Computer Masti

LEVEL IV

Inopen

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...adding simplicity to sense

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A Collaborative Product from IIT Bombay and InOpen Technologies

ComputerMasti

Level IV

Created at:
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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 elelment 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, communicaton 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).

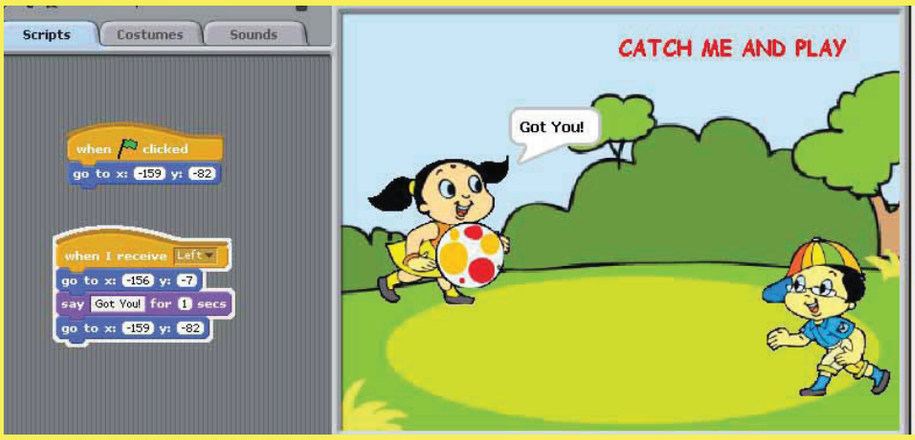
Acknowledgements:
This second edition is a result of incorporating several suggestions by Sahana Murthy and Farida Khan. We are thankful to Aruna Prabhala, Srinath Perur and Neela Srinivasan, for their contribution to the preliminary content, prior to the first edition. We are also thankful to Vaijayanthi Sarma for her meticulous review during the first edition. We acknowledge the support provided by Rekha Kale, Pravin Ingle, Vinod Bhalerao, Bhairavnath Lahotkar and Seeja Sadanandan.

We are grateful to IIT Bombay for support during the creation of this book. We are also grateful to the SSRVM Trust, especially the staff of SSRVM Mulund, for support during the pilot implementation. Last but not the least, the teachings of Sri Sri Ravishankar have been a major source of inspiration for this book.

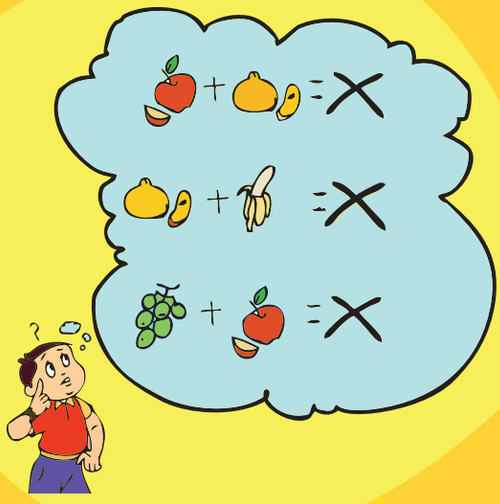
How To Use This Book

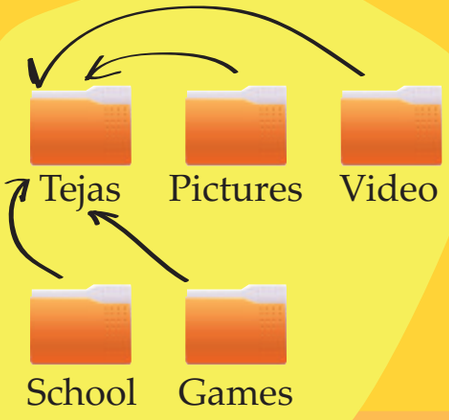
This book is meant to be used for teaching computers to children in a way that is mostly fun (as indicated by the "Masti" in the title). The teacher's role is primarily that of a facilitator encouraging active learning. Specific guidelines for each lesson can be found in the Teacher's Corner of each lesson. Ensure that the conceptual understanding is mastered before proceeding to the skills. Allow students to play educational computer games included in each lesson in order to reinforce learning of the concepts/skills covered in the lesson. 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 computer based activities. The Worksheets include exercises to inculcate higher order thinking skills. Use the Group Activities and Projects to stimulate creativity and knowledge sharing. The book is designed so that it can be covered comfortably in one year, with one class (30 to 45 minutes) per week. See the table below for an overview of the concepts, skills and values covered in each lesson along with a week wise schedule.

Lesson No.	Topic Name	Concepts	Skills	Values reinforced	Weeks
1.	Revision of Level III	o Step-wise thinking. o Program execution. o Sequence of programming instructions.	o Dividing a task into main and detailed sub tasks. o Drag and drop basic commands of Scratch. o Exercises for wrists, neck and spine. o Formatting text.	o Exchange of ideas and sharing of resources. o Inculcate the importance of team work and group discussion.	1st - 3rd
2.	Logical Thinking	o Reasoning. o Problem solving.	o Identifying goals, information and conditions for problem solving.	o Working systematically.	4th - 8th
3.	Programming Multiple Sprites in Scratch	o Control statements. o Coordination between program parts.	o Write scripts using Scratch controls. o Change parameters in Scratch blocks.	o Reinforcing creativity and imagination. o Working patiently.	9th -13th
4.	Dos and Don'ts - Balancing Asanas	o Importance of exercises. o Taking care of health while using computers.	o Exercises for legs, ankles and foot muscles. o Exercises to improve balance.	o Value of traditional art forms and instruments o Taking care of oneself.	14th -16th
		REVISION			17th -18th
5.	More Activities using Scratch	o Animation of concepts in other subjects.	o Writing scripts for games and stories.	o Developing secular tolerance and celebrating all festivals.	19th -23rd
6.	Naming and Organising files	o Storage and organization of Files and Folders. o Classification of content.	o Creating folders and organizing files within folders. o Identifying type of content based on file extensions. o Classification or grouping of relevant items.	o Arranging things at home and school, in an orderly way.	24th - 28th
7.	Projects				29th - 32nd


Scripts
Costumes
Sounds
when clicked
go to x: -159 y: -82
when I receive Left
go to x: -156 y: -7
say Got You! for 1 secs
go to x: -159 y: -82
CATCH ME AND PLAY
Got You!


SCRATCH

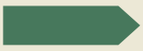



Tejas
Pictures
Video
School
Games

ComputerMasti
Level IV

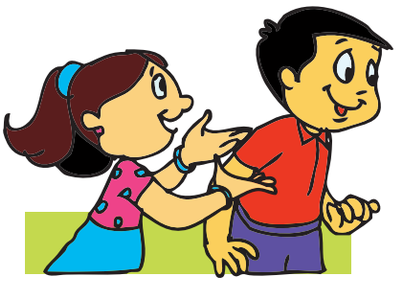
Contents

Legends used in the book

Indicator	Explanation
	Lists the topics covered in the lesson.
	Explains the concept discussed in that section of the lesson.
	Gives step by step instructions to do a task (on the computer) in the application being discussed.
	General recommendations that help to achieve a certain goal.
	Provides information and/or additional details about a skill or concept.
	Lists the expected measurable learning objective to be attained by the student after learning the topic.
	Pages with this icon has Worksheets; that test extent to which learning objectives of the lesson are attained.
	Pages with this icon has 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.
 Teacher's Corner	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.

Black Italic text	Search Keyword, examples and Web site address.
Bold black text	New word introduction.
Bold Orange text	New Technical term introduction.

Three years ago...



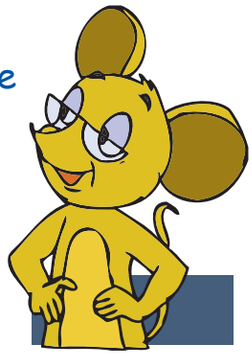
Tejas and Jyoti met Moz in the school computer room. Moz offered to teach them computer and thus their 'masti' with computers started. They learnt how to write programs using Scratch, and format text in Word Processor. They also learnt how to keep themselves fit and healthy.

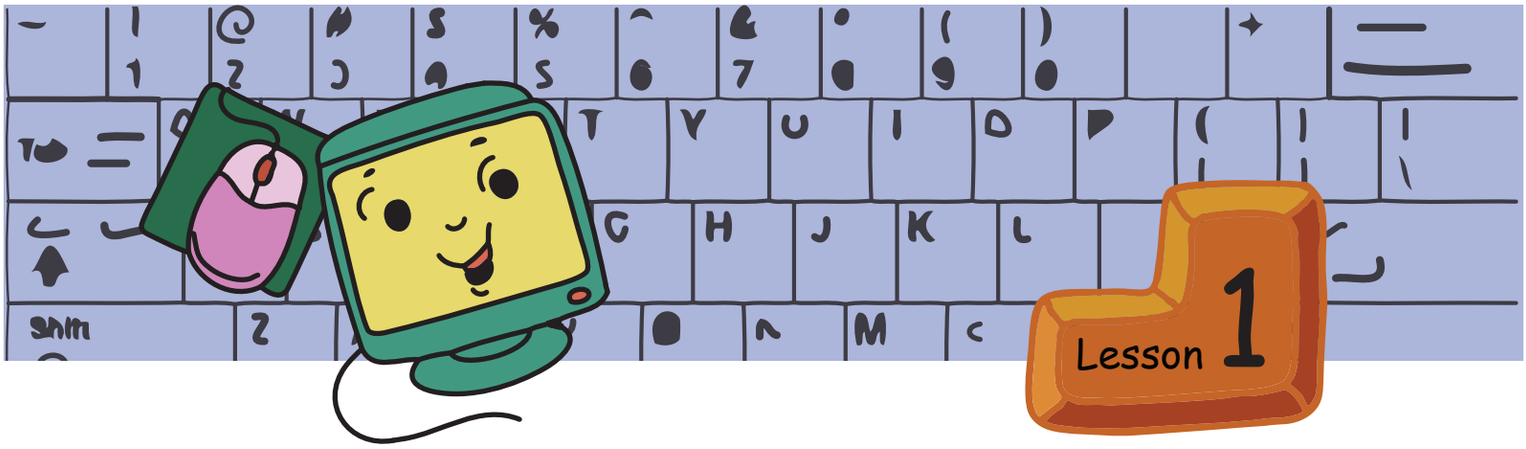
Moz: Both of you look fresh and healthy. What is the secret?
Tejas: We both had been to Timbaktu and spent some time sharing our computer knowledge with friends.

Jyoti: We learnt many things about trees, animals and insects in their natural surroundings, from our friends.
Tejas: Yes. We also learnt some interesting games, songs and the Kolatam dance from them.

Moz: That is good.

Tejas: We brought some saplings and seeds to be sown in the school.
Jyoti: Moz, We are just waiting to learn and explore more about Scratch and the other activities.
Moz: Sure, Let us start from tomorrow.

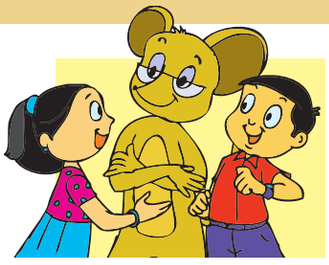




Revision of Level III

Aim

In this lesson you will:
Revise the topics from level III.



Schools have reopened and it is time for students to plan an event for their class. This year Tejas and Jyoti have been given the responsibility to plan for the class day. The children are discussing about the event with Moz.

Tejas: Moz, We have to plan a four hour event. We planned four main activities. These are,

1. Tree planting – Vanamahotsav.
2. Fun with Scratch.
3. Exercises and Asanas.
4. Fun with text processing.

Moz: Wow, tree planting! Why did you think of tree planting?
Jyoti: We need to plant more and more trees to fight pollution.
Tejas: Trees give us oxygen, shade, fruits, flowers, wood and many more things.
Moz: What does Vanamahotsav mean?
Tejas: Vanamahotsav is a festival of tree planting and nurturing the trees.

Info

During Vanamahotsav

- Awareness is created in people about the importance of trees in our lives.
- Every year, during Vanamahotsav, new saplings of trees are planted in areas that do not have trees.
- Trees native to the region are planted. These can adapt easily to local regions and have a high survival rate. They can support the birds, insects and animals of the local eco-system.

Jyoti: Now is the right time to plant trees as the rains have just begun.
Moz: Correct. So what should we do next?

1. Step-wise thinking

Tejas: Now we have to plan for each activity and list the main steps for each activity.
Moz: Good. What are the main steps for "Tree planting activity"?
Tejas: First, we get some saplings. Then we go to a place where we can plant the saplings.
Jyoti: Then, plant the saplings and water them regularly. If it starts raining regularly, we need not water them.
Moz: Good. So you have three main steps. What are they?

Activity 1: Tree planting- Vanamahotsav

Step 1: Plan for planting of saplings.
Step 2: Plant the saplings.
Step 3: Take care of the saplings.

Moz: What next?
Tejas: We have to list the detailed steps.
Moz: Good. Do you know where you can plant the saplings?
Jyoti: The hill near the school is barren. We plan to plant the saplings there.
Jyoti: Our teacher has obtained the permission for us to plant the saplings.
Moz: How many saplings will be planted?
Tejas: There are 40 students, 2 teachers and a principal.
Jyoti: We need a total of 43 saplings.

Moz: Did you decide the type of saplings that you are going to plant?
Tejas: Some medicinal plants like Amla and Neem. My grandmother says that the air from the neem tree is very good for health.

Laxmi Taru

Moz: I know of one tree called Laxmi Taru or Sirouba. This tree consumes high amount of Carbon dioxide and purifies the environment. It can grow on barren land and reduces the soil erosion. It requires very little water to grow.

Jyoti: We can also plant trees that give shade like Banyan, as well as fruit bearing trees like Mango, Tamarind and Chikoo.

Banyan

Chikoo

Tejas: After deciding the saplings that we want, we have to give the list to the gardener. The gardener will bring the saplings.
Moz: Good.

Moz: How do you plant the saplings?
Jyoti: We need to dig the soil and then plant the saplings.
Tejas: Our teacher said that the ground will be prepared by our gardeners.

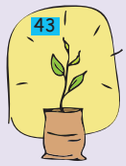
Detailed steps are:

Main Step 1: Plan for planting of saplings.

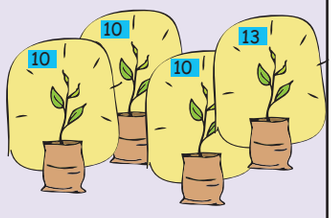
Step 1.1: Decide the location to plant the saplings.

Step 1.2: Obtain permission to plant the saplings.

Step 1.3: Calculate the number of saplings that will be required.



Step 1.4: List the types of saplings that are required.



Step 1.5: Inform the gardener about the number of saplings and type of saplings that will be planted.

Step 1.6: Request the school gardeners to prepare the ground to plant the saplings.

Moz: Now, how do you plant the saplings?
Tejas: Let us work in groups of two students each.
Moz: Why?
Tejas: It is fun and we can help each other while planting.
Moz: That is a good idea.

Jyoti: Next, each student plants a sapling.
Moz: Correct. You have to detail out this step too.
Jyoti: Oh! Yes. We put the roots of the plant in the hole made by the gardener. Then cover it with mud.
Moz: So do you need something for this step?
Jyoti: Yes. We need a shovel or a spade.
Moz: Good thinking.

Detailed steps are:
Main Step 2: Plant the saplings.

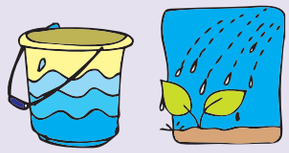
Step 2.1: Make groups of two students each.

Step 2.2: Collect the tools to be used for planting.

Step 2.3: Plant the saplings.

Moz: After the saplings are planted what do you do?
Tejas: We need to water them. So we need to get a few water cans.
Moz: Very good. You have made a very detailed plan.
Tejas: The last step and important one is to water them regularly. The teacher said that the gardener will take care of it, till we get regular rains.

Main Step 3: Take care of the plants.
Step 3.1: Arrange for water.
Step 3.2: Water the plants regularly.



2. Scratch – Introduction and Simple animation

Moz: Can you demonstrate the tree planting activity using Scratch?
Tejas: Yes. We can.

Tejas and Jyoti first plan the program and then convert it into instructions in Scratch.

> Information:
> There are two students.
> Two saplings to plant.
> A hill to plant the saplings.

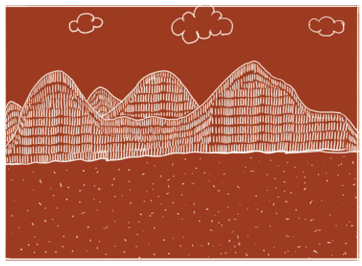
Main steps for Scratch program "Two students planting saplings".

> Step 1: Prepare for planting.
> Step 2: Plant the saplings.
> Step 3: Take care of the saplings.

Tejas: We need two Sprites, one for each student. We also need different Costumes like sitting to plant, digging etc. for the two Sprites.

Jyoti: Let us do Warli drawings for each action using Paint.
Tejas: Oh! Yes. That will be a good idea.
Jyoti: Will you please draw the Background? You are good at drawing scenery.
Tejas: Thanks. I will paint the Background. We will need three Backgrounds:

1. To show the place where the saplings are to be planted.
2. To show the place dug out and mud strewn around.
3. Another one with the planted sapling.



> Warli art is an ancient Indian folk art tradition of painting. It has derived its name from a tribe in Maharashtra by the same name. This art mainly uses geometric figures like circle, triangle and square. The use of colour is usually white against earthen colors.
>
> Info

Moz: Very good. Both of you have planned the activity very well.
Tejas and Jyoti then plan the program on paper.
Tejas: We first have to import the Background, Sprites and Costumes.

- Import Backgrounds.
- Import the Sprites and the Costumes.
- Position StudentSprite1 and StudentSprite2 on the hill.

Jyoti: Now let us first write the detailed steps for StudentSprite1, StudentSprite2 and Background.
Tejas: I will be student 1 and you are student 2. Let us act out the sequence and write the detailed steps.

Tejas (with a smile says): That means we have to insert "wait __ secs" wherever necessary.
Moz: Correct. Coordination between Sprites is important.

Jyoti and Tejas write the detailed steps for each action:

Detailed steps for - Step 1: Prepare for planting	
StudentSprite1	**StudentSprite2**
Start the program. Change to Costume standing. Say "Let us start", for 1 second.	Start the program. Change to Costume standing. Wait for 1 second.
Wait for 1 second.	Say "I will give you the saplings and the tools" for 1 second.
Change Costume to sitting position. Say "` Please give me the tools" for 1 second.	___ Wait for 1 second.
___ Wait for 0.5 second. Change Costume to digging.	Change Costume to giving tools. Wait for 0.5 second. ___

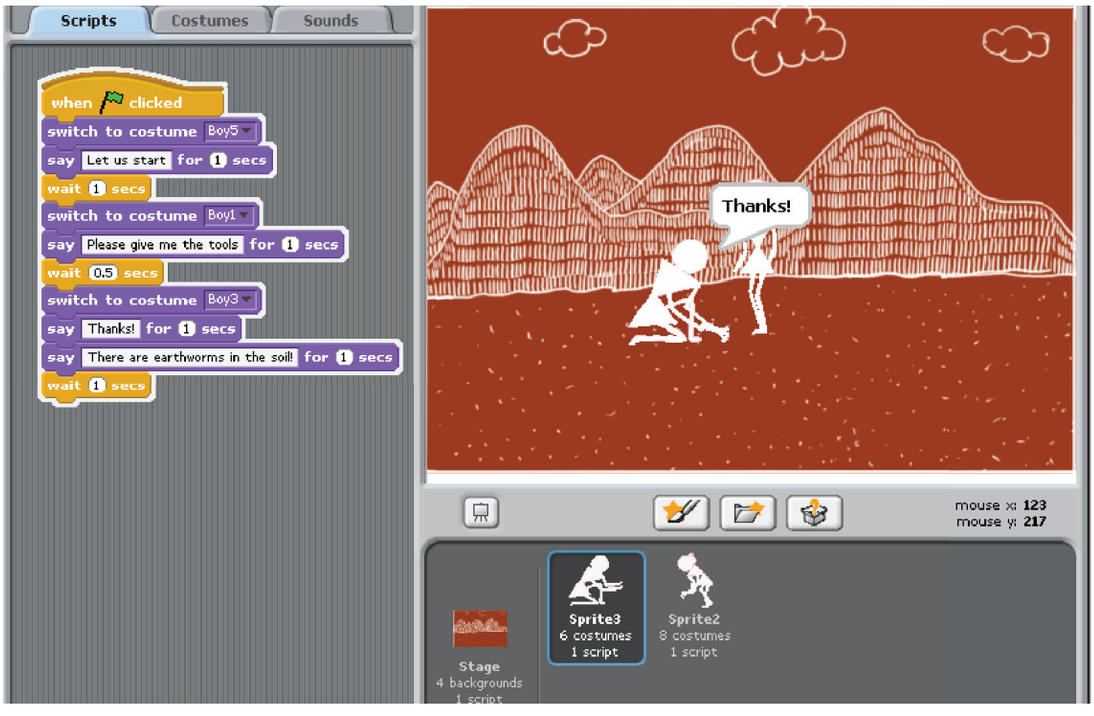
Detailed steps for - Step 1: Prepare for planting

StudentSprite1	StudentSprite2
—— Say "Thanks" for 1 second.	Change Costume to standing. Wait for 1 second.
Say "There are earth worms in the soil!", for 1 second.	Wait for 1 second.
Wait for 1 second.	Say "They are good for the plants. They keep the soil loose."

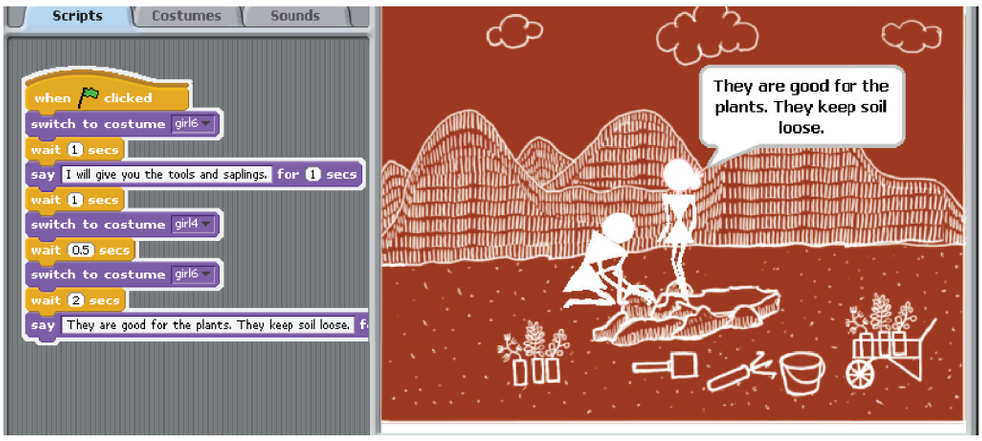
Background

Start the program.
Switch to background showing the place where the saplings are to be planted.
Wait for 4.5 seconds.
Change to background with the place dug out and mud strewn around.

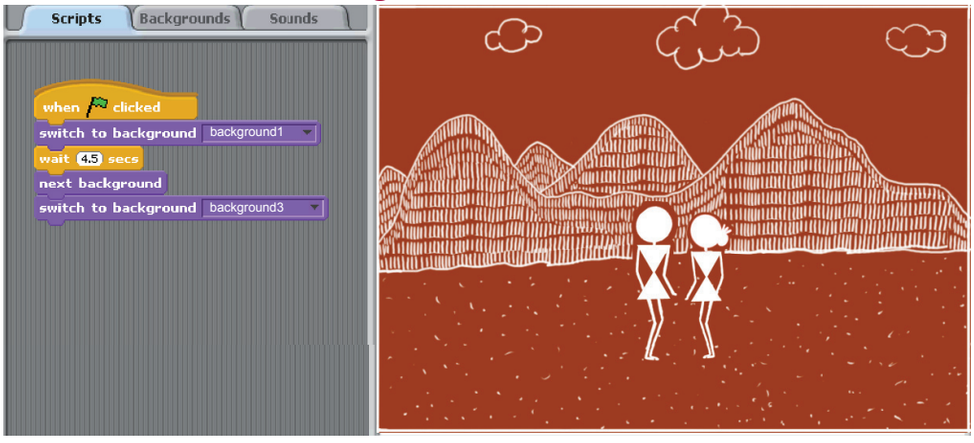
Scratch block for StudentSprite1



Scratch block for StudentSprite2



Scratch block for Background



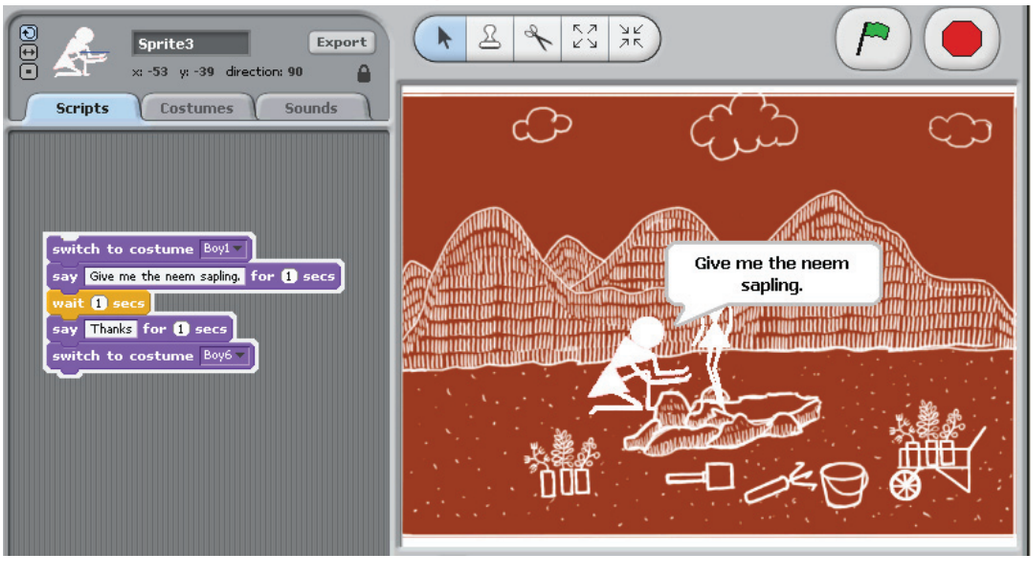
Detailed steps for - Step 2: Plant the saplings

StudentSprite1	StudentSprite2
Change Costume to stretching the hand. Say "Please give me the Neem sapling", for 1 second.	Change Costume standing. Wait for 1 second.
— Wait for 1 second. Change Costume to planting the sapling.	Change Costume to giving the plant. Say "Here is the Neem sapling", for 1 second. Change Costume standing.

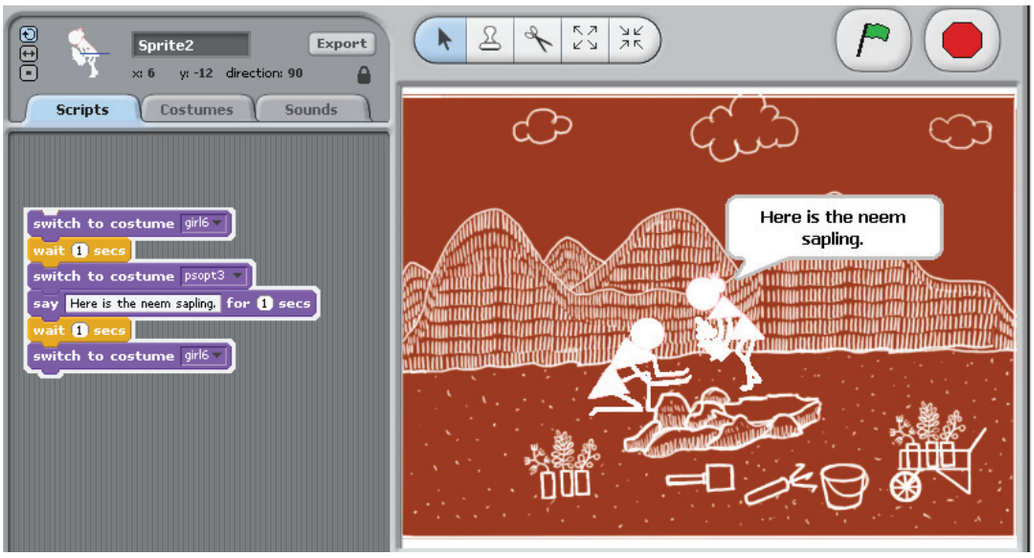
Background

Change Background with the place dug out and mud strewn around.
Wait for 3 seconds.
Change Costume to background with the planted sapling.

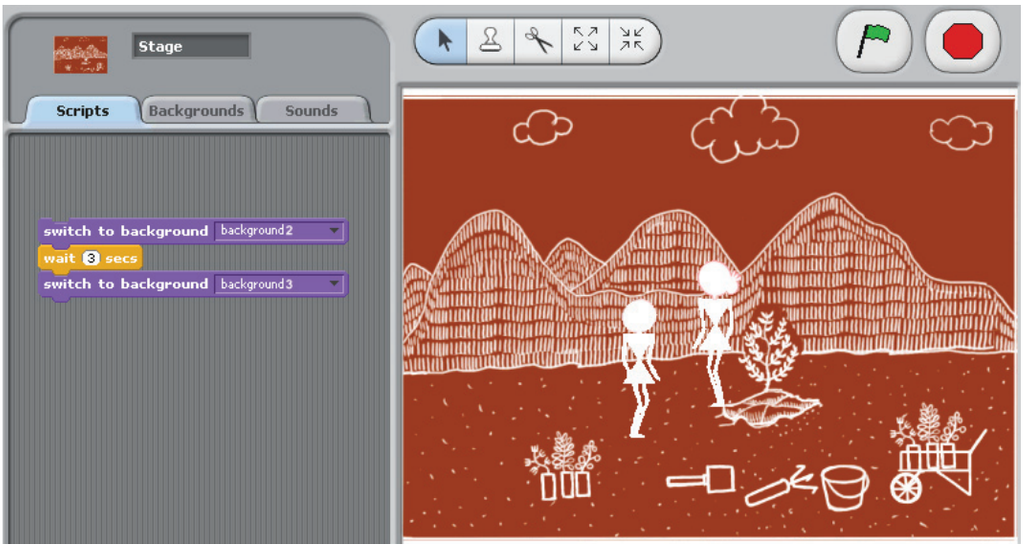
Scratch block for StudentSprite1



Scratch block for StudentSprite2



Scratch block for Background



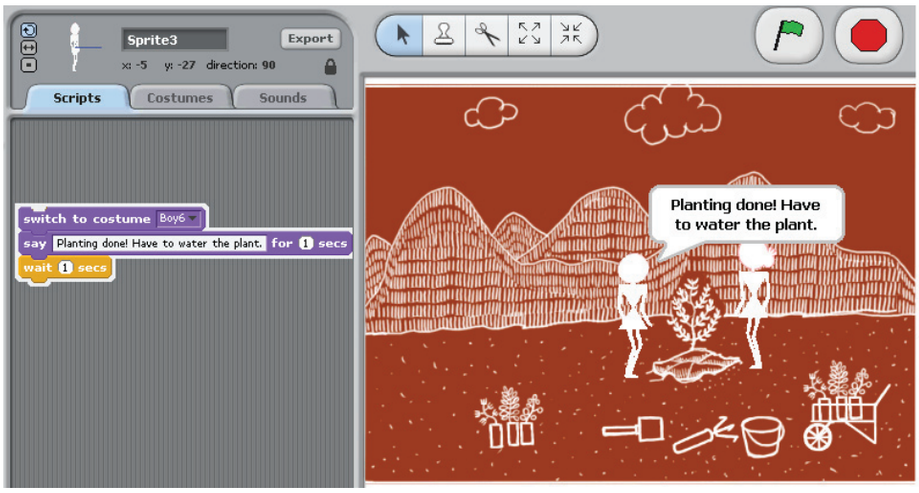
Detailed steps for - Step 3: Take care of the saplings

StudentSprite1	StudentSprite2
Change Costume to standing. Say "Planting done! Have to water the plant.", for 1 second.	Change Costume to standing. Wait for 1 second.
—— Wait for 1 second. ——	Change Costume to watering the plant. Say "I will water the plant", for 1 sec. Change Costume to standing.

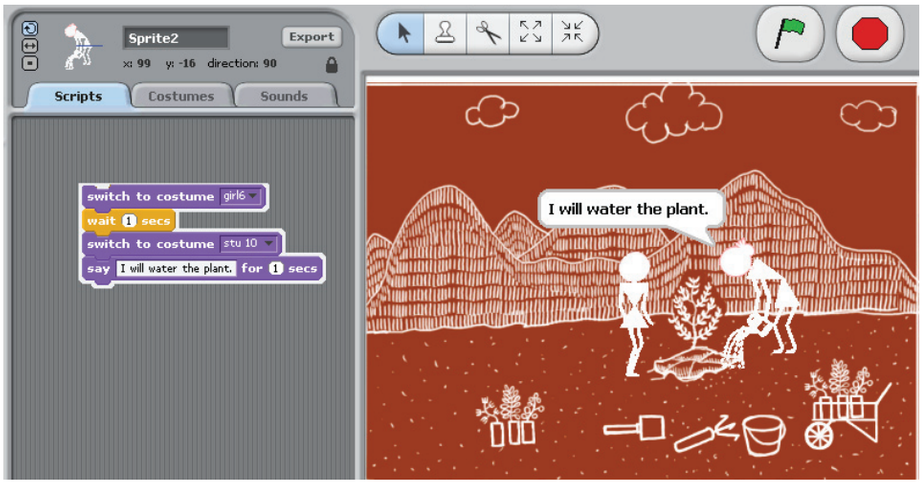
Background

Change Costume to Background with planted sapling.

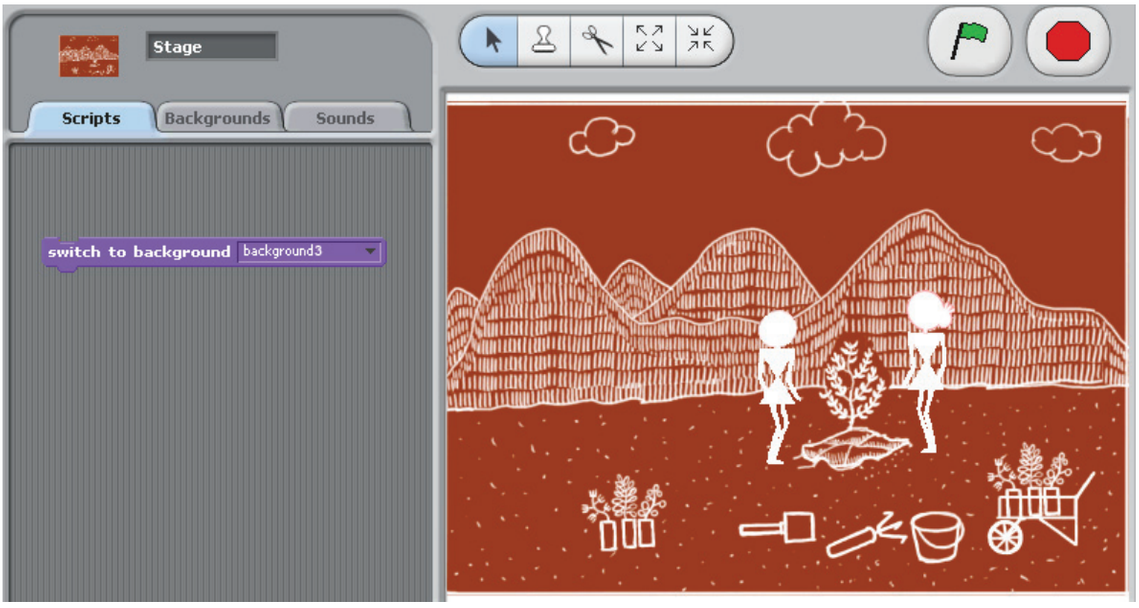
Scratch block for StudentSprite1



Scratch block for StudentSprite2



Scratch block for Background



Jyoti: When it is the second student's turn to plant, we can repeat the above blocks for StudentSprite1 and StudentSprite2, just by reversing the roles.
Moz: Correct. Are there any steps where you can change the sequence?
Tejas: Either of the two students can start planting the sapling.
Jyoti: Both of them can also sit together, keep the tools in between a n d plant the saplings at the same time.
Moz: Correct. For some activities the sequence does not matter, while for others the sequence matters. Now, enter the programs in Scratch and execute the animation.

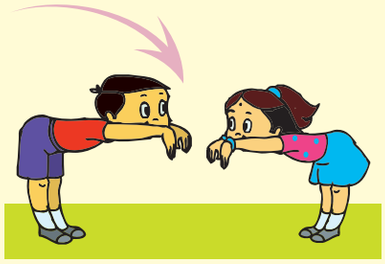
Jyoti: For the next "Fun with Scratch" activity, let us ask the students to make the Sprite draw an elephant, a joker, a butterfly or a dragon, step by step.

Moz: That will be interesting. Are you giving any hints to help them complete the activity?
Tejas: Yes. We will give hints.

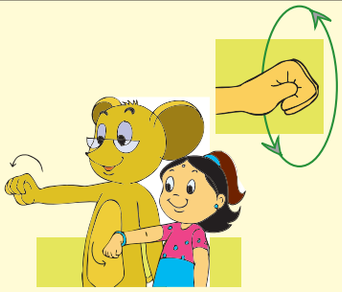
"Fun with Scratch" activity prepared by Tejas and Jyoti can be found on page number 23, as group activity (b).

3. Dos and Don'ts: Asanas

Tejas: Let us take a break and do some exercises.

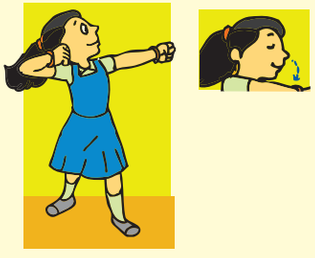


Samakonasana



Manibandha chakra

Skandha Chakra



Akarna dhanurasana

Hasta Utthanasana

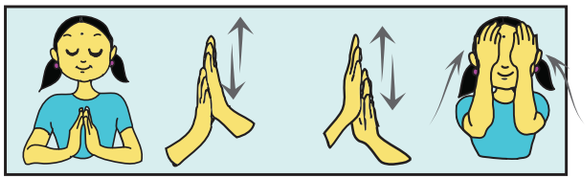
Rotational viewing

Moz: Can you list some of the important precautions while using a computer.
Tejas and Jyoti: Yes. We can.

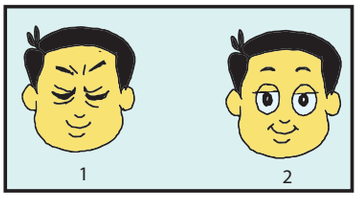
- Do not work for more than half an hour at a time.
- If we are not using the mouse or keyboard then keep the hands relaxed.
- Keep your wrists straight while you are typing. Do not bend your wrists up, down or to the sides.
- Maintain a good posture to avoid pains and aches in the body.
- Do some stretching exercises and asanas for shoulders, wrists, legs and back.
- Exercise regularly to keep fit.

Guidelines

Moz: Are you blinking regularly?
Tejas: Yes. And we also take breaks while using computers.



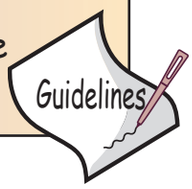
Palming



Be a cat

Minimize eye strain

- Blinking and looking away from the monitor need to be done frequently.
- Take eye-breaks every 10 minutes, by looking away from the screen and into the distance.
- Remember to clean your screen. If you wear glasses, clean them also.
- If you cannot read the text on the screen easily, increase the font size of your text, instead of going closer to the monitor.
- Do the eye exercises regularly to avoid strain on the eyes and to have good eyesight.



Moz: Now, What is your plan for "Exercises and Asanas" activity?
Jyoti: Let us divide the class into groups and ask each group to demonstrate one asana.

"Exercises and Asanas" activity prepared by Tejas and Jyoti can be found on page number 23, as group activity (c).

4. Fun with Text processing

Moz: Good. Now you have one more activity that needs to be detailed.
Tejas: Let us write about the history of computers in the Word Processor.
Jyoti: The students can then format the document.
Moz: What are the guidelines for formatting?
Tejas: We will list them down so that we can give these guidelines to the students.

Formatting text

Font type:

- Choose a font which is clear and easy to read.
- If you mix different types of fonts in a sentence, it will be difficult to read the sentence.

Font size:

- Larger fonts are used for text which is important and to capture the attention of the reader.

Font Style:

Whenever you want to highlight or emphasize a word or sentence:

- Use either **bold** or *italics* style of the font.
- Use **bold** and *italics* together only if necessary.
- A different colour can be used for a word or sentence.
- Underline can also be used to draw attention.
- Remember not to use too much of **bold**, *italics* or colour in your story, essay or any document that you are preparing.

Guidelines

Moz: That is right. Can you use a number of fonts in a sentence?
Jyoti: If there are too many font changes, then it is not easy to read.
Moz: Correct.

Jyoti and Tejas prepare an activity for "Fun with Text Processing" which is given as a worksheet on page number 20.

Moz: Excellent. You have learned to do things systematically. Did you observe that you have planned the event step by step.
Jyoti: Yes. We decided the main activities first. Then we detailed each activity.
Tejas: Thanks Moz for helping us to plan the event. We would like to explore more of Scratch.
Moz: Sure, we will start tomorrow. In the next lesson we will discuss problem solving with logical thinking. This will help you in writing programs for games, interactive greeting cards, etc., in Scratch.
Chin Chinaki...

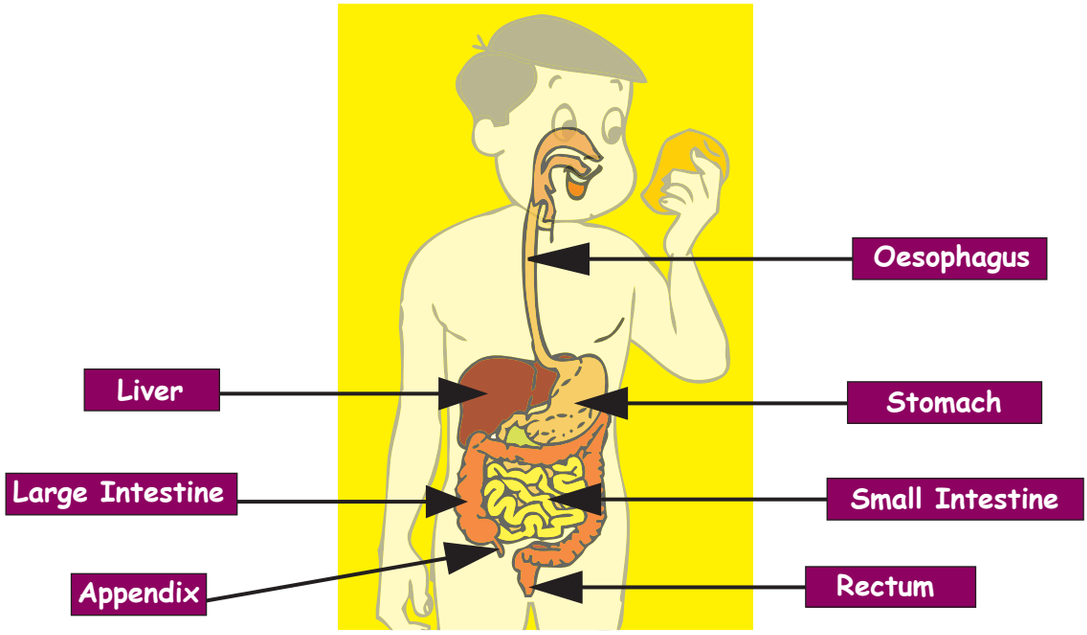
Learning Outcome

After you have studied this lesson, you will be able to:

- Recall and applay what was learnt in Level III, such as step-wise thinking, programming with Scratch, Asanas and text formatting.

WORKSHEETS

1. Various steps in digestion of food are given below. Write numbers from 1 to 7 next to the sentences, as per the steps in digestion process.



Step 1 → You take a bite of food.

_ _ _ _ _ _ _ _ → Water is removed from the remaining food in this large intestine.

_ _ _ _ _ _ _ _ → Your teeth tear, chop and grind the food.

_ _ _ _ _ _ _ _ → Food reaches the stomach. It is mixed with digestive juices and churned.

_ _ _ _ _ _ _ _ → The waste food is thrown out through the rectum.

_ _ _ _ _ _ _ _ → The food is mixed with more digestive juices in this long, narrow intestine. The food breaks down further.

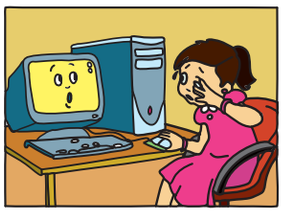
_ _ _ _ _ _ _ _ → The crushed food travels through the oesophagus.

WORKSHEETS

2. Circle True, if the statement is correct and False, if the statement is not correct.

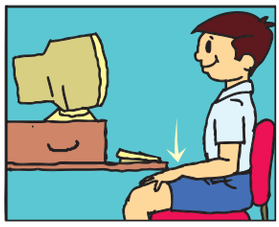
i. Increasing the text size on the computer screen will strain your eyes.

True/False



ii. You can work on a computer without breaks.

True/False



iii. If you are not typing or using the mouse, relax your hands in your lap.

True/False

iv. Zeba and Zubin are sharing the computer and sharing is a good habit.

True/False

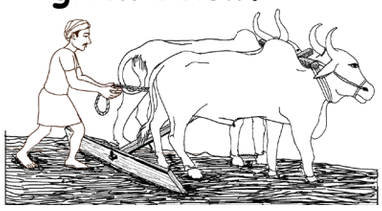
v. Shishir is sitting in a low chair to work on the computer and this is the correct posture.

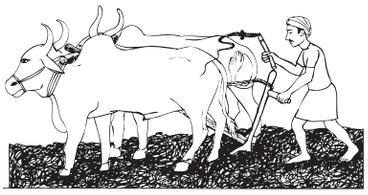
True/False

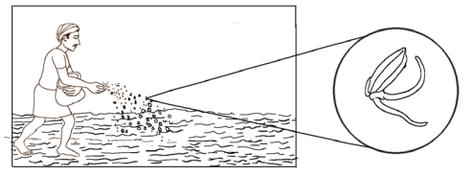
3. Bittu wants to do exercises for his eyes. Which of the following two exercises should he do?

a) Palming
b) Manibandha Chakra
c) Blinking
d) Samakonasana

4. Following pictures show how rice (or paddy) is grown in Timbaktu. The pictures are given in a jumbled order. The three main steps are listed below. List out the detailed sequence of each main step in the blanks given below.


Levelling


Ploughing


Sowing seeds in the nursery plot


Seedlings grow


Removing seedlings from nursery plot


Transplanting seedling into fields


Weeding


Applying organic pesticide


Flowering


Drying out in drained field


Cutting the crop


Threshing

Main Step 1: Preparing the field.

Detailed Steps: 1.1. Levelling 1.2. Ploughing _____

_____

Main Step 2: Preparing the rice plants.

Detailed Steps: 2.1. 2.2. 2.3 _____

_____

Main Step 3: Harvesting.

Detailed Steps: _____

_____

WORKSHEETS

5. State whether True or False.

a. Dividing a task into smaller steps makes the task difficult to do.
True/ False

b. Take eye-breaks every 10 minutes by looking away from the screen into the distance. True/ False

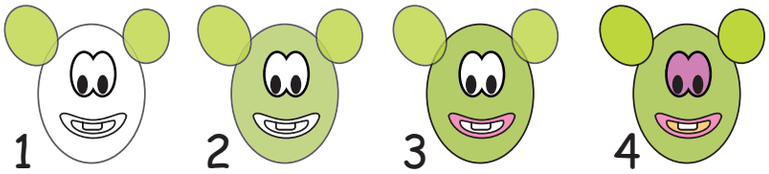
c. 

command can be used to stop a program in Scratch.
True/ False

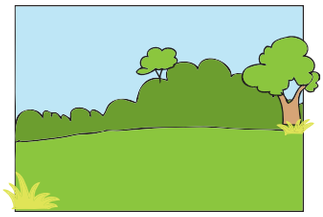
d. To highlight or emphasize a word or sentence we can use bold style of the font. True/ False

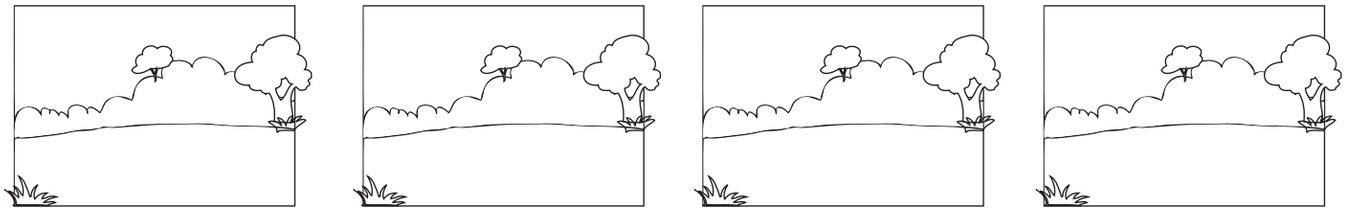
e. A computer can only work using step by step instructions from us.
True/False

6. Just like you draw step by step, you can also colour step by step. An example is shown below.



Now paint the following figure step by step.





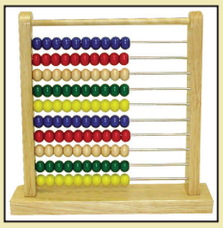
7. Write a program in Scratch to show the step by step colouring in the above question.

8. Help Tejas find the two exercises that are good for his shoulders.

i. Hasta Utthanasana
ii. Skandha Chakra
iii. Manibandha Chakra

9. Format the following document choosing a font type and colour. One of the paragraphs is done for you.

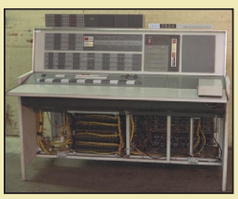
History of Computers



Since stone age people needed to count and calculate. Stone age men used stones for simple counting and calculations. The abacus was invented as an early aid for mathematical calculations. It was made of strings and beads. Using these beads people performed calculations. Many mechanical devices were later invented to help us in calculations. In a present times, computers are used to perform complex calculations.

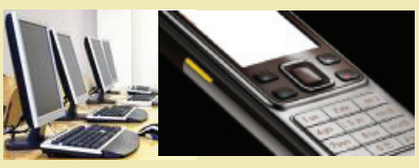
The history of modern computers dates back to 1945. The present day computer has crossed more than 3 generations. The classification of generations has been done based on technology, speed, storage, reliability and cost.

The first generation computers used vacuum tubes. They were named 'Eniac', 'Edvac', and 'Univac'. They were enormous (taking up entire rooms), very expensive to operate and used a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.



In the second generation of computers, transistors replaced the vacuum tubes. The transistor was far superior to the vacuum tube. Computers became smaller, faster, cheaper, more energy-efficient and reliable. But still it generated a lot of heat which often damaged the computer.

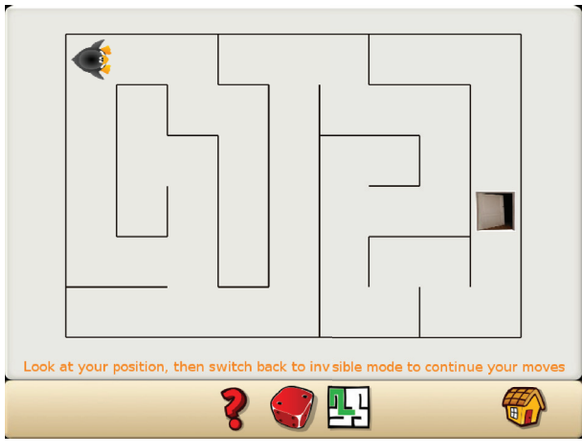
The invention of integrated circuits ushered in the next generation of computers. With the developments in the integrated circuits, large number components could be fit into a small chip. A microprocessor is a single integrated circuit which incorporates most or all of the functions of a central processing unit (CPU). These developments reduced the size and price of the computers at the same time increasing power, efficiency and reliability. The computers in the latest generation are the Desktop, Notebook or Laptop, Palmtop, Server, Mainframe and Super Computer.



Open Educational suite GCompris and play the following games:

1. **Invisible Maze:** Help Tux get out of this maze. Use the keyboard arrows to move Tux up to the door. You can switch between invisible and visible modes using the spacebar. Visible mode just gives you an indication of your position, like a map. You cannot move Tux in visible mode.

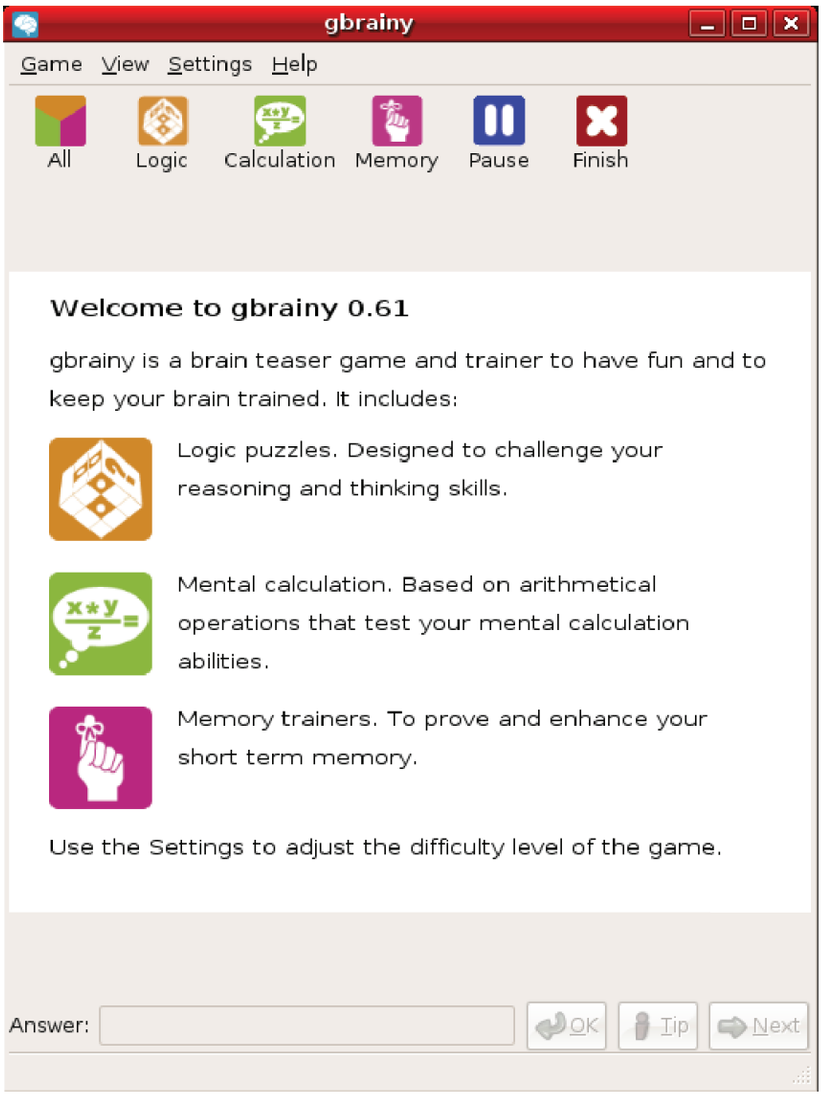
Invisible mode



Visible mode

2. **Memory game Flash cards:** You can see only one side of the cards. Each card is hiding an operation, or the answer to it. You are playing against Tux, the penguin. You need to find the two parts of the operation, and bring them together again. Click on a card to see what number it is hiding, and then try to find the other card that goes with it, to make a whole operation.
   You are doing the job of the equals sign, and the numbers need you to put them together and make a proper equality. When you do that, both those cards disappear! When you have made them all disappear, you have won the game!

3. **gbrainy:** This is a brain teaser game and allows you to play games related to memory, calculation and logic. To play this game, follow these steps:
   Applications ---> Games ---> gbrainy



Group Activity:

a. **Famous Five on a Vacation:**
   Form groups of Five children. Imagine that you are on a vacation with your friends (the group members). Example: Taj Mahal, Munnar hills, Goa beaches, or Timbaktu. When you are in such a place what would you talk about? Act out the conversation. Write down the conversation. Write a Scratch program with the place as the background and your conversation to the Sprite. Remember to first write the detailed steps for each Sprite and the background. Then convert it into a Scratch program.

   Hint: Each member of the group is represented by a Sprite. Have fun using animals, birds, insects as Sprites. Use Looks, Control, Motion and Sound blocks.

b. Anything is easy to draw!

Draw step by step:

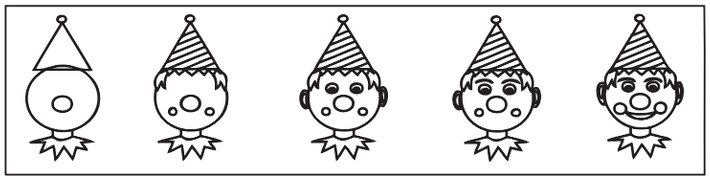
Form groups of three children each. Each group selects one of the following drawings which can be drawn using step by step:

1. An elephant
2. A butterfly
3. A dragon
4. A joker

Write a program in Scratch to demonstrate step by step drawing of the selected drawing.

Hint: Draw a Costume for each step using Paint. Use instructions from Looks, Control and Sound blocks. Some instructions that can be used are:

Example: Costumes to draw a joker step by step.



c. Choose and Demo:

Divide the class into eight equal groups. On small sheets of paper write the names of the exercises and asanas. Fold these papers and put them in a bowl. A member of the group picks up one of the folded papers from the bowl. The group then demonstrates the exercise or asana that is written on the paper.

1. Kehuni Naman.
2. Manibandha Chakra.
3. Greeva Sanchalana.
4. Akarna Dhanurasana.
5. Samakonasana.
6. Be a cat.
7. Rotational viewing.
8. Palming.

Explore!

1. Find out about Carpal Tunnel Syndrome. What are its causes and how can it be avoided?
2. Find out how you can use your own pictures as a Sprite in Scratch.

Teacher's Corner

Level IV
Lesson 1

- The first lesson of Level IV is a revision chapter. It is important that students have a clear understanding of the concepts covered in Book III before they start learning new topics. You can begin the class by asking the students how they spent their vacation. Some students would mention that they visited their relatives or travelled to a new place.

- You can ask them how they planned the trip and list the different steps involved in the activity. Summarize the main and detailed steps. Draw attention of the students to the reasoning involved in taking decision for each step. Mention that they will learn more thinking skills this year.

- You can make the students enact the vanmahotsav activity in the lesson.

- You can ask the students to write a short paragraph on activities during the vacation, using the text editor. Encourage them to use the different formatting options to make the paragraph easy to read.

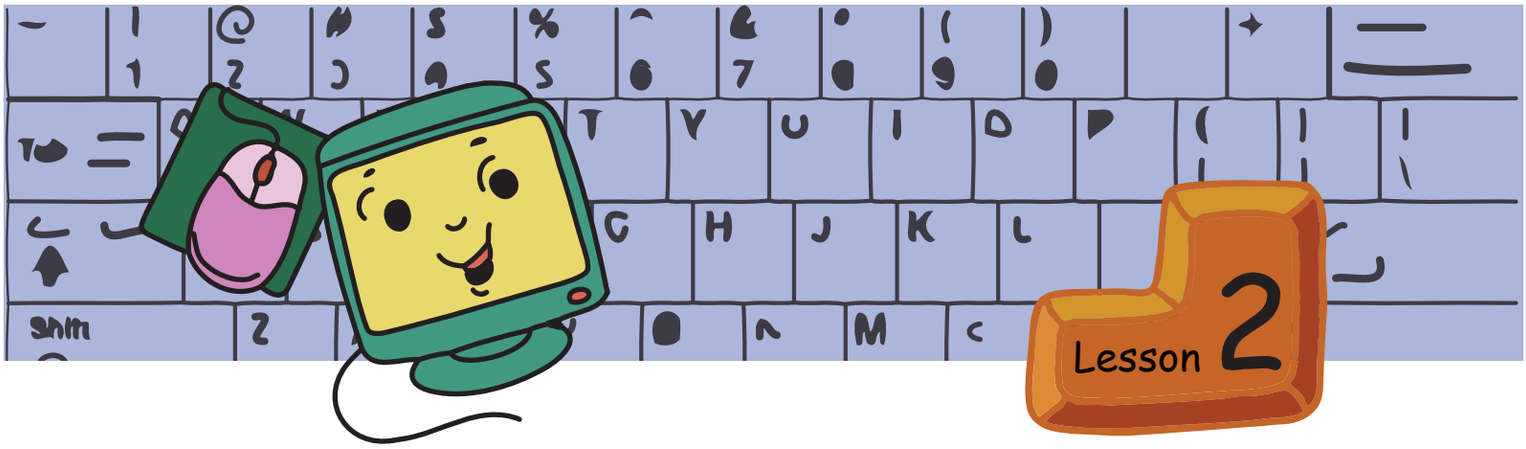
- Revise the various exercises they learnt to keep fit while using computers. Ask the students to demonstrate these in the class. You can play a game where each row in the classroom represents one group. Ask one group to mention the name of the asana and the second group demonstrates it. You can also reverse the format, wherein one group shows the exercise and other group mentions its name. Make the game more challenging by asking a few random questions open to all the groups such as demonstrate the correct posture while using the computer. End the session by listing the different asanas for neck, back, eyes and shoulders.

- Ask the students to mention the various activities they did with computers. Students would mention about Scratch and the different projects they had written. Let one student start this application and run a short program such as drawing a square. Another student can show how to control the given project by using the different control commands. Revise the different commands of Scratch covered in Level III. Tell the students that they will learn new commands this year that will allow them to write interesting projects using Scratch. Ask the students to read the detailed steps for writing a script for the vanmahotsav project explained in the lesson.

- End the class by summarizing the different topics covered in Level III. Allow the students to have adequate hands-on practice by giving them appropriate exercises, especially in Scratch.

Further Reading:
http://school.discoveryeducation.com/brainboosters/

Notes:

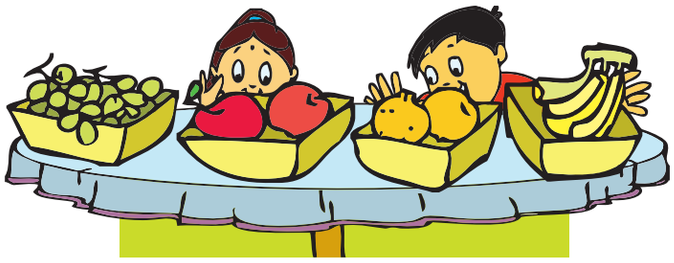


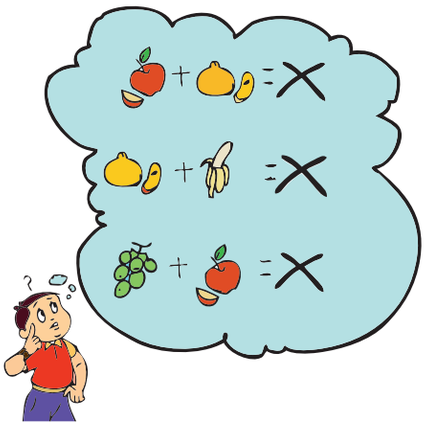
Logical Thinking

Aim

In this lesson you will learn:
Step by step approach and reasoning to solve problems.
How to use what you already know to solve problems.
How to tackle a task when you do not know anything about it.

Tejas: Fruits! I like fruits. They are good for health.
Moz: Correct. You can have them.
But first you have to solve this puzzle.





There are four types of fruits:
Apples, Oranges, Bananas and Grapes.
Each one of you must pick two types of fruits.
Note the following conditions:

- If you pick apple you cannot pick orange.
- If you pick orange you cannot pick banana.
- If you pick grapes you cannot pick apple.

Tejas: I want an apple. With apple I cannot pick an orange or grapes. So I pick apple and banana.

We know: There are four types of fruits- apples, oranges, bananas and grapes.
Goal: Tejas has to pick two fruits. He likes apples. What other fruit can he take?
Answer: Banana

Jyoti: I like oranges. With orange I cannot pick banana or apple. Hence I pick orange and grapes.

Moz: Very good logical thinking. Can I pick banana and grapes?
Tejas and Jyoti: Yes, you can!

Main steps in logical thinking

I. Task: Read the problem carefully.

Example problem: What comes next in the sequence below?

II. Identify: As you are reading make a note of the following:

1. Goal- What is the goal?

To find the fourth shape in the sequence.

2. Information- What is the information available?

- A sequence of geometrical shapes is given.
- In the sequence, the first shape has 3 sides, the second has 4 sides, and the third has 5 sides.

CONCEPTS

3. Conditions- What are the conditions?

In the given sequence, from one shape to the next, the number of sides is increasing by 1 .

III. Solve: Achieve the goal by using the given information and following the conditions.

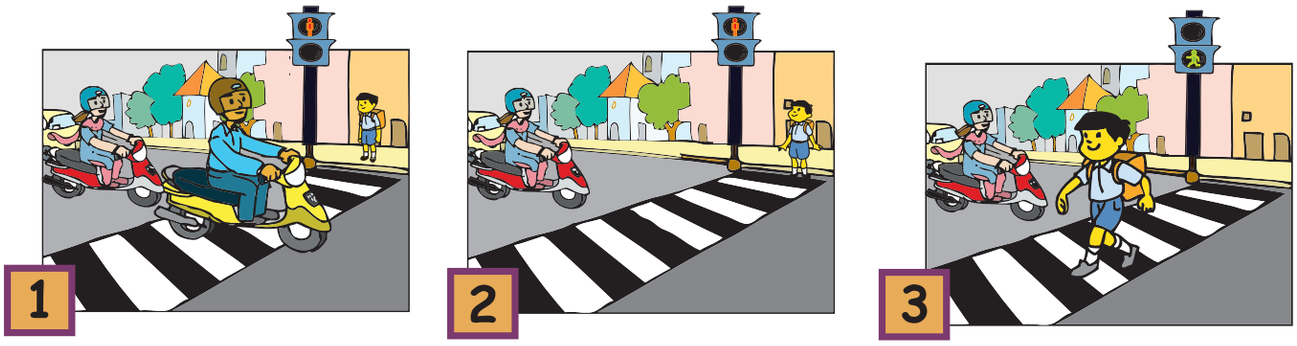
1. Reasoning- The fourth shape should have 5+1 = 6 sides.

2. Solution- Work out the solution in a step-wise manner.

The problem is solved!

Moz: Let us look at another example. You are walking towards a play ground. But the playground is on the other side of the road. So what do you do?

Jyoti: We know that we have to first reach a crossing where there are traffic lights.
Tejas: Next, we check that the vehicles on both sides of the road have stopped before crossing. Then we can cross.



Jyoti: The condition is that we should follow traffic light rules.
Moz: Good. It is very important to learn about the traffic rules and follow them.

I. Task: To cross the road.

II. Identify:

1. Goal- Cross the road.

2. Information available-
   - There are vehicles on the road.
   - There is a zebra crossing with a traffic signal.

3. Conditions-
   - Wait for the green signal before crossing the road.
   - No vehicles should be moving while we cross.

III. Solve:

1. Reasoning- We should wait till the crossing signal is green and the vehicles have stopped moving.

2. Solution- Steps: 1) Come to a zebra crossing.
   2) Wait for green signal.
   3) Ensure vehicles have stopped.
   4) Cross the road.

Moz: If you do not know the rules then what do you do?
Tejas: Ask parents, teachers, other elders whom you know.
Jyoti: Observe others who are performing the task.

ex: Observe, how people wait till the green signal to cross is on, and all the vehicles in both the directions stop.

Moz: Why do you follow the traffic rules?
Jyoti: To be safe.
Tejas: If we do not follow traffic rules, we can get hit by a vehicle and get hurt.

CONCEPTS

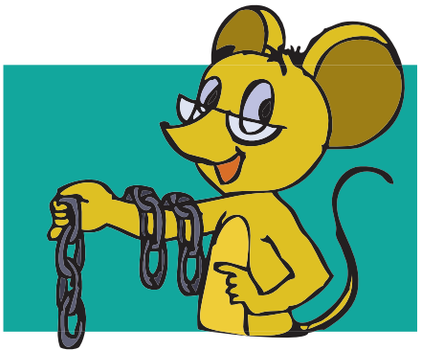
We use logical thinking to solve problems. This involve 3 steps :

1. First identify the goal.
2. Understand the given information, the rules and conditions.
3. Work out the solution in a step-wise manner.

"What", "When" and "Why", are questions that can help in thinking logically, to find out "How" to reach the goal.

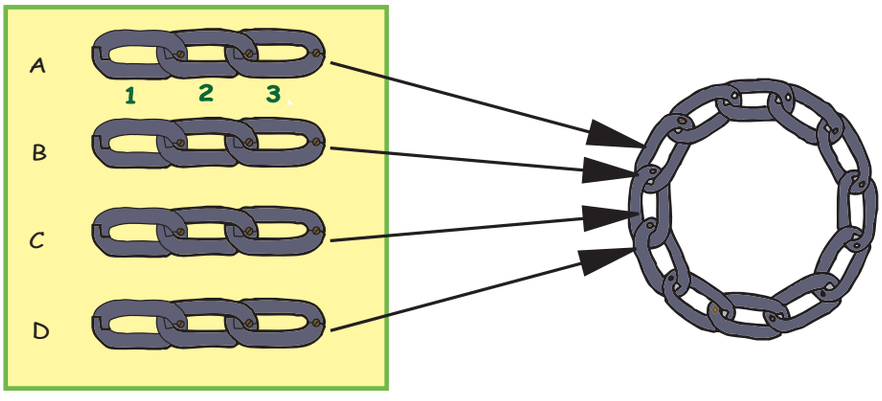
Moz: Did you know that you already use logical reasoning to solve puzzles, math's problems, science experiments and other subjects?

Moz brings out four pieces of a chain and gives Tejas and Jyoti the following problem:



- You are given four pieces of a chain.
- Each piece has three links in it.
- The links can be opened and closed.
- Join all 12 links of the chain into a single circle, as shown below.
- At the beginning of the problem all the links are closed.

- Each of the actions "opening a link" and "closing a link" is counted as one action.
- Total number of actions to form the single circular chain should not exceed 6.



Tejas and Jyoti make a note of the information available and the conditions of the problem as follows:

I. Task: To make a circular chain.

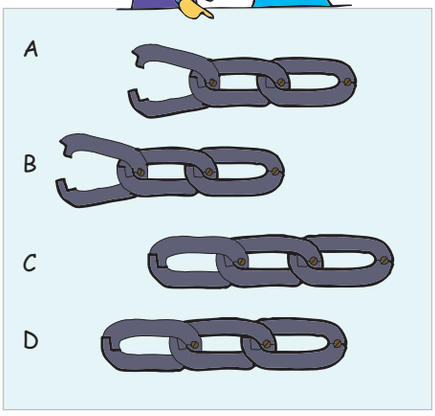
II. Identify:

1. Goal- Join all the 12 links into a single circle.

2. Information available-
   - Four pieces of chain.
   - Each chain has three closed links inter-connected.
   - The links can be closed and opened.

3. Conditions-
   - Opening a link or closing a link is counted as one action.
   - Number of actions to complete the task should not be more than six.

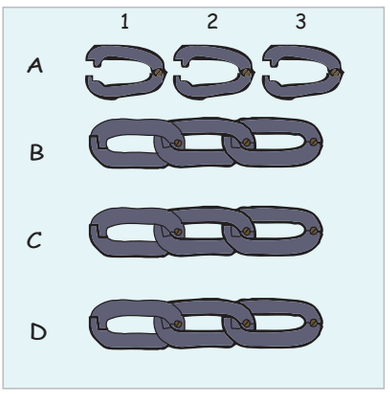
III. Solve:
   - (See the next box.)



Tejas: Let us open link at the end of chain 'A' and connect it to the beginning link of chain 'B'.
Jyoti: Then we will open the end link of 'B' and connect it to the beginning link of the chain 'C'.

Moz: The number of actions are now 4. You have two more actions to complete the circular chain.
Tejas: Oh! We cannot complete in two more actions as we still have to connect the 'D' chain and then close the circle. What should we do?

Tejas and Jyoti start thinking of other options and they keep playing with one chain. Tejas accidentally opens all the links of chain A.



Tejas (exclaims): Look! The three links of chain A are open. Let us try connecting other chains B, C and D with these links.
Jyoti: We have already used three actions for opening the three links of chain A. We have to achieve the goal with three more actions!

Jyoti: With link 1 of chain A let us connect chains B and C. We have seven links interconnected. Total number of actions is 4.

Tejas: Now connect the chain D to these 7 links using the link 2 of chain A. We have a long chain of 11 links. Total number of actions is 5.

Jyoti: Complete the circle using link 3 of chain A!
Problem solved using 6 actions.
Moz: Very good.

III. Solve: (Continued from previous box.)

1. Reasoning- Try various options for the solution. Find one option that leads to the goal without breaking the conditions given.

Example: Circular chain problem:

Option 1:

Open a link from each chain to make the circular chain.

Option 1 **does not satisfy** the conditions.

Option 2:

Open all the three links of one of the chains.

Option 2 **satisfies** the conditions.

2. Solution- Achieve the goal by choosing the option that satisfies the conditions. Work out the detailed steps required to reach the goal.

Moz: You have been able to solve the problem very easily. You already know how to think logically. Would you like to solve a different type of puzzle?
Tejas: Oh! yes.
Moz: Here is the problem of a farmer I met yesterday.

Farmer's problem:

Kishan, the farmer has to take a fox, a chicken, and a bag of corn safely across a river in a boat. He can take only one thing at a time in the boat. He cannot leave the fox and the chicken together on either side of the river, since the fox will eat the chicken. Likewise, he cannot leave the chicken along with the bag of corn, since the chicken will eat the corn. How can the farmer get everything across the river without anything being eaten?

Tejas and Jyoti discuss the problem and first list out the information, goal and conditions.

I. Task: The farmer, fox, chicken, and corn have to cross the river.
II. Identify:
1. Goal- Farmer has to take the chicken, fox and the corn to the other side of the river in the boat.
2. Information available-
- A river that can be crossed by boat.
- A farmer who owns a boat.
- The farmer has with him a fox, chicken and some corn.

3. Conditions-
- The farmer can take only one item at a time in his boat (either the fox or the chicken or corn).
- On either side of the river the farmer cannot leave:
  - Fox and chicken together.
  - Chicken and corn together.

III. Solve:
(See the next box.)

Tejas: Suppose the farmer takes the chicken first and leaves it on the other side.
Moz: Why did you choose chicken first?
Tejas: If we take the fox then chicken and corn will be left together. The chicken will eat the corn.
Jyoti: The farmer cannot leave the fox and chicken together because the fox will eat the chicken.
Moz: Good reasoning.


fox and chicken together


Chicken and corn together


But he can leave fox and corn together

III. Solve: (Continued from previous box.)

1. Reasoning- For the first step

Option 1:

- First take fox in the boat.
- Then chicken and corn will be together.
- Chicken will eat the corn.

Option 1 **does not satisfy** the conditions.

Option 2:

- First take corn in the boat.
- Then fox and chicken will be together.
- Fox will eat the chicken.

Option 2 **does not satisfy** the conditions.

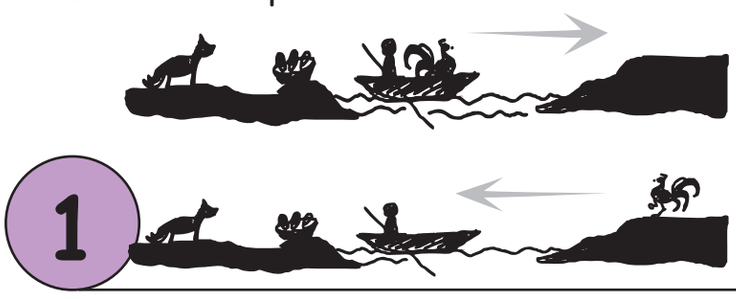
Option 3:

- First take chicken in the boat.
- Then fox and corn will be together.
- Fox does not eat the corn.

Option 3 **satisfies** the conditions.

2. Solution- Choose option 3 and proceed.

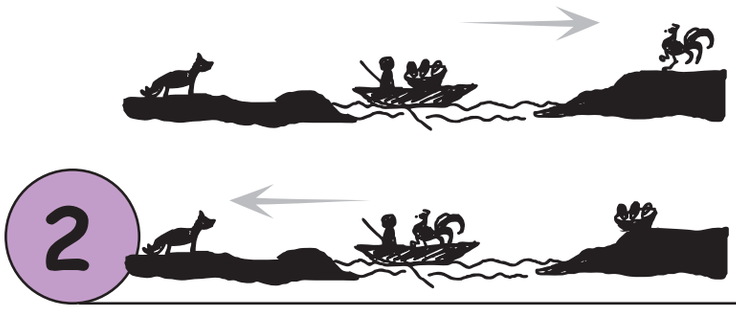
Detailed steps are shown below.



Step 1: Farmer takes the chicken in the boat and leaves it on the other side of the river and comes back alone.

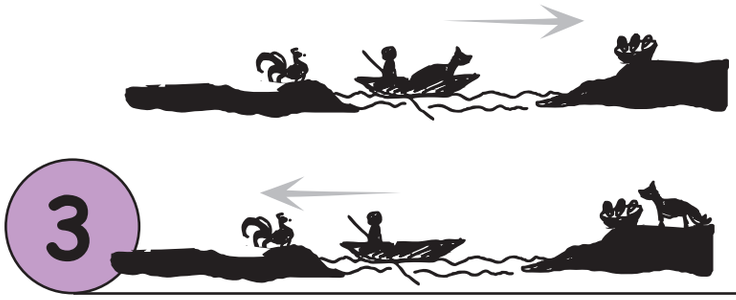
Jyoti: Next the farmer takes the corn.

Tejas: But he cannot leave the corn and chicken together on the other side of the river. So the farmer should leave the corn and bring back the chicken.



Step 2: The farmer takes the corn to the other side of the river. He leaves the corn and brings back the chicken.

Tejas: Next the farmer takes the fox and leaves it on the other side.



Step 3: The farmer takes the fox and leaves it on the other side and comes back.

Moz: Good. So the fox and corn on the other side can be left together.
Jyoti: Yes. He comes back and then takes the chicken.

Step 4: The farmer takes the chicken to the other side of the river.

Jyoti: Farmer's problem solved! That was fun to solve.

CONCEPTS

Logical thinking

1. Identify - the goal, the information given, and the conditions of a problem.
2. Solve the problem in a step-wise manner to achieve the goal.

CONCEPTS

Step-wise thinking

1. Identify the main steps.
2. List the detailed steps for each main step to achieve the goal.

Moz: Now consider the second step again. Can the farmer take the fox instead of the corn?

Tejas: Oh! Yes. Either fox or corn can be taken in the boat to the other side.

Jyoti: But he has to bring back the chicken.

Moz: Correct. Now what will be the next step?

Tejas: The farmer takes the corn to the other side and comes back.

Jyoti: Then he takes the chicken in the last step.

Farmers problem solved

Step 1: Farmer takes the chicken in the boat, leaves it on the other side of the river and come backs empty.
Step 2: The farmer takes the fox and brings back the chicken.
Step 3: The farmer takes the corn to the other side and comes back empty.
Step 4: The farmer then takes the chicken.

Moz: See how easy it is to solve a problem by first understanding the given information, the conditions and the goal.
Tejas: And then solve it step by step!
Jyoti: We have also found out that there can be many ways in which we can solve a problem.

CONCEPTS

- A problem can have more than one correct solution.
- The sequence of steps may be fixed in some cases (only one solution) or interchangeable in others (more than one solution).

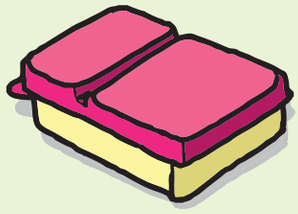
Moz: Correct. Now apply step by step thinking and logical reasoning while you solve problems in other subjects. Tomorrow we can use what you learned and build some interesting games using Scratch.
Chin Chinaki...

WORKSHEETS

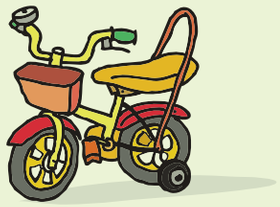
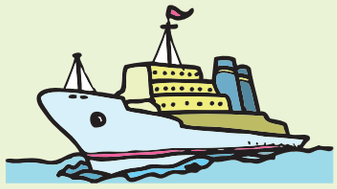
1. Solve anagrams and match the columns.

In anagrams, alphabets in a word are presented in jumbled order. You have to set them in correct order to form the word. For instance, 'D R E' is an anagram of 'RED'.

a. Following are some things you carry to the school everyday. Solve the anagrams and match the columns.

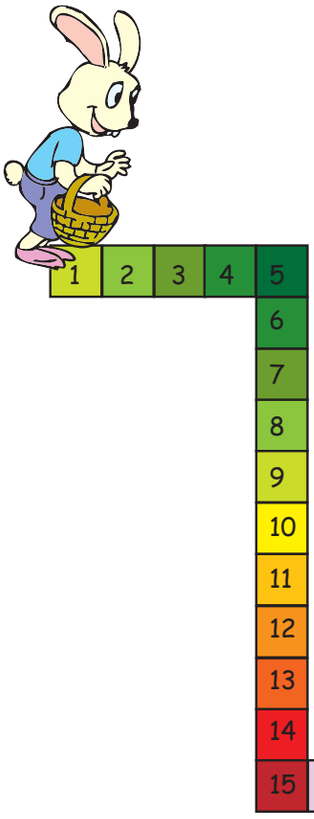
S. No.	Anagram	Word	Object
1	K B O O	_____	
2	F I T F I N	_____	
3	G A B	_____	
4	C I P E N L	_____	
5	X O B	BOX	

b. Following are names of some vehicles that are used for transportation. Solve the anagrams and match the columns.

S. No	Anagram	Word	Object
1	R N T I A	_____	
2	P S I H	_____	
3	L C Y E C	_____	
4	S B U	BUS	
5	R A C	_____	

2. Chiku, the rabbit has to hop his way to find the carrots on the island. With each hop, he crosses five tiles. How many times will he have to hop to reach the carrots.

I. Task: Rabbit has to find the carrots on the island.



II. Identify:

1. Goal: Reach carrots on tile _____.

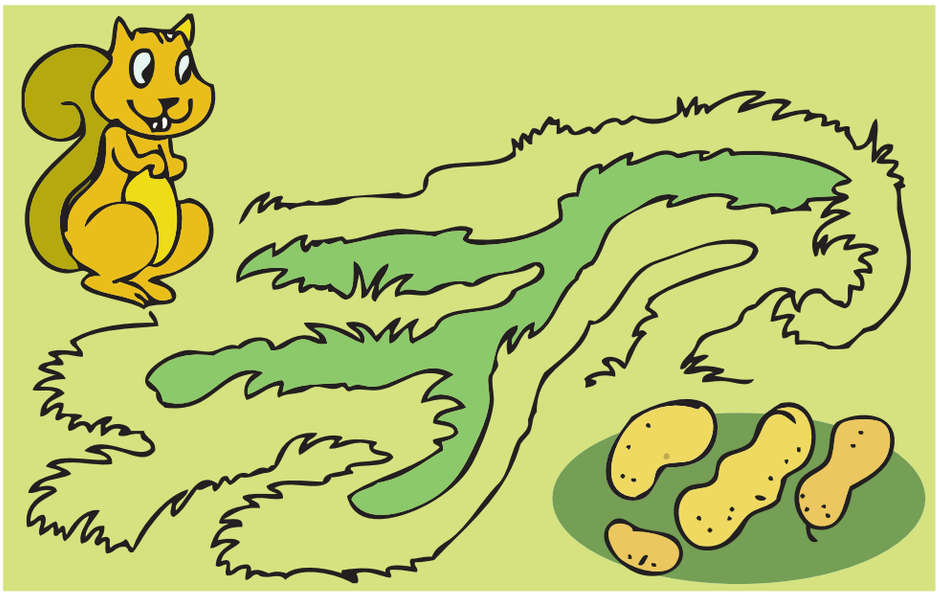
2. Information: There are _____ tiles.

3. Conditions: hops of_____ tiles.

III. Solution: Hop on tile numbers 5, 10, __ , __ , 25.
So the number of hops =_____.

Another way of solving:
25 ÷ 5 = _____ hops.

3. Munmun, the squirrel has to eat the groundnut. Help her reach it.



4. Complete the following sequences by writing the steps as shown in the first problem below:

a. 9, 10, 12, 15, ?

1. Goal:
   Find the 5th number in the sequence.
2. Information:
   4 numbers of a sequence in ascending order.
3. Condition: We observe that
   9 + 1 = 10, 10 + 2 =12, 12 + 3 =15
4. Reasoning:
   We added 1 to first number and got second number. 9+1=10
   We added 2 to second number and got third number. 10+2=12
   We added 3 to third number and got fourth number. 12+3=15
   We should add 4 to fourth number to get the fifth number.
5. Solution: 15+4=19

b. 1, 2, 4, 7, ?

A) 10 B) 11 C) 5 D) 12

c. 10, 9, 7, 4, ?

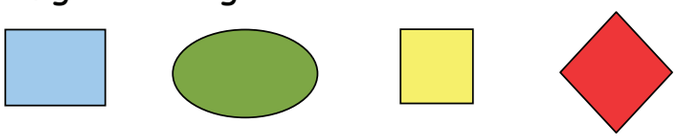
A) 8 B) 1 C) 2 D) 0

d. 12, 8, 5, 3, ?

A) 2 B) 10 C) 1 D) 7

5. Can you help Jyoti to solve the following puzzles.

a. Some figures are given below. Observe them.



Now match the shapes with their colour.

YELLOW	RED	BLUE	GREEN

b. Observe the following figures.

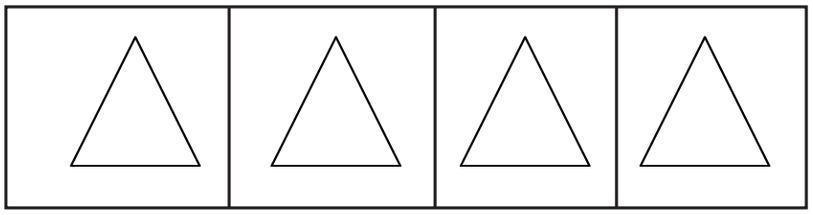
Fill in the blanks and colour the triangles in the grid below. The Red triangle should be between yellow and blue triangles. The first triangle is the Yellow one.

1. Goal: Colour the grid.

2. Information: First triangle is _____.

3. Condition: Red triangle should be between _____ and _____ triangles.

4. Reasoning:
   - So the third triangle is _____.
   - The second triangle is _____.
   - The fourth triangle is _____.



c. Study the following figures.

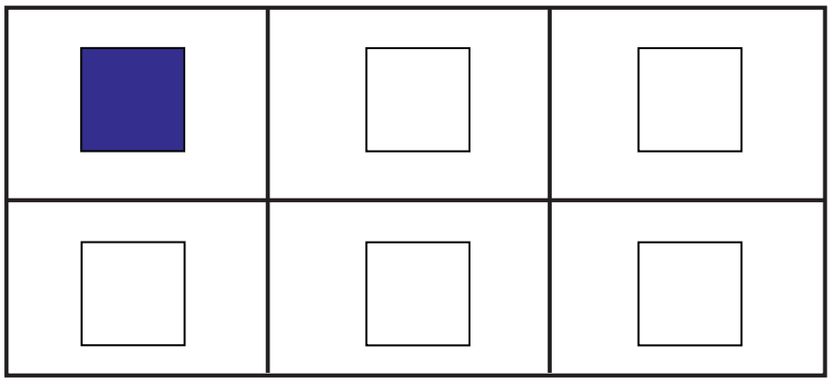
The Red square comes in between the brown and yellow squares. Blue square is the first square in the grid. Black square is directly above the yellow square.

Fill in the blanks and colour the squares in the grid that follows:

1. Goal: Colour the squares in the grid.
2. Information: _____ square is the first square in the grid.

3. Condition:
   - Red square comes in between the _____ and yellow squares.
   - _____ square is directly above the yellow square.
4. Reasoning and solution:

   The squares in the second row are brown, _____ , yellow.
   The remaining square next to blue is _____ square.

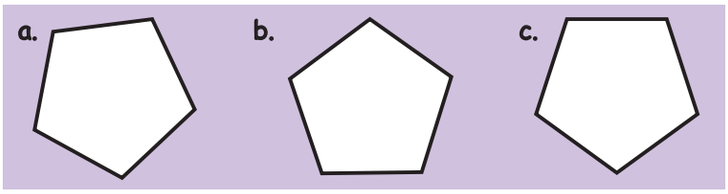


6. Minu will go hiking with her friend in 2 weeks. Today is January 3rd. What is the date on which Minu will go hiking?

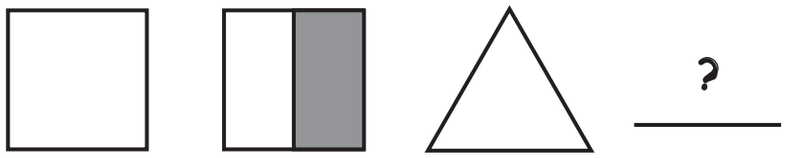
1. Information:
   - Today is _____.
   - Minu will go hiking in _____ weeks.
2. Reasoning:
   - Two weeks means _____ days.
3. Solution:
   - 3+ _____ = _____.
   - Minu will go hiking on January_____.

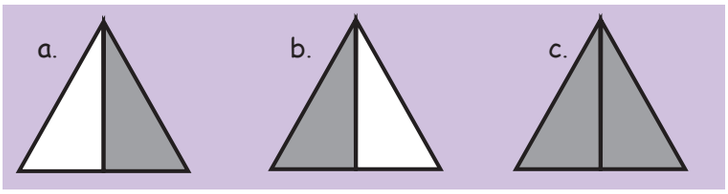
7. Can you tell what comes next? Circle the correct option from a,b,c given below.

i.

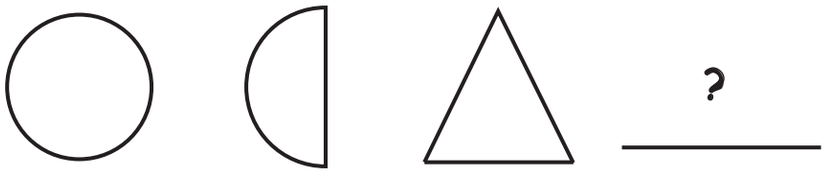


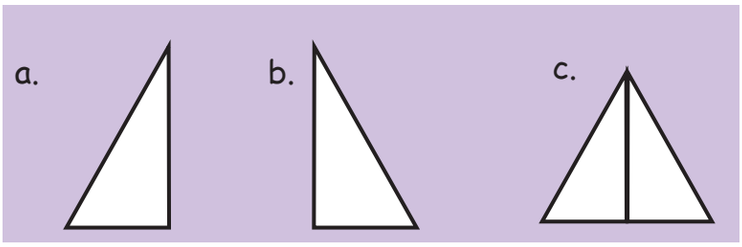
ii.



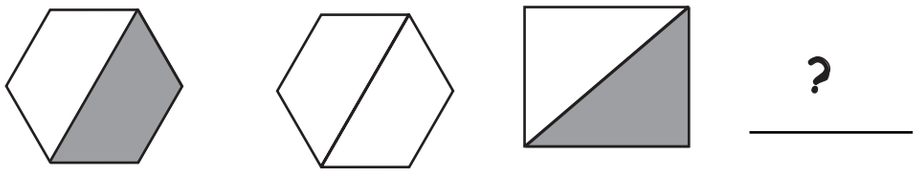


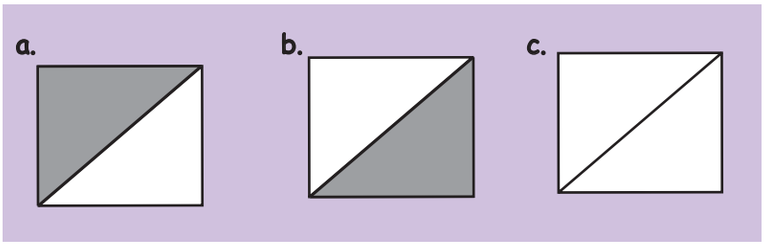
iii.





iv.





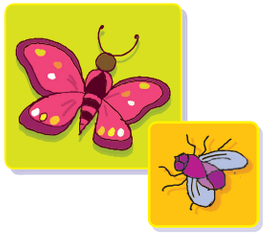
8. Solve the following puzzles:

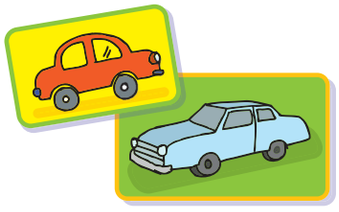
a. Kartar, Seema and Rahul collect different items. One collects stamps, one collects insect pictures and one collects toy car pictures. Rahul exchanged his car pictures for insect pictures. Seema doesn't like cars but likes getting letters. Kartar thinks insects are too small to worry about. What do Kartar, Seema and Rahul collect?

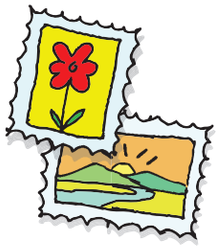
Kartar

Seema

Rahul







Information:

_____, _____, and _____ are collectors.

Conditions:

i. _____ swapped his car pictures for _____ pictures.

ii. Seema doesn't like cars but likes getting _____ .

iii. Kartar thinks _____ are too small to worry about.

Reasoning and solution:

1. By condition (i), Rahul collects _____ pictures.
2. By condition (ii), Since Seema likes getting letters. Letters have _____ stuck on them, so Seema collects _____.
3. By condition (iii) and (i), Kartar collects _____ pictures.

b. Amina, Manish, and Jeet each ate something different for breakfast. One had toast, one had chapati, and one had an apple for breakfast.

i. Amina likes to eat either an apple or toast for breakfast.
ii. Only Manish and Jeet like chapati for breakfast.
iii. Jeet did not have chapati or toast for breakfast.

What did each person have for breakfast?

Amina

Manish

Jeet

Goal:

Find who ate what for breakfast.

Information:

i. There are 3 items for breakfast- apple, chapati and toast.
ii. There are 3 children- Amina, Manish, Jeet.
iii. Jeet did not have chapati or toast.

Condition:

i. _____ likes to eat either an _____ or toast for breakfast.
ii. _____ and Jeet like chapati for _____.

Reasoning:

1. From information, Jeet ate _____.
2. Since Jeet ate _____, by condition (i). Amina ate _____.
3. From 1 and 2 above, we find that _____ is left. Hence, Manish ate _____.

Solution:

Jeet ate _____.
Amina ate _____.
Manish ate _____.

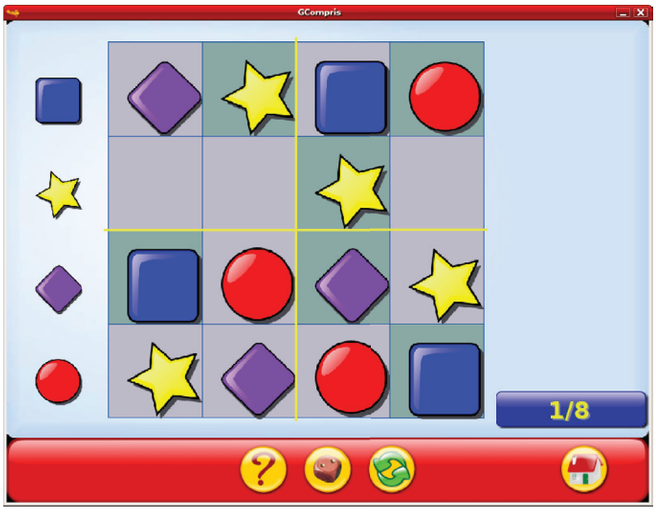
1. **Sudoku:** Select Applications ---> Games ---> Sudoku

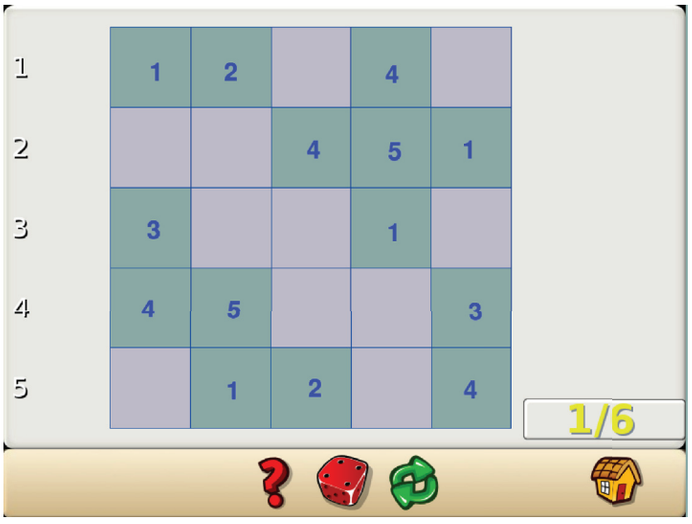
The rules of Sudoku are quite simple. In order to complete the puzzle, you must fill each square with a number between 1 to 5. Each row and each column contains the digits from 1 to 5 only once. That means, you must fill each square such that no number appears twice in the same row or column. Ask questions like:

- "How can I fit all the numbers in this box?"
- "What numbers can fit in a square satisfying the given conditions?"

Think logically and solve the puzzle.

As the level of the game increases, the difficulty level and the number of grids also increases.



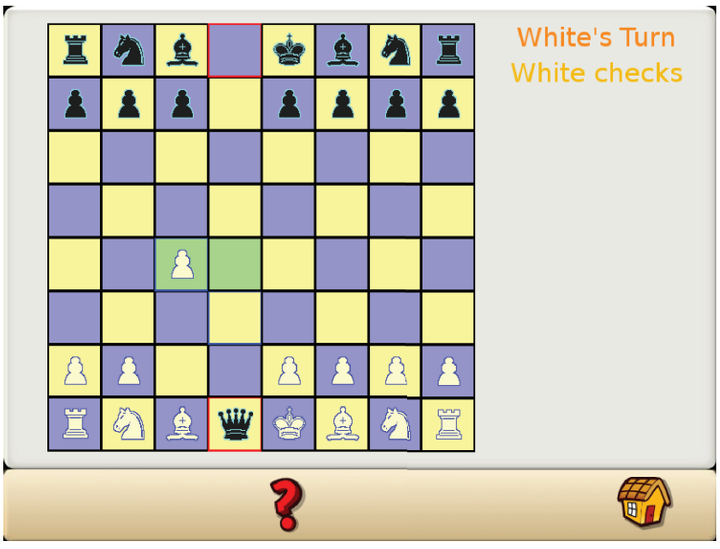


2. **Chess:** Select Applications ---> Games ---> Chess

Goal: The object of the game is to checkmate the opponent's king. This occurs when the king is under immediate attack (in check) and there is no way to remove it from attack on the next move. Learn to play by trial and error.

Information: Chess is a two-player board game. You can play this game with the computer (as a second player). Chess is played on a square chessboard, consisting of 64 squares of alternating colour. Each player begins the game with sixteen pieces: one king, one queen, two rooks, two knights, two bishops, and eight pawns.

Rules: One player controls the white pieces and the other player controls the black pieces; the player that controls white is the first to move. The players take turns moving pieces; certain moves involve a "capturing" of an opponent's piece, removing it from the chessboard. Movement of each type of piece has a rule. Find these rules using "help". Discover more rules on your own by playing with the computer.



3. **Tux math:** Select Applications ---> Games ---> Tux math

   Your mission is to save the penguins' igloo from the falling comets. Stop a comet by typing the correct answer to the math problem and pressing the space bar or enter. If an igloo gets hit by a comet, it melts. But do not worry, the penguin is ok! Type the correct answer on the comet before it hits the igloo.

   (Note: You can select what kind of operations you want to solve and change the difficulty level.)

Group Activity:

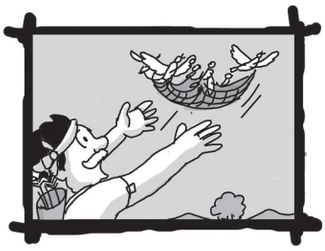
1. Enact the following story in the class.
2. Answer the questions given at the end of the story.

Unity is Strength

Once upon a time, there was a flock of doves that flew in search of food led by their king. One day, they had flown a long distance and were very tired. The dove king encouraged them to fly a little further. The smallest dove picked up speed and found some rice scattered beneath a banyan tree. So all the doves landed and began to eat.

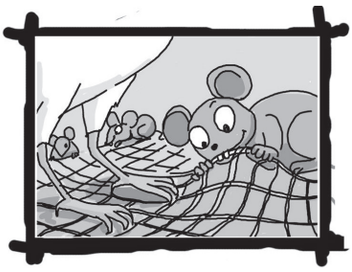
Suddenly a net fell over them and they were all trapped. They saw a hunter approaching carrying a huge club. The doves desperately fluttered their wings trying to get out, but to no avail.

The king had an idea. He advised all the doves to fly up together carrying the net with them. He said that there was strength in unity.



Each dove picked up a portion of the net and together they flew off carrying the net with them. The hunter looked up in astonishment. He tried to follow them, but they were flying high over hills and valleys. They flew to a hill near a city of temples, where lived a mouse who could help them. He was a faithful friend of the dove king.

When the mouse heard the loud noise of their approach, he went into hiding. The dove king gently called out to him and then the mouse was happy to see him. The dove king explained that they had been caught in a trap and needed the mouse's help. He asked the move to gnaw at the net with his teeth and set them free.



The mouse agreed saying that he would set the king free first. The king insisted that his subjects be freed first and the king last. The mouse understood the king's feelings and complied with his wishes. He began to cut the net and one by one all the doves were freed, including the dove king.

They all thanked the mouse and flew away together, united in their strength.

Questions to be answered:

i. How were the doves saved?
ii. What would have happened if all the doves did not listen to their king?
iii. Why is it important to be united?
iv. Finally, list out the information, conditions, reasoning and the solution.

Project

Do project 1 given in lesson 7.

Explore!

1. A shoe can be used for several activities besides covering your feet. Suggest twenty different uses of a shoe.
2. What are the conditions in constructing a building? Can you put beams before columns?

Teacher's Corner

Level IV
Lesson 2

- Start the class by revising the step-wise thinking lesson. Now bring out the importance of thinking capabilities. Ask students what they do to keep physically fit. They may say, 'We exercise our body to remain physically fit'. **Tell them, that exercise of mind is important for mental fitness.** Mention that solving puzzles, mental sums, stories and computer games can be an effective mechanism for exercise of the mind.

- The purpose of this lesson is to build clarity of thought in students. A foundation for the same is provided by step-wise thinking and it is further reinforced in this lesson.

- To teach logical thinking, discuss examples where children use logical thinking in every day life. For instance, you may ask the students, why they do not cross the road when vehicles are moving. You can elaborate that while crossing the road, they reason out that: (i) they should not cross the road when the vehicles are passing, and (ii) they may be hit if they are not careful. They wait for the walk signal to be green, so that the vehicles stop and they cross the road safely.

- Ask several 'WHY' questions. For example:
  i. Why are vegetables washed before cooking?
  ii. Why do you not put your finger in the flame of a burning candle?
  iii. Why should we learn good manners?
  iv. Why should we help others?
  v. Why should we speak truth?

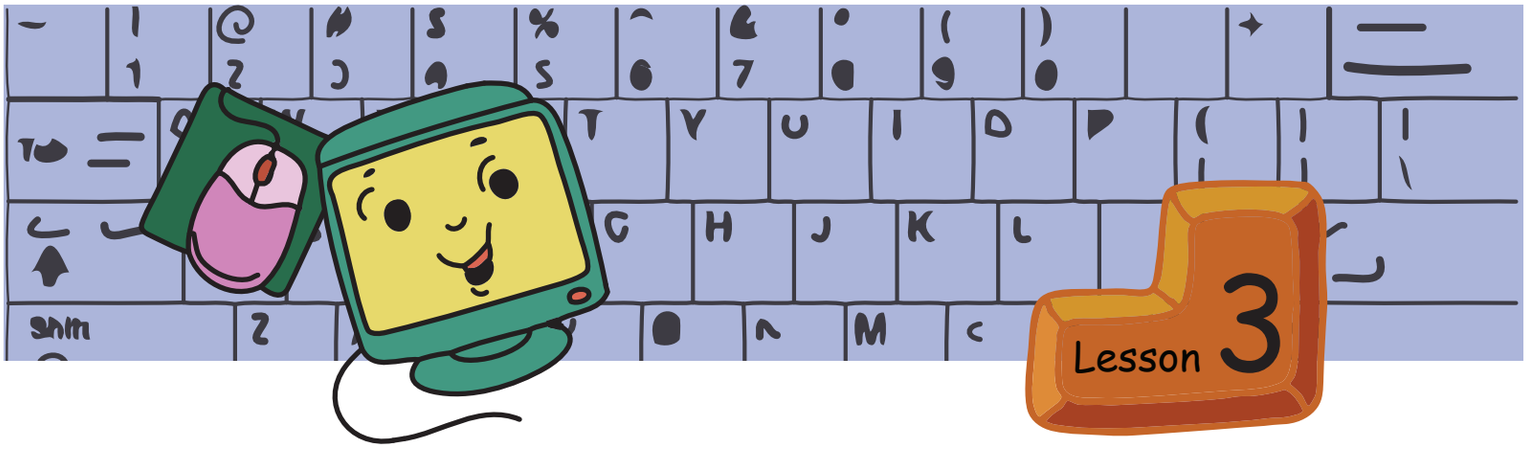
- Explain that step wise thinking is about identifying the steps of a solution. The sequence of steps may be fixed sometimes or interchangeable. For logical reasoning, they have to understand the rules and conditions. You can give the example of cooking a vegetable. First ask them about the steps to follow. Tell them that this is an example of making a vegetable. Now question them on why to follow the steps in that order. In many a situation, questioning leads to logical reasoning and finding a solution. Encourage students to ask questions while solving a problem.

- Narrate a story to the students that highlights logical thinking. Ask them questions that require logical reasoning after you have told them the story. For example, you can refer stories of Akbar and Birbal, Tenali Raman.

- Explain the concepts covered in the lesson and make the students solve the examples in the class. You can make the students enact the puzzles in the class and help them solve it. Tell the students that many a times they have to make a choice. For this, logical thinking is required. Pose the puzzle of choosing fruits in the lesson to illustrate this.

- Summarise the lesson emphasizing the importance of thinking. Give them puzzles to solve where they have to detail the steps and understand the conditions to arrive at the answer.

Further Reading:
http://www.kidsdomain.com/kids/links/Puzzles.html
http://www.indiaparenting.com/stories/panchatantra/panch010.shtml
http://www.aimsedu.org/Puzzle/fencingNum/fence1.html
http://www.det.wa.edu.au/education/gifttal/activities/ideas.htm



Programming Multiple Sprites in Scratch

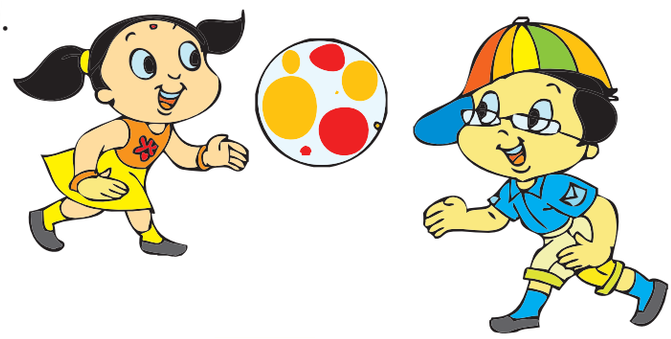
Aim

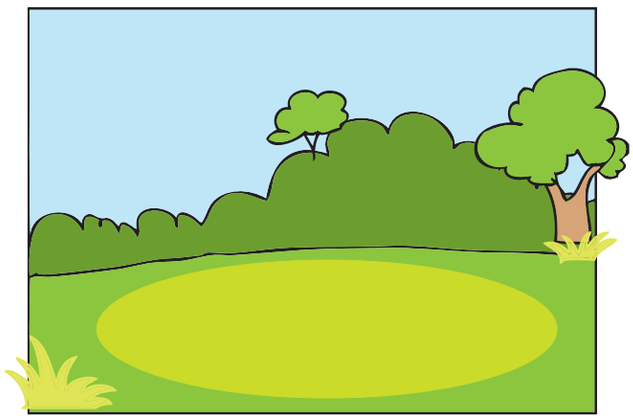
In this lesson you will learn:
To demonstrate actions like games, in Scratch.
To program coordination between various Sprites.

Tejas: We want to animate two Sprites playing throw ball.
Moz: How is this game played?
Tejas: I throw the ball and Jyoti catches it. Next Jyoti throws and I have to catch it. Many players can also play this game together.
Moz: Good! Now, plan the Scratch project for the game.
Jyoti: Let us start with two players. So we need two Sprites.
Tejas: We need one more Sprite- the ball.
Jyoti: Let us have a playground as the Background.
Moz: Ok. Now list out what you need. Are you painting or importing the Sprites?
Tejas: We can import the ball and paint the two players.
Jyoti: Let us import the 'playground' for the Background.

What we need?

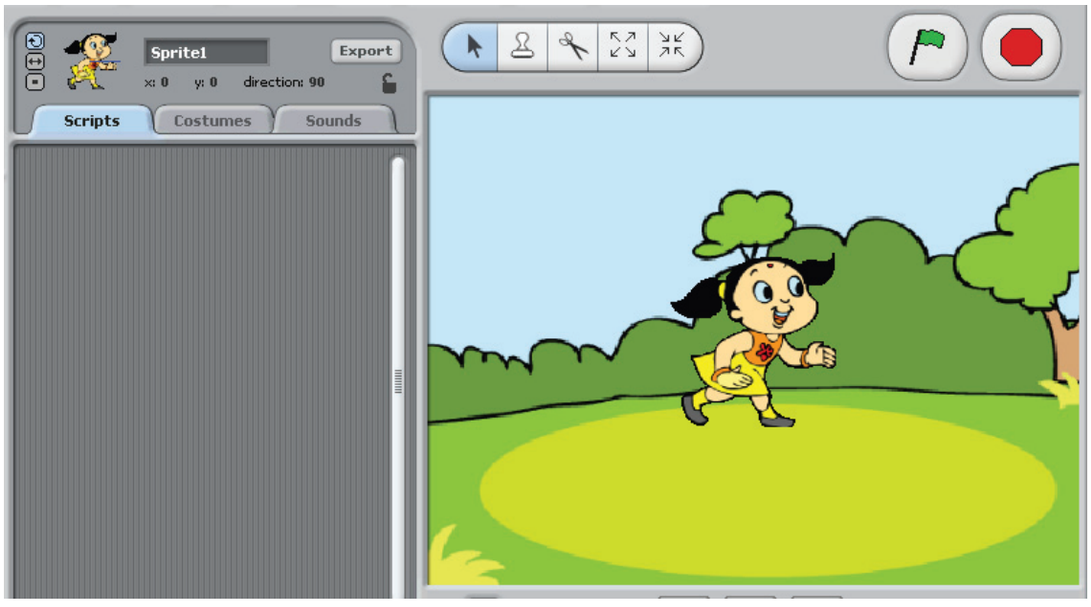
- 3 Sprites (two players, one ball).
- One Background.



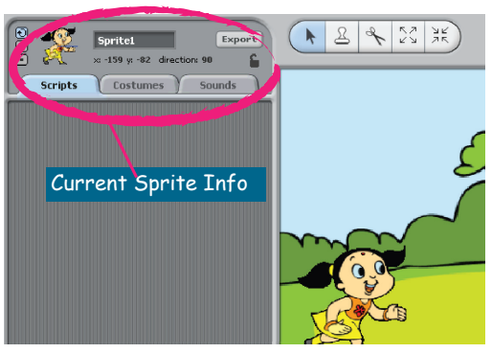


Moz: How does the game start?
Tejas: We have to make them stand opposite to each other at the start of the game.
Jyoti: Yes. And both have to stand at some distance apart.
Tejas: How can we make the Sprite stand in one position at the start of the game?
Moz (points to the **Current Sprite Info** window): Look at this. What is the number next to x and y?
Jyoti: x: 0 and y: 0.

Moz: Where is the Sprite on the stage?
Jyoti: At the centre of the stage.



Moz: Now move the Sprite to the bottom-left corner of the stage. Check x and y again.
Tejas: Oh! Look, now it is x: -159 and y: -82.

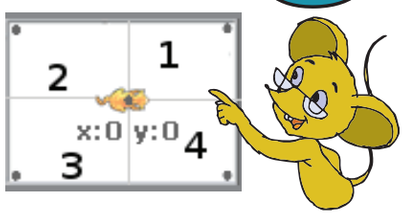


- **Current Sprite Info** shows a Sprite's name, x-y position and direction.
- You can also type in a new name for the Sprite.
- Direction indicates how the Sprite will turn when it executes a move instruction.
  Direction: 0 = up
  Direction: 90 = right
  Direction: 180 = down
  Direction: -90 = left

Info

Jyoti: Why is x -159? What does it mean?

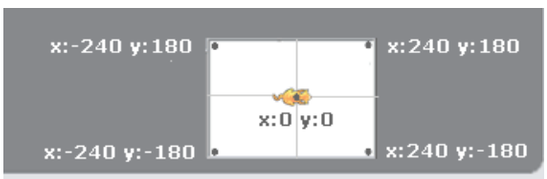
Moz: Look at this figure. Consider this as Scratch Stage. What do you observe?



Jyoti: The stage is divided into four squares by a horizontal line and a vertical line.
Tejas: They are also numbered.
Moz: Good observation. The four squares are called four quadrants.

CONCEPTS

- The horizontal line is labeled the x-axis and the vertical line is labeled the y-axis.These two axes divide the Stage into four quadrants.
- The point at which the two axes meet is the center of the Stage and is called the **origin**. The origin has x:0 and y:0.



Moz: Now move the mouse pointer to each corner of the stage and note x and y values.

Tejas: The top right corner has x:240 and y:180 but the top left corner has x -240 and y:180.

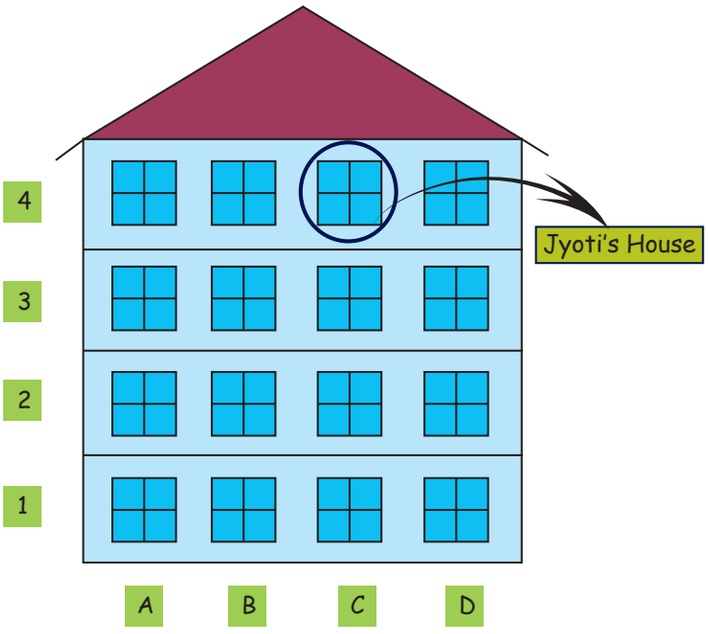
Moz: Correct. What else do you observe about x and y values?
Jyoti: As we move to the right from the origin, the x-value increases from 0 to 240. As we move left from the origin, the x-value changes from 0 to -240.
Tejas: Similarly, as we move up from the origin, the y-value increases from 0 to 180. As we move down from the origin, the y-value changes from 0 to -180.
Moz: Very good.

CONCEPTS

Each point on the stage is represented by two numbers. In Scratch, these numbers are called x and y values.

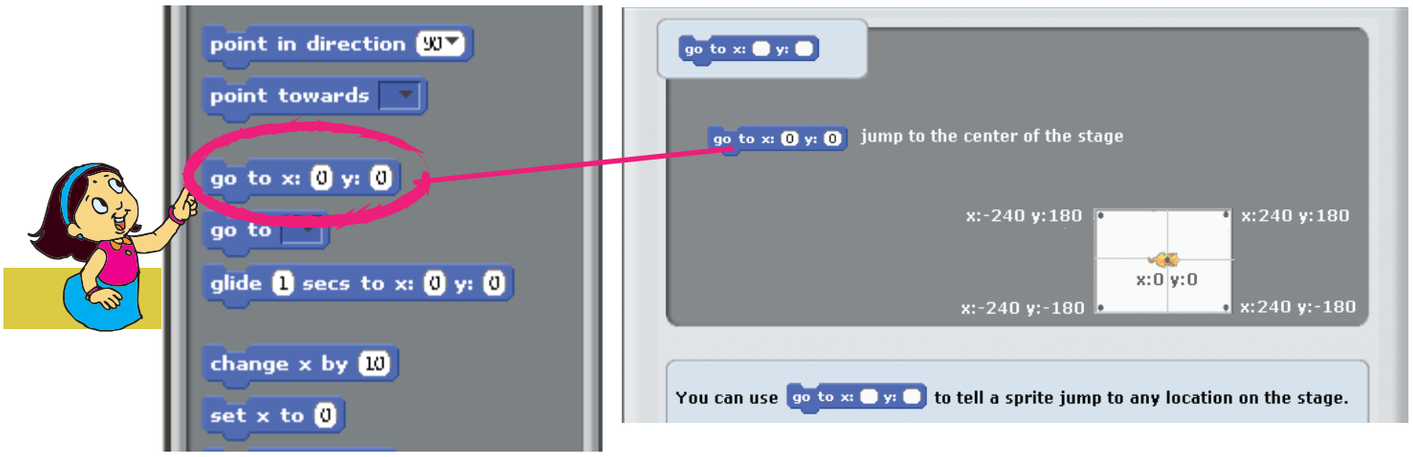
Moz: Let us look at an example of this in real life. Jyoti, you stay in a four stored building. Isn't it?

Jyoti: Yes. I stay on 4C. On each floor we have four houses. The horizontal line x, which represents houses on each floor, has values A, B, C, D. The vertical line y, which represents the floors, has values 1, 2, 3, 4.
Tejas: Then the address of the 3rd house in the second floor is 2C.



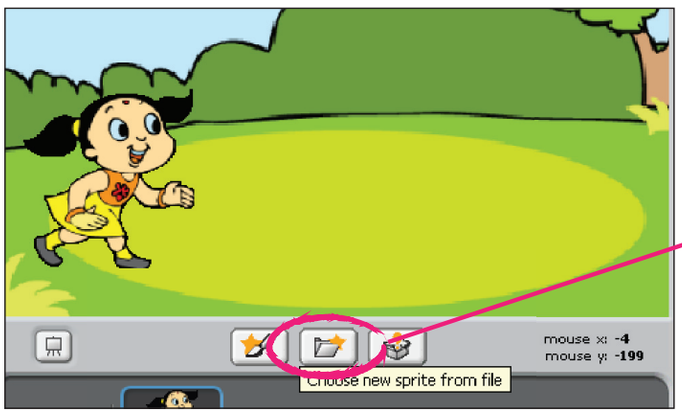
Moz: Good. Now, get back to the Scratch instructions.
Tejas: We have to move the Sprite to a particular position on the stage at the start of the game.
Moz: In which block will you find the movement instructions?
Jyoti: Motion block.

Jyoti (points to the instruction) : Let us try out this instruction.



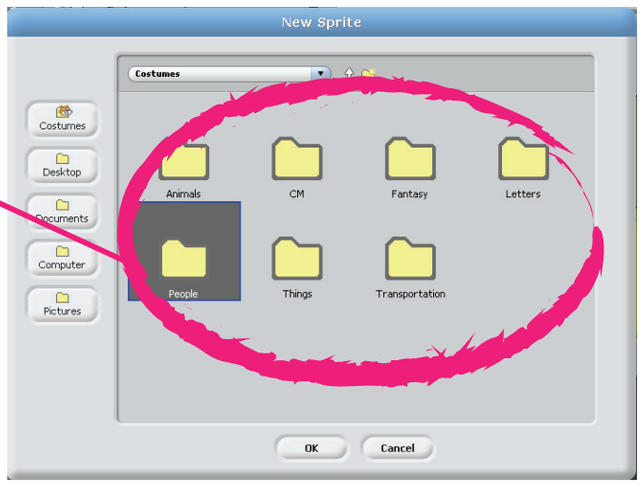
Tejas and Jyoti use the go to x:__ , y: __ instruction to position the first Sprite on Stage.

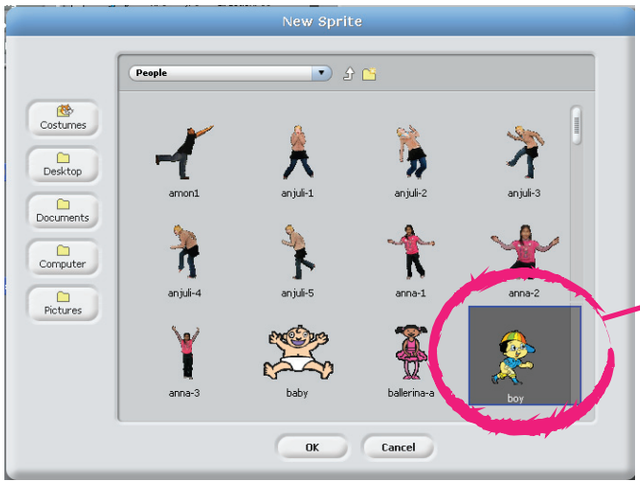
Jyoti: Now we have to import the second Sprite into the project.
Steps to import a new Sprite:



Step 1: Click on the buttons to Import a new Sprite.

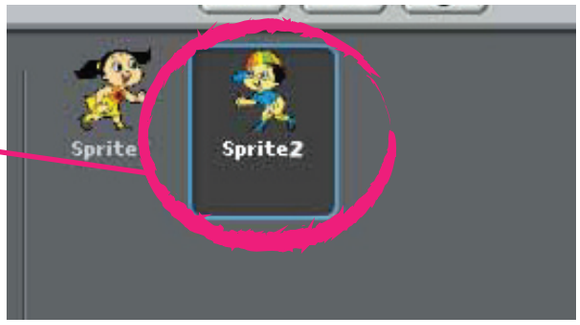
Step 2: The available list of folders are displayed. Select a folder to choose a new Sprite.



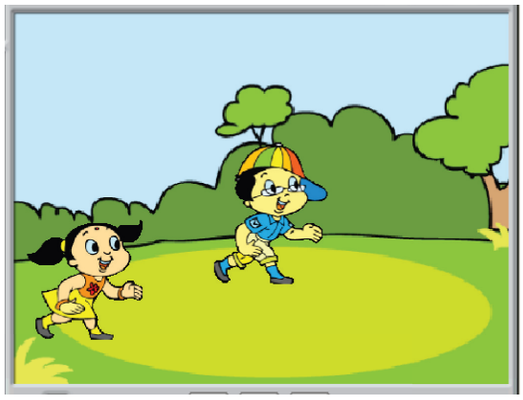


Step 3: Sprite inside the selected folder are displayed. Select the required Sprite.

The selected Sprite is added to the existing Sprite list.

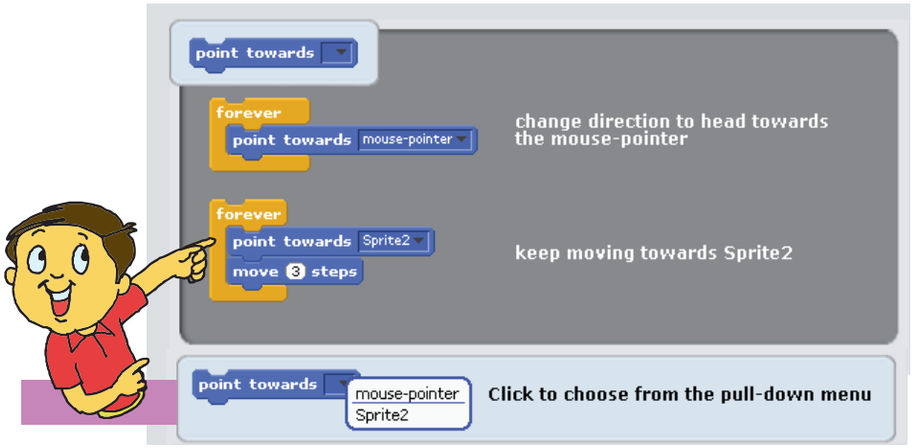


Jyoti: The Script area is blank. What happened to the Script that we wrote.
Moz: Click on Sprite1.
Jyoti: Oh! It is back.
Moz: Yes. But observe that this is the Script for Sprite1. You have to write a separate script for Sprite2.
Jyoti: Ok. At the start we want both the Sprites to be positioned on the stage. The starting instruction has to be same.
Moz: Correct.

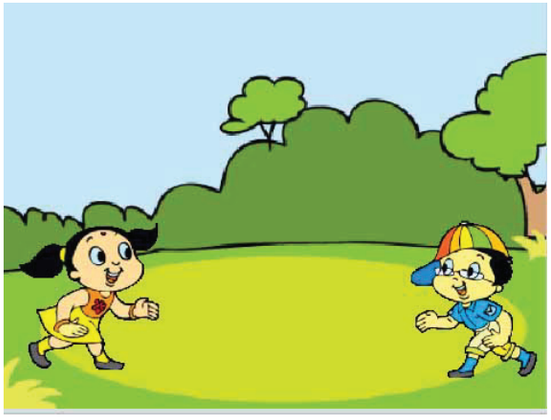


Jyoti: The Sprite2 has to face Sprite1. How do we change the direction of the Sprite? This is again a movement of the Sprite. Let us check in the Motion block.

Tejas (points to the instruction block): We can use this.



Tejas and Jyoti enter the following instructions to position the second Sprite on the stage.

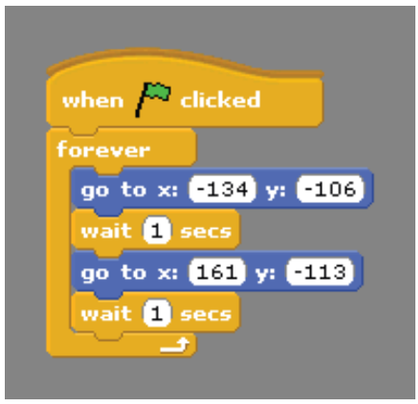


Tejas: Now we have to import the ball Sprite (Sprite3).
Jyoti: Next let us place the ball in the hand of Sprite1.
Tejas uses the mouse and moves the ball Sprite into the hands of Sprite1. Then he points to the x and y position of the ball Sprite displayed in the **Current Sprite Info** window.

Tejas: The x and y position of the Sprite is displayed here, x: -134 and y:-106.

Jyoti: When Sprite1 throws the ball then the ball has to be in the hands of Sprite2.
Tejas (moves the ball Sprite into the hands of Sprite2): The x and y position of the Sprite displayed here is x: 161 and y:-113.
Jyoti: To repeat the actions we have to use instructions from Control block.
Moz: Good. Now, write the Scripts for the ball Sprite.

Tejas and Jyoti enter the following instructions for the ball Sprite to animate the game of throw ball.



Tejas and Jyoti click on  and are happy to see the two Sprites playing throw ball on stage.

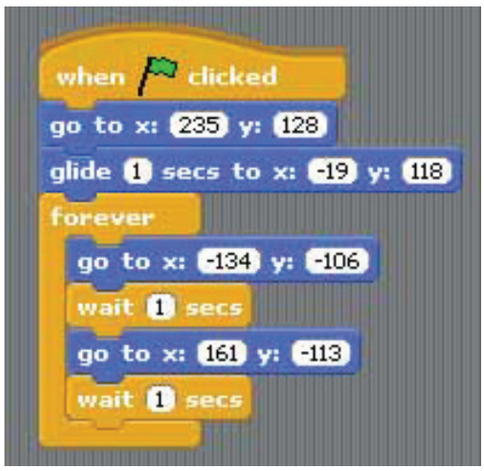
Jyoti: We will give it a title "Catch me and play". Let us glide this ball over the title. Then make it jump into the hands of Sprite1.

Tejas: That is a good idea. We have to add one more Sprite for the title. I think we have to use Paint  in Scratch to create the title.

Jyoti and Tejas create the title Sprite and place it on stage. The ball Sprite instruction block is modified.

Stage of "Catch me and play" animation

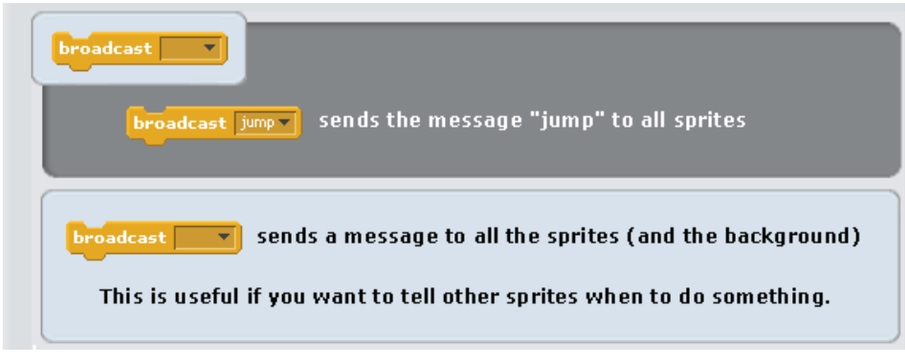
The modified instructions of ball Sprite.



Moz: Let us take a break and play throw ball outside.

Tejas: When we were playing outside the ball sometimes goes to the left of right of the player. But still we catch it. Can we make the Sprites do the same in the animation?
Moz: Yes. You can. Suppose I am throwing the ball. How do you know that you have to move to the right or left to catch the ball?

Tejas: When I look at the way the ball is coming, I know if I have to move to the right or left.
Moz: Correct. We need to provide this signal in the program by sending a message all the Sprites. See the instruction in Control block.



Tejas: What does Broadcast do?
Moz: Broadcast sends out a signal to all the Sprites through a message and then waits for some action from other Sprites.
Jyoti: It is just like we get a signal when the ball is thrown to the left or right.
Tejas: Ok. Then let us make ball Sprite broadcast "left".

A signal is sent to other Sprites through the message "left".

In Scratch a signal is sent to other Sprites through a message using the instruction **Broadcast**.

SKILLS

Jyoti: Then Sprite2 has to receive the message and take action.

The signal is received by Sprite2.

The actions of Sprite2 after receiving the signal.

Tejas: We can also use similar instructions to control the movement of Sprites to other positions.

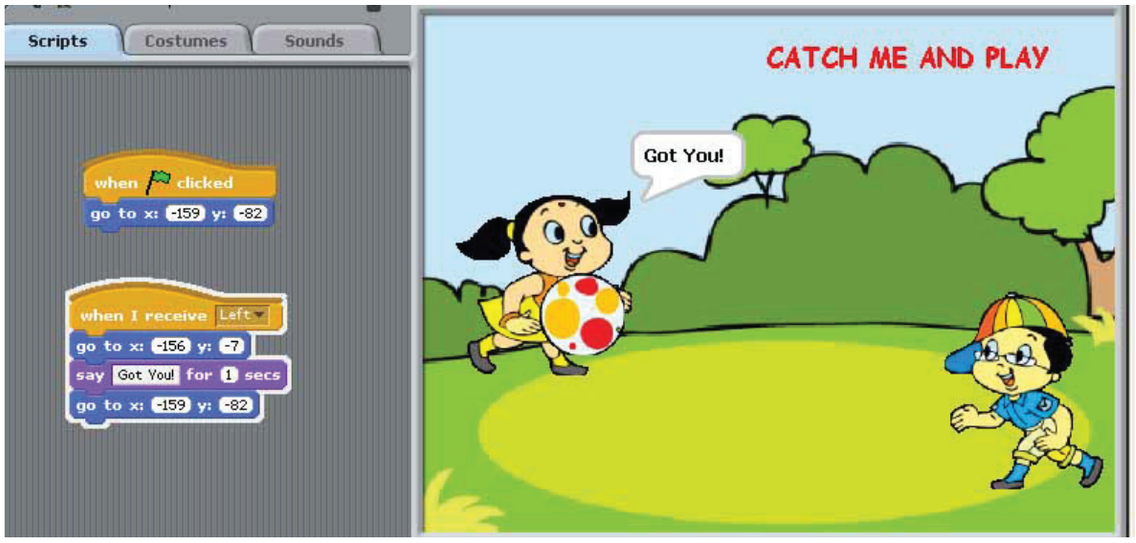
Jyoti: I see that these instructions help us to coordinate actions of multiple Sprites.

In Scratch, the instructions **Broadcast** and **When I receive** enable us to coordinate the actions of multiple Sprites.

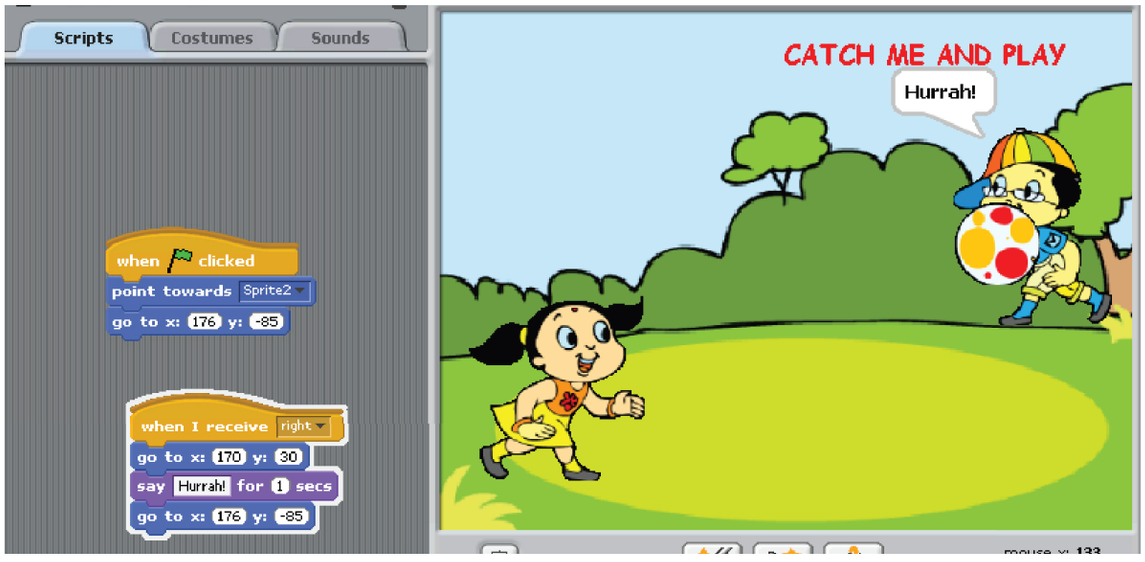
SKILLS

Final scripts of "Catch me and play".

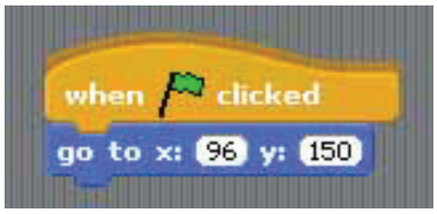
Scripts for Sprite1 along with the Stage.



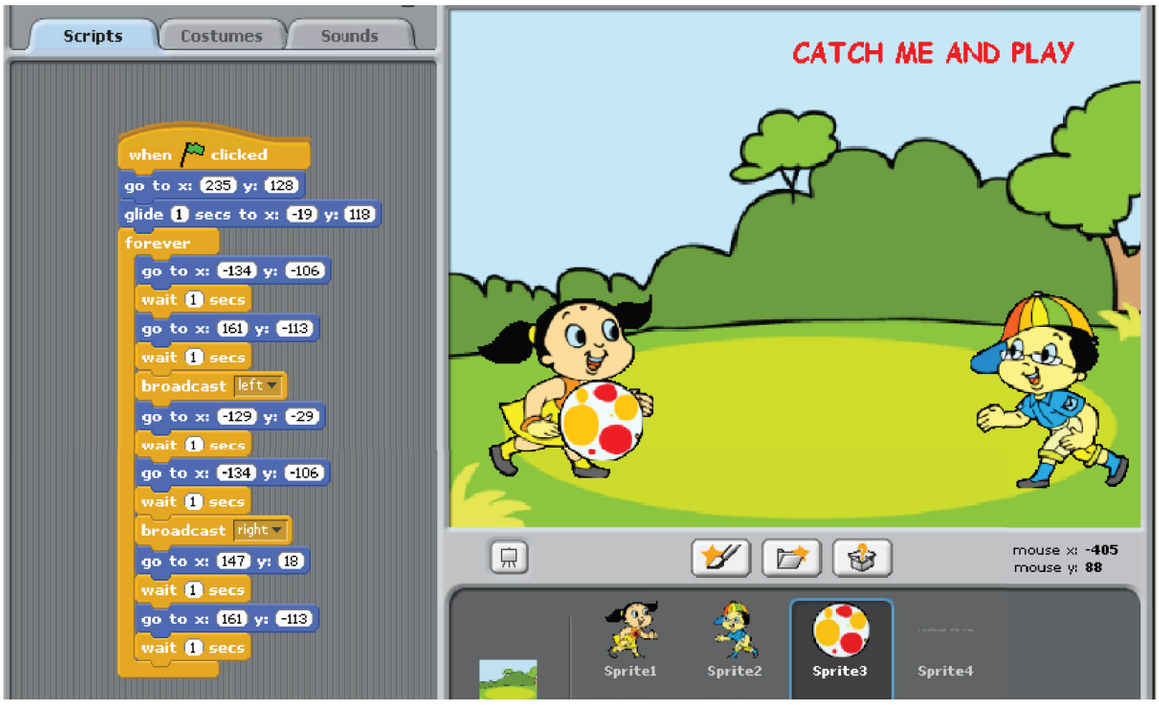
Scripts for Sprite2 along with the Stage.



Title Sprite



Scripts for the Ball Sprite along with the Stage.



Tejas: Wow! The two Sprites are playing throw ball.
Jyoti: We will write more programs like this.
Moz: Yes. You can do some more interesting programs in Scratch next time.
Chin Chinaki...

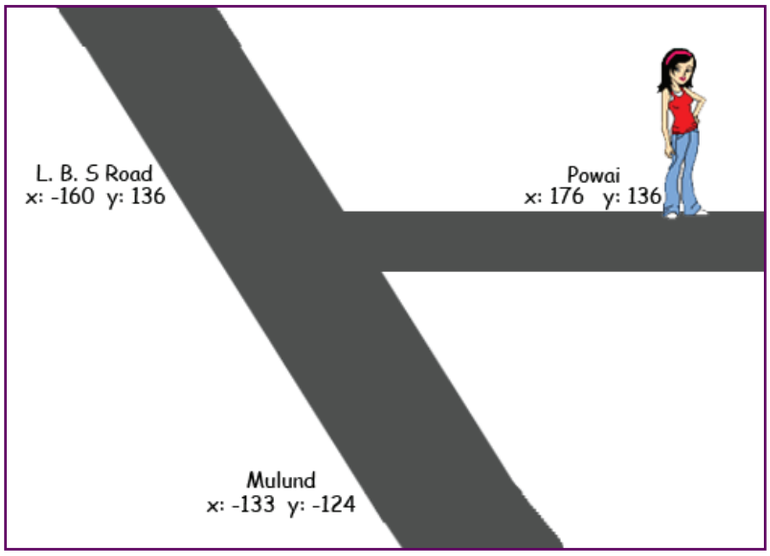
Learning Outcome

After you have studied this lesson, you will be able to:

- Write a program with multiple Sprites.
- Coordinate the actions of the various Sprites.
- Use Control bolcks appropriately.
- Write a program for animation.

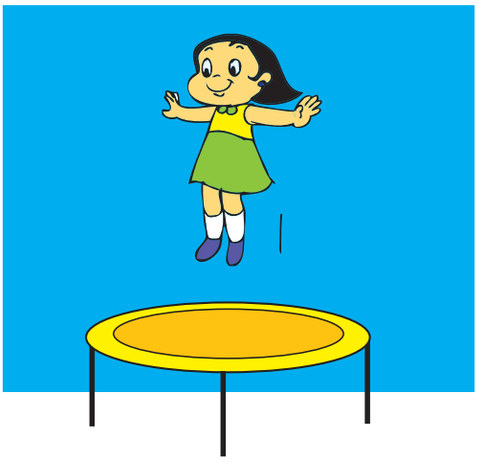
WORKSHEETS

1. Shilpa is at Powai. She has to go via L.B.S Road to Mulund. The x-value and y-value shows positions of Powai, L.B.S Road, Mulund are given below. Write a program in Scratch for Shilpa to go from Powai to Mulund via L.B.S Road.



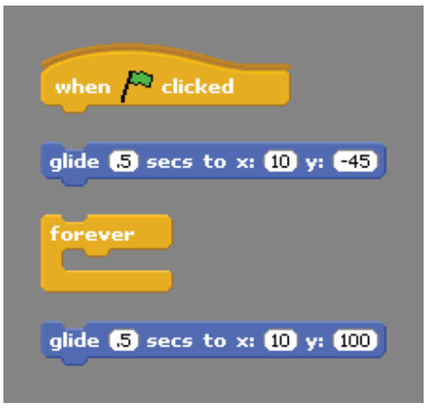
Hint: The starting instructions are given below. Complete the program and run it in Scratch.

2. Vishal is programming an animation for his sister Jyotsna. He wants to show her jumping on the trampoline. Help him do the following three activities.



WORKSHEETS

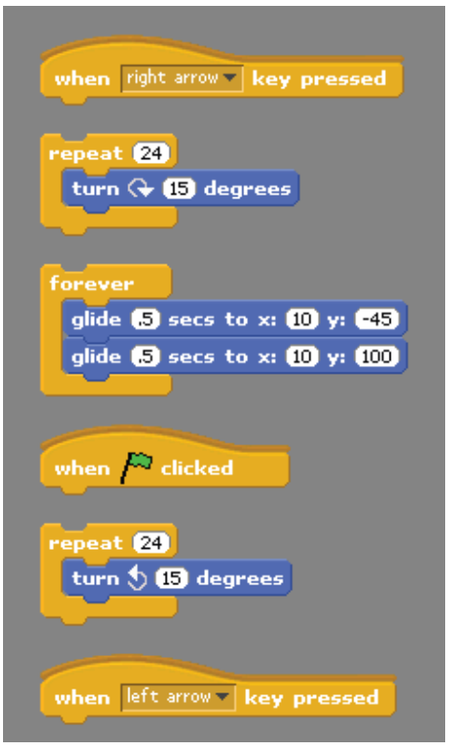
a. Arrange the following instructions on the right hand side to make Sprite Jyotsna, jump on the trampoline.



b. Vishal knows that following instructions are required to make Jyotsna do a somersault. Match the command with the correct action.

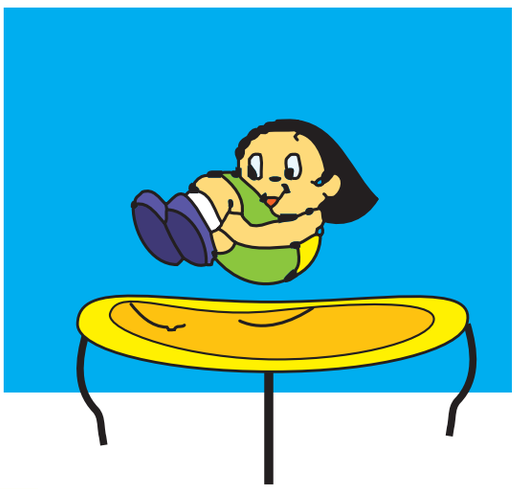
	Moves Sprite smoothly to a specified position over specified length of time.
	Changes Sprite's appearance by switching to different Costume.
	Runs the blocks inside over and over.
	Runs Script below when green flag is clicked.

c. The following instructions make Jyotsna do a full somersault from the right when right arrow key is pressed, and a full somersault from the left when left arrow key is pressed. Put the instructions together to make Jyotsna do somersault.



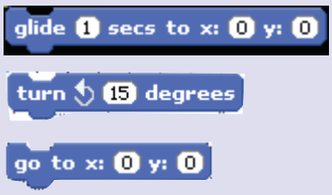
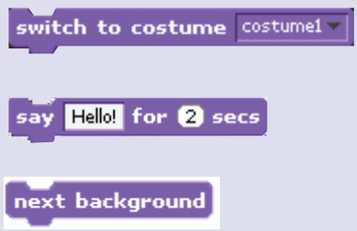
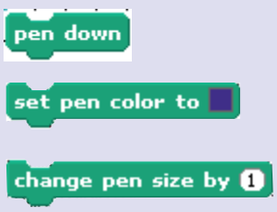
Hint:

	Runs instructions below it when the specified key is pressed.



WORKSHEETS

3. Match the following instructions with their blocks:

	Looks
	Motion
	Control
	Pen
	Sound

4. Meetu monkey again! Complete the sequence of actions and instructions given in a), b) and c) to help Martha monkey jump on the stones and reach the bananas. You are given the following:

> Sprites – Bananas and Martha monkey.
>
> Background – A stream with the stones and the banana tree on the other side of the stream.
>
> x, y positions of bananas and stones.

a. Fill in the blanks for Step 1 and Step 2:

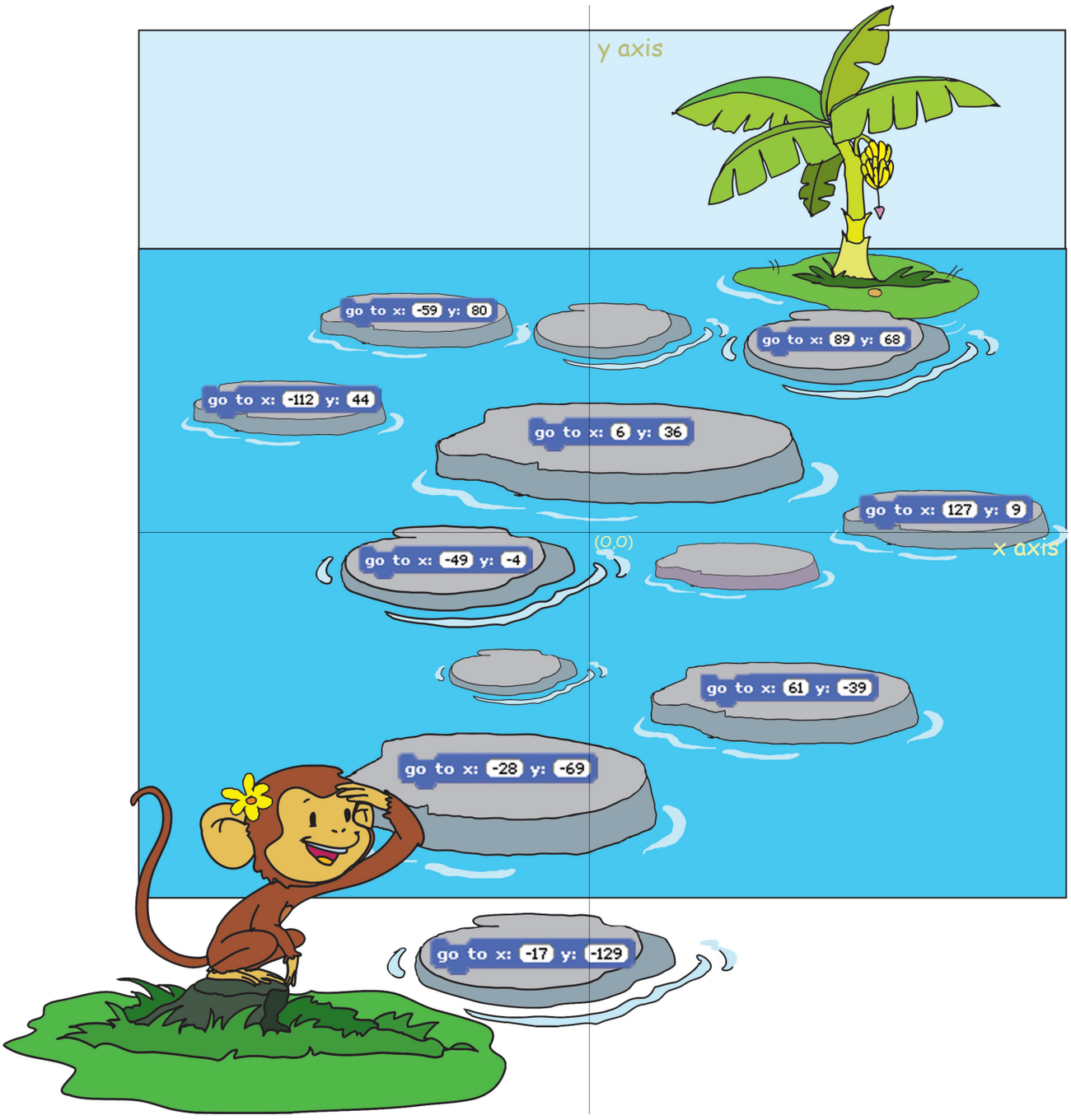
Step 1: _____ the background into the project.
Step 2: Program the _____ Sprite to place it on the banana plant.

When flag clicked
go to x: ____ y: _____

b. Program the Sprite Martha monkey to jump on the stones: Write the program block for Step 3 using the x-value and y-value given in the following picture.

Hint: The first three instructions are given to you. Complete the block.

When flag clicked
go to x: -115 y: -126
wait 1 secs
go to x: ____ y: ____
wait __ secs
go to x: ____ y: ____
wait __ secs
go to x: ____ y: ____
wait __ secs
go to x: ____ y: ____
wait __ secs
go to x: ____ y: ____
wait __ secs
go to x: ____ y: ____
wait __ secs



c. Add the instructions to Banana Sprite to make the bananas move to the hands of the monkey.

Hint: Find the correct x-value and y-value of Meetu and write these instructions.

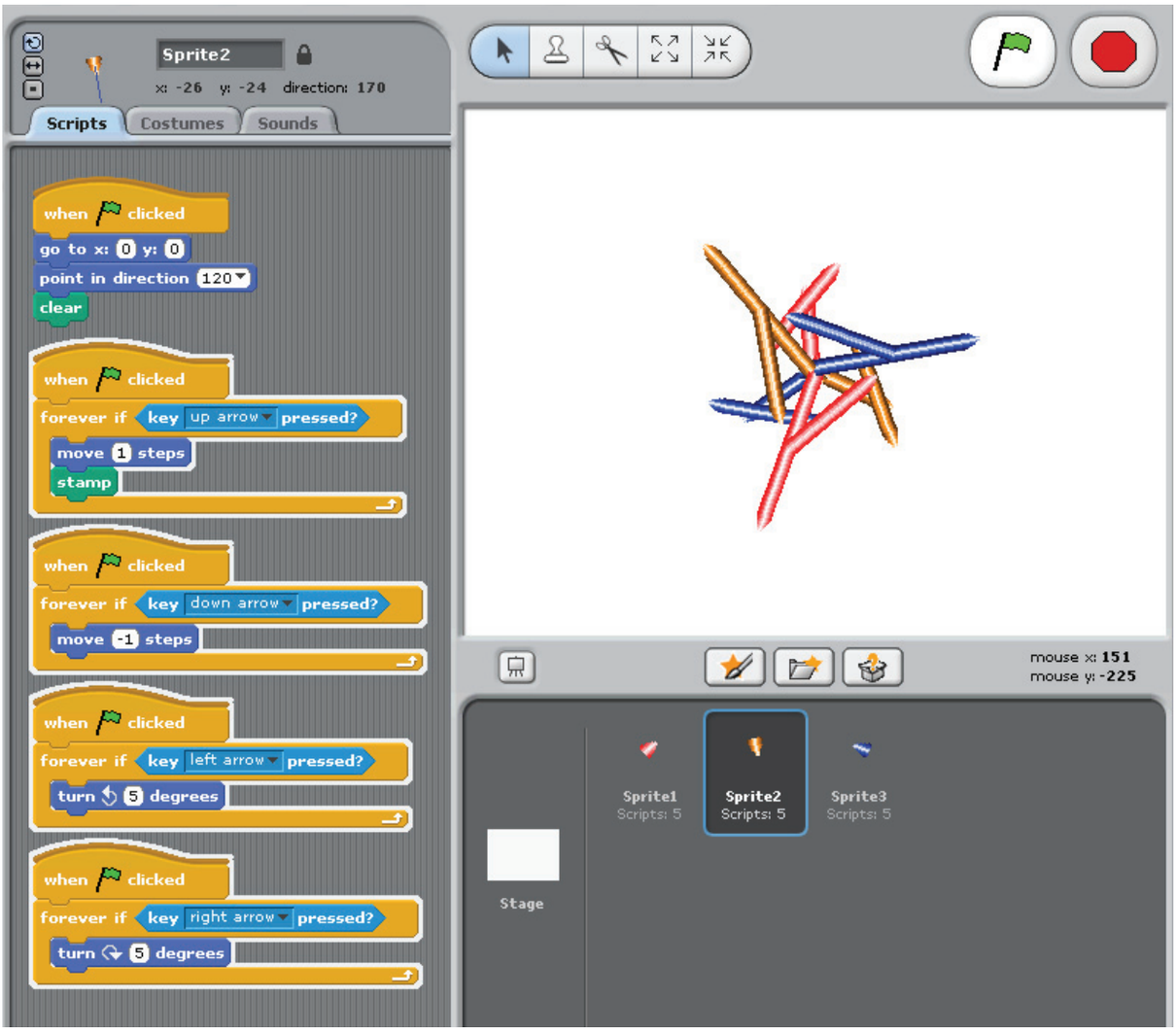
Open the following Scratch projects and do the activities.

1. **Kaleidoscope:** Use the arrow keys to move around and draw a symmetrical pattern. Follow these steps to start this project:

Scratch ---> Projects ---> Games ---> Kaleidoscope

Activities to do:

- Edit the Costumes of the Sprites to draw using different shapes.
- Change the x and y position.
- Use the 'change colour effect' block to make different colours.
- Add more key controls.



2. **Monkey Dressup:** Click the clothes to adorn the monkey.
   Follow these steps to start this project:

Scratch ---> Projects ---> Interactive Art ---> Monkey DressUp

Activities to do:

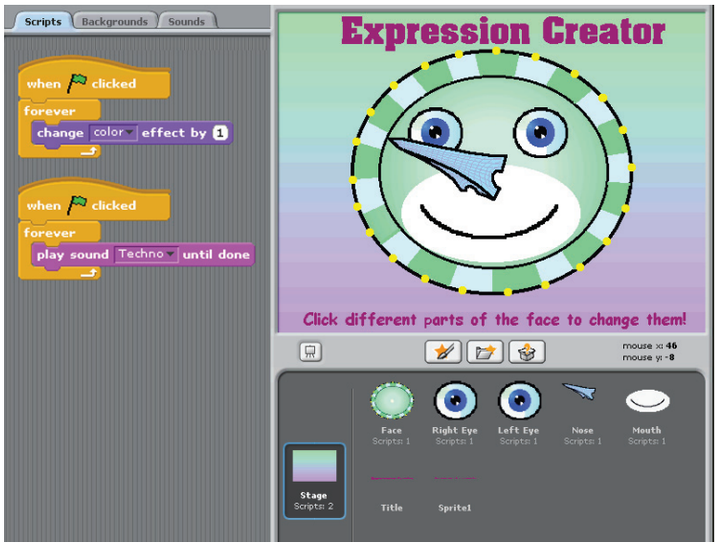
- Change the x and y position.
- Use the broadcast option.
- Add key controls.

3. **Expression Creator:** Click on different parts of the face to change them.
   Follow these steps to start this project:

Scratch ---> Projects ---> Interactive Art ---> Expression Creator

Activities to do:

- Make changes to the Costume of each Sprite.
- Make the eyes glide to particular x and y position.



4. Write a project in Scratch that shows the game of badminton.

Hint:

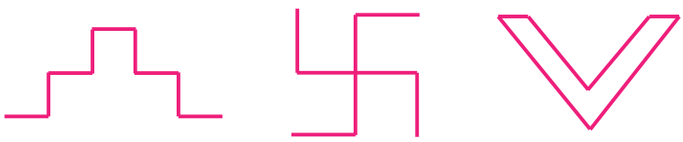
This is similar to the ball game described in the lesson.

1. You will need Sprites for the two players, play items.
2. Use the following commands under motion block:

Group Activity

Divide the class into groups of five each. Create or import two Sprites for the two students and write a script for them to do an activity of your choice. Use your imagination to make them do actions under motion and control blocks.

While acting as Sprites, you can draw different shapes, for example:



Project

Do project 2 given in lesson 7.

Explore!

1. Open Scratch and click on the tab 'want help?' [You will find it in the top row]. Now click on help screens and read to know the function of different instruction blocks.
2. How will you draw a flower, a heart, circle, etc, using Scratch?

Teacher's Corner

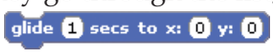
Level IV
Lesson 3

- The purpose of this lesson is to teach students how to plan and write a program in Scratch. It will enable students to think logically and plan an activity. Besides, they become confident in controlling the technology, by writing programs they can make the computer do something.

- Start the class by revising the Scratch concepts taught in Level 3 of Computer Masti. Revise the different blocks and instructions. You can ask the students to write a small project to refresh their memory of what they already know about Scratch.

- Tell the students that they will now learn more interesting activities using Scratch. You can say that they will learn to do animations to arouse their curiosity.

- Start Scratch and click on the motion block so that students can look at all the instructions under it. Ask them to read it. Students are already familiar with move, turn and point instructions. As they go through the list, draw their attention on the instruction:



- Use this opportunity to explain what are x and y axis, origin and the concept of quadrants. Refer page numbers 52 and 53 of the lesson for this. Explain that the stage in Scratch is divided into four quadrants. The horizontal line represents x-axis and the vertical line y-axis. The x-value varies from -240 to 240 and y-value varies from -180 to 180. Ask them to note the x and y values for the Sprite. Drag the Sprite and ask them to note the change in x and y values. Now demonstrate how to make the Sprite move by changing the x and y values.

- Get two Sprites and write scripts for the two so that the program runs with coordination.

  You can use various control blocks such as, 

, 

, 

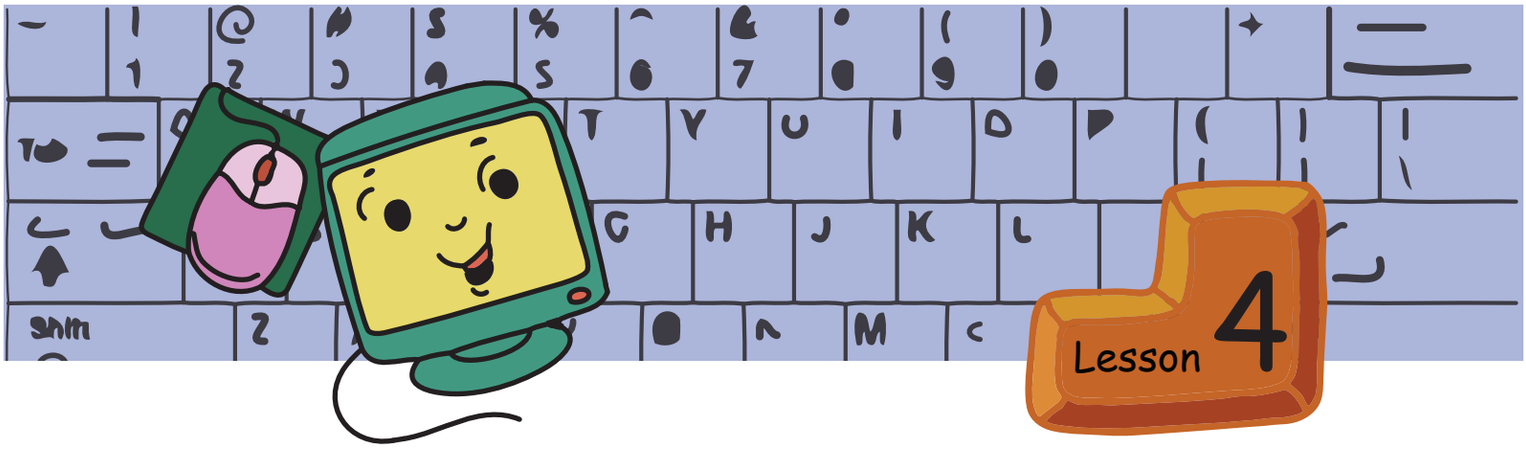
.

- Write the Script for the activity described in the lesson and demonstrate the use of the different instruction blocks covered in the lesson.

- Emphasise that it is important to plan the program on paper before going to the computer. Ask the students to write the script for the Scratch project in their notebook. Ensure that they think through the entire activity before they start writing the project on the computer. Of course, they can go back and forth on this and make changes, but this exercise will help them to plan the project appropriately.

- Summarise the lesson and give the students activities to practice.

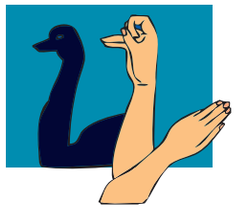
Further Reading:
http://info.scratch.mit.edu/Support



Dos and Don'ts- Balancing Asanas

Aim

In this lesson you will learn:
Eye and breathing exercises.
Exercises for strengthening leg, ankle and foot muscles.



Moz: Shadow of a swan! Interesting.
Tejas: These are called hand shadows. We are practicing these to show in the class.
Moz: Good. These also provide exercise to your wrists and hand. How do you make these hand shadows?

Jyoti: We need a white screen to be used as the background and a torch. Position the torch such that the light falls on the hands. Stand to one side of the screen so that your body does not get in the way. Remember that all other lights should be off.

Moz: Can we make shadows with any other source of light?
Tejas: The Sun. When we walk in the Sun our shadows can be seen on the ground.

Jyoti: We can also see shadows in moon light.

Moz: Let us go out and try making shadows using sunlight.

Tejas, Moz and Jyoti go out and make shadows in the sun light.

Tejas: I am tired.
Moz: Let us go inside and do pranayam.
Jyoti: What is pranayam? Does pranayam help to remove tiredness?
Moz: Pranayam is a breathing exercise. It calms the mind, improves attention and refreshes us.

Pranayama:

1

- Sit comfortably. Close your eyes.

2

- Close the right nostril with the right thumb. Inhale slowly through the left nostril and fill your lungs with air.

3

- Close your left nostril with the ring and middle fingers of the right hand and open the right nostril.
- Exhale slowly and completely with the right nostril.

4

- Again inhale through the right nostril and fill your lungs.
- Close the right nostril by pressing it with the right thumb. Open the left nostril, breathe out slowly. This process is one round of Anulom Vilom Pranayam.

Continue for 15 minutes. You may take a minutes rest after every five minutes of exercise.

CONCEPTS

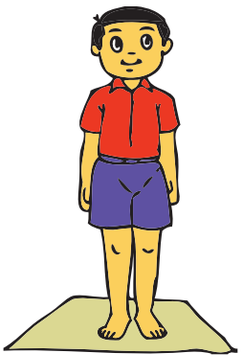
Breathing exercises have many benefits, such as calming the mind and improving concentration.

Tejas: I feel fresh after the breathing exercise.
Jyoti: Let us show the balancing asanas that we learnt during holidays.
Moz: What are the benefits of these asanas?
Tejas: These asanas help to strengthen leg, ankle and foot muscles.
Jyoti: They also help in balancing the body and increasing concentration.
Tejas: I fall down and get hurt very often. After practicing the balancing asanas regularly I do not fall often.
Moz: That means they are helping you to control your movements and maintain balance.

Tejas: Ekapada Pranamasana strengthens muscles of the ankle and foot. It also develops nervous balance.

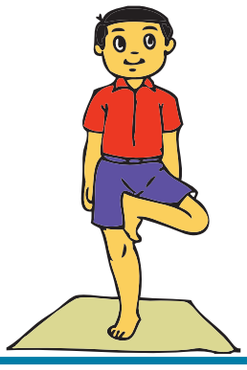
Eka Pada Pranamasana (One legged prayer pose):

1



- Stand upright with the feet together and the arms at the sides. Focus your gaze on a fixed point in front of the body at eye level.

2



- Bend the right leg, grasp the ankle and place the sole of the foot on the inside of the left thigh. The heel should be close to the perineum and the right knee should point out to the side.

3

- Hold the ankle until the body is balanced.
- Place the hands in the prayer position in front on the chest for the final position.

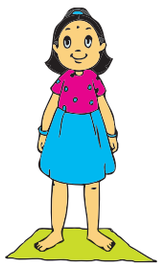
4

- Release the pose completely and change sides.
- Breathe normally throughout the practice.
- Practise upto 3 rounds on each leg, holding the final position for up to 2 minutes.

Jyoti: Natarajasana balances the body and develops mental concentration.

Natarajasana (Dance form pose):

1



- Stand upright with the feet slightly apart.

2

- Bend and raise the left knee so the thigh is horizontal, the foot pointing away from the body and slightly to the right of the right leg.
- Bend the right knee slightly.

3

- Place the left arm across the body in line with the left thigh, with the palm and fingers facing down.

4

- Bend the right elbow so that the right palm faces forward and the forearm is vertical.

5

- The right elbow should be just behind the left wrist.
- Fold the index finger of the right hand so that it touches the inside root of the thumb. Straighten the other three fingers of the hand so that they are relaxed and slightly apart. This is called **gyana mudra**.

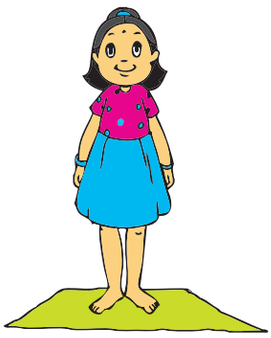
6

- Release the pose and change sides.
- Look in the front.
- Breathe normally throughout the practice.
- Practise up to 3 times on each side, holding each time for as long as possible.

Jyoti: Eka padasana asana strengthens arms, wrists, hips and leg muscles.

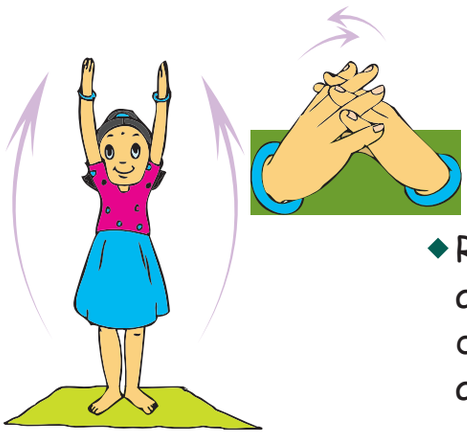
Eka Padasana (One foot pose):

1



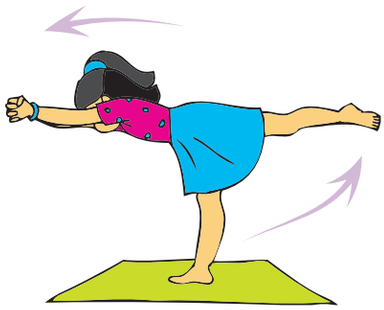
- Relax the body in the standing position with the feet together.

2



- Raise the arms directly above the head and interlock the fingers with the palms downward. Inhale while raising the arms.

3



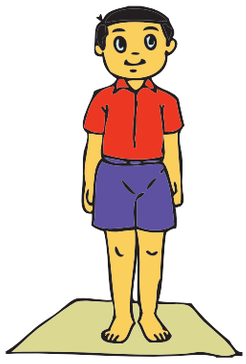
- Bend forward slowly from the hips, keeping the trunk, head and arms in a straight line.
- Simultaneously raise the left leg straight back, keeping it in line with the trunk.
- In the final position the left leg, trunk, head and arms are all in one straight, horizontal line. The right leg is straight and vertical. Focus your gaze on the hands. Exhale while bending to assume the final position.

4

- Hold the final position for as long as possible then slowly return to the starting position. Inhale while returning to the upright position. Exhale while lowering your arm.
- Repeat the movement, raising the right leg back.

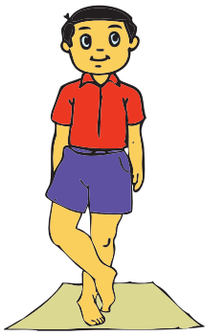
Tejas: Natavarasana helps develop concentration.

Natavarasana (Flute playing pose):



1

- Stand with the feet together and focus on a fixed point at eye level.



2

- Place the right foot to the outside of the left calf with the toes above the floor and the sole of the foot almost vertical.
- Rest the side of the right calf against the left shin.

3

- Raise both the hands to the right as if playing a flute, the right palm should face forward and the left palm backward. The index and little fingers of the hands are straight and the middle fingers bent.

4

- Turn the head slightly to the left and focus the eyes at a point on the floor.
- Hold the final position for as long as is comfortable.
- Breathe normally throughout the practice. Practise up to 3 rounds on each leg, holding the final position for up to 2 minutes.

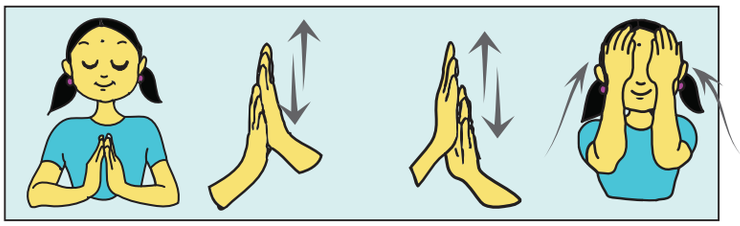
CONCEPTS

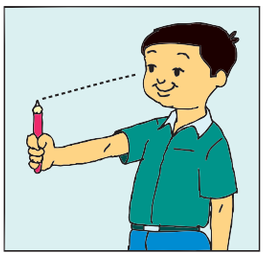
Balancing asanas

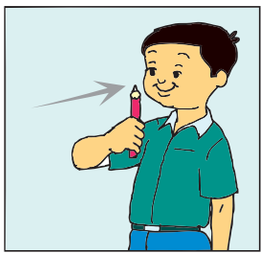
They strengthen leg, ankle, and foot muscles. These asanas also help in balancing the body and helps develop concentration.

Moz: Very good. Now do some exercises for the eyes.

Tejas and Jyoti do palming, pencil exercise and the exercise using the ball.







Tejas: We would like to explore more instructions in Scratch and build some games.

Moz: Sure. Get ready with an interesting game and you can write a program in Scratch tomorrow. Chin Chinaki...

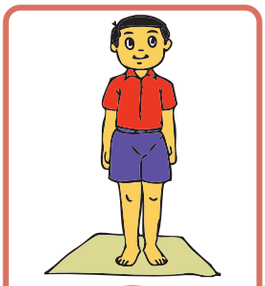
WORKSHEETS

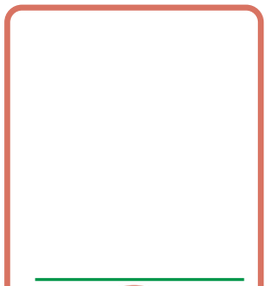
1. Match the following.

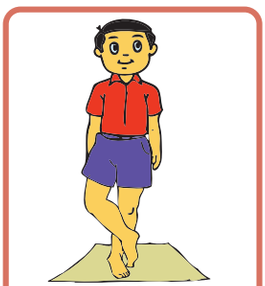
Eka Pada Pranamasana	
Hasta Utthanasana	
Natavarasana	
Eka Padasana	
Natarajasana	

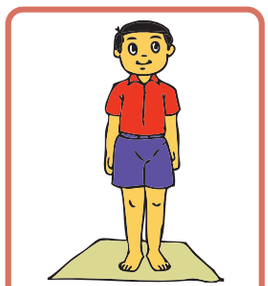
WORKSHEETS

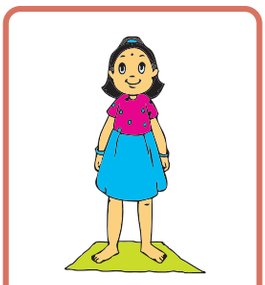
2. Complete the sequence.

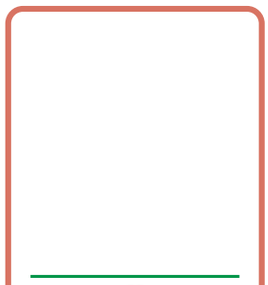












3. Name five musical instruments which are played with fingers.

1 _____

2 _____

3 _____

4 _____

5 _____

Group Activity

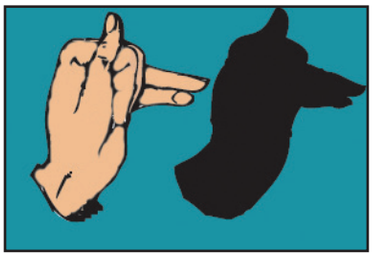
Make hand shadow pictures and tell a story.

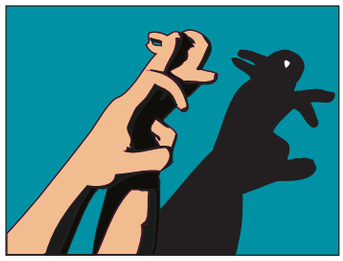
Divide the class into groups of five each. Let them discuss and decide upon a story. The students have to perform the story. Use hand shadows for the characters of the story.

For making hand shadows you need:

1. A screen of white cloth, about 1 meter square, fastened to the wall and pulled tight so that there are no creases. A large sheet of white paper will also work.
2. A torch for casting shadows.

Ask your partner to keep the torch on a level with hands making the shadow. Stand to one side of the screen so that your body does not get in the audience's way. Remember that all other lights should be off.





Project

Do project 3 given in lesson 7.

Explore!

1. Find more asanas for improving balance.
2. What is shadow puppetry?
3. Find out about various pranayamas and their benefits.

Teacher's Corner

Level IV
Lesson 4

- The purpose of this lesson is to ensure that children learn ways to prevent strain caused due to extended computer use, especially on the wrist.

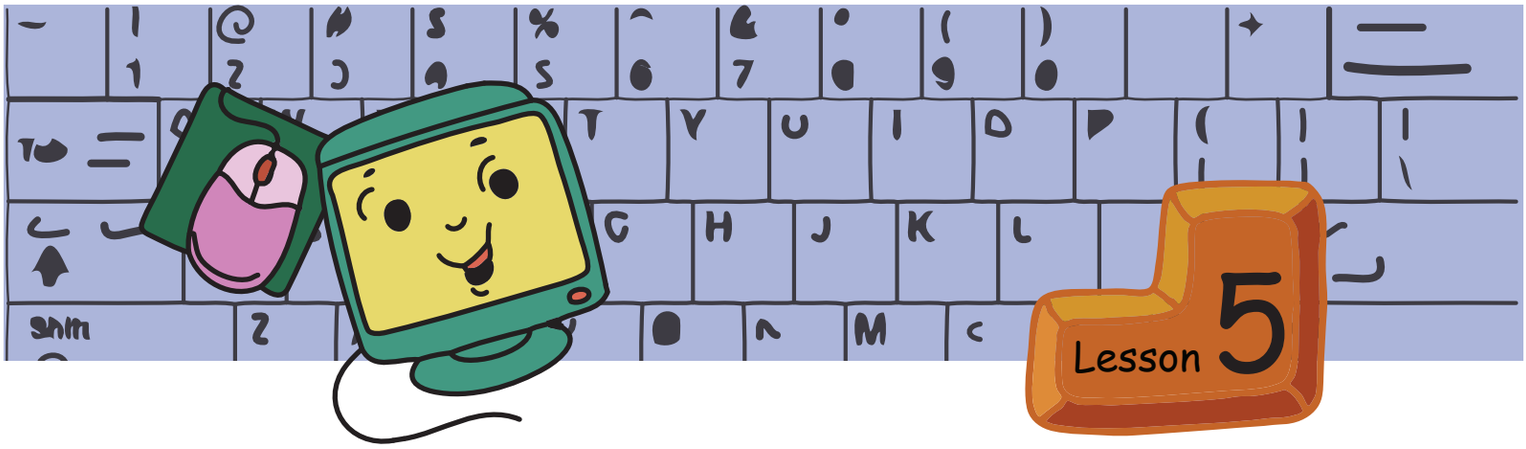
- Start the class by playing a game which requires some physical activity. Let the students play for 15 mins or so and then ask the students how they feel. Some of the expected responses are: 'we feel fresh', 'we want to play more'. Ask them to show some of the exercises/ asanas they know. Use this opportunity to revise the asanas taught in earlier levels. You can ask them to demonstrate exercises/asanas that help to relieve strain in neck, hands, wrist and eyes. To make it challenging, divide the class into two or three groups, ask one of them to name the asana and the other group demonstrates it. Allocate points to each group and reward students of that group (e.g. they get preference in the next computer lab session or get extra computer time).

- Teach the students asanas covered in the chapter that provide exercises to balance and develop attention. Ask the students to read the description of different asanas and look at the pictures in the book. You can tell them a story that highlights the importance of attention in every activity they do. Use this opportunity to reach out to students who have an attention problem and teach them asanas such as Pranayam that can help them in relaxing and improving concentration. Make the students do Pranayam as explained on page number 73.

- Summarise the lesson and emphasize the importance of exercise and asanas to avoid strain due to computer use.

Further Reading:
ftp://opensource.nchc.org.tw/gutenberg/1/2/9/6/12962/12962-h/12962-h.htm
[Project Gutenberg's Hand Shadows To Be Thrown Upon The Wall, by Henry Bursill
This e-Book is for the use of anyone anywhere at no cost.]
http://www.kidsexercise.co.uk/on-your-marks-exercise-game.html
Asana Pranayama Mudra Bandha written by: Swami Satyananda Saraswati

Notes:

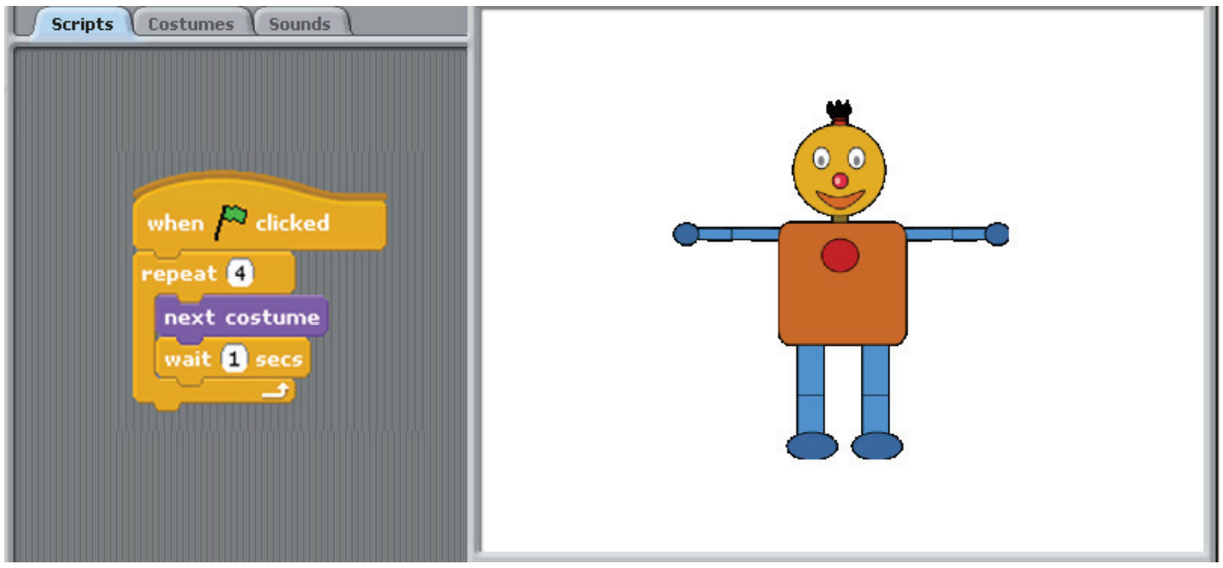


More Activities using Scratch

Aim

In this lesson you will learn:
To use various blocks of Scratch.
Explore a variety of programs that you can build, like animations, teach what you know, toy demos, making interactive cards, narrating a story.

1. **Make the robots exercise:**
   Create atleast two robot Sprites, using shapes. Paint various Costumes for each of the robots. Write a program in Scratch to make the robots demonstrate atleast two of the asanas you have learned.



2. **Each one teach one:**
   Teach one of the following to class I students using Scratch program:
   - Uses of computers.
   - Dos and Don'ts of computers.
   - Parts of computers.

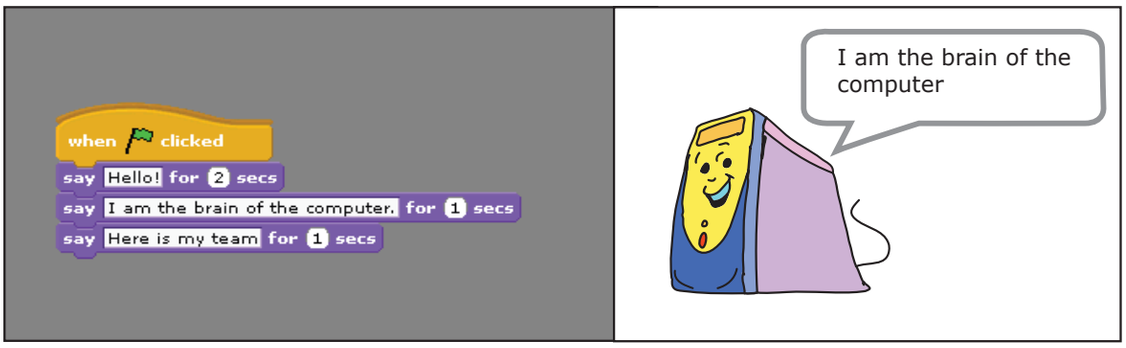
Example:
Parts of Computers: Brainy the CPU, is introducing the parts of a computer. CPU, monitor, keyboard, mouse, printer, and speakers are all Sprites.

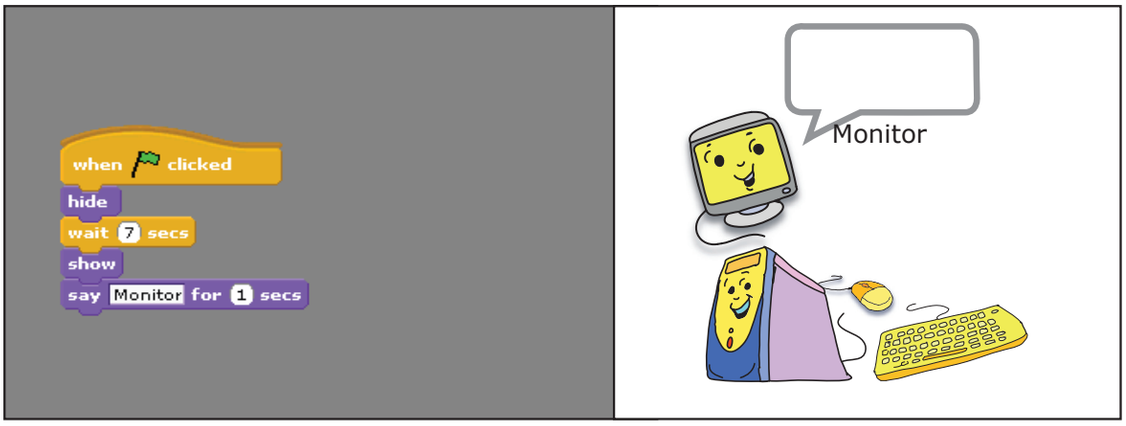
Program plan:

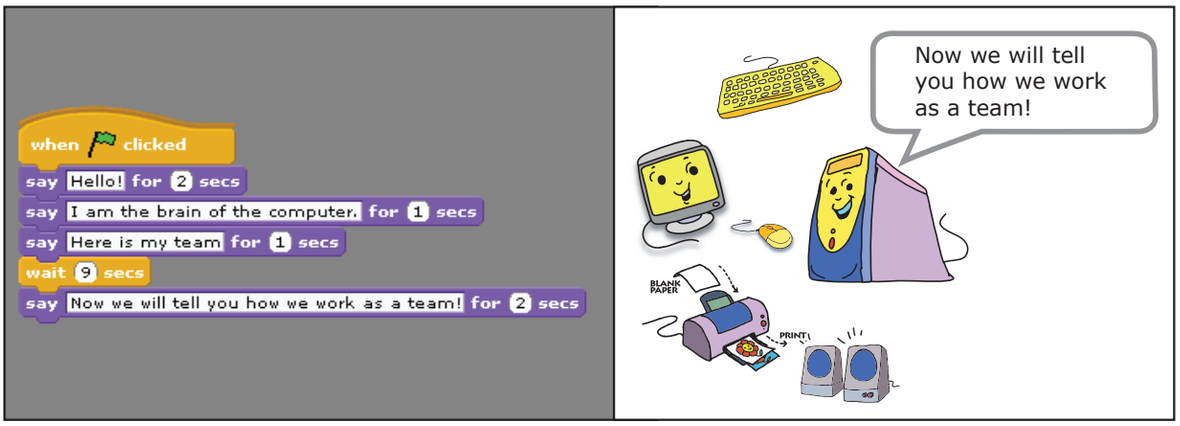
1. Brainy introduces itself.
2. Parts of the computer appear one by one and introduce themselves.
3. Starting with CPU each part explains its functionality.

A few screens and Scratch Scripts are given below:

BRAINY'S TEAM





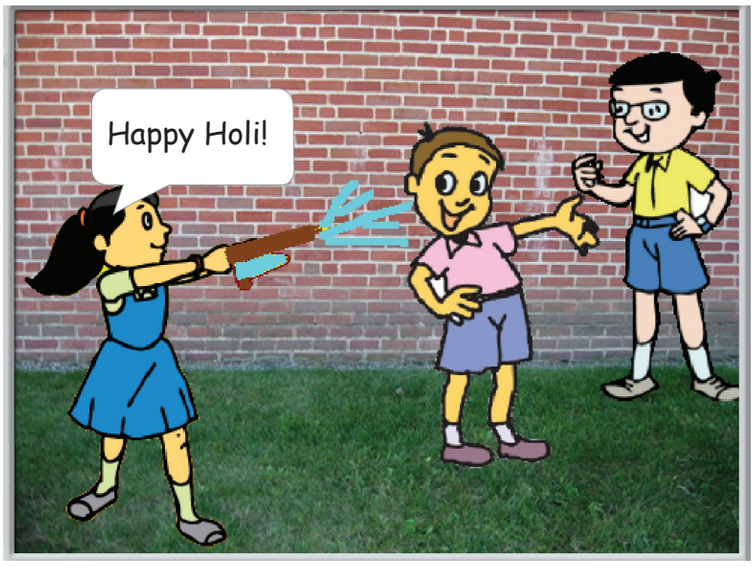


3. Interactive cards:

Divide the class into groups of five students each. Each group picks one of the following celebrations and write two projects.

Project A: An interactive invitation to the celebration.

Project B: An interactive greeting card for the celebration.



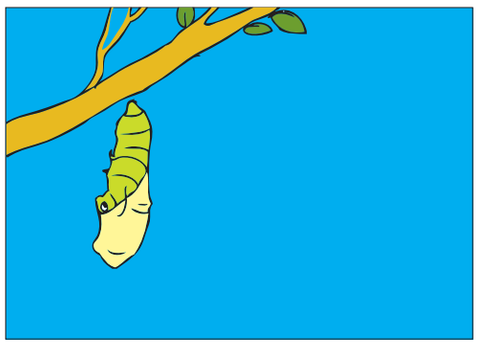
- Birthday
- Diwali
- New Year
- Christmas
- Ramzan Eid
- Holi

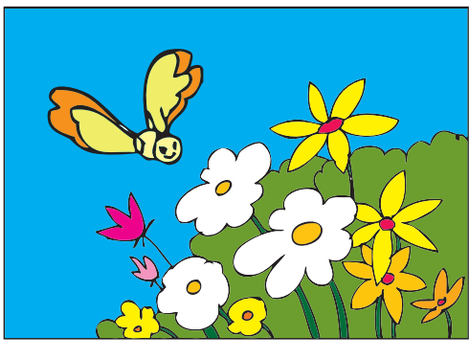
Hint:

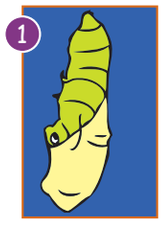
Use Sound block, Looks block, Pen block, Control block. You can record a song and use it in the greeting. Use looks to say something. Make the Sprite dance!

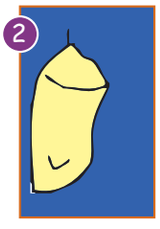
4. Evolution of a butterfly:

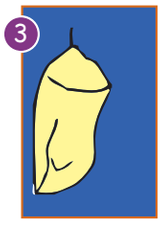
Students in Class II are interested to see an animation of the evolution of a butterfly. Write an animation project in Scratch to demonstrate how a caterpillar changes to a butterfly. At the end of the demo make many butterflies fly around the stage and drink honey from some flowers.

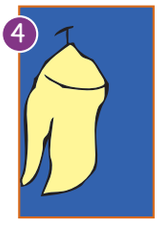


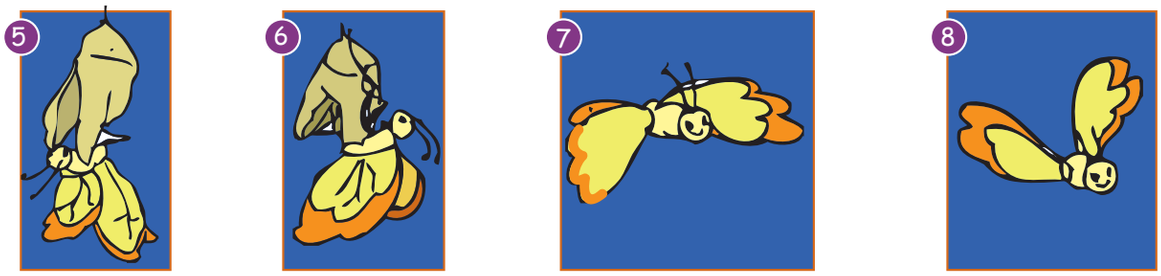












Hint:

Use Costumes and instructions from Costume block. For explanation of each stage of the evolution, create a text Sprite and place it on the stage. Use Motion block to make the butterfly fly around the Stage and drink honey from flowers. You can also make the butterfly fly from one Background "into" another.

5. Tell me a story:

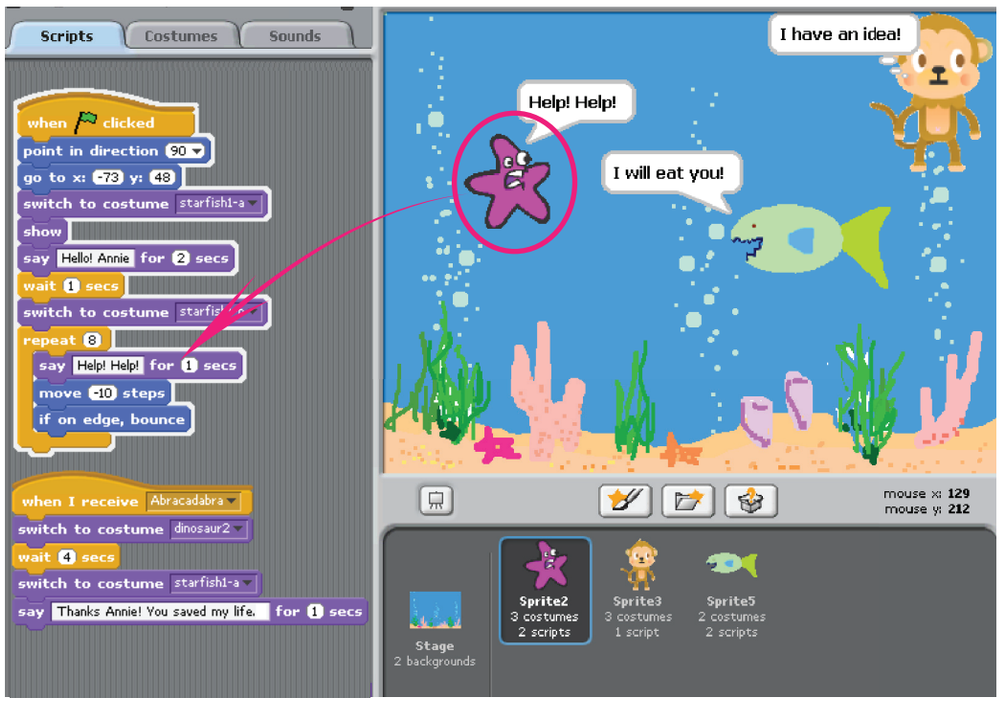
Write a story using the animal Sprites, available in Scratch.
Write a program in Scratch to tell the story.
Example:

Annie saves Smiley

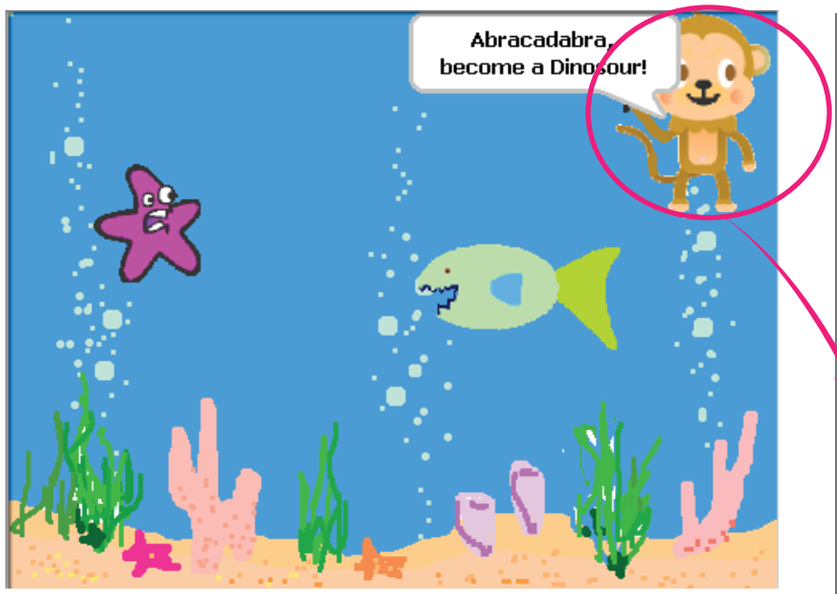
This is a story of how Annie the monkey saved Smiley the fish. Annie is a magician. One day Annie went to the beach. Annie saw a big shark chasing Smiley. Annie wanted to save Smiley. Suddenly the shark turned back and went away. What happened?

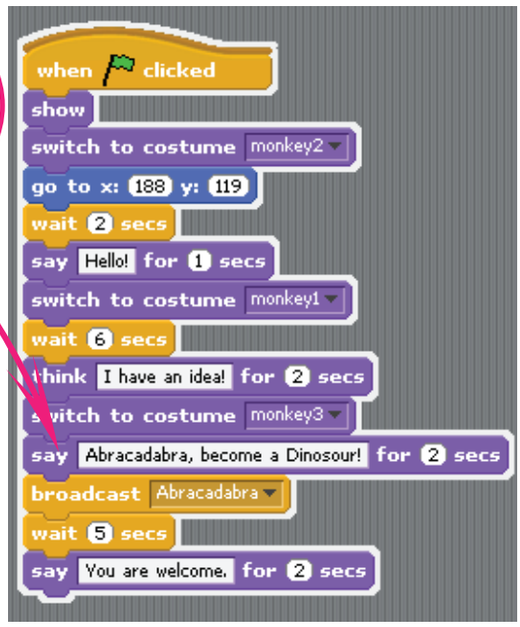
The following Scripts show how Smiley was saved.

Smiley scripts

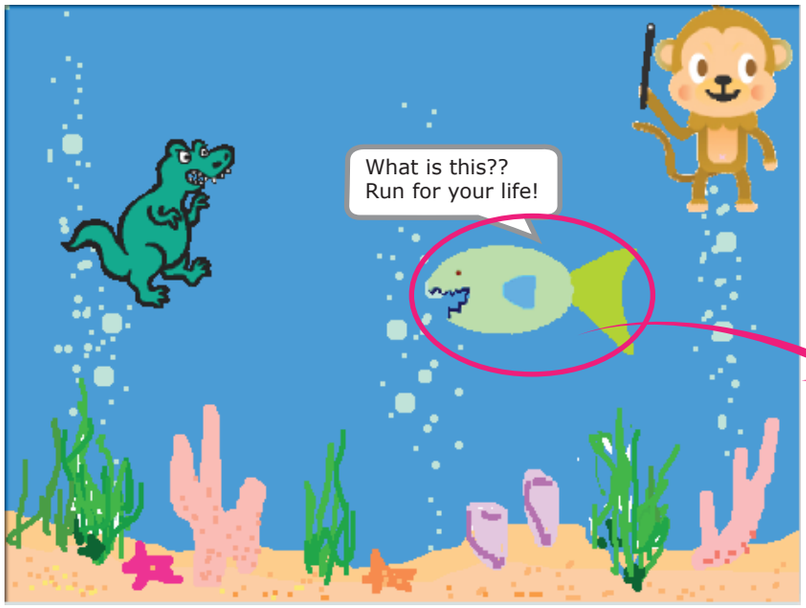


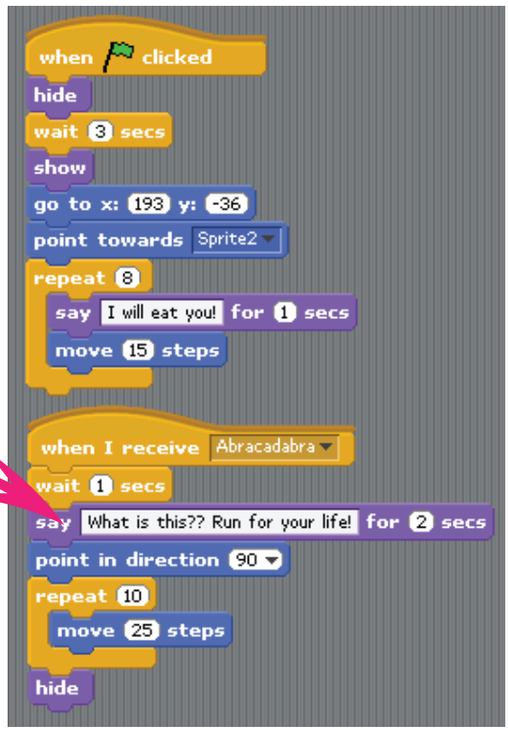
Annie scripts





Shark scripts





6. **Gaming with Scratch:** Build your own computer game.

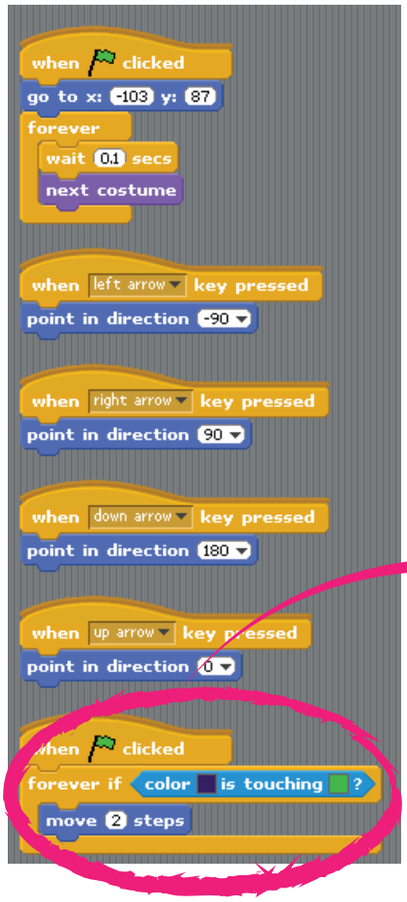
Example:

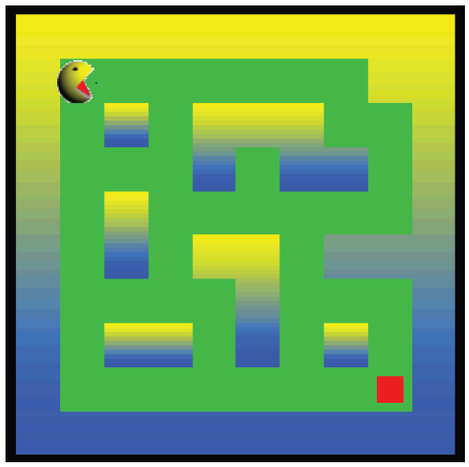
Play "Conquer the Maze!" with your friends. Manoeuvre Roller ( ) through a maze using arrow keys. If Roller touches the wall of the maze then the player is out. Record the time each player takes to move Roller to the exit of the maze.

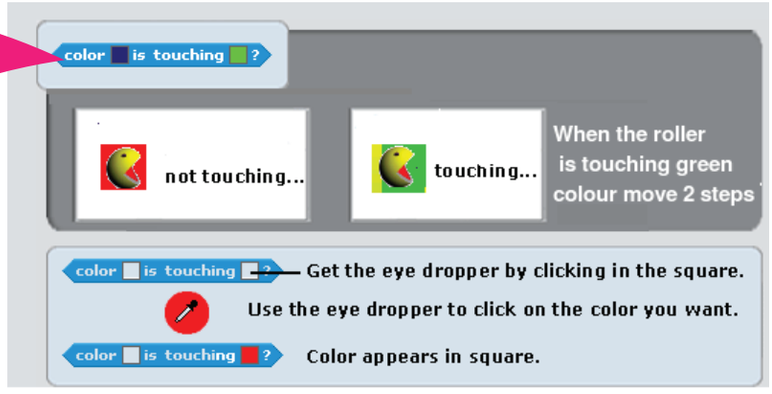
Hint:

Use Motion block, Control block, Sensing.

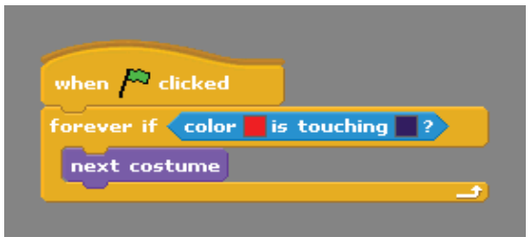
Roller script

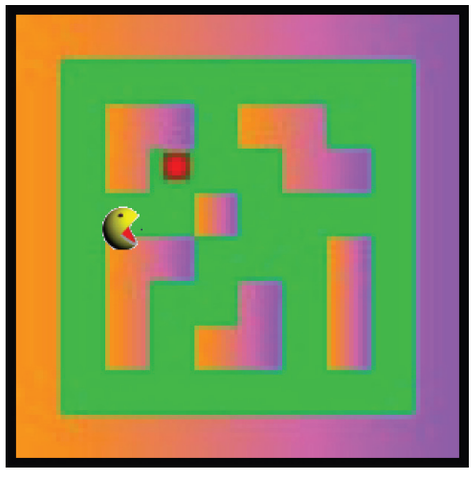






Maze script

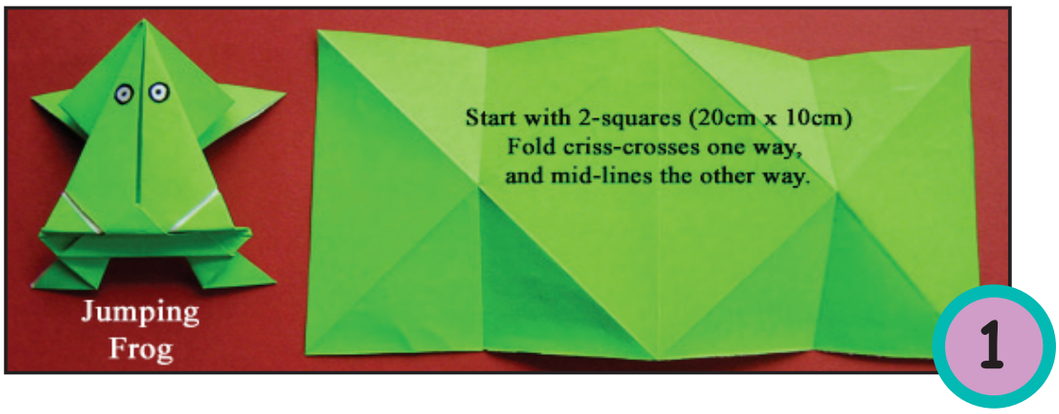


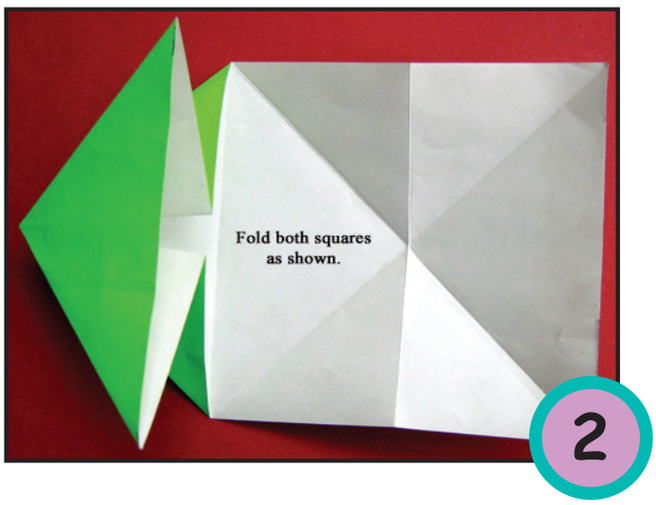


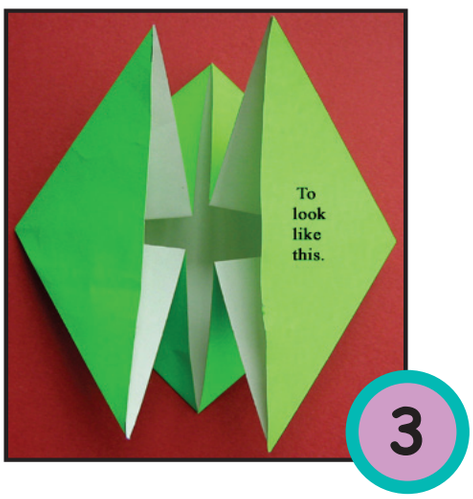
Group Activity:

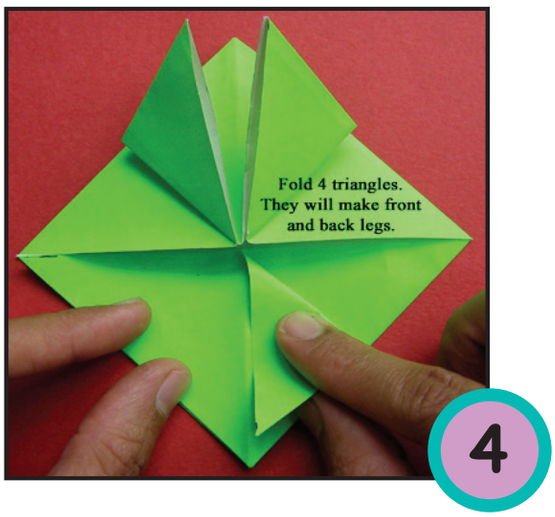
7. Jumping frog:

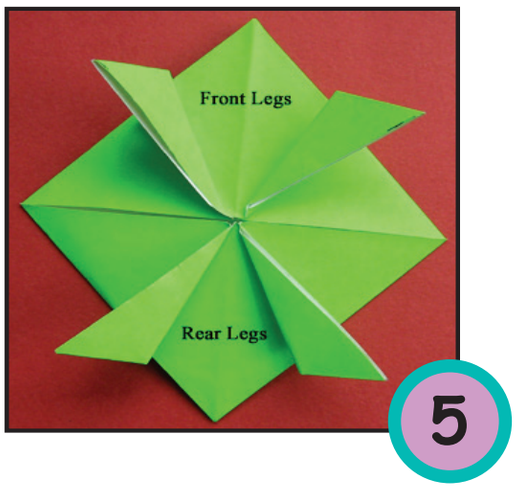
Divide the class into groups of five each. Each student can make a frog in different colour. Jumping Frog is an amazing paper toy. It needs a special size of rectangular paper where the length is double the width. The frog has a special spring folded from the paper itself. When you press the spring it makes the frog leap and jump. Instructions for making the toy are given below. Devise games with the frogs and have fun.

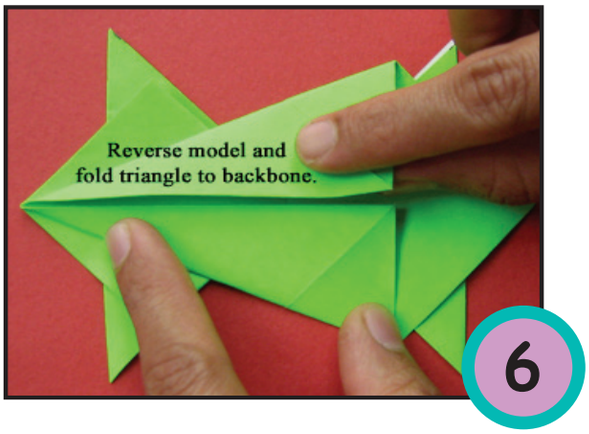


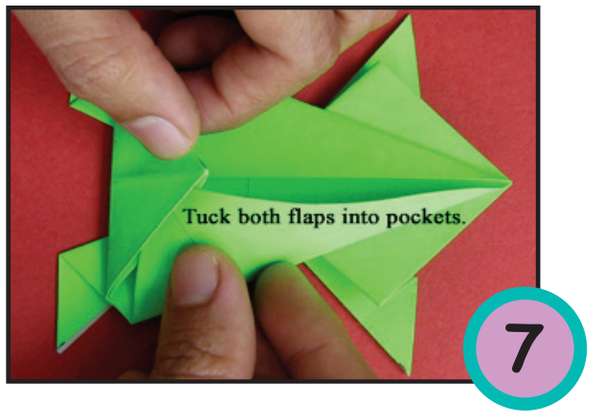


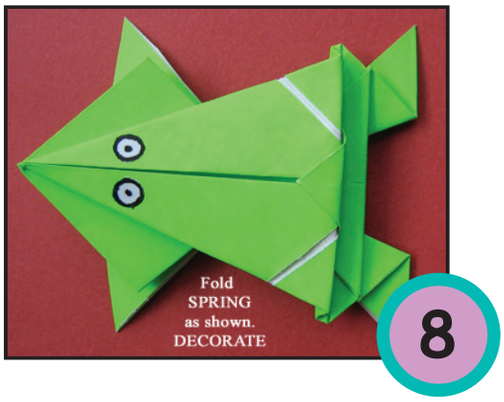




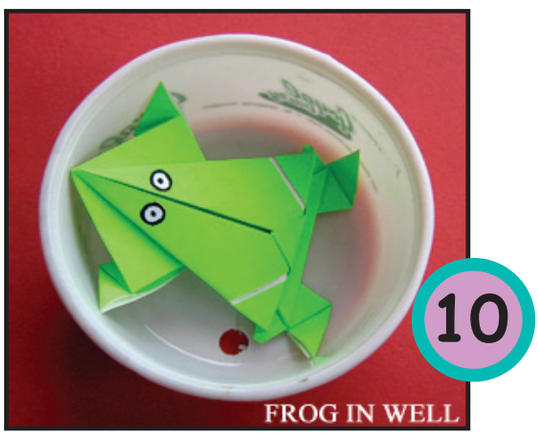


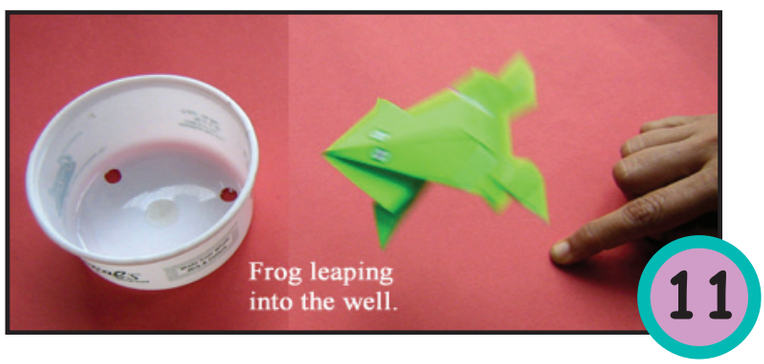

Reverse model and
fold triangle to backbone.
6


Tuck both flaps into pockets.
7


Fold
SPRING
as shown.
DECORATE
8


Press spring with finger
to make the frog
jump into the well!
9


10
FROG IN WELL


Frog leaping
into the well.
11

8. Demonstrate a toy:

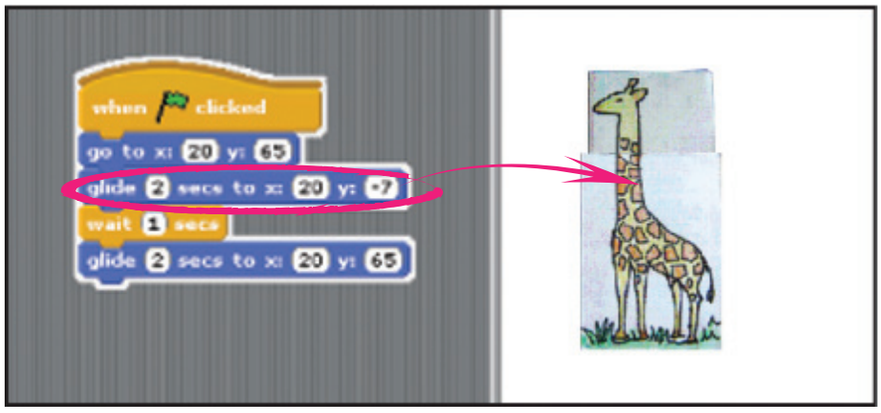
Take a picture of any animal and make its head disappear and appear. You can try these out with vehicles. Use your imagination. Here is an example of how a Giraffe's neck and head disappears and appears using a Match box. Write a program in Scratch to demonstrate the toy.

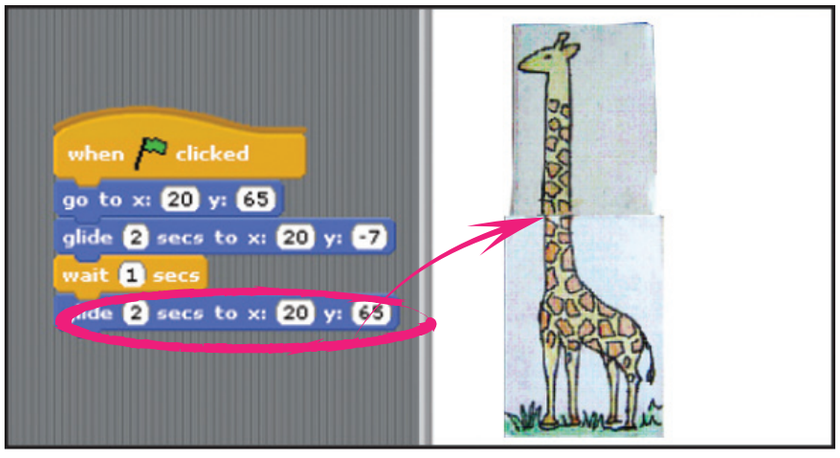
Hint:

Pressing Up arrow key reveals the neck and head of giraffe.

Pressing Down arrow key makes it disappear.

Repeat this activity using a match box.





Project

Do project 4 given in lesson 7.

Explore!

1. Write a Scratch program to show our Solar system.
2. Explore the instructions that you have not used till now from control, looks, sound, motion, pen using help. Start using these instructions and have fun with Scratch.

Teacher's Corner

- The purpose of this lesson is to provide a wide set of activities that students can do in Scratch.

- Students have been using Scratch and are familiar with various instruction blocks. Start the class by asking students questions about what they have liked the most about Scratch, a particular project that they enjoyed doing and so on. Tell them that with Scratch they will be able to do animation and show movements as they see in cartoons. Mention that they can also make their own computer games using Scratch. They will be thrilled with this and eager to learn more.

- Revise the different instructions in Scratch that students have already used. You can use the Scratch cards and ask them to write projects (*http://info.scratch.mit.edu/Support/Scratch_Cards*). Use this opportunity to assist students who are less confident of using Scratch. Bring Book 3 to the class and allow the students to read the Scratch chapters. Ask students to open an existing project, make changes to it and observe its effect.

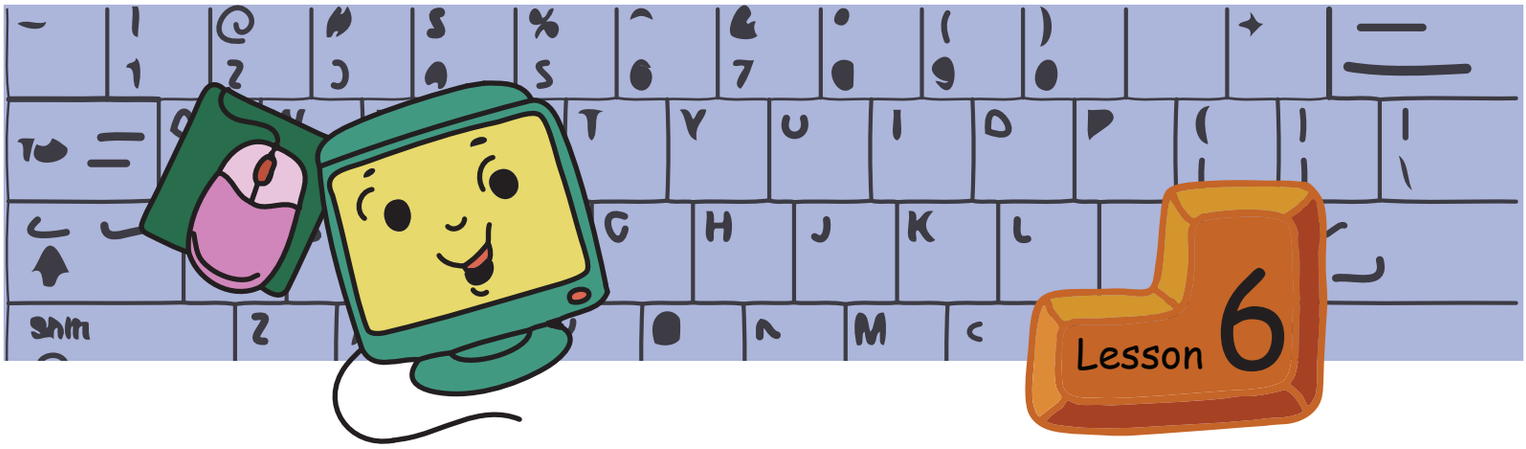
- You can also ask the students to read the help screens (click on tab – want help?) to revise the function of the different blocks.

- Ask students to open one of the projects and add the different sensing options in the control blocks. Ask them to note the edges of different sensing blocks to find out which blocks can fit into the control blocks. Let them explore and test the effect of adding the different sensing blocks to the existing project. Explain the function of different sensing blocks and demonstrate this to them.*

- In order to give appropriate practice of the different instruction blocks, allow the students to do the different activities listed in the lesson. Tell them that they can use Scratch to do projects of other subjects, such as showing life cycle, solar system and so on. Besides, these projects can be shown as a slide show. Steps to convert Scratch projects into presentations is available at http://scratch.mit.edu/forums/viewtopic.php?id=10122

* Note: Depending on what version of Scratch you have installed, there might be slight changes in the menu and instruction blocks.

Further Reading:
http://info.scratch.mit.edu/Support
www.arvindguptatoys.com



Naming and Organising Files

In this lesson you will learn:
How to organise files and folders.
Naming of files and folders.

Tejas: Moz, today at home we helped my mother to store the things that she brought from the shop.

Moz: What did your mother bring and where did you store them?

Tejas: We put the sugar, coffee, grains, and rice on the kitchen shelves.

Jyoti: Aunty brought some story books. We put them in the story book shelf of Tejas's cupboard.

Tejas: The bed sheets were placed in the bedroom cupboard.

Moz: Good. Why do you keep sugar, rice etc., in the kitchen?

Jyoti: These items are used for cooking. Whenever we need these items we can find them easily.

Tejas: It is like storing my files in a folder named Tejas-files on the computer. Jyoti saves her files in the folder named Jyoti-files. So each one of us can find our files easily.

Moz: What are the names of the files that you saved?

Tejas: painting-house, story-fingers, song-jana-gana.

Jyoti: painting-sun, story-tenaliraman, music-vande-mataram.

Moz: Why is it important to choose suitable names for the files and folders?

Tejas: The name tells us what the file or folder contains.

Jyoti: Yesterday, I was going home with my friends. Then we were reading the names of shops and schools. Imagine what would happen if our school is given the name food bazaar and the shop that sells vegetables is called the Zephyr school!

Moz: Yes. Names are very important. Names allow you to identify places, persons and things. Similarly giving appropriate names to files and folders is very important.

CONCEPTS

- Any content created using a computer, such as a picture or text is saved as a File.
- Choose a File name that tells us something about the contents of the File, without having to open it.

Tejas: Why is .png added to the name of my painting?
Moz: This is called an extension. Which activity did you use to create the painting?
Tejas: Tux paint.
Moz: So files created with a painting activity have been given the extension .png.
Tejas: Ok, I see. I can name my painting just sun instead of painting-sun. I can identify that it is a painting when I look at the name sun.png.
Moz: Yes. Let us look at other extensions.
Jyoti: The file that has Tenali Raman's story has the extension .txt.
Moz: Good observation! Text files created using text editor have the extension .txt.

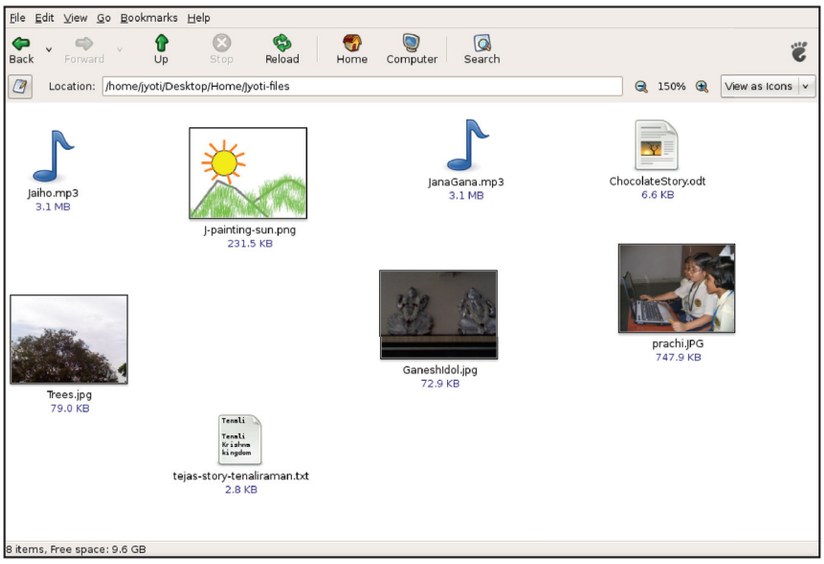
Jyoti: I used Open Office activity to enter the chocolate story. The file was saved with extension .odt. Chocolate .odt is also a text file.
Moz: You are right. Both the files with .txt and .odt are text files.

File names have extensions. The extension is added to the name of the file by the activity with which you create the file. We can identify the type of content in a file by the file extensions.
Example: Types of files and their extensions

- .png or .jpg - paintings, photographs or any image.
- .avi or .mp3 – music
- .txt or .doc or .odt – text files

Info

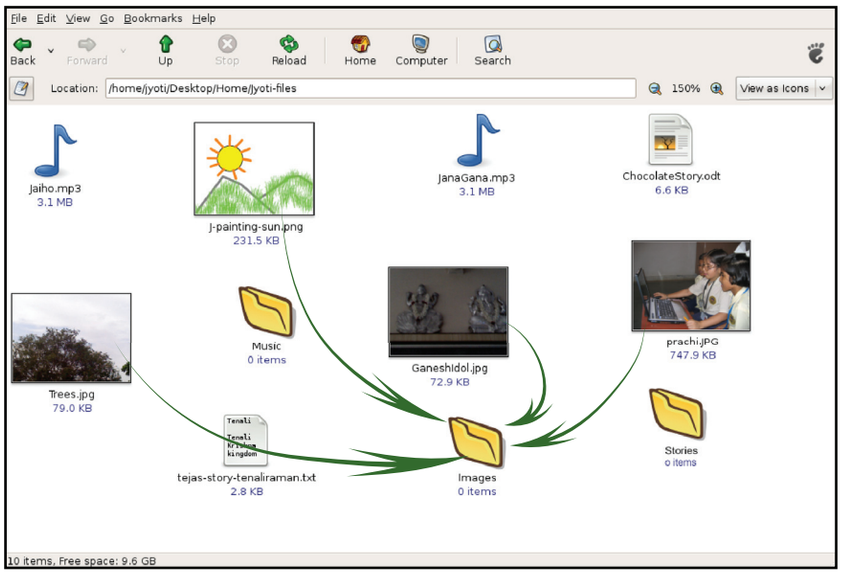
Moz: Now, how will you organize these files into folders? In one folder or different folders?
Jyoti: Different folders. I store music files in one folder, paintings and photos in another and my stories in another folder.



CONCEPTS

Folders help us by:

- allowing us to organise related documents or files together.
- making it easy to locate important files quickly.



Moz: Very good. Now look at this desktop. These photos are of students in class IV.

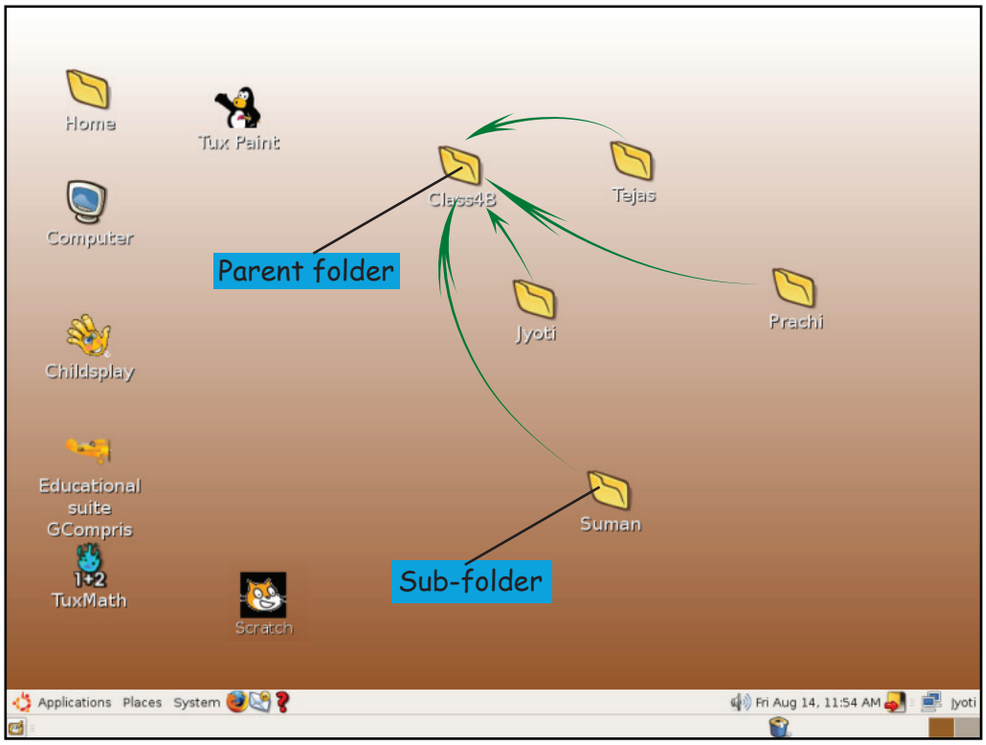
Tejas: The desktop looks so untidy. Let us create a folder for each student. Then move the photos of the students into his or her folder.
Moz: How do you move files into a folder?
Tejas: By using drag and drop. We learnt this in Book II.

Jyoti: The desktop still looks cluttered! Can we create one folder for each class?

Moz: Yes, you can. Move the students folders into their class folder.

Jyoti: That means we can move folders into other folders!

Moz: Yes. For example folder Class4B contains student folders Jyoti, Prachi, Suman and Tejas. Class4B is called the **parent folder** and the student folders are called the **sub-folders**.



CONCEPTS

- A folder located within another folder is called a **sub-folder**.
- The main folder is called the **parent** folder.
- Folders and sub-folders help us to keep our files neatly.

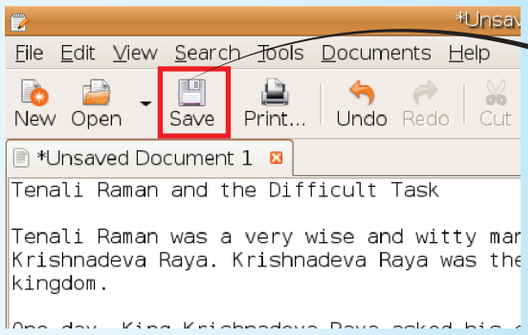
Jyoti: Can we have a school folder to contain all the different class folders?
Moz: Yes. you can.
Tejas: Let us see how we can do this.

- Create a folder with the name of the school. This folder will contain information of the students of that particular school.
- Within the school folder, create folders for each class in that school, for example, std1, std2, and so on. These are sub-folders of the school folder.
- Similarly we can create further sub-folders within each class for different sections, for example, std4A, std4B, and so on, and store files containing information about the students in these sections within these sub-folders.

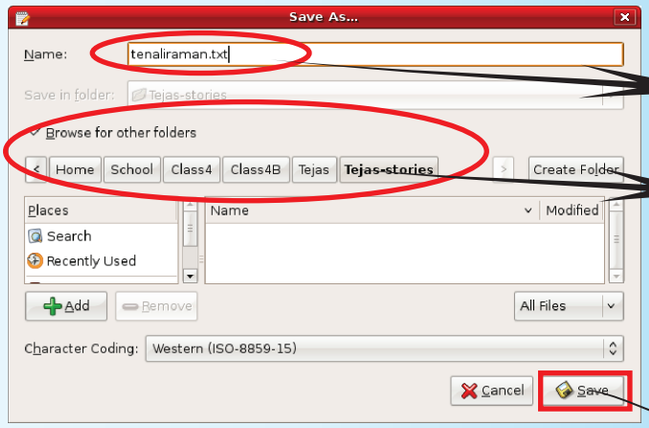
CONCEPTS

Arranging folders one inside another is useful to group files systematically. Arrangement of folders into parent and sub-folders is called a **directory structure**.

Moz: Now let us see how to save a file in its correct folder.
Tejas: I will save the story that I entered in text editor.
Tejas does the following to save the file in Tejas-stories folder.



Step 1: Click on **Save** in the text editor menu bar.



Step 2: Enter a name for the file here.

Step 3: Click on **Browse for other folders**.

Step 4: Double click on **std4B**, then **Tejas**, next **Tejas-stories**.

Step 5: Click on **Save**.

SKILLS

Moz: Let us look at another situation. This is the first time that your friend Neeta is saving her files on this computer. What should she do?
Jyoti: Neeta is in class 4A. She should create a sub-folder under Class-4A folder and name the sub-folder neeta.

Moz: Correct. Observe that in many places like a classroom, library, shops and home, things are organized logically. Similarly, we organise files and folders in a computer, logically.

Jyoti: I have seen that the postman sorts letters for each city separately in a post office.

Tejas: My mother does beautiful embroidery. Her embroidery box is neatly arranged. The coloured threads are all kept in one partition, the beads are in another partition, various sizes of needles are kept in a small box. She says that, when things are arranged in their place, we can find them easily. When we work systematically, we can enjoy our work.

Moz: You have given very good examples. Now, give me a few examples on the computer.

Jyoti: From Applications menu, when we choose games then we find a list of all the games that we can play.

Tejas: In Scratch, the costumes for the Sprites are organized in folders according to the categories that they belong to. For example, all animal costumes can be found in animals folder.

CONCEPTS

We organize things in our home, school and office systematically so that we can find them easily. This also saves time.

Similarly suitable naming and organizing of files and folders on a computer is important. This helps us to find the information that we want easily.

Tejas and Jyoti: Thanks, Moz for teaching us so much about the computers.

Moz: I too enjoyed your company. I have learned the exercises, yoga asanas. I have to now go to Anandavan. Do all the projects that I have prepared and have fun using the computers. See you next year. Chin Chinaki...

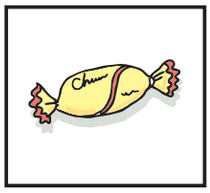
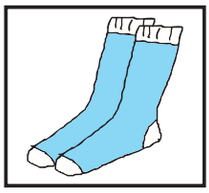
Learning Outcome

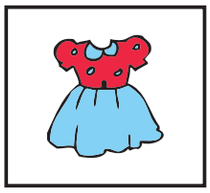
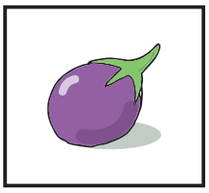
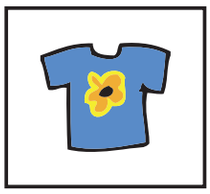
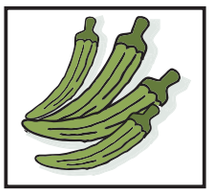
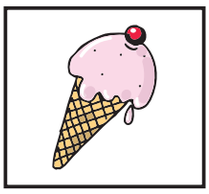
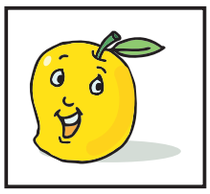
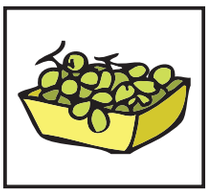
After you have studied this lesson, you will be able to:

- Select appropriate names for files and folders.
- Organise data using files, folders and sub-folders.

WORKSHEETS

1. See the list of items given below and group them appropriately.

Group all the items appropriately. Two boxes are given below, one is labelled as *Things we eat*, and another as *Things we wear*. Arrange the items under these two groups.

Things we eat

Fruits

1. _____
2. _____
3. _____

_____

1. _____
2. _____

Sweets

1. _____
2. _____

Things we wear

Clothes

1. _____
2. _____
3. _____

2. Identify what does not belong here. Circle the word that does not belong and explain why.

a. Car Truck (Horse) Bus Train

A horse is an animal, the others are vehicles.

b. Camel Goat Doll Cow Lamb

_____

c. Fan Fridge Mixer Oven Pen

_____

d. Cake Bread Apple Muffin Biscuit

_____

e. Pencil Table Chair Sofa Recliner

_____

f. Cow Lion Camel Goat Sheep

_____

3. Help Tejas list three things that:

a. You take to school Pencil, Tiffin box, School bag

b. Are round in shape _____

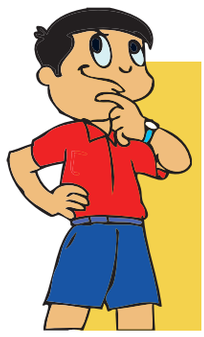
c. Smell good _____

d. Are green in colour _____

e. Conduct electricity _____

f. Are sweet in taste _____

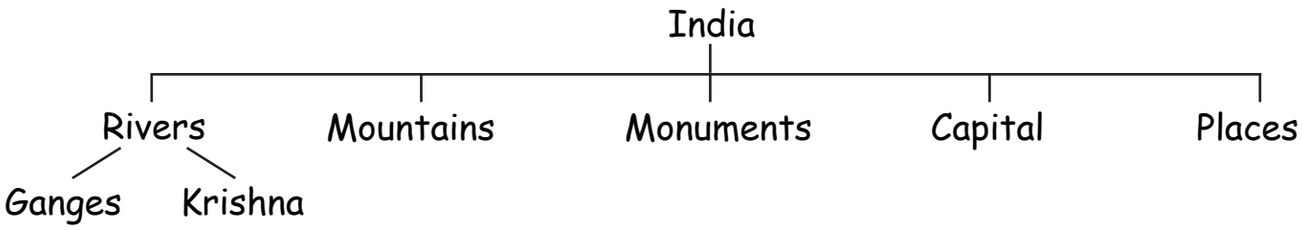
g. Cause pollution _____

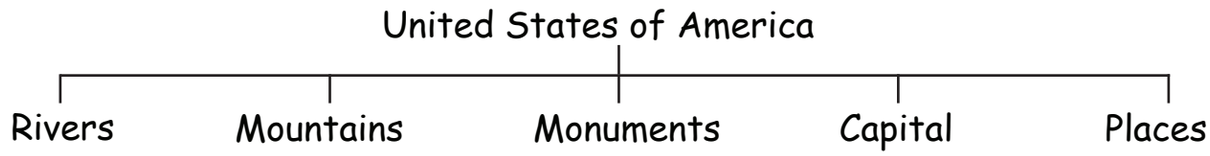


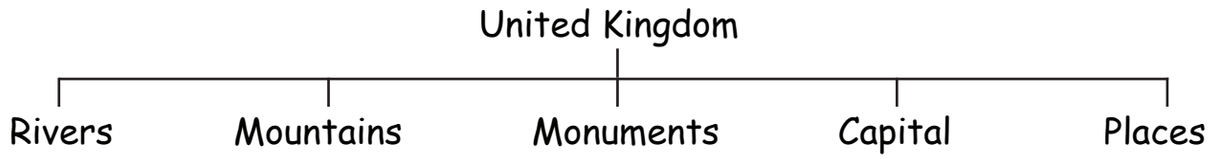
4. A list of countries, capitals of these countries, rivers, mountains, and some interesting places to visit in the country is given below. Classify the information and create a tree structure for each country. Add more rivers, mountains and interesting places that you know.

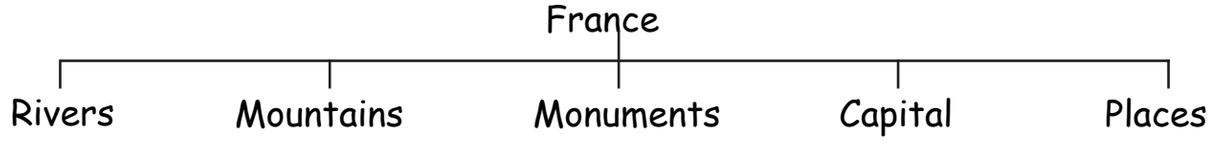
Countries: India, United States of America, United Kingdom, France
Capitals:, Washington, London, Paris, New Delhi
Rivers: Thames, Mississipi, Ganges, Seine, Missouri, Krishna
Mountains: Marilyns, Vindhyas, Hewitts, Himalayas, Rocky mountains, Alps, Colorado, Mount Rushmore.
Places: Eiffel Tower, London Eye, Taj Mahal, Notre Dame Cathedral, Statue of Liberty, Empire State Building, Big Ben, Kutub Minar.

An example is given below.

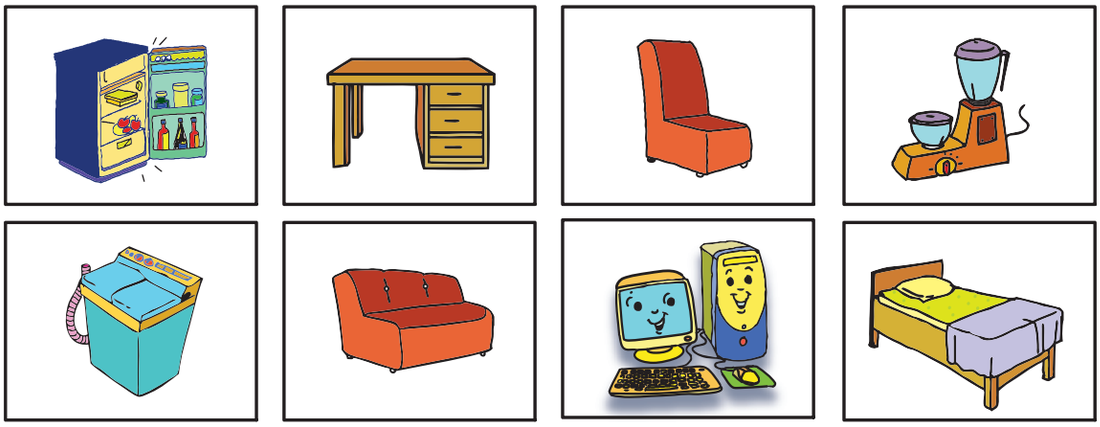




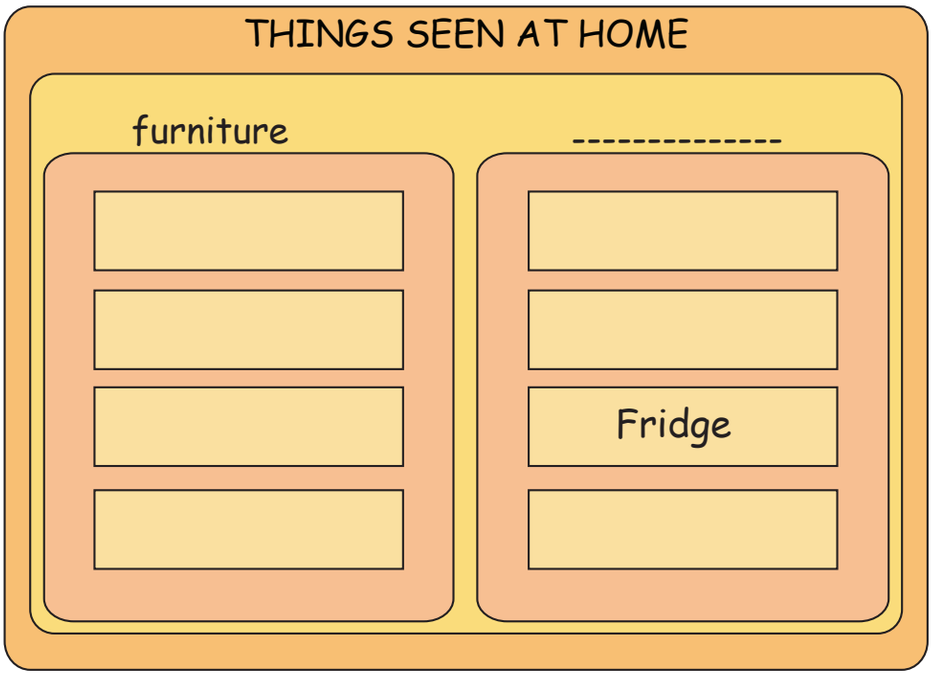




5. Following is a set of pictures of some things you see in your home.



How will you organise them? The following outline will help you in it.



1. Which is the root parent folder?

_____

2. Name the sub-folders?

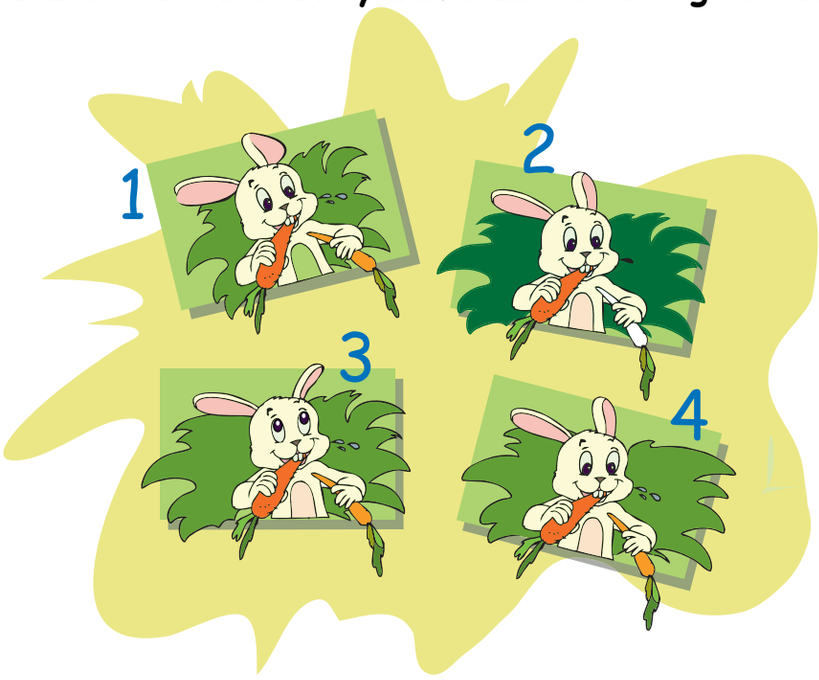
_____

3. Name the different files.

_____

6. a.

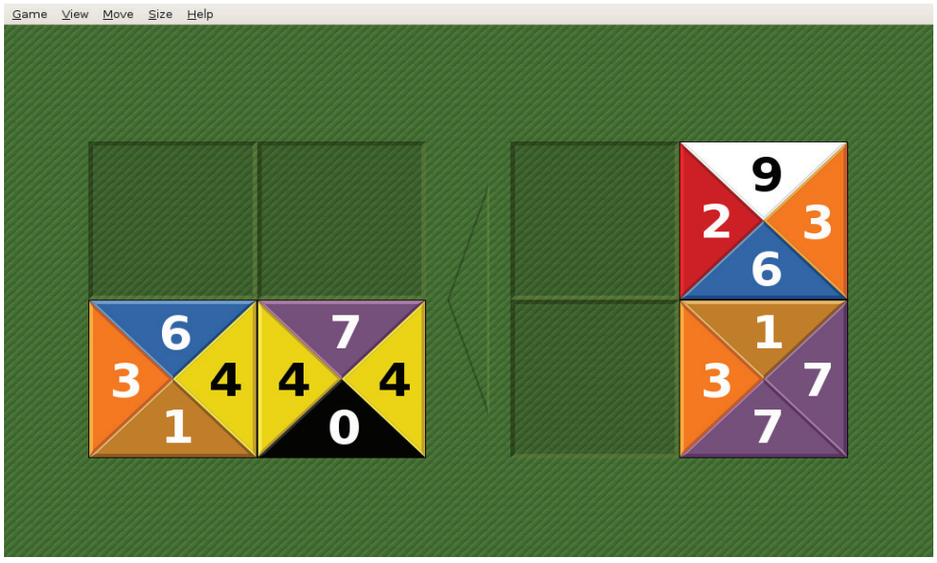
Circle the picture that is exactly same as the one given above.



b. Four pictures are given below. Circle the two pictures which are exactly same.

1. **Pack your school bag according to the timetable:**
   All the textbooks, class work and home work notebooks, rough book and school calendar are mixed together in one pile. You have to pick up the books of a particular subject and put them together. Now pack your school bag according to the time table for the next day.

2. **Tetravex:** Select Applications ---> Games ---> Tetravex
   Tetravex is a simple puzzle where pieces must be positioned so that the same numbers are touching each other. The tiles are divided into four parts. You must position them so that only identical numbers are next to each other. The game will not let you position the tiles so that different numbers are next to each other. You position the pieces by dragging them from their current position to their new position. These moves are not permanent and can be readily reversed. The game is completed when you have positioned all the squares in the right positions.



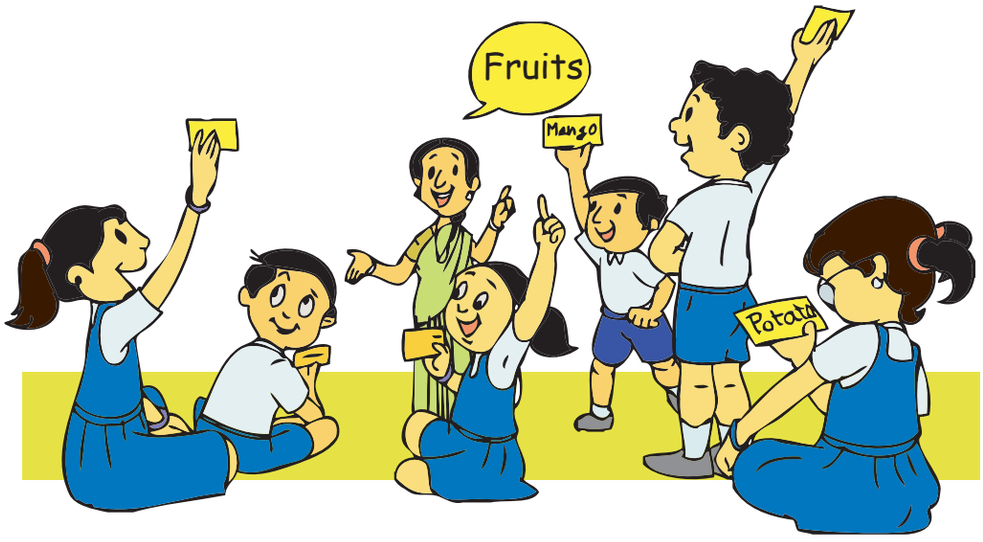
Group Activity

Part A

Write names of flowers, fruits, vegetables, sweets on chits of paper. Now mix them all and ask each student to pick one chit. Let students sitting in one row form one group. The teacher asks two students to find out names of all the sweets that are written on chits. Similarly, two students find names of flowers. Note that you will have to go to each group if you want to know the names of all the sweets.

Part B

Now, the teacher calls for each group one by one. First, fruits is called out. Notice that students from different groups who have the names of fruits will form the new group. Similarly, flowers, vegetables and sweets are divided into respective groups. Now you can go directly to a particular group and find out names of all sweets! Note that the new groups are formed because they share a common theme. Similarly, folders help us to keep related files together.



Project

Do project 5 given in lesson 7.

Explore!

1. Start grouping and classifying what you learn and discover how easy it is to remember. For example, try to group the different types of vehicles.
2. Associate what you learn with an appropriate name to help you recall the information.

Teacher's Corner

Level IV
Lesson 6

- The purpose of this lesson is to ensure that children learn organization skills. Students already know about files and folders. You can revise these concepts and explain the importance of using folders. Emphasize the importance of selecting appropriate file names.

- Explain that files can be organised in different ways. Example: You are storing details of your family members in different files. You can have one folder that has all the photos, another folder that has voice recordings or text on each family member. The other way of organising these files is to have different folders for each family member. All the files related to this member – photos, voice recording and text are put in this folder. There is no single correct way of organizing, irrespective of which method you use to organise, there needs to be some order that has to be followed. This is for your convenience as you will be able to find the files easily later.

- Play a memory game with the students. Bring in a variety of things, jumble them up and spread it on the table. For example, you can get chalk, duster, books, key, lock, bangle, bottle, tiffin, apple, banana, orange, etc. Now remove the cover for a minute and ask the students to look at these items. Cover it again and ask students to recall all the items they had seen. Take a count of how many items were correctly recalled and note it on the board. Now, segregate these items according to their category, e.g. put all fruits on one desk. Repeat the game. Take a count of how many items were correctly recalled and note it on the board. This is likely to be higher than the first case. Explain that when the items are organised, it is more convenient to locate them.

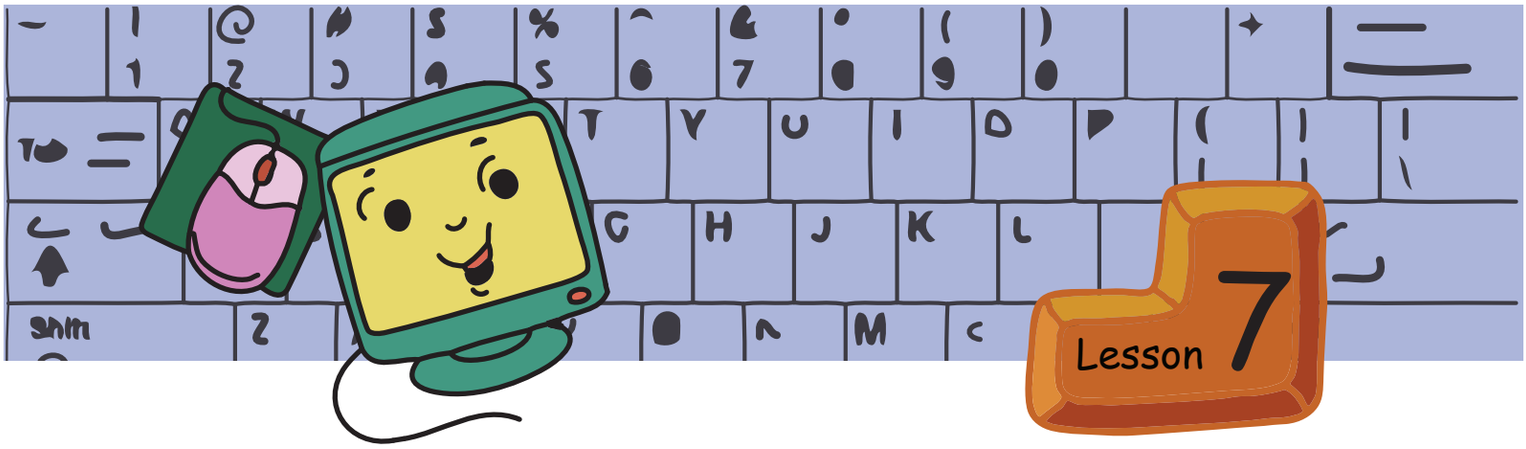
- Explain the function of sub-folders. You can use the analogy that every page is a file, the notebook are sub-folders and the school bag the main (root/ parent) folder. For example, if you want to refer Lesson 3 from EVS, you will open the bag, pick up the EVS book and go to page of lesson 3. Ask questions such as: If they did not have notebook and only stacks of paper all piled together, how will they find the lesson 3 of EVS? Just as notebooks keep related pages together, the sub-folders keep related files together. Similarly, just as all the notebooks are put in your school bag, similarly all related sub-folders are kept in the main folder. Ask questions to encourage discussion and thinking amongst students. For example, what happens if your notebook goes in your friend's bag? Why do you need separate notebooks for different subjects?

- Illustrate how sub-folders are created. To do this, create a folder called Bag. Create sub-folders with names Mathematics and English. Now create files that has names of lessons from Mathematics and English. Select a file with the name of a English lesson, drag and drop it in the sub-folder named English. Similarly place all the files in their respective sub-folders.

- Summarise the lesson and emphasize the importance of organising.

Further Reading:
www.myffgames.com

Notes:



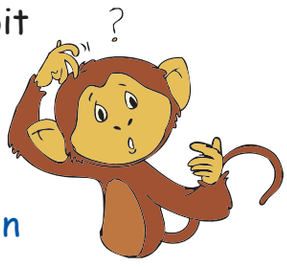
Projects

Project 1 (Lesson 2 - Logical Thinking)

1. A story with four puzzles is given in this project. Divide the class into four groups. Each group solves one puzzle and invents another puzzle similar to what they have solved. The puzzles thus created are solved by other groups. While solving the puzzle, the group should list out the information, conditions, the goal and the solution steps. Of course, you also get a new story in this project with the new puzzles created by you. Share the new story created by your class with your friends and family.

The lost rabbit and the four puzzles

Jyoti, Tejas and their friends were searching for their rabbit that was lost. As they were searching, they met a monkey who was sitting and seriously counting again and again.



Children: Did you see a small rabbit walking this way?
Monkey: I saw the rabbit. The rabbit went in the direction where you can find papayas.

Tejas: But where can we find papayas?

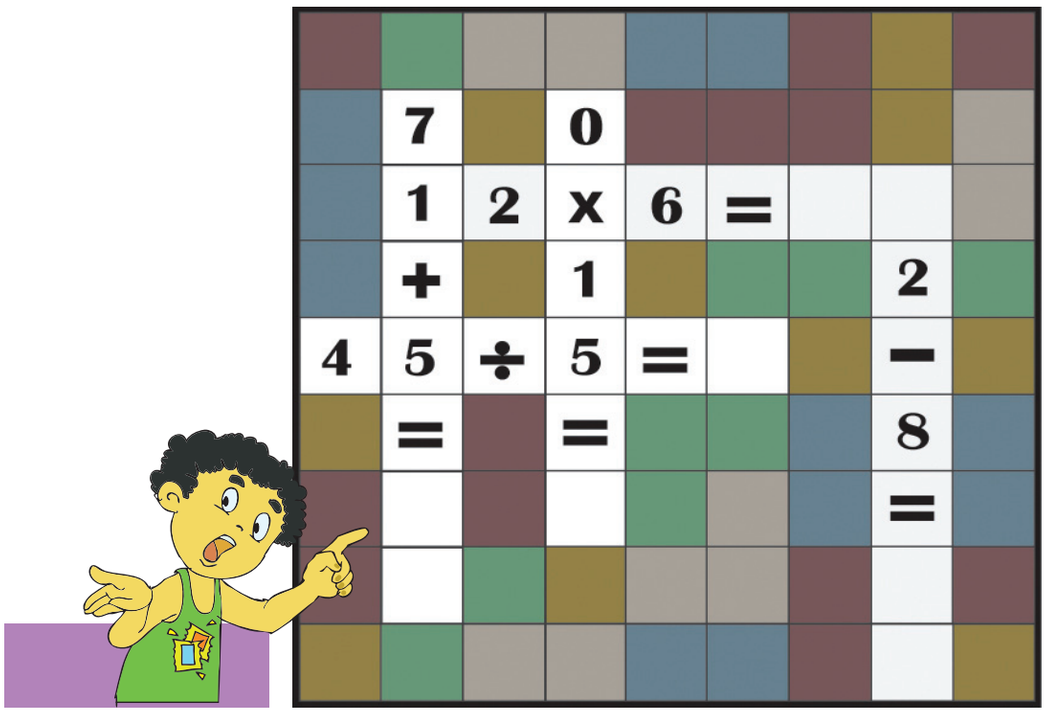
Monkey: I am going that way. I will show you. But first you have to answer my question. I have called twenty friends for dinner. Four want bananas, six want nuts, five want coconuts. The rest want papayas. How many papayas should I get?

Children: You have to get _____ number of papayas.

The children then walked with the monkey to the place where papayas are found. They met a boy named Mihir, who was standing at a gate and seemed to be solving some puzzles displayed on a board.

Children: Did you see a rabbit go through this gate?
Mihir: Yes. It went through the gate. We have to solve the puzzle on the board for the gate to open.

Fill in the numbers that ran away in the following crossword puzzle:



The children filled in the correct numbers and the gate opened.

The children saw a beautiful garden and many people walking here and there. The children searched everywhere in the garden and asked many people about the rabbit. No one seemed to have seen the rabbit. Finally they met a magician. They asked the magician if he saw the rabbit.

Magician: Yes. I saw your rabbit and it followed one group of my magicians. I have eight magicians, one group of my magicians went on the road which is on the right side and the other group on the road which is on the left side.

The group of magicians that went to the right

- Were carrying carrots and cabbages.
- The age of each member in this group is less than 15 years.

The group of magicians that went to the left.

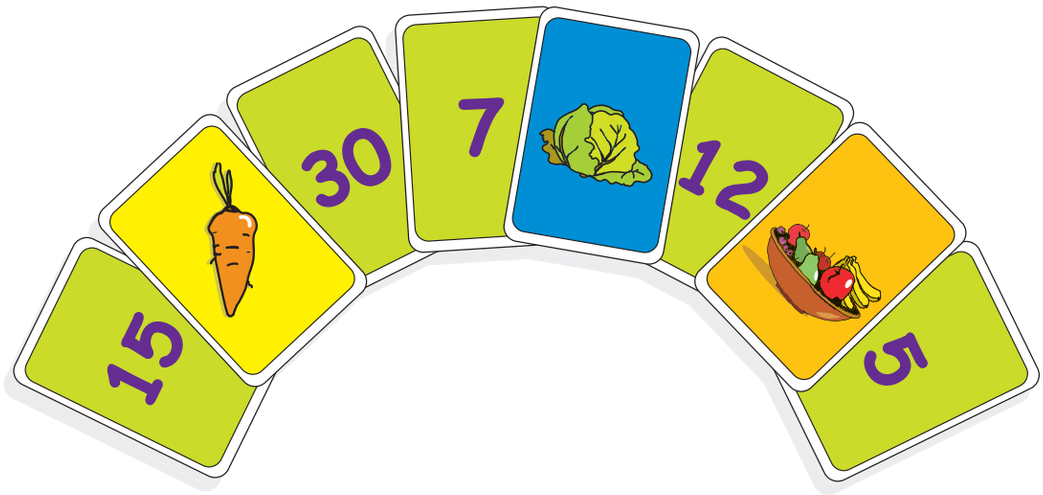
- Were carrying fruits.
- The age of each member in this group is more than or equal to 15 years.

The rabbit went with the larger group of my magicians. You can find the larger group of magicians by solving the following puzzle.

On the following eight cards,

- One side gives the magicians age.
- The other side gives what they are carrying.

The magician showed the children only one side of each card. The children now have to figure out which way each magician went.



The children figured out that they have to take the road on the _____ side to find the rabbit.

The children started walking on the road and reached a river. They met a farmer there who was sitting and thinking.

Children: Did you see a rabbit go this way?
Farmer: Yes, the rabbit crossed the river with some magicians. You can find it on the other side of the river.
Tejas: Please help us cross the river.
Farmer: I will. But first I have to take the lion, the goat and the hay to the other side of the river.

Jyoti: Then take them across and later take us also.
Farmer: I can take only one person or animal, or a thing at a time in my boat. If I leave the goat and the hay together, then the goat will eat up the hay. If I leave the lion and the goat together, then the lion will eat up the goat. So what should I do?

Fill in the answers to understand the farmer's problem:

1. What is the information? _____

_____

2. What are the conditions? _____

_____

_____

3. What is the goal? _____

_____

Fill in the blanks to give the farmer a solution:

i. Take the _____ to the other side of the river.
ii. Come back.
iii. Take _____ to the other side of the river.
iv. While coming back bring _____ with you.
v. Take _____ to the other side of the river.
vi. Come back.
vii. Take _____ to the other side of the river.

After the farmer safely takes the lion, goat and the hay to the other side of the river, he comes back and takes the children to the other side of the river. They find the rabbit at last with the magicians and take it back home. They thanked all the people who helped them find the rabbit.

Project 2 (Lesson 3 - Programming Multiple Sprites in Scratch)

a. Balancing acts:

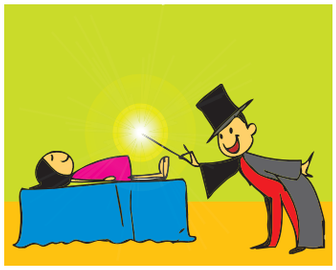
There are many balancing acts that you see. For example in circus, in dance programs, sports etc., Choose any one of these activities. Decide the number of sprites required to show the activity. Write the sequence of steps for each sprite to demo the activity.

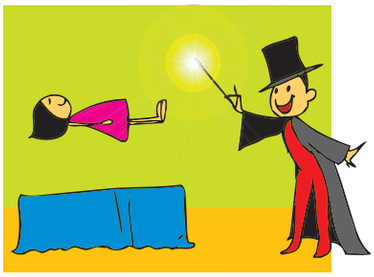
Convert the steps into a Scratch program. Demonstrate the program to your class.

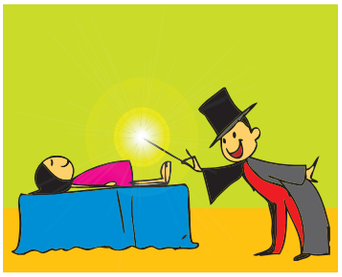
b. Be a magician!

Recall a magic act that you have seen or create one of your own using Scratch.

Example: A girl disappears from the crowd and appears near the magician. Magician asks the girl to lie on a table. The magician keeps raising his magic wand and the girl follows rising up without any support. By moving the wand downward the girl is brought down slowly back onto the table. The girl gets up and stands next to the magician. The crowd says "Hurray" "Once more" "Unbelievable" and so on.





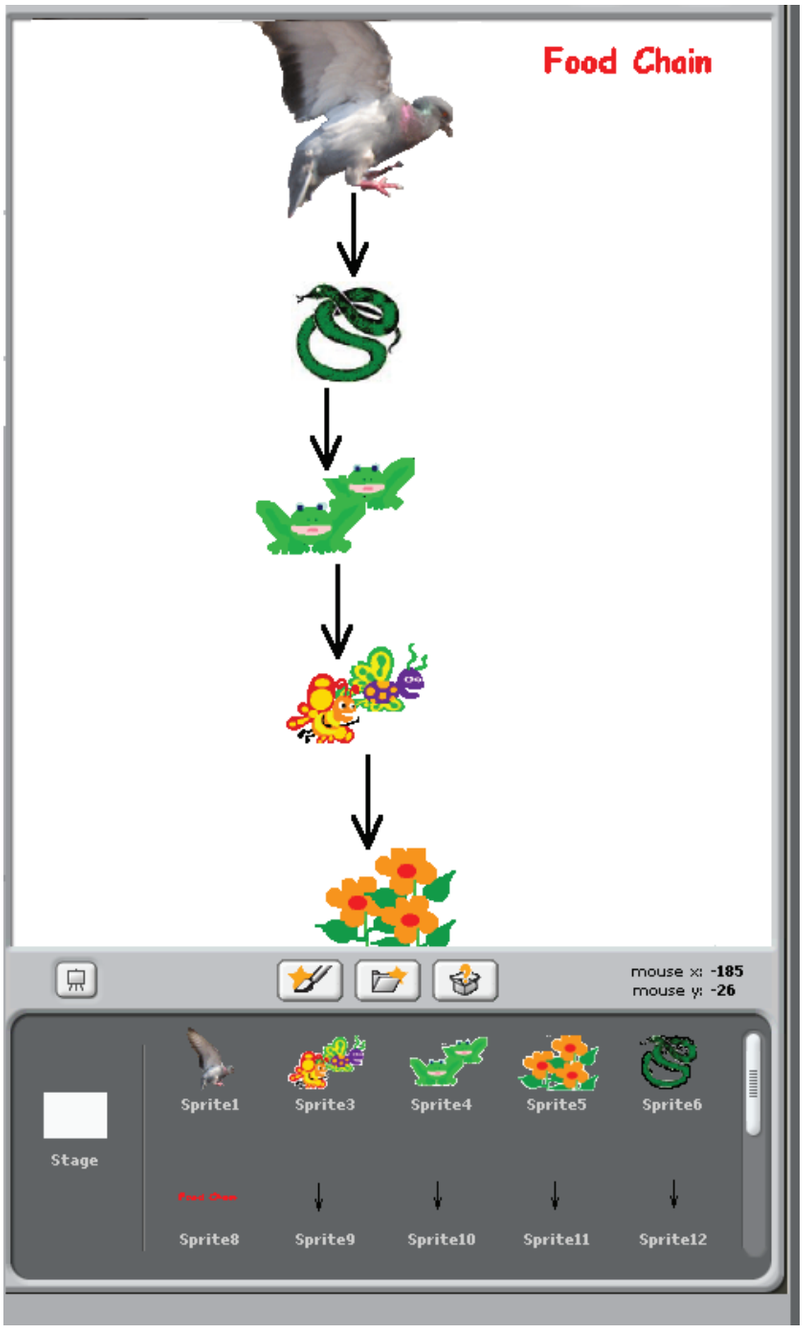


c. Demonstrate a food chain:

Show the food chain in nature using a Scratch program.

Example: (a) butterflies (insects) eaten by
(b) frogs who in turn are eaten by
(c) snakes, who form the food for
(d) eagles (birds).

Hint: Use different Sprites to show the sequence.



Project 3 (Lesson 4 - Do's and Don'ts- Balancing Asanas)

a. Who touched my nose?

Divide the class into two groups A and B.

- Each group selects a leader.
- The groups sit separately and decide an alternate name for each student in their group and write it down on a paper and gives it to the teacher.
- The leader of group A goes to group B and closes the eyes of one of the students in group B.
- The leader of group A then calls a student from group A with the alternate name using an interesting sentence.
- Example: Suppose the alternate name of a student is Rose. Then the leader can create an interesting phrase or a sentence to call the student.
  "Rose, Rose, Give a pose, come and touch my friend's nose".
- The student who has the alternate name comes and touches the nose of the student in group B whose eyes are closed.
- The student from group B whose eyes are closed, has to recognise the student who touched the nose.
- If the student is recognized then the student from A joins group B.
- If the student is not recognized then the student whose eyes have been closed joins group A.
- The group with most number of students wins.

b. Langdi – Balance on a foot and catch me.

Divide the class into two groups. The game is played in a limited space. A line is drawn around the area where this game is played.

- At the start of the game a coin is tossed. The group that wins the toss goes into the game area.
- The second group sits or stands outside the area in a group. One member (ex: Shruti) from the second group comes to the boundary of the area.
- When the teacher blows the whistle, Shruti bends one of her legs up and starts hopping in the area with one leg to catch the members of the second group.
- The members of second group keep running around. When Shruti touches a member of the second group that member is out and goes out of the circle.
- Shruti can continue catching members of second group if she is not tired.
- Shruti cannot put both legs down. She has to balance herself. If she puts both legs down then her turn is over. Shruti can go out on her own if she is tired. She goes out of the circle and the next member from the team repeats the action.
- The group which catches all the members of other group wins. If both groups catch all the members of other group then you can decide the other parameters on which the winner is decided.

Have fun devising games which need balancing and sensing to be used, and play with your friends.

Project 4 (Lesson 5 - More Activities using Scratch)

Animate an activity:

There are many activities you do or watch during the course of a day like playing with your friends, crossing the busy road, a train waiting for the signal, people waiting at a railway crossing, etc. Write a program in Scratch to animate these activities.

Example: People waiting at a railway crossing:

We need the following:

Sprites- One person on a cycle, a boy and a girl waiting to cross, a train and a signal.

Background - A railway crossing.

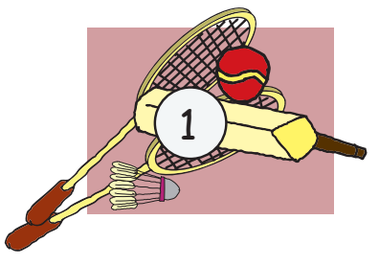
Hint:

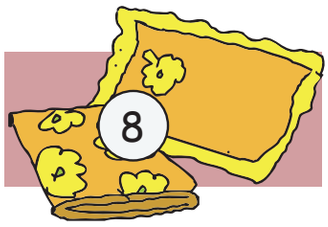
To co ordinate the actions of these Sprites, use the commands Broadcast _ _ _ _ and when I receive _ _ _ _.

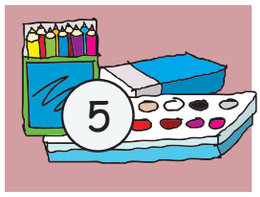
Project 5 (Lesson 6 - Naming and Organizing Files)

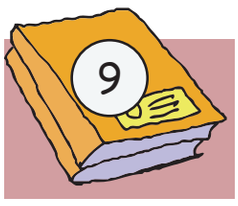
Where is my place?

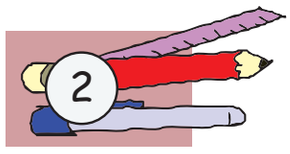
- Divide the class into two groups.
- One group of students draws pictures of the following items.
  - Clothes (T-shirt, shorts, pyjamas, frocks, skirts, etc.).
  - Pencil, colour pencils, pen, eraser, paints, ruler.
  - Shoes, socks and slippers.
  - Story books.
  - School books.
  - Bed sheets, pillow covers.
  - Basket ball, base ball, foot ball, cricket ball and bat.
- The second group draws pictures of containers for the above items.
  - Clothes cupboard which has a few drawers.
  - Bed with the drawers below the bed open.
  - A book shelf with at least two shelves, some drawers.
  - A study table.
  - Pencil holder.
  - Shoe rack.
  - A cardboard box.
  - Coat hangers.
- Take two printouts of each picture and create a chart as shown below.

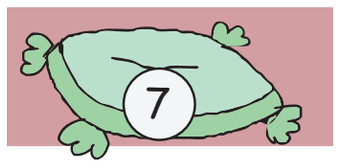


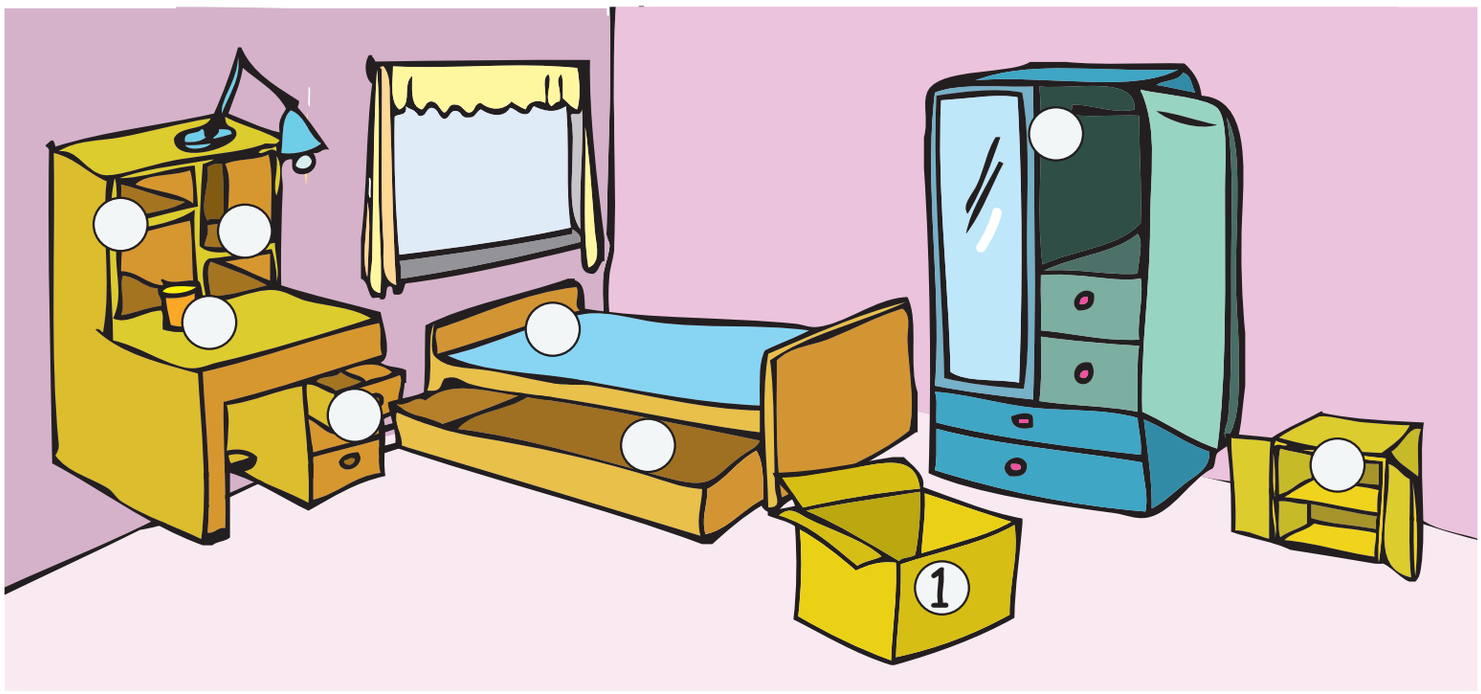










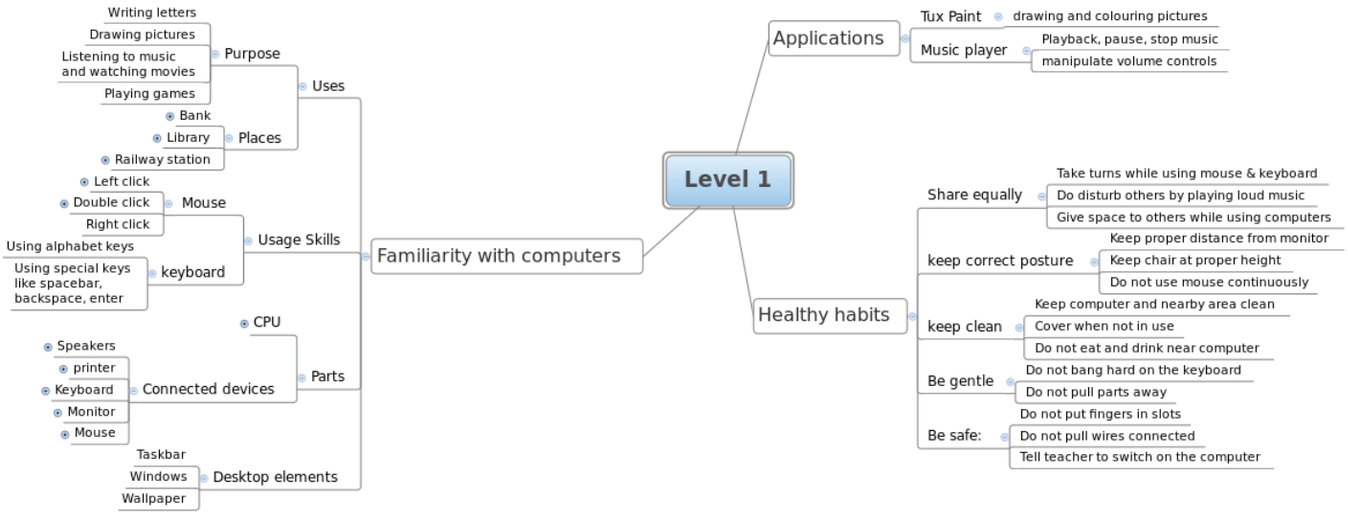


Hint:
Arrange the different items in their respective places. One example is shown in the above picture.

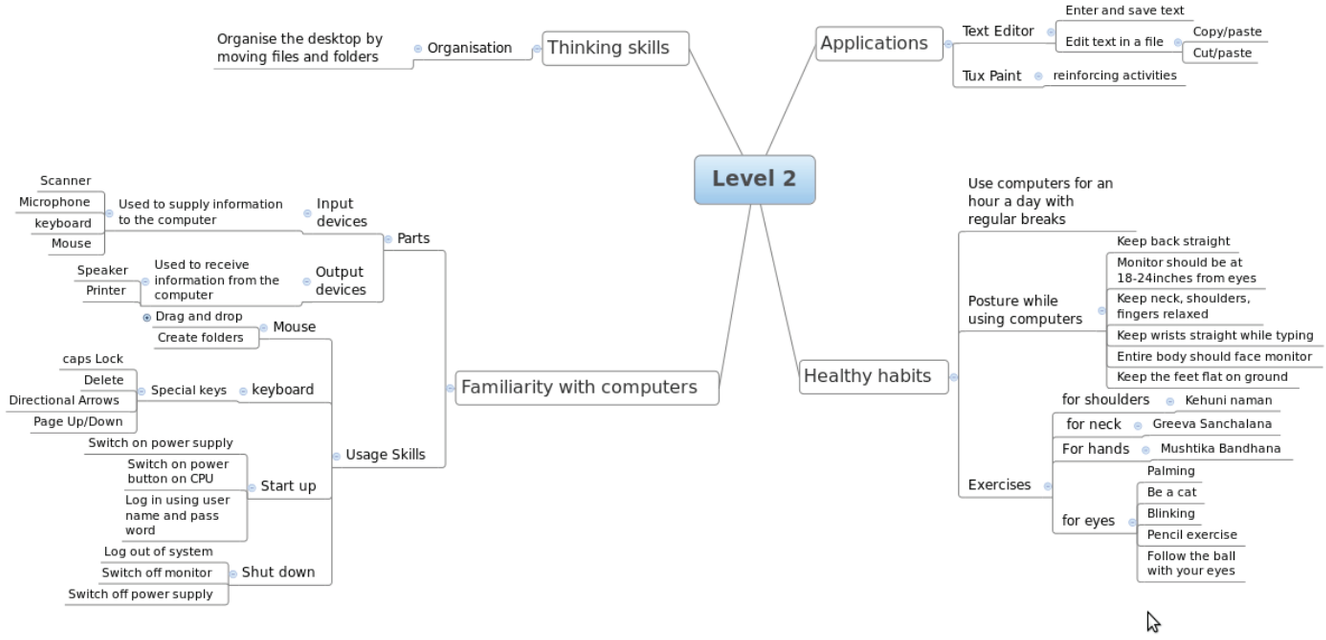
Notes:

Overview of Computer Masti Series

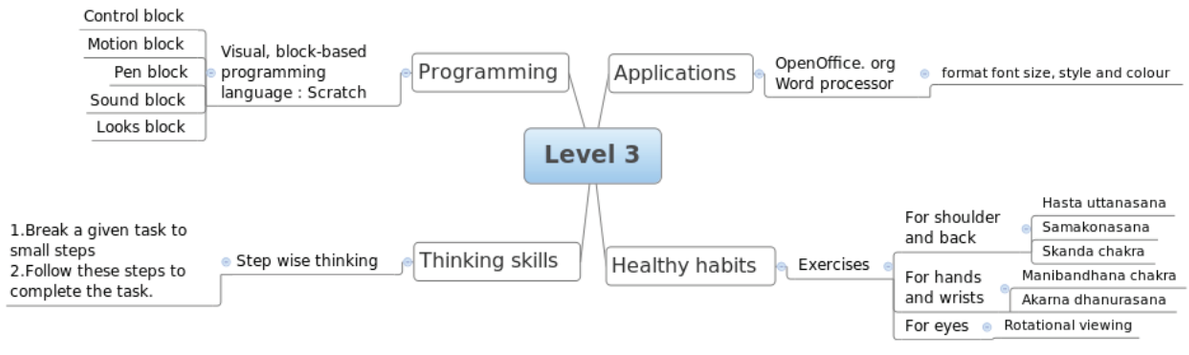
Computer Masti Level 1



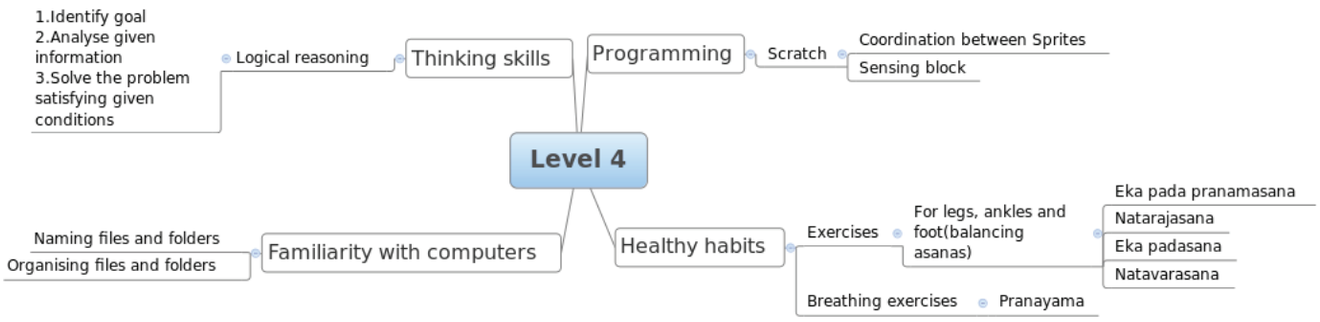
Computer Masti Level 2



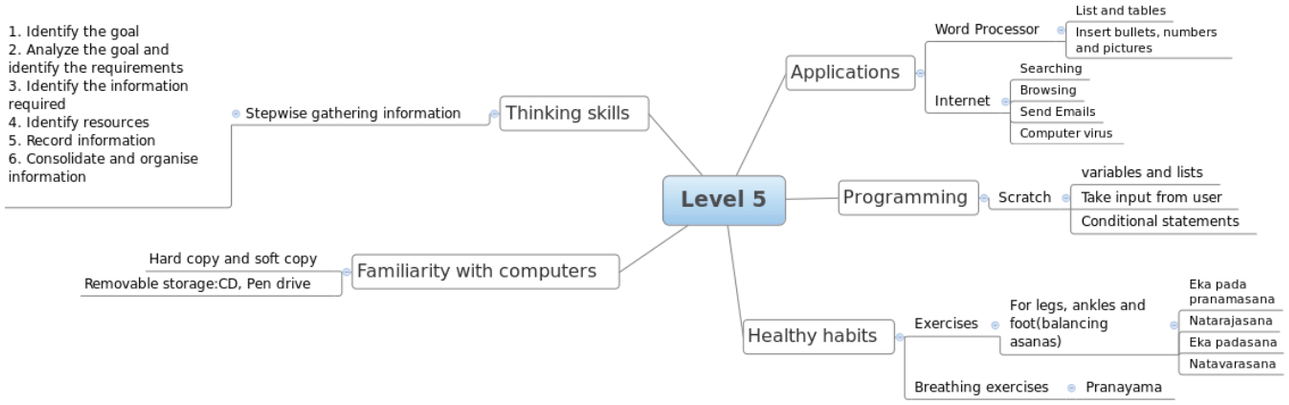
Computer Masti Level 3



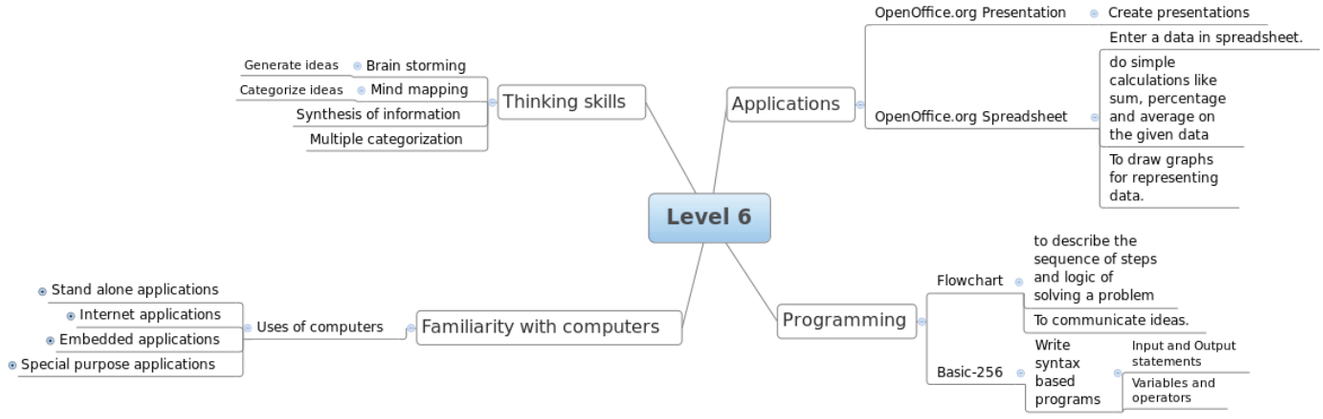
Computer Masti Level 4



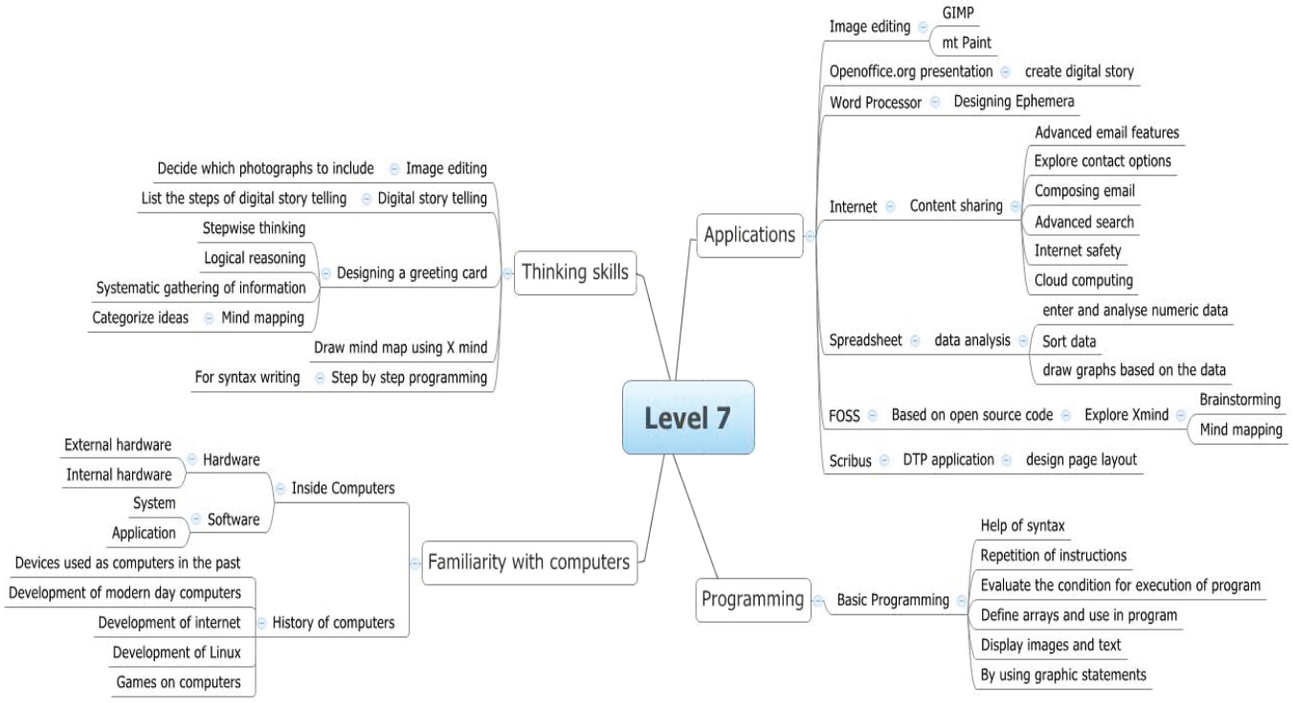
Computer Masti Level 5



Computer Masti Level 6



Computer Masti Level 7



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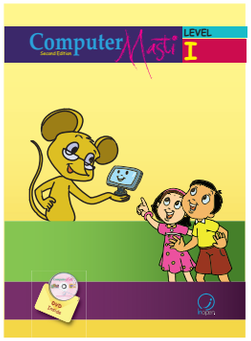

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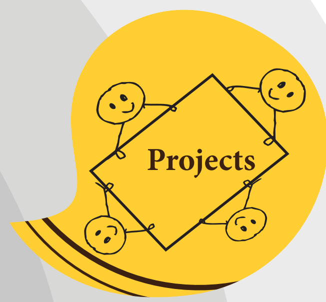

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