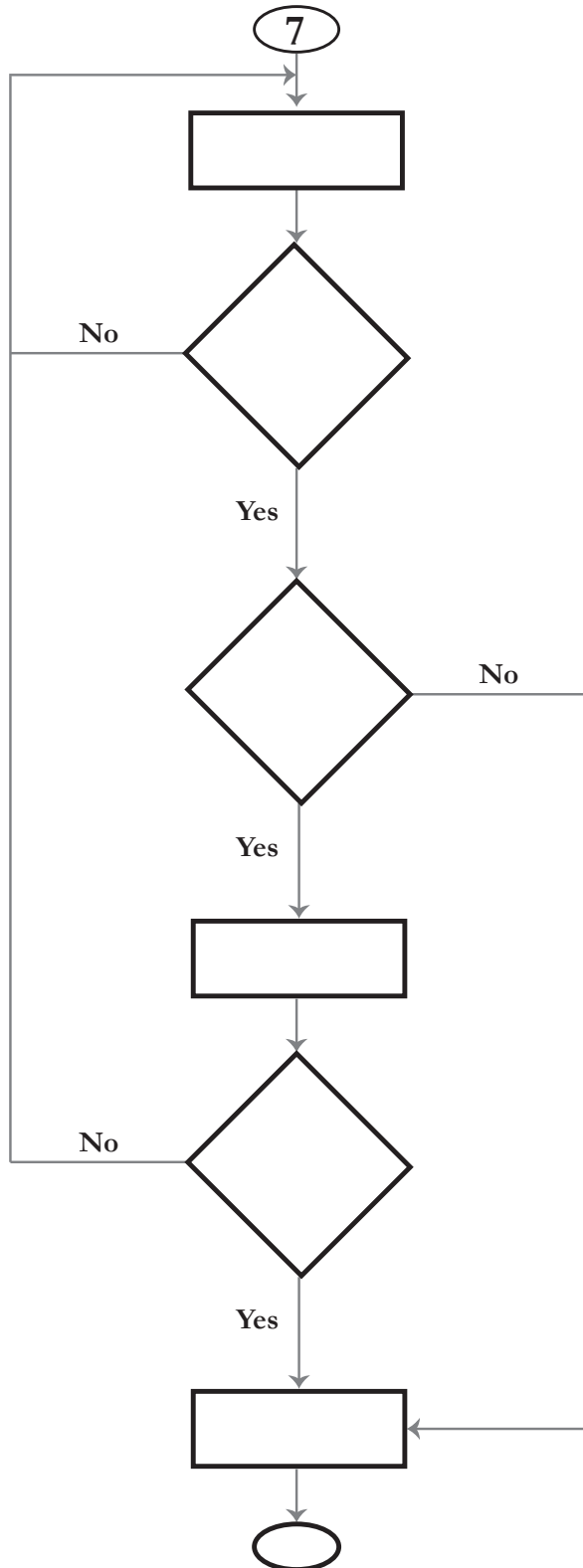
d. Marks of two more students are given below. Study it and fill in the blanks with the average marks of each student and whether the student is awarded a star or not.

	Science	Mathematics	English
Riya	75	80	72
Suman	72	70	82

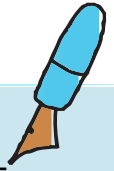
- i. Riya's average is _____. So she is _____ a star.
- ii. Suman's average is _____. So she is _____ a star.



6. The following empty flowchart gives the steps to be followed while seeking admission to a new school. The phrases to be filled in the boxes are also given. Complete the flowchart by filling in the number of the corresponding phrase, inside each box. For example: the number corresponding to the first box in the flowchart is 7.

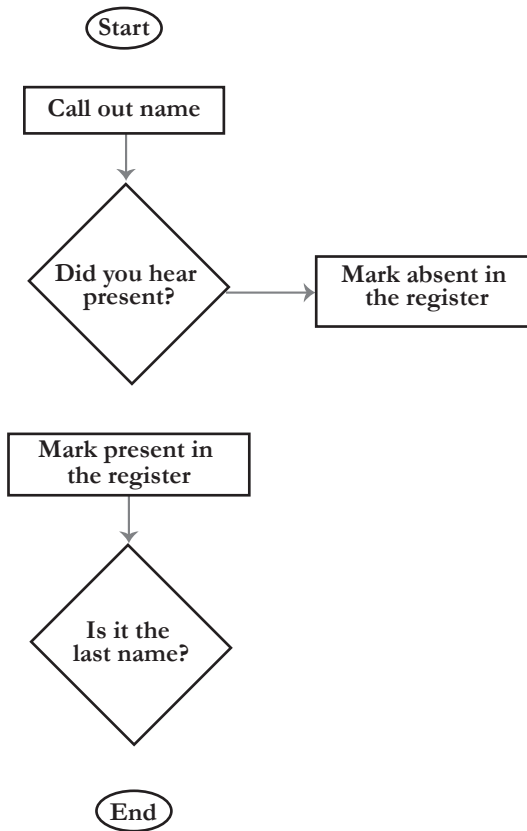


1. Search for a school
2. Prepare for the admission test and write the test.
3. Did you pass the exam?
4. Submit necessary documents and get admission.
5. End
6. Are seats available?
7. Start
8. Is there an admission test?



7. The following flowchart gives the steps followed while taking attendance in a class. Three arrows and a loop are missing. Complete the flowchart as follows:

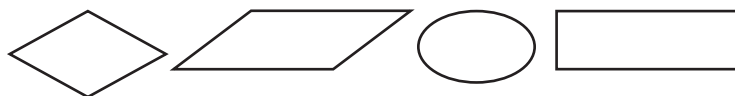
- Draw the three missing arrows and loop at the correct place.
- Label the decision arrows with yes or no.



8. **Frame a question.** *Hint: Try to make a question, which will have the answer given below.*

For example: The answer given is:

Some of the boxes of different shapes used in a flowchart are:



The question can be:

Draw some of the symbols used in a flowchart?

Now frame a question for each of the answers given below:

a. The answer given is: In a flowchart, we use a rectangular box to represent a process .

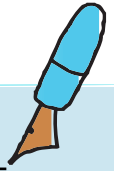
The question can be: _____

b. The answer given is : In a repetition structure, the process is repeated till the condition is satisfied.







The question can be: _____

c. The answer given is : The decision structure has two branches, Yes or No.

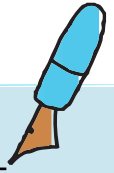
The question can be: _____



9. There are four types of fruits Apples, Oranges, Bananas and Grapes. Each student can pick up two fruits. There are some conditions which have to be used to pick up the fruits. Draw a flow chart which can take the name of first fruit as an input and print the names of second fruit or fruits that can be picked up. The conditions are:

- If you pick an apple you can pick banana.  +  = ✓
- If you pick orange you can pick grapes.  +  = ✓
- If you pick grapes you can pick banana.  +  = ✓

Hint: There will be one input box to read the first fruit, three decision boxes and four output boxes in the flowchart.

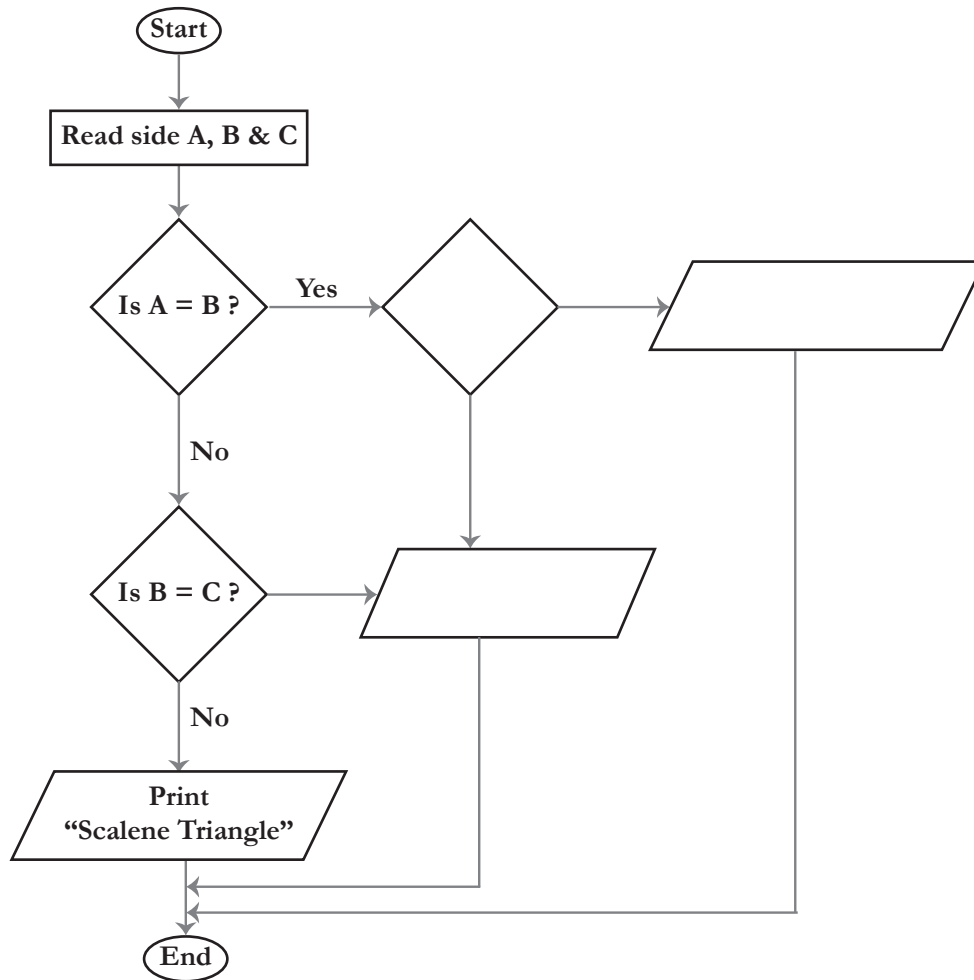


10. Lengths of three sides of a triangle a, b, c are given as input. The following flowchart finds if the triangle is isosceles, equilateral, or scalene. Some boxes in the flowchart are filled in for you, fill in the rest of the details.

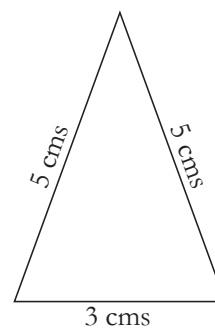
Hint: In an equilateral triangle, all sides are equal.

In an isosceles triangle, two sides are equal.

In a scalene triangle, none of the sides are equal.



a. Use the above flowchart and provide the execution steps in finding whether the given triangle with sides 5 cms, 5 cms and 3 cms is scalene or isosceles or equilateral triangle.





ACTIVITY

Level VI | Lesson 6

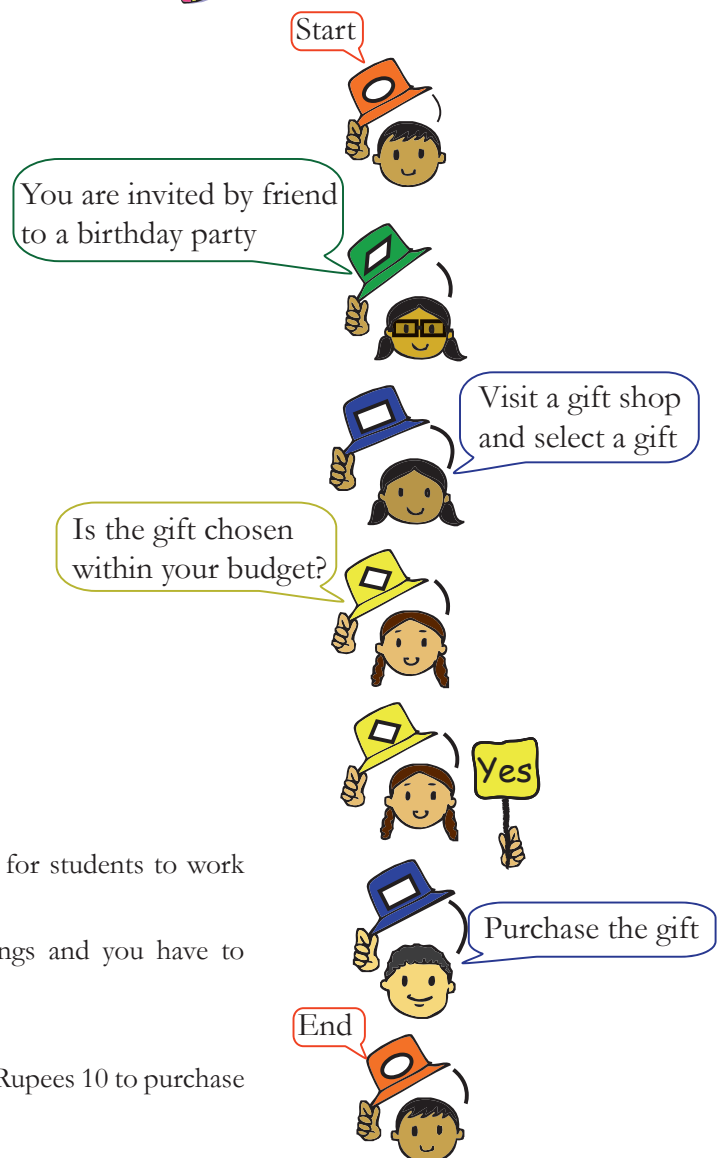
1. Select one of the games given below from GCompris and draw a flowchart to explain the rules of the game.
 - Memory games with images
 - Image name (drag and drop each item above its name)
 - Numbers with dice
2. Use one of the following applications- open office draw or Kivio (available for Linux) or Diagram Ring (available for Windows)- to draw a flow chart for the above using the computer.

Group Activity

3. Play Computer Class:

Divide the class into four teams- INPUT DATA, OPERATIONS, DECISION, and OUTPUT. Nominate one person from input and output team to play the role of start and end box respectively. Each group has a set task to perform based on instructions given to them by another team.

For example: Let the situation be to purchase a birthday  for your friend.



- a. You can give one the following situations for students to work through the process of flow chart.
 - i. A wired telephone in your house rings and you have to attend the call.
 - ii. You visit a pediatrician for check up.
 - iii. You go to a post office with a note of Rupees 10 to purchase stamps worth Rupees 5.



ACTIVITY

Level VI | Lesson 6



1. a Input, output and decision phrases are given in the table given below. Note that one input phrase corresponds to one flowchart. Draw three flow charts using the phrases in the table for the following:

- i. A flowchart which conveys the rules in AWARE.
- ii. A flowchart which conveys Accept rule of SMART.
- iii. A flowchart which conveys Meet rule of SMART.

Input phrases	Decision phrases	Output phrases
An image to be used in presentation.	Is permission given to use image? Is it from a resource with Creative commons (CC)? Is the image copyrighted?	Take permission. Acknowledge use of image. Do not use the image.
New Email in inbox	Is the mail from a friend? Is it marked SPAM in Subject of mail?	Delete mail. Might have virus. Do not open. Read the mail.
Online request to meet	Is the Meet request from friend?	Meet the person. Meet in the presence of an adult family member.

- b. There are three more rules of SMART which are Safety, Reliability, and Tell. Draw a flowchart for each of these rules by creating the phrases on your own. Compare your flowcharts with other groups in the class.
- c. The teacher can evaluate and select the flowcharts that can be converted to posters for SMART and AWARE and put them up for display.



1. Explore tools to draw flowchart in a word document.
2. Search for open source flowchart drawing software.
3. Other flowchart symbols that are used and their purpose.

- The objective of this lesson is to teach students how to draw flowcharts for understanding the process of doing a variety of activities such as solving mathematical questions, puzzles.
- Begin the class by drawing a flowchart (refer page 91) on the board. Use the technique of guided inquiry by asking students appropriate questions but allowing them to discover the answer on their own. Draw students' attention to the starting point of the flowchart. Ask students to read the flow chart as you point to the different boxes. Ask students to identify what the different shapes of the boxes convey. Summarize the points mentioned by the students and teach them the functions associated with each symbol and shape.
- Repeat the above exercise with flowcharts on pages 93, 94, 95 and 96. Explain the concept of sequence, decision structure and loop. Note that the flowchart on page 96 is chosen from a non-mathematical context in order to ensure that students' note that flowchart can be useful in variety of contexts. Do worksheet 1 and 2 in class and give 3 as homework. Do activity 1 to provide students an opportunity to draw flowchart to explain rules of game. You can ask students to do activity 2 in order to learn the skill of making flowcharts using a computer application.
- Ask students to solve the remaining worksheet questions to practice reading of flowchart (worksheet 4, 5), filling the details of an incomplete flowchart (worksheet 6, 7, 10) and making a flowchart on their own (worksheet 9). Students would require assistance to comprehend the task of worksheet 8 as they are not familiar with this question format. Spend enough time explaining them the task and encourage them to work it out on their own.
- Summarise the lesson and end the class with activity 3 to further reinforce understanding of flowchart.



Further Reading:

<http://www.nos.org/htm/basic2.htm>

<http://asq.org/learn-about-quality/process-analysis-tools/overview/flowchart.html>

http://users.evtek.fi/~jaanah/IntroC/DBeech/3gl_flow.htm

```

Name$ = "Tejas"
Print "Hello"+Name$
Hello Tejas

```

7. BASIC Programming

Aim: In this lesson, you will learn:
Programming using BASIC – 256.
Input and output statements.
Variables and operators.

Tejas, Jyoti and their classmates are excited as they are to learn a new Programming language called BASIC. The application called Basic 256 is opened on a computer by Moz. All of them surround the computer and see that the window of this application has some familiar options like “New, Open, Save”. They also notice some new options like “Run”.



Tejas: There is a *menubar*, which looks like any other application menu with File, Edit, View, Tools, Help and a *toolbar*.

Jyoti: The *toolbar* has **Run**. Does this execute the program?

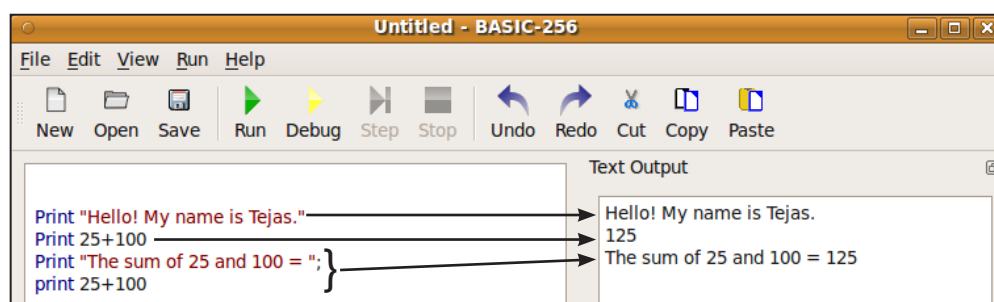
Moz: Yes. **Run** executes the program. You write the instructions in the program area of the application.

Tejas: I am eager to write a program and **Run** it.

Print Statement – To display output

Moz: Ok. Let us start with the **Print** statement. This is used to display text and numbers on the screen. First start a new program by clicking on ‘New’. Enter the Print statements in the program area, and click on ‘Run’. The output will be displayed in the text output area.

Print - BASIC-256 program and text output



Jyoti: In the first statement, Print is displaying text which is inside quotes.

Moz: This is called a String.

Tejas: In the second statement, Print is printing the sum of the two numbers. This means the two numbers are added and then the result is printed.

Jyoti: The output of third Print statement and fourth print statement are on the same line. Is it because of the ; at the end of the Print statement?

Moz: You are right. You have explained the **syntax** of Print statements.

Concept

Syntax of a programming language

- Syntax of a programming language is the set of rules that specifies the grammar of the programming language.

Print statement

Syntax: Print expression	BASIC-256 Example and Text output
<p>Print expression ;</p> <ul style="list-style-type: none">• The print statement is used to display text and numbers on the text output area.• Print followed by Text, numbers and other symbols (ex: *, &, ^, % etc.) enclosed “ ” (in quotes) are displayed as they are entered.• Print followed by arithmetic expressions (ex: addition, multiplication, division etc.) are evaluated and the result is displayed.• For getting output of several print statements on the same line, use a ‘;’ (semicolon) at the end of each Print statement.	<p>PROGRAM Print "My name is Jyoti. I am 12 years old." OUTPUT My name is Jyoti. I am 12 years old.</p> <p>PROGRAM Print "Sum of 100 + 75=" OUTPUT Sum of 100 + 75=</p> <p>PROGRAM Print 100 + 75 OUTPUT 175</p> <p>PROGRAM Print "Sum of 100 + 75="; Print 100 + 75 OUTPUT Sum of 100 + 75=175</p>

Moz: Now that you have understood the Print statement, go ahead and try out some more Print statements.

Tejas: Should we start a new program?

Moz: You can add more statements and run the same program or you can start a new program. You can also save programs (using Save) and load a saved program later (using Open).

New **Open** **Save** **Run** **Debug** **Step** **Stop** **Undo** **Redo** **Cut** **Copy** **Paste**

To execute a program or an instruction

To locate and remove errors

To execute instructions one by one

To stop the execution of a program

Arithmetic expressions

Tejas: I want to include division and multiplication in my statements. Which is the division symbol on keyboard?

Moz: Use `/` for division and use `*` for multiplication. These are the symbols used for division and multiplication in many programming languages.

Tejas: Can we also use brackets like we do in Maths.

Moz: Yes. You can. The order of operations is also exactly the way you do in Maths, i.e., BODMAS.

- B Brackets first
- O Orders (Powers and Square Roots)
- DM Division and Multiplication (left-to-right)
- AS Addition and Subtraction (left-to-right)

PROGRAM	<pre>Print " Average of 50, 68, 35 = "; Print (50+68+35) / 3 Print "The cost of an apple = ₹ 13" Print "The cost of 12 apples = ₹ "; Print 13*12</pre>		<pre>Average of 50, 68, 35 = 51 The cost of an apple = ₹ 13 The cost of 12 apples = ₹ 156</pre>	OUTPUT
----------------	--	--	---	---------------

Jyoti: In the statement `Print (50+68+35)/3`, BODMAS rule is used to evaluate the arithmetic expression and then the result is displayed.

Arithmetic operators							
Arithmetic operation	Operator	BASIC-256 Example and Text output					
Addition	+	<table border="1"> <tr> <td style="background-color: #FFD700; vertical-align: middle;">PROGRAM</td> <td><code>Print 256 + 567 + 678</code></td> <td style="text-align: center;"></td> <td>1501</td> <td style="background-color: #FF0000; color: white; vertical-align: middle;">OUTPUT</td> </tr> </table>	PROGRAM	<code>Print 256 + 567 + 678</code>		1501	OUTPUT
PROGRAM	<code>Print 256 + 567 + 678</code>		1501	OUTPUT			
Subtraction	-	<table border="1"> <tr> <td style="background-color: #FFD700; vertical-align: middle;">PROGRAM</td> <td><code>Print 1000 - 750</code></td> <td style="text-align: center;"></td> <td>250</td> <td style="background-color: #FF0000; color: white; vertical-align: middle;">OUTPUT</td> </tr> </table>	PROGRAM	<code>Print 1000 - 750</code>		250	OUTPUT
PROGRAM	<code>Print 1000 - 750</code>		250	OUTPUT			
Multiplication	*	<table border="1"> <tr> <td style="background-color: #FFD700; vertical-align: middle;">PROGRAM</td> <td><code>Print 250 * 20</code></td> <td style="text-align: center;"></td> <td>5000</td> <td style="background-color: #FF0000; color: white; vertical-align: middle;">OUTPUT</td> </tr> </table>	PROGRAM	<code>Print 250 * 20</code>		5000	OUTPUT
PROGRAM	<code>Print 250 * 20</code>		5000	OUTPUT			
Division	/	<table border="1"> <tr> <td style="background-color: #FFD700; vertical-align: middle;">PROGRAM</td> <td><code>Print 135 / 9</code></td> <td style="text-align: center;"></td> <td>15</td> <td style="background-color: #FF0000; color: white; vertical-align: middle;">OUTPUT</td> </tr> </table>	PROGRAM	<code>Print 135 / 9</code>		15	OUTPUT
PROGRAM	<code>Print 135 / 9</code>		15	OUTPUT			
Multiple operators		<table border="1"> <tr> <td style="background-color: #FFD700; vertical-align: middle;">PROGRAM</td> <td><code>Print 250 + (250 - 100) * 20 / 5</code></td> <td style="text-align: center;"></td> <td>850</td> <td style="background-color: #FF0000; color: white; vertical-align: middle;">OUTPUT</td> </tr> </table>	PROGRAM	<code>Print 250 + (250 - 100) * 20 / 5</code>		850	OUTPUT
PROGRAM	<code>Print 250 + (250 - 100) * 20 / 5</code>		850	OUTPUT			

Moz: Now try out these statements.

PROGRAM	<code>Print "Jyoti and Tejas"+ "are learning BASIC"</code>		Jyoti and Tejas are learning BASIC	OUTPUT
PROGRAM	<code>Print "Today the price of 12 apples is = ₹ " + (5 * 12)</code>		Today the price of 12 apples is = ₹ 60	OUTPUT
PROGRAM	<code>Print "The area of a rectangle of length 12 units and breadth 8 units = "+ (12 * 8) + " square units"</code>		The area of a rectangle of length 12 units and breadth 8 units = 96 square units	OUTPUT

Tejas: In these statements, phrases (strings) are combined to get a full sentence.

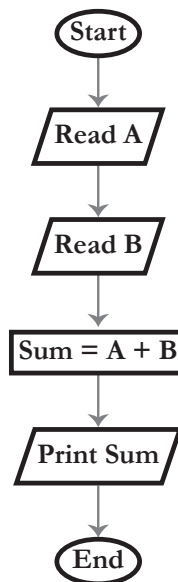
Jyoti: In the second statement, the price of 12 apples is calculated and then printed.

Moz: The '+' operator also adds strings together. This operation is called **concatenation**. In concatenation, two or more strings are joined together, to make a longer string.

String operation		
String operation	Operator	BASIC-256 Example and Text output
Concatenation	+	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> PROGRAM Print "I have apples " + "and oranges." Print "Price of 20 books = ₹" + (25*20) </div> <div style="text-align: center; margin-right: 10px;">▶</div> <div style="border: 1px solid black; padding: 5px;"> OUTPUT I have apples and oranges. Price of 20 books = ₹500 </div> </div>

Variables - Numeric Variables – To store numeric values

Jyoti: Let us convert the addition flowchart into a program.



Moz: Use the example values where $A = 346$ and $B = 478$

PROGRAM $A = 346$ $B = 478$ $Sum = A + B$ Print "Sum of A + B = "; Print Sum	▶	OUTPUT Sum of A + B = 824
--	---	-------------------------------------

Moz: What are you instructing the computer in the first and second statements.

PROGRAM $A = 346$ $B = 478$	▶	OUTPUT	Memory <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">A</td> <td style="border: 1px solid black; padding: 2px; text-align: center;">346</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">B</td> <td style="border: 1px solid black; padding: 2px; text-align: center;">478</td> </tr> </table>	A	346	B	478
A	346						
B	478						

Jyoti: The first statement is instructing the computer to store 346 in a variable named A. The second instruction similarly instructs the computer to store 478 in a variable named B.

PROGRAM $Sum = A + B$	▶	OUTPUT	Memory <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">Sum</td> <td style="border: 1px solid black; padding: 2px; text-align: center;">824 (346+478)</td> </tr> </table>	Sum	824 (346+478)
Sum	824 (346+478)				

Tejas: Next we are instructing the computer to add the two numbers A and B and store the result of the addition in the variable named Sum.

Moz: Note that there will not be any display for these statements. The purpose of these statements is to store the values. Do you know where these values are stored?

Tejas: In the memory.

Moz: Right. In your program, numeric values are stored in variables A, B and Sum. In a numeric variable you can store only numbers (integers and decimals). A, B and Sum are examples of **numeric variables**.

Jyoti: We can also use the numeric variables in Print.

Moz: This is called **retrieving** the value stored. The values that are stored in memory can be retrieved using the respective variable names and used in the program.

Concept	Variables
	BASIC allows you to name the spaces in computer's memory and store information in them. This is called a variable . Once you name a variable you can store information in it. You can also retrieve and use it in your program, using its name.

Numeric variables					
Info	<table border="1" style="width: 100%;"> <tr> <th style="background-color: #ADD8E6;">Numeric variables</th> <th style="background-color: #ADD8E6;">BASIC-256 Example and Text output</th> </tr> <tr> <td style="vertical-align: top;"> <p>Syntax</p> <ul style="list-style-type: none"> A numeric variable name begins with a letter and can contain letters and numbers. Example: A, sum, value1. Numeric values (integers and decimals) are stored and retrieved using numeric variables. The variable name is case sensitive which means that if you use 'A' as a variable name while storing, you must use 'A' to retrieve the value and not 'a'. </td> <td style="vertical-align: top;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>PROGRAM</p> <pre>sum = 2 Item5 = 112 Print sum Print Item5</pre> <p style="text-align: center;">▶</p> <p>OUTPUT</p> <pre>68 56</pre> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>PROGRAM</p> <pre>priceitem1 = 56 priceitem2 = 75 sum = priceitem1 + priceitem2 Print "Total price of items =" + sum</pre> <p style="text-align: center;">▶</p> <p>OUTPUT</p> <pre>Total price of items = 131</pre> </div> <div style="border: 1px solid black; padding: 5px;"> <p>PROGRAM</p> <pre>priceitem1 = 56 priceitem2 = 75 sum = priceitem1 + priceitem2 Print "Total price of items =" + Sum</pre> <p style="text-align: center;">▶</p> <p>OUTPUT</p> <pre>ERROR on line 4: Unknown variable</pre> </div> </td> </tr> </table>	Numeric variables	BASIC-256 Example and Text output	<p>Syntax</p> <ul style="list-style-type: none"> A numeric variable name begins with a letter and can contain letters and numbers. Example: A, sum, value1. Numeric values (integers and decimals) are stored and retrieved using numeric variables. The variable name is case sensitive which means that if you use 'A' as a variable name while storing, you must use 'A' to retrieve the value and not 'a'. 	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>PROGRAM</p> <pre>sum = 2 Item5 = 112 Print sum Print Item5</pre> <p style="text-align: center;">▶</p> <p>OUTPUT</p> <pre>68 56</pre> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>PROGRAM</p> <pre>priceitem1 = 56 priceitem2 = 75 sum = priceitem1 + priceitem2 Print "Total price of items =" + sum</pre> <p style="text-align: center;">▶</p> <p>OUTPUT</p> <pre>Total price of items = 131</pre> </div> <div style="border: 1px solid black; padding: 5px;"> <p>PROGRAM</p> <pre>priceitem1 = 56 priceitem2 = 75 sum = priceitem1 + priceitem2 Print "Total price of items =" + Sum</pre> <p style="text-align: center;">▶</p> <p>OUTPUT</p> <pre>ERROR on line 4: Unknown variable</pre> </div>
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Variables – String Variables – To store strings and retrieve later in the program.

Jyoti: Where do we store text? Is there a text variable?

Moz: The variable in which you store text is called **string variable**. You have to put a \$ at the end of the name of a variable (Ex: A\$) to instruct that the value that will be stored is a string. In a string variable, alphabets, numbers, words, sentences, and any special symbols can be stored. Enter the following statements and see what happens.

Jyoti: When we start a new program the output of the previous program is still displayed. Is it possible to clear the text output area?

Moz: **cls** clears the text output area and **clg** clears the graphic output area. You can also use these statements in programs to clear the text and graphic output areas.

PROGRAM	<pre>cls clg</pre>		OUTPUT
----------------	--------------------	--	---------------

PROGRAM	<pre>NamePet\$="Prince" Print NamePet\$; Print "is my pet."</pre>		OUTPUT
----------------	---	--	---------------

Memory
NamePet\$ Prince

PROGRAM	<pre>cls NamePet\$ = "Prince " Print NamePet\$; Print "is my pet." Print "When I call my pet by it's name "; Print NamePet\$; Print " , it comes running to me."</pre>		OUTPUT
----------------	--	--	---------------

Memory
NamePet\$ Prince

Jyoti: A value assigned to a string variable is enclosed in quotes.

Tejas: While retrieving we have to give the string variable name in a statement to retrieve the value. We have to keep in mind that string variables are also case sensitive like numeric variables.

String variables

Syntax of naming a String variable

- A string variable name begins with a letter and can contain letters and numbers and ends with a "\$". Example: A\$, sum\$, value1\$
- Strings (alphabets, words, sentences, numbers and special symbols) are stored and retrieved using string variables.
- The variable name is case sensitive, which means that if you use "A\$" as a variable name while storing, you must use "A\$" to retrieve the value and not "a\$".

Info

PROGRAM	<pre>Name\$ = "Tejas" booknames\$ = "Computer Masti - Book VI" Print Name\$</pre>		OUTPUT
----------------	---	--	---------------

Tejas

PROGRAM	<pre>Name\$ = "Tejas" booknames\$ = "Computer Masti - Book VI" Print Name\$ + " is reading " + booknames\$</pre>		OUTPUT
----------------	--	--	---------------

Tejas is reading Computer Masti - Book VI

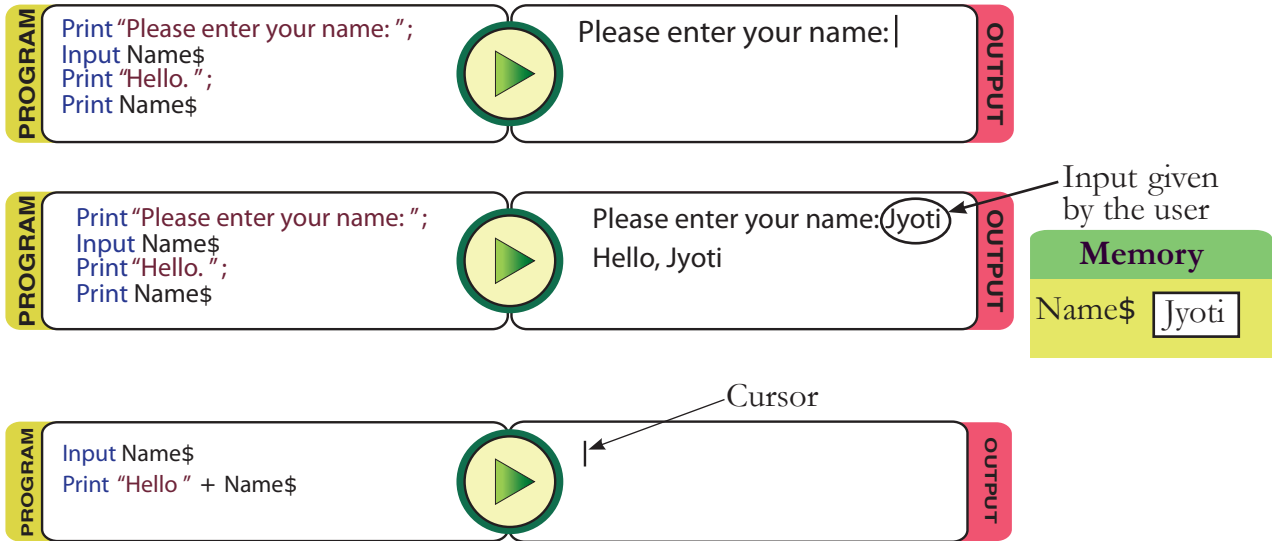
PROGRAM	<pre>Name\$ = "Tejas" booknames\$ = "Computer Masti - Book VI" Print NAME\$ + "is reading" + booknames\$</pre>		OUTPUT
----------------	--	--	---------------

ERROR on line 3: Unknown variable

Input Statement – To take input from the user

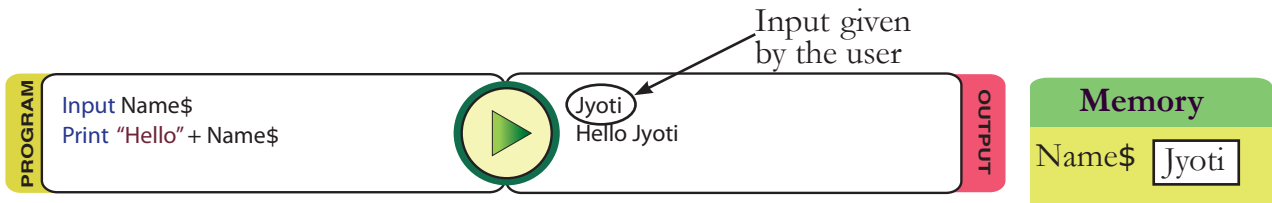
Jyoti: We want the computer to take input from the keyboard and print the sum of the numbers. What is the statement to take input?

Moz: The answer is in your question! **Input** is the statement to retrieve string or numbers that the user types. Enter the following two statements and run the program. Find out how each statement is executed.



Tejas: A cursor appears when we execute the program. This cursor must be because of the first Input statement.

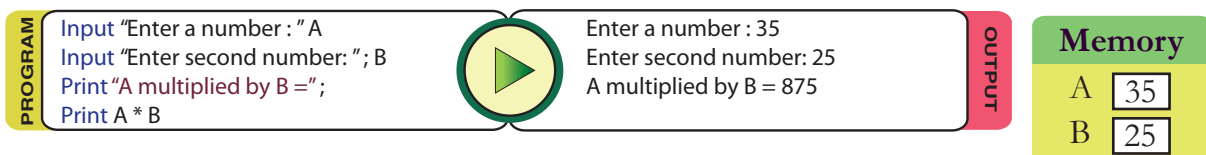
Moz: You are right. The Input statement displays a cursor to indicate that input has to be given.



Jyoti: We enter a name at the cursor. The name that we enter is stored in the string variable Name\$.

Tejas: Next a message is displayed using the name that was stored in Name\$. The string stored in Name\$ is retrieved and displayed.

Moz: Now can you explain the program below?



Jyoti: One by one the Input statements display their messages and the numbers we enter at the cursor, are stored in the numeric variables A and B.

Tejas: The next Print statement displays the message: 'A multiplied by B= '.

Jyoti: The last Print statement evaluates the arithmetic expression and displays the result next to the message of the previous Print statement.

Moz: Good. You were able to understand the input statement.

Input statement

Info

Syntax

Input "prompt", stringvariable\$

Input "prompt", numericvariable

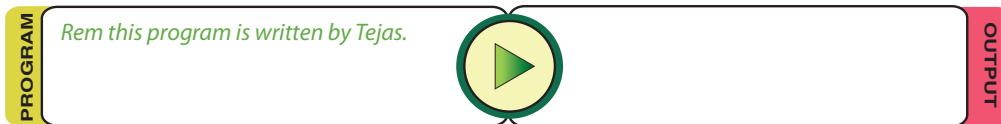
Input stringvariable\$

Input numericvariable

- The input statement retrieves a string or a number that the user types into the text output area of the screen at the cursor.
- The input is stored in the variable that is provided in the input statement. This value can be used later in the program
- A prompt message, if specified, will display on the text output area and the cursor will directly follow the prompt.



Moz: Whenever you write a program you should also include comments about the program. Comments can be used to give the details of the program like the function of the program code, the author of the program, etc. Comments make the program easier to understand. Comments can be introduced as follows. When the Basic application encounters **Rem** or **#** in front of a statement it will ignore the statement.



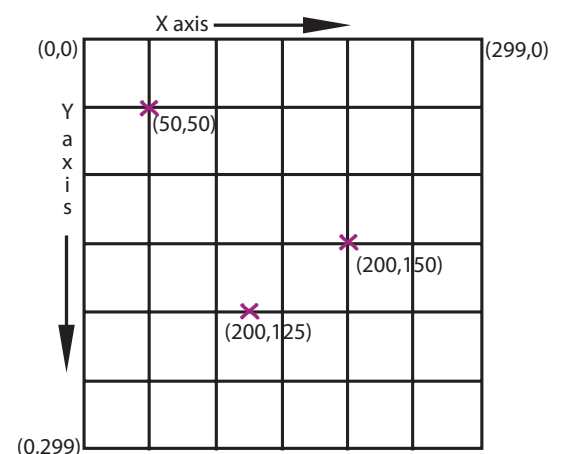
Rem statement

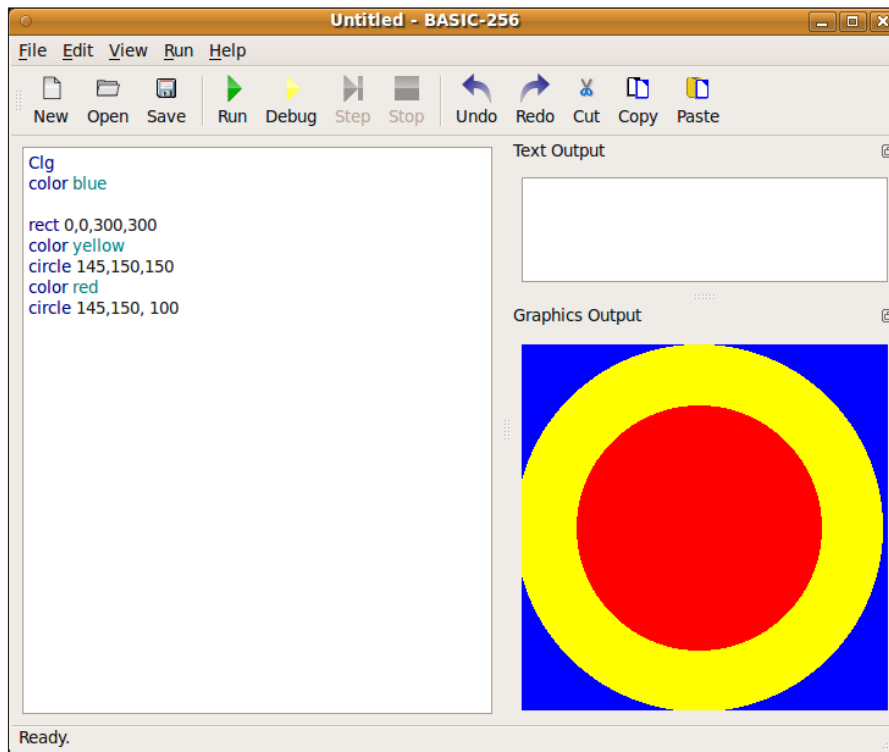
Info

- The # and rem statements are called comment statements.
- These are not case sensitive.
- The Basic application ignores the rest of the text on the line which has the # or rem statement.
- Comments make the program easier to understand.

Tejas: There is a graphic output area in the BASIC program interface. How do we get output on this area?

Moz: You are familiar with x and y coordinates. The graphic output area has x coordinate 0-299 and y coordinate 0-299, starting from the left upper corner. Now, enter the following statements.

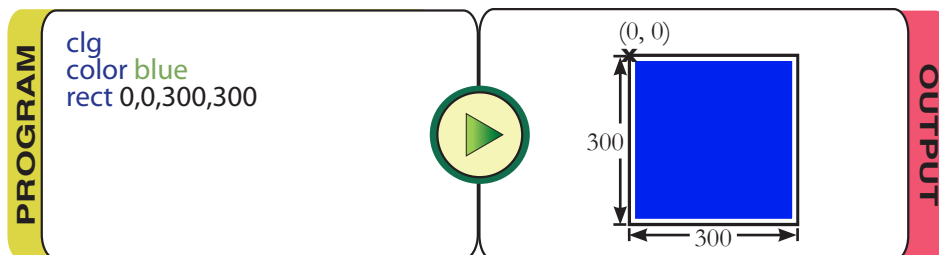




Tejas: First statement clears the graphic output area. The next statement, **color** specifies the colour to be used.

Moz: Right. You can specify a colour by using the colour name.

Jyoti: The next statement, **rect** draws a rectangle in blue. 0, 0 must be x and y coordinates. The next two numbers could be length and breadth of the rectangle. In this case they are equal hence we have a square.



Moz: Yes. A rectangle can be drawn by giving the (x, y) coordinates of the top left corner of a rectangle and the breadth and length from this point.

Rect statement

Syntax:

Rect x,y,breadth,length

Rect x,y, width, height

Info

The rect statement uses the current drawing colour and draws a rectangle on the graphics output area. The top left corner of the rectangle is specified by its (x, y) coordinates, by the first two numbers. In the next two numbers, the width and height is specified.

Jyoti: Next the colour is changed to yellow. The **circle** statement draws circle. The first two numbers (145, 150) must be (x, y) coordinates of the center. The third number (150) is the radius.

Moz: Yes. The (x, y) coordinates of the center of the circle and the radius of the circle have to be given to draw a circle.

Tejas: Next, another colour, red, is specified. Then a red filled circle of radius 100 is drawn. It has the same center (145, 150) as the previous circle.

PROGRAM	<pre>color blue rect 0,0,300,300 color yellow circle 145,150,150 color red circle 145,150,100</pre>	▶	OUTPUT

Info	<h3>Circle statement</h3> <p>Syntax: Circle x, y, radius</p> <p>The circle statement uses the current drawing color and draws a filled circle with its center at (x, y) and the radius that is specified.</p>	
-------------	---	--

Tejas: In all these statements the radius and the (x, y) coordinates of the center are already given.

Jyoti: Let us try whether we can draw circle and rectangle by taking the values from the user?

Moz: Which statement will you use to take values from the user?

Tejas: Input statement.

Moz: Go ahead and try it.

PROGRAM	<pre>Rem To draw a rectangle Print "Give the x and y coordinates of the top left corner of the Rectangle: " Input "x coordinate: ", x1 Input "y coordinate: ", y1 Input "Breadth of the rectangle: ", breadth1 Input "Length of the rectangle: ", length1 Color Yellow Rect x1,y1,breadth1, length1 Rem To draw a circle Print "Give the x and y coordinates of the center: " Input "x coordinate of center: ", x2 Input "y coordinate of center: ", y2 Input "Radius of circle: ", r Color Green Circle x2,y2,r</pre>	▶	OUTPUT																
<table border="1" style="width: 100%; background-color: #90ee90;"> <thead> <tr> <th colspan="2" style="background-color: #006633; color: white;">Memory</th> </tr> </thead> <tbody> <tr><td>x1</td><td style="text-align: center;">0</td></tr> <tr><td>y1</td><td style="text-align: center;">0</td></tr> <tr><td>Breadth1</td><td style="text-align: center;">200</td></tr> <tr><td>length1</td><td style="text-align: center;">250</td></tr> <tr><td>x2</td><td style="text-align: center;">150</td></tr> <tr><td>y2</td><td style="text-align: center;">150</td></tr> <tr><td>r</td><td style="text-align: center;">100</td></tr> </tbody> </table>				Memory		x1	0	y1	0	Breadth1	200	length1	250	x2	150	y2	150	r	100
Memory																			
x1	0																		
y1	0																		
Breadth1	200																		
length1	250																		
x2	150																		
y2	150																		
r	100																		

Tejas: Yes, using the Input statement the user can give values and draw a circle or a rectangle.

Moz: Now use all the statements that you have learned and write a program. You can also use the graphical statements with the other statements in your program.

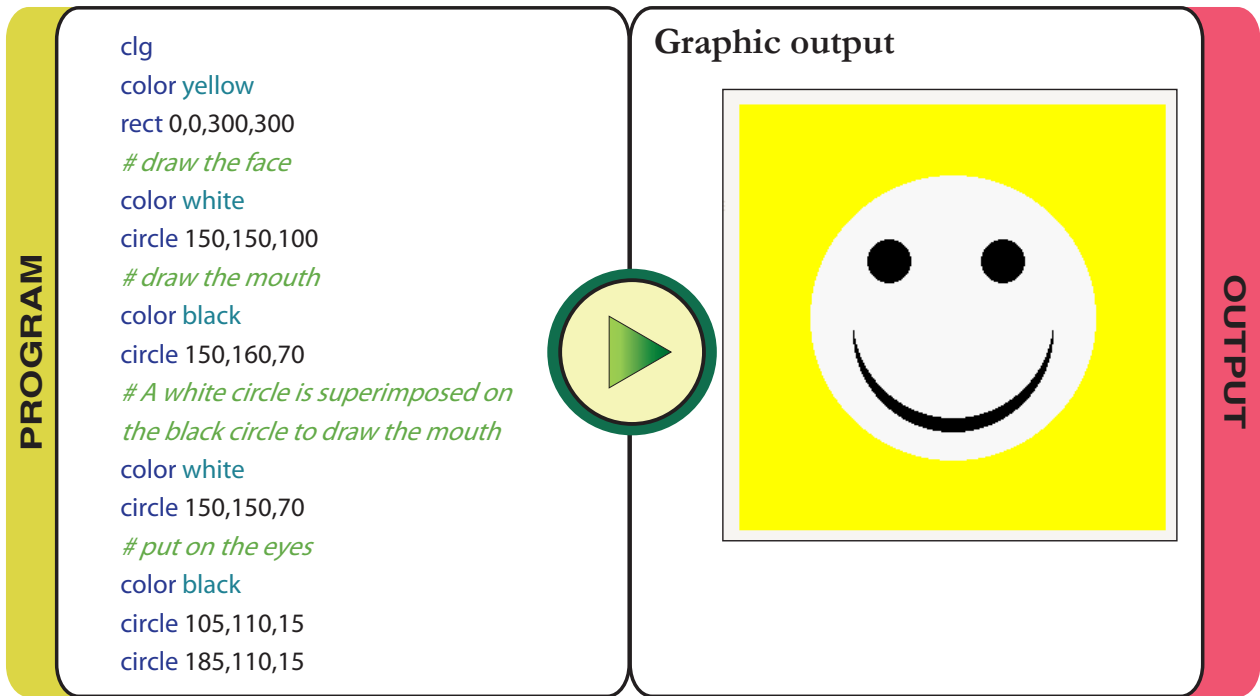
Tejas: This is fun. Let us write some programs.

Jyoti: Let us write a program to convert the input of a user into a funny story.

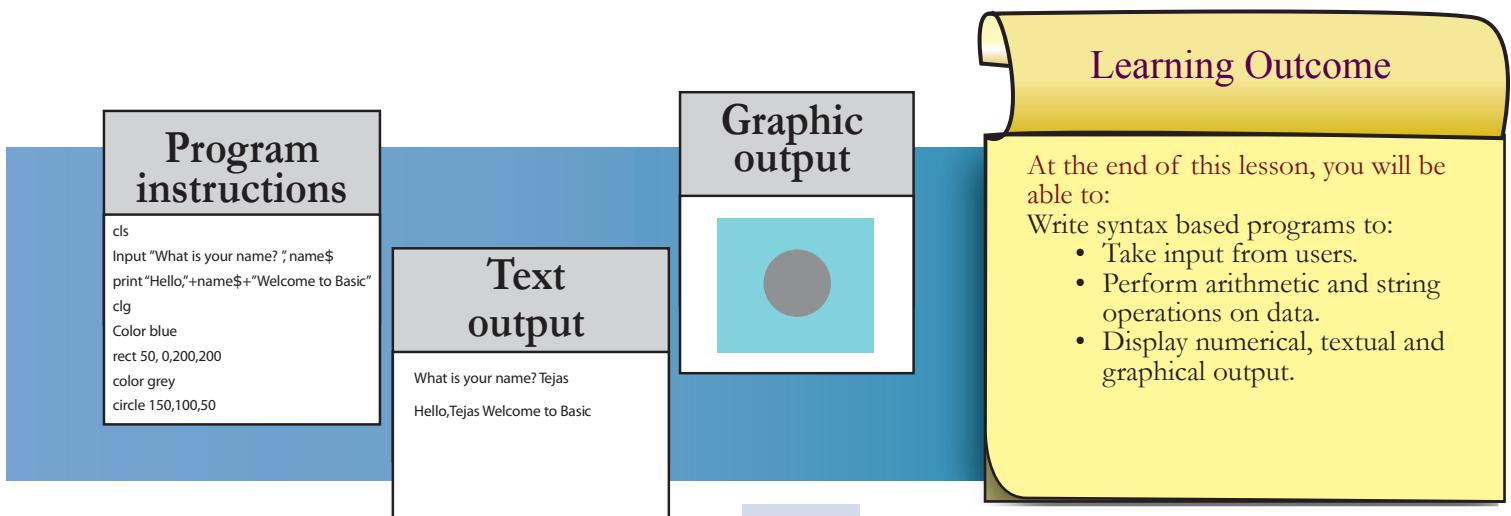
Tejas: Oh! Yes. Let us ask the user to enter some details about themselves and a pet, some verbs and adjectives. Use these to print the story. We can use string concatenation to add strings and string variable to build the story.

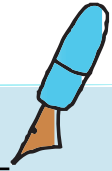
Tejas and Jyoti's program

PROGRAM	▶	OUTPUT																				
<p><i>Rem This is a program written by Tejas and Jyoti</i></p> <p>Print "You have to give some information about yourself and your pet. If you do not have a pet imagine that you have a pet and enter the input."</p> <p>Print</p> <p>input "Enter your name: ", name\$</p> <p>input "Enter a pet animal name: ", pet\$</p> <p>input "Enter a name for the pet: ", namepet\$</p> <p>input "Enter the pet food: ", food\$</p> <p>input "Enter your favourite food: ", myfood\$</p> <p>input "Enter an adjective, beautiful, ugly, short: ", adj\$</p> <p>input "Enter pet's favourite activity: ", petact\$</p> <p>input "Enter name of room where the pet is kept: ", room\$</p> <p>input "Where do you watch TV in your house: ", tv\$</p> <p>input "Give an exclamation (Wow, oh no!): ", exclam\$</p> <p>Print</p> <p>Print</p> <p><i>Rem Input has been collected, now the output is a funny story</i></p> <p>Print "A FUNNY STORY BY" + namepet\$</p> <p>Print exclam\$ + "! You have a cute pet" + namepet\$ + "but, " + name\$ + " is a weird name for a pet. "</p> <p>Print "Why does it " + petact\$ + " in your " + tv\$ + "? Have you not given it enough " + myfood\$ + " to eat " + "?"</p> <p>Print "I am getting bored. Let's call your friend " + pet\$ + " also to your place. "</p> <p>Print "We can all eat the magic" + food\$ + "in your" + room\$ + "and after eating we will turn into" + adj\$ + "fairies!!"</p>	<p>You have to give some information about yourself and your pet. If you do not have a pet imagine that you have a pet and enter the input.</p> <p>Enter your name: Jyoti</p> <p>Enter a pet animal name: Dog</p> <p>Enter a name for the pet: Blacky</p> <p>Enter the pet food: Biscuit</p> <p>Enter your favourite food: pasta</p> <p>Enter an adjective, beautiful, ugly, short: Short</p> <p>Enter pet's favourite activity: play</p> <p>Enter name of room where the pet is kept: bedroom</p> <p>Where do you watch TV in your house: living room</p> <p>Give an exclamation (Wow, oh no!): wow</p> <p>A FUNNY STORY BY Blacky</p> <p>wow! You have a cute pet Blacky but, Jyoti is a weird name for a pet.</p> <p>Why does it play in your living room?</p> <p>Have you not given it enough pasta to eat ?</p> <p>I am getting bored. Let's call your friend Dog also to your place.</p> <p>We can all eat the magic Biscuit in your bedroom and after eating we will turn into Short fairies!!</p>	<p style="text-align: center;">Memory</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>name\$</td><td><input type="text" value="Jyoti"/></td></tr> <tr><td>pet\$</td><td><input type="text" value="Dog"/></td></tr> <tr><td>namepet\$</td><td><input type="text" value="Blacky"/></td></tr> <tr><td>food\$</td><td><input type="text" value="Biscuit"/></td></tr> <tr><td>myfood\$</td><td><input type="text" value="pasta"/></td></tr> <tr><td>adj\$</td><td><input type="text" value="Short"/></td></tr> <tr><td>petact\$</td><td><input type="text" value="play"/></td></tr> <tr><td>room\$</td><td><input type="text" value="bedroom"/></td></tr> <tr><td>tv\$</td><td><input type="text" value="living room"/></td></tr> <tr><td>exclam\$</td><td><input type="text" value="wow"/></td></tr> </table>	name\$	<input type="text" value="Jyoti"/>	pet\$	<input type="text" value="Dog"/>	namepet\$	<input type="text" value="Blacky"/>	food\$	<input type="text" value="Biscuit"/>	myfood\$	<input type="text" value="pasta"/>	adj\$	<input type="text" value="Short"/>	petact\$	<input type="text" value="play"/>	room\$	<input type="text" value="bedroom"/>	tv\$	<input type="text" value="living room"/>	exclam\$	<input type="text" value="wow"/>
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room\$	<input type="text" value="bedroom"/>																					
tv\$	<input type="text" value="living room"/>																					
exclam\$	<input type="text" value="wow"/>																					



Moz: This program is interesting. What a funny story at the end of the execution! Good. Chin Chinaki...





1. Some BASIC-256 commands are given below. Where will be the output displayed? Tick the correct option.

Print "Hello there."

Text Output area/ Graphics Output area

Rect 100,100,200,50

Text Output area/ Graphics Output area

Input "Enter a number: ", A

Text Output area/ Graphics Output area

2. Below are some BASIC-256 commands and their possible outputs. Circle the correct option.

a.

PROGRAM
Print 200+(75+10)/5-3

- i. 142.5
- ii. 214
- iii. 274
- iv. 200+(75+10)/5-3

b.

PROGRAM
Print (545+35)3

- i. 1740
- ii. Syntax error on line 1 around column 14.
- iii. (54535)3
- iv. (545+35)*3

c.

PROGRAM
Print "Plants can be classified into "
+"trees, shrubs and herbs."

- i. "Plants can be classified into" "trees, shrubs and herbs."
- ii. Plants can be classified into trees, shrubs and herbs.
- iii. Syntax error on line 1.
- iv. "Plants can be classified into "+ "trees, shrubs and herbs."

d.

PROGRAM
Print "Hi! there. ";
Print "Welcome to BASIC. ";

- i. Hi! there. Welcome to BASIC.
- ii. "Hi! there." "Welcome to BASIC."
- iii. Hi! there.
Welcome to BASIC.
- iv. "Hi! there."
"Welcome to BASIC."

e.

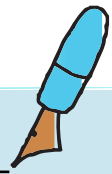
PROGRAM
HeroName\$="Napoleon"
Print HeroName;
Print "was a military leader of France."

- i. "Napoleon was a military leader of France."
- ii. Napoleon
was a military leader of France.
- iii. ERROR on line 2: Unknown variable
- iv. Napoleon was a military leader of France.

f.

PROGRAM
Print "BODMAS: (25+35-10*100) ="
+ (25+35-10*100)

- i. "BODMAS: (25+35-10*100) =" + (25+35-10*100)
- ii. BODMAS: (25+35-10*100) = -940
- iii. BODMAS: (25+35-10*100) = (25+35-10*100)
- iv. -940



Q8.

PROGRAM		OUTPUT
<pre>Rem Find the sum of apples with Ali and Savani. Print "Type in the number of apples with Ali?"; Print "Type in the number of apples with Savani? "; Input B Sum = A+B A\$ = "The total number of apples is " Print A\$+Sum</pre>		<pre>Type in the number of apples with Ali? 67 Type in the number of apples with Savani? 28</pre>

- i. "The total number of apples is" Sum
- ii. Syntax error on line 1 around column 7
- iii. The total number of apples is 95
- iv. 95

3. Anand has written a program to find the profit or loss for a given selling price and cost price. When he ran the program it gave an error as shown below.

PROGRAM		OUTPUT
<pre>CostPrice\$=500 SellingPrice\$=450 Loss= CostPrice\$-SellingPrice\$ Print Loss</pre>		<pre>Syntax error on line 1 around end of line.</pre>

Upon seeing the error message he realized that he had made more such errors. Can you correct all the errors in the program?

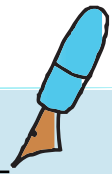
4. Study the program and answer the following questions.

PROGRAM		OUTPUT
<pre>Input "Your name is", Name\$ Input "Which school do you study?", School\$ Input "What you age?", Age Input "What is your date of birth?", Birthdate Input "In which month were you born?", Birthmonth\$</pre>		

- a. Circle the correct option.
 - i. What is being stored in the variable School\$?

String / Integer or decimal number
 - ii. What is being stored in the variable Birthdate?

String / Integer or decimal number
- b. Which are the numeric variables in the above program?



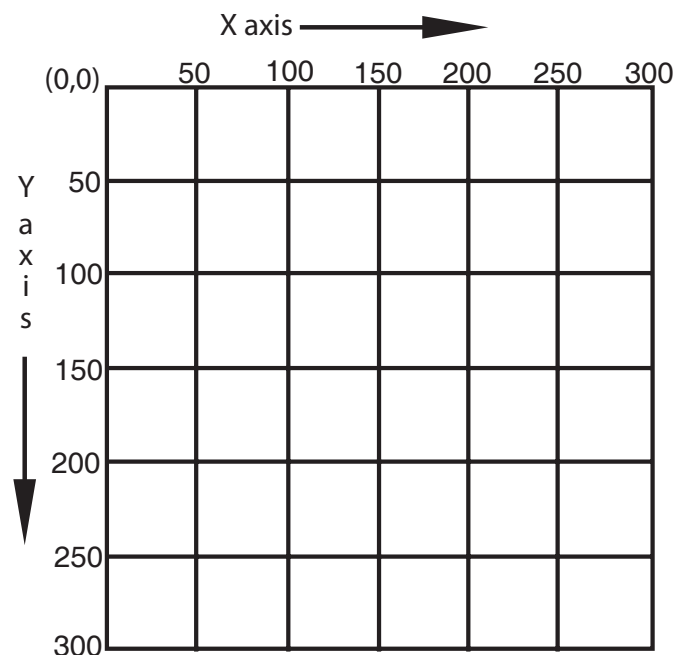
5. What is my duty? Here are some commands in Basic-256. What is the function of each command? Fill in the blanks with the correct options.

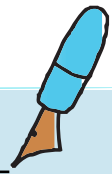
- a. In “circle 100,150,10” 10 is the _____ .
 - i. Radius of the circle
 - ii. X coordinate
 - iii. Y coordinate
 - iv. Diameter of circle
- b. In “Rect 110, 5, 20, 18”, 110 and 5 are the _____ .
 - i. Length and breadth of rectangle
 - ii. X and Y coordinates
 - iii. length and diagonal of rectangle
 - iv. None of the above
- c. ‘cls’ clears _____ .
 - i. The output text area
 - ii. The output graph area
 - iii. The command area
 - iv. The entire screen
- d. Rem is a used to _____ .
 - i. Put comments in a program
 - ii. Remove a command
 - iii. Erase the graphic output area
 - iv. None of the above

6. A program code with comments, which draws a picture, is given below. Read and follow the commands and draw the picture in the graph area given below.

```

Rem My little red car!
clg
Rem to draw the top portion of the car
Color Red
Rect 100,0,100,50
Rem to draw the lower portion of the
car
Color Red
Rect 50,25,200,50
Rem to draw wheels
color black
circle 100,75,25
color black
circle 200,75,25
  
```





7. Given here is a program which finds the perimeter and area of a Rectangle.

PROGRAM	▶	OUTPUT
<pre># Program to find the area and perimeter of a rectangle. Print "Length of the rectangle = 50" Print "Breadth of the rectangle = 5" Area = 50*5 Perimeter = 2*(50+5) Print "Area= " + Area Print "Perimeter= " + Perimeter</pre>		<pre>Length of the rectangle = 50 Breadth of the rectangle = 5 Area = 250 Perimeter= 110</pre>

a. Change and write the program in the space given below, so that the values of length and breadth are given by the user. Give your own input for the program in the text area and calculate the area and perimeter.

PROGRAM	▶	OUTPUT

b. Find how many tiles with the dimension given by you in the above program are needed to cover the floor of a room of length 1000 units and breadth 500 units.

PROGRAM	▶	OUTPUT
<pre># Program to find the number of tiles. RoomArea=1000*500 Print "Area of the room = " + RoomArea TileArea= _____ Print "Area of the tile = " + TileArea TileNumber=RoomArea/TileArea Print "Number of tiles = " + TileNumber</pre>		

c. Write a similar program to find the area and perimeter of a triangle.

PROGRAM



ACTIVITY

1. a. Run the following program and find out its display.

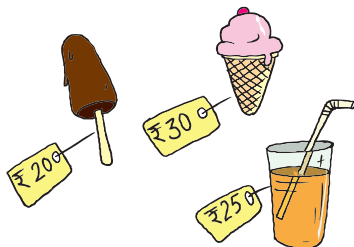

```

      clg
      circle 35,20,8
      clg
      circle 45,20,8
      clg
      circle 55,20,8
      clg
      circle 65,20,8
      clg
      circle 75,20,8
      
```
- b. Change the clg command to cls and then run the program. What do you observe?
- c. What will you do to change the movement of the object along the Y-axis?

2. Savani, Ali and Asmit went for a picnic. Each one carried Rs. 100 towards expenses at the picnic. Write a program to find the following. Give proper comments so that others are able to understand your program.



- a. At the picnic they went on a ride. The cost of each ticket was Rs.30. Find the amount left with each after the ride?

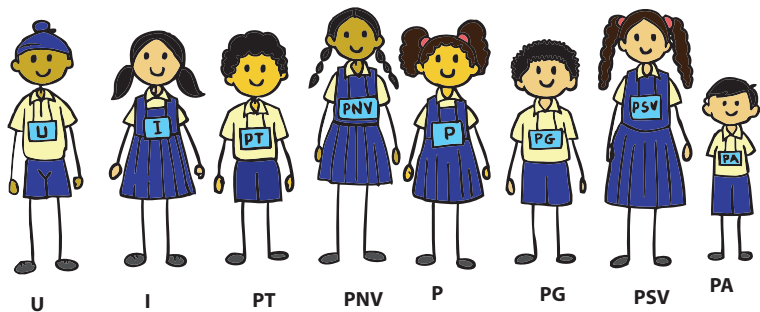


- b. Savani had ice cream that cost Rs. 20, Ali had orange juice that cost Rs.25 and Asmit had ice cream that cost Rs. 30. Then they returned home. How much money is left with each of them now?

Group Activity

3. Divide the class into 8 groups namely,

- Users (U)
- Instructions (I)
- Processing
 - o Text output (PT)
 - o Graphic output (PG)
 - o Numeric variables (PNV)
 - o String variable (PSV)
 - o Arithmetic operators (PA)





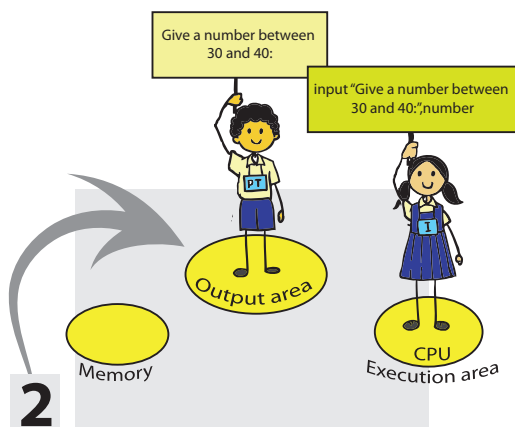
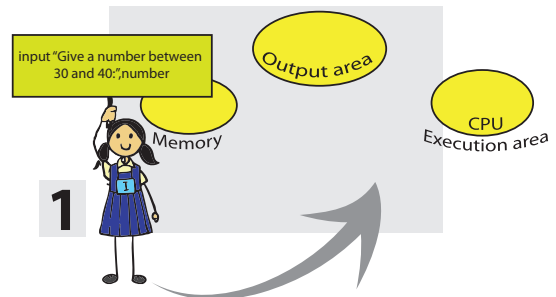
ACTIVITY

Allocate some space in the front of the classroom as processing, memory and output areas. Have some placards or small sheets of paper ready. Write all the instructions on placards. When the teacher calls out Run, the processing of the following program is enacted by the groups.

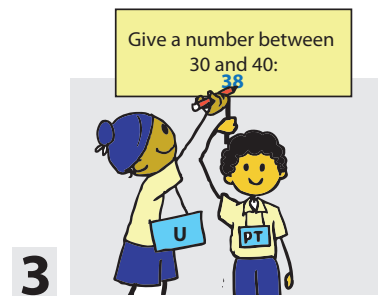
Input “Give a number between 30 and 40:”, number

Let the number given by the user (U) be ‘38’

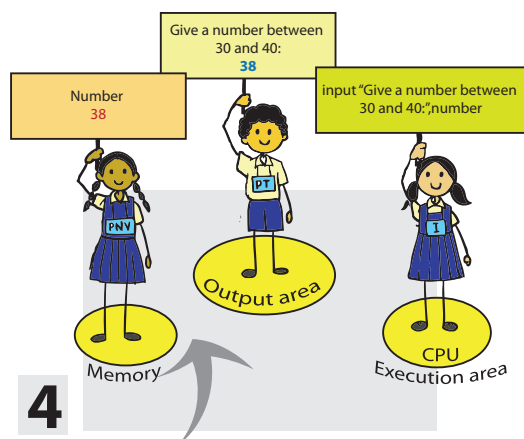
- a. Student (I) goes to CPU: Input “Give a number between 30 and 40:”, number



- b. Student (PT) writes message on placard and stands in output area: Give a number between 30 and 40:



- c. Student (U) goes to output area and writes input and goes back: Give a number between 30 and 40: 38



- d. Student (PNV) writes the variable and its value on a placard and stands in the memory area: number 38

For the instruction

Print “You have given the number: “, number

Student (I) goes with the above instruction on a placard and stands behind the previous instruction.

Student (PT) writes the message which is in quotes on placard, then goes to memory and copies the value of the variable specified on to the placard and stands in output area.



ACTIVITY

Level VI | Lesson 7

Enact the following statements:

Input "What is your name ", name\$

Input "What is your age? ", age

mage = 35

Print name\$ + " is " + (mage - age) + " years younger than me."



You are the Author and I am the Writer


Similar to the funny story in the lesson, write a program to take input from the users about 5 animals, their food, and their sounds. Using the inputs, display an interesting and funny story about the animals. You must use all the BASIC programming statements that you have used in the lesson at least once. For

Example: You can have a situation where the animals:

- Have gone for a picnic.
- Are visiting a mall to buy food.



1. Explore Debug option in BASIC – 256.
2. How to print text and graphic output of a program.

- The objective of this lesson is to teach the students a new programming language, Basic. The students already are familiar with another programming language Scratch. Ask students to recall the features of Scratch. Now tell the students that just like Scratch, Basic is another programming language.
- Open the Basic 256 (version 0.9.2 or later) interface and let them become familiar with the interface. Ask questions to draw the attention to the new icons they see on the menu bar.
- Open an example which has both text and graphic output to show the function of these new icons. This exercise will also make them familiar with the different parts of the Interface like the program area, Text output and Graphics Output.
- Write on the blackboard Print 'Hello World'. Now demonstrate the same by typing this on the Basic Interface and then press the 'Run' icon  to see the output.
- Now type another Print statement without the double quotes. Show the syntax error message. Explain to them the importance of correct syntax. Correct it and run it again. Also draw attention to the colour code used in the Basic interface for various commands.
- While teaching Arithmetic expressions, ask them to recall the BODMAS rule already taught in mathematics. Point out the difference between a numeral and a string. Demonstrate how the use of '+' operator give different results in case of a numeric and string variables. Do question 2 of the worksheets, which reinforce the student knowledge in arithmetic operators and print statements.
- Make them recall how we could get input from the user in Scratch. Tell them that similarly, the command used in Basic is 'Input'. Demonstrate the syntax of the Input command.
- Once the students are comfortable with the syntax of above commands, proceed to the Graphics output area. Demonstrate the Rect and Circle statements and through these statements. Teach them about the size and coordinates of the graphics area. Clear the graphics area using the 'clg' statement. Draw attention to the fact that like 'clg' statement, 'cls' statement clears the text output area. Do question 4 of the worksheets and Activity 1, which will check the student understanding of these commands.
- Tell them 'Rem' is another important statement which helps us to comment the program segments and enhance the readability of the code. Finally the students can attempt activity 2 where they can write a program using some of the commands taught in the lesson.

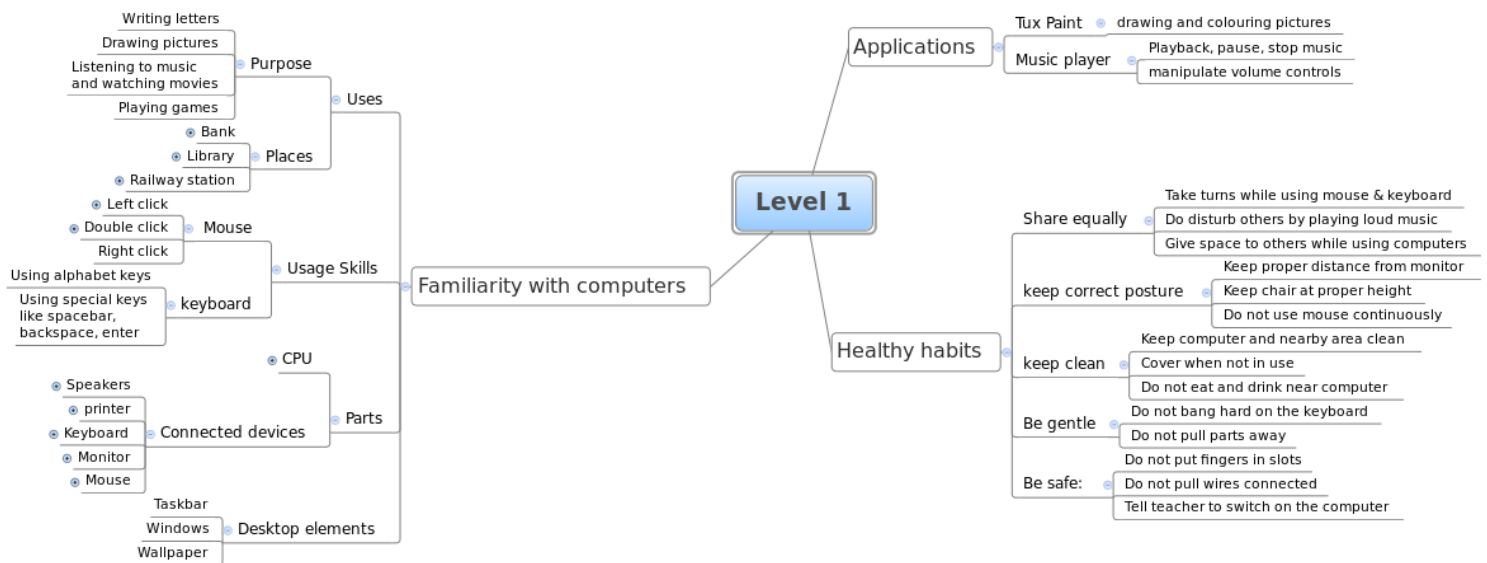


Further Reading:

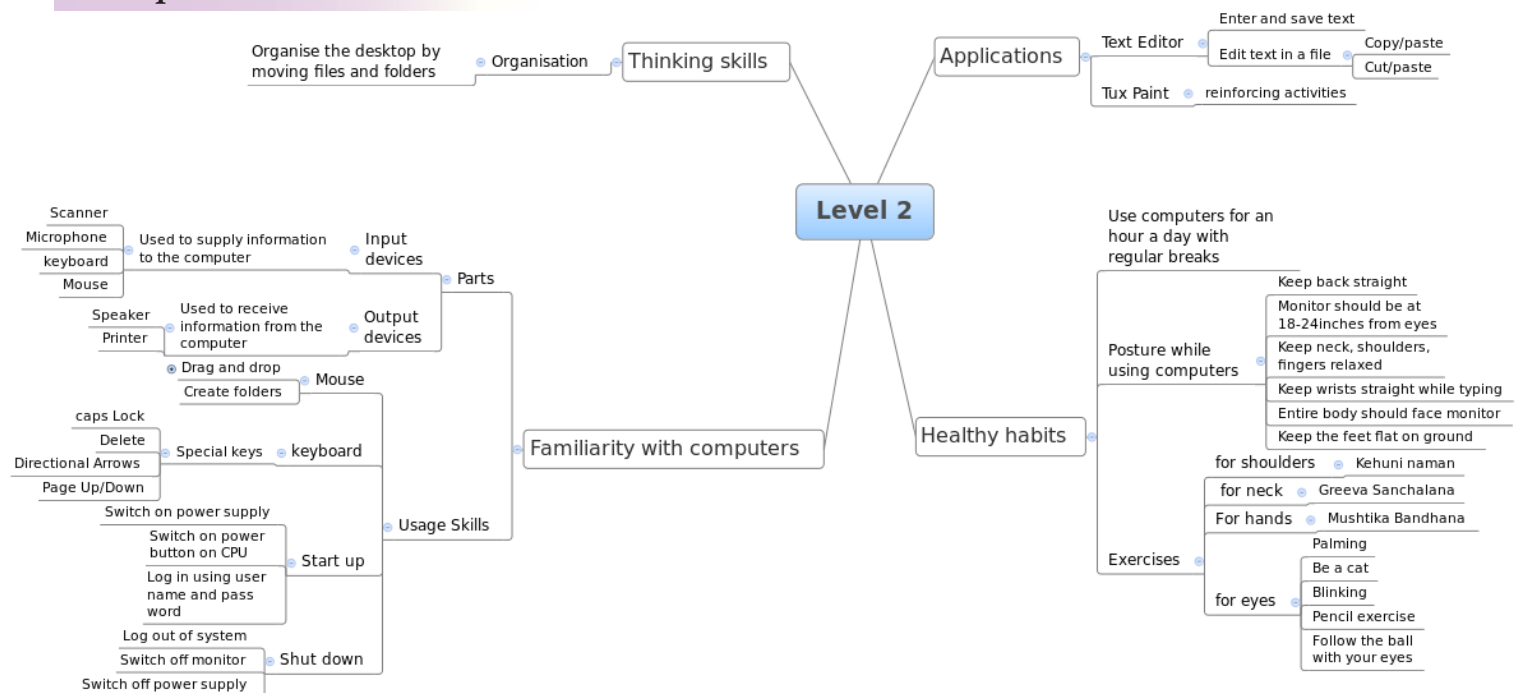
http://www.basic256.org/index_en

<http://sourceforge.net/projects/kidbasic/>

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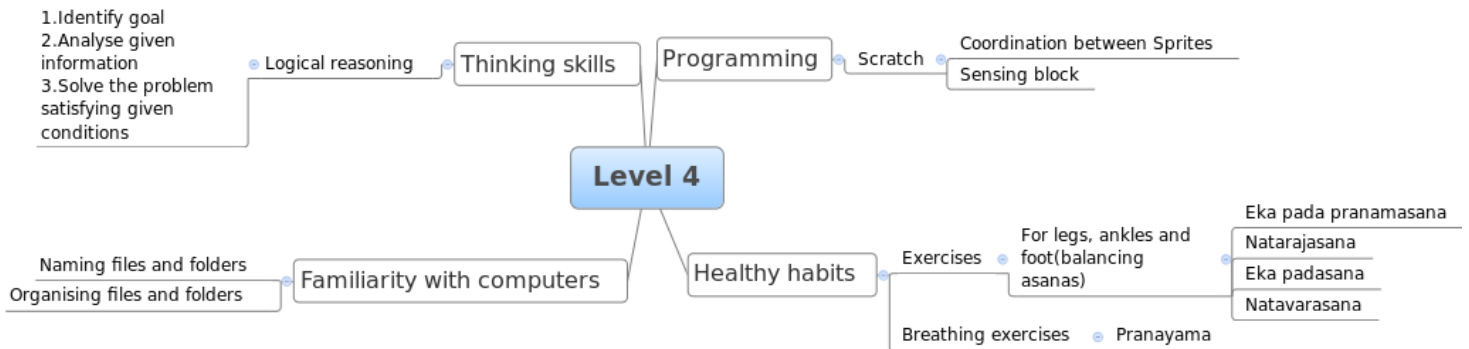
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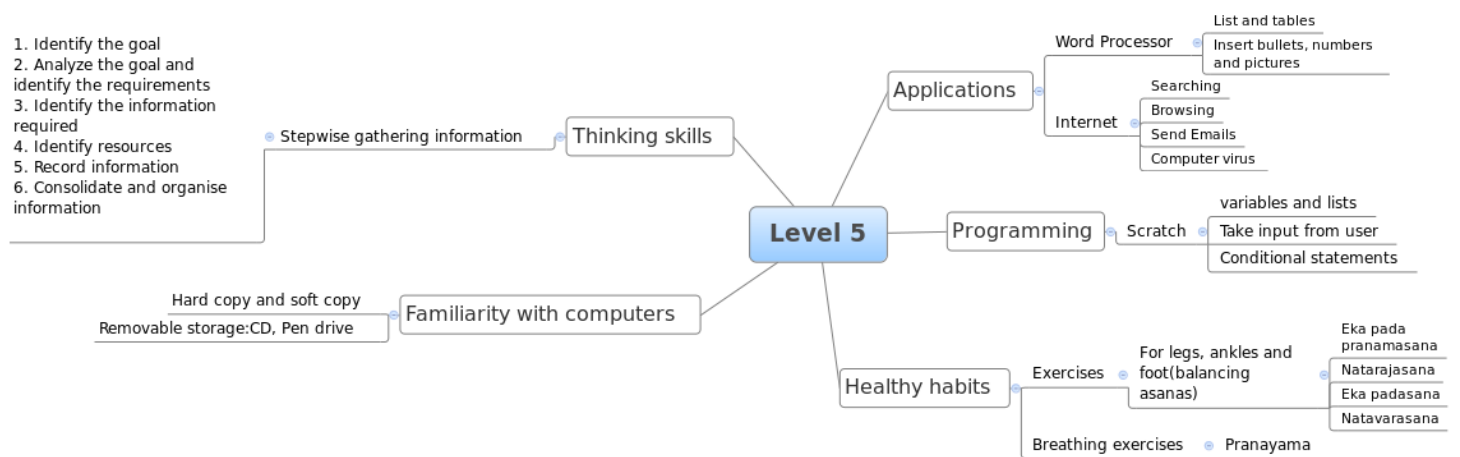
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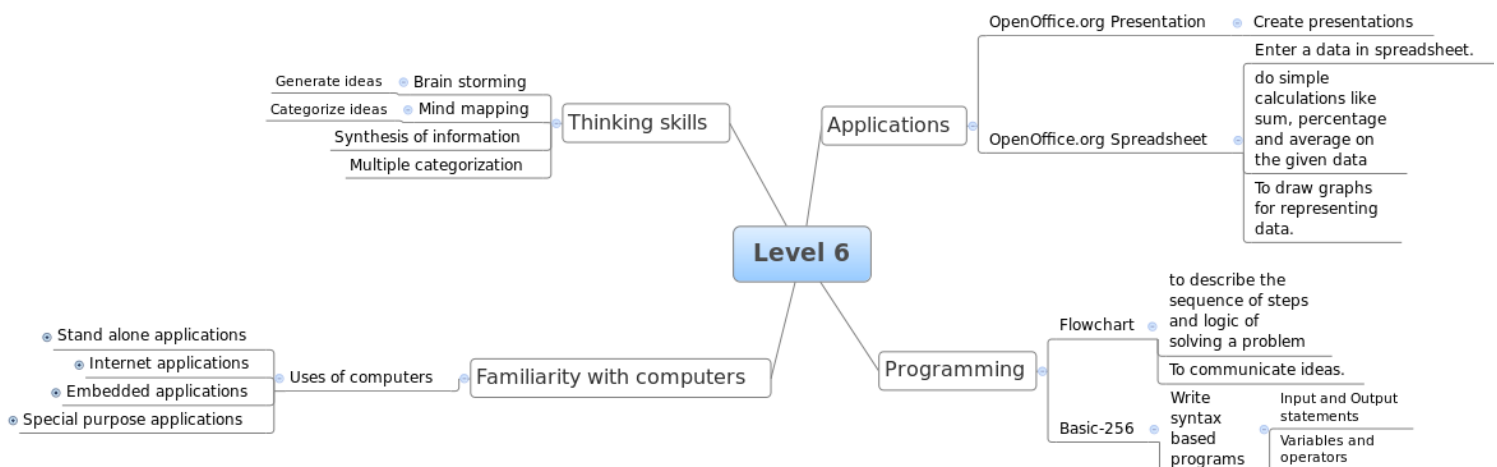
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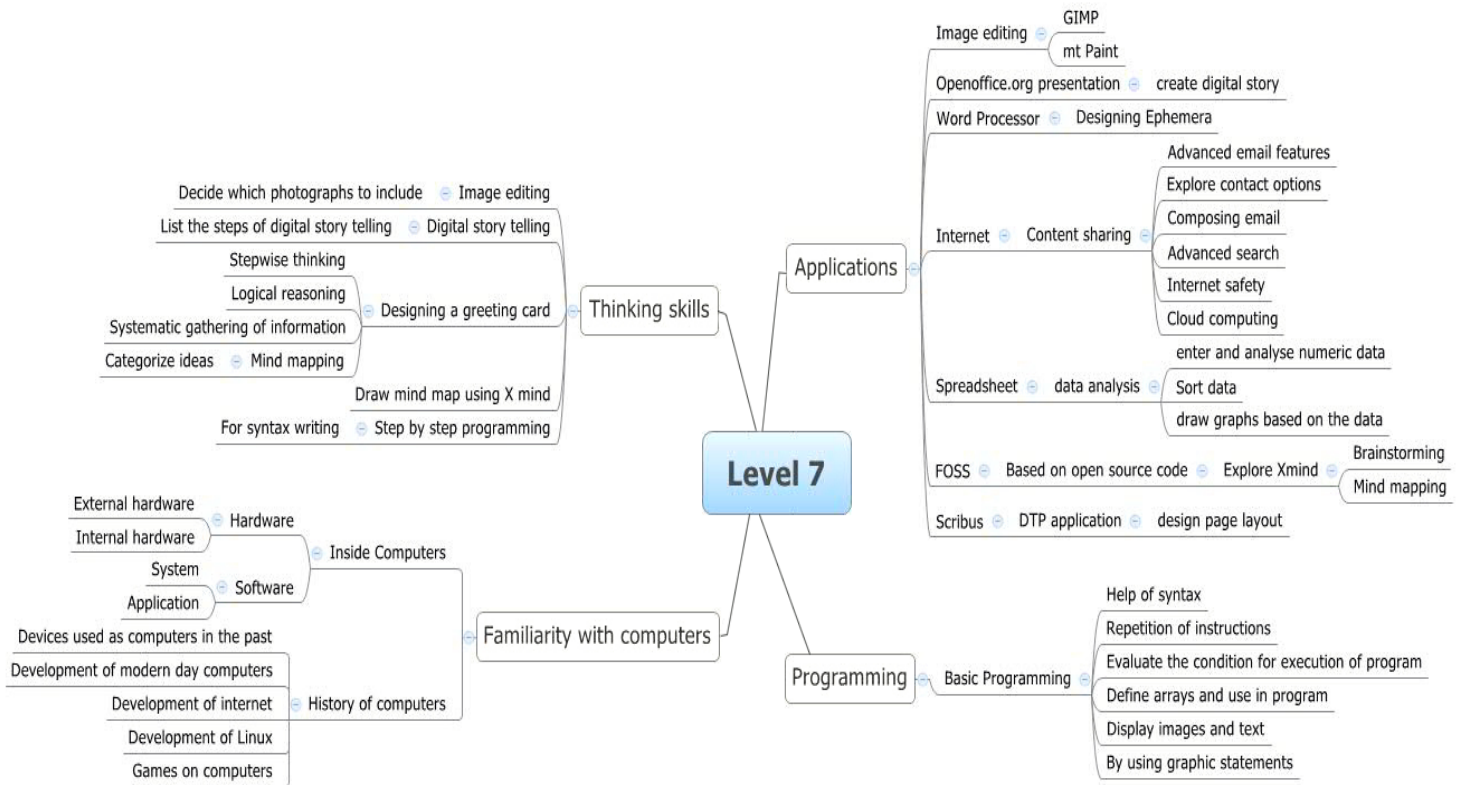
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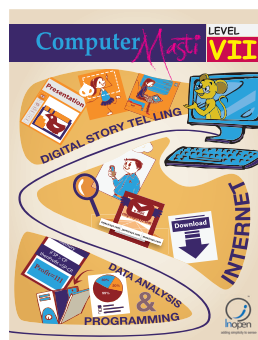
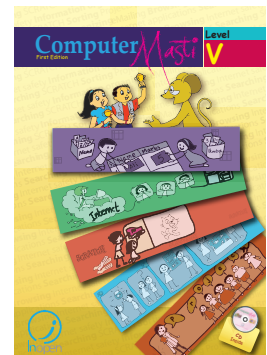
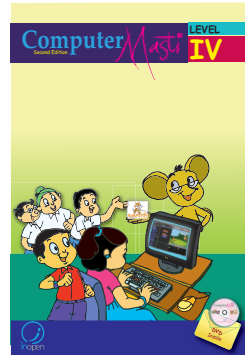
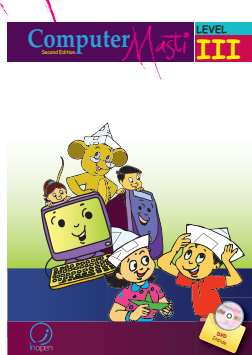
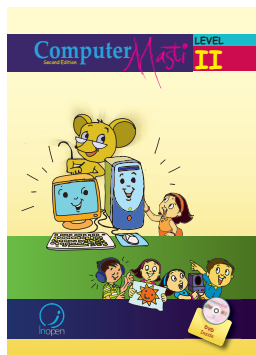
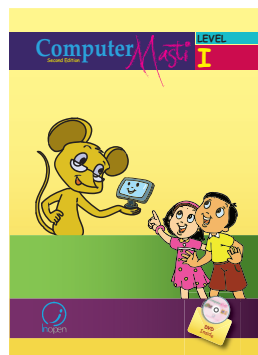
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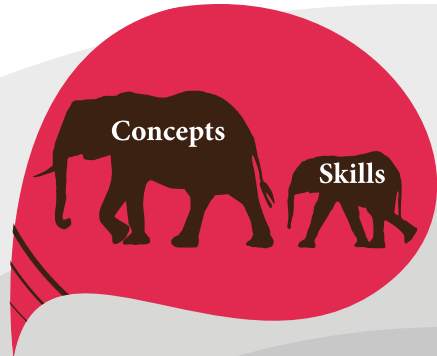
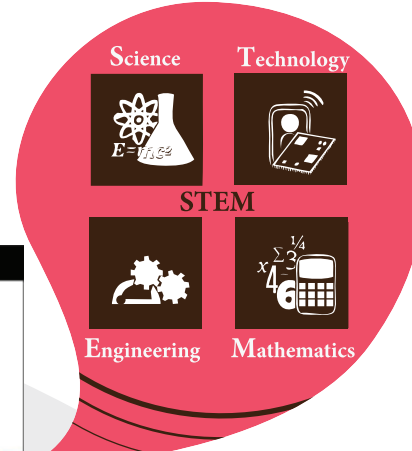
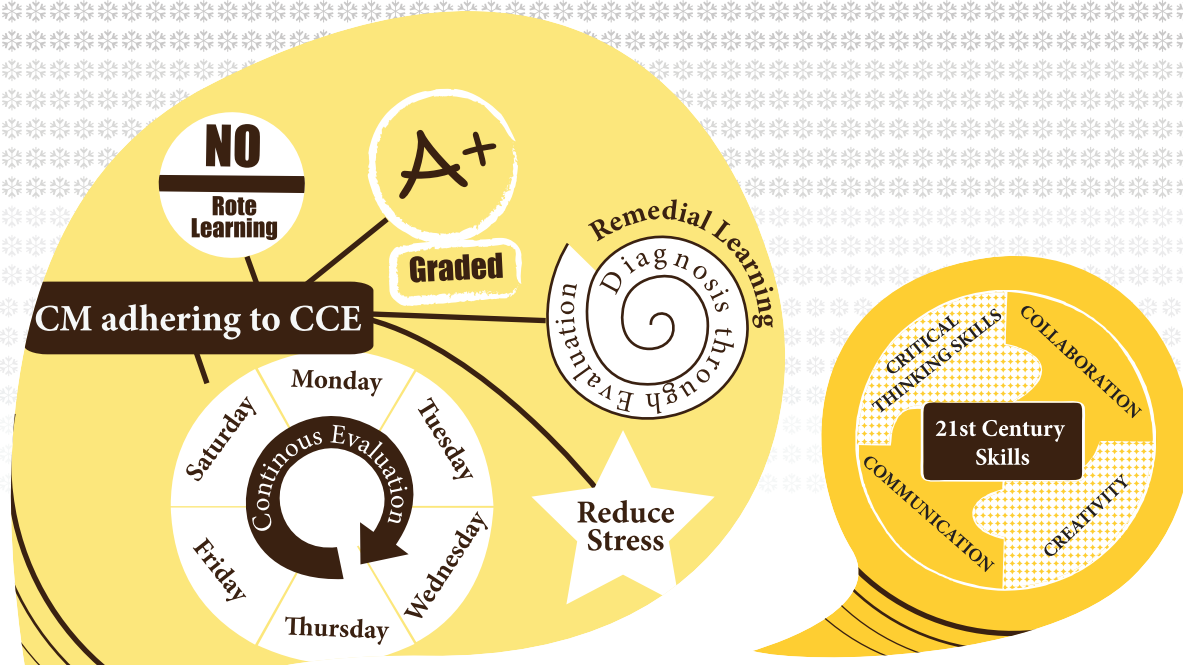
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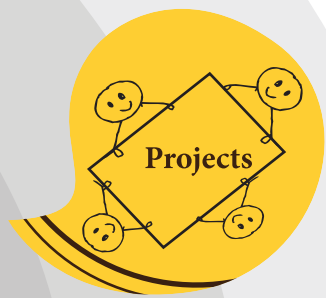
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