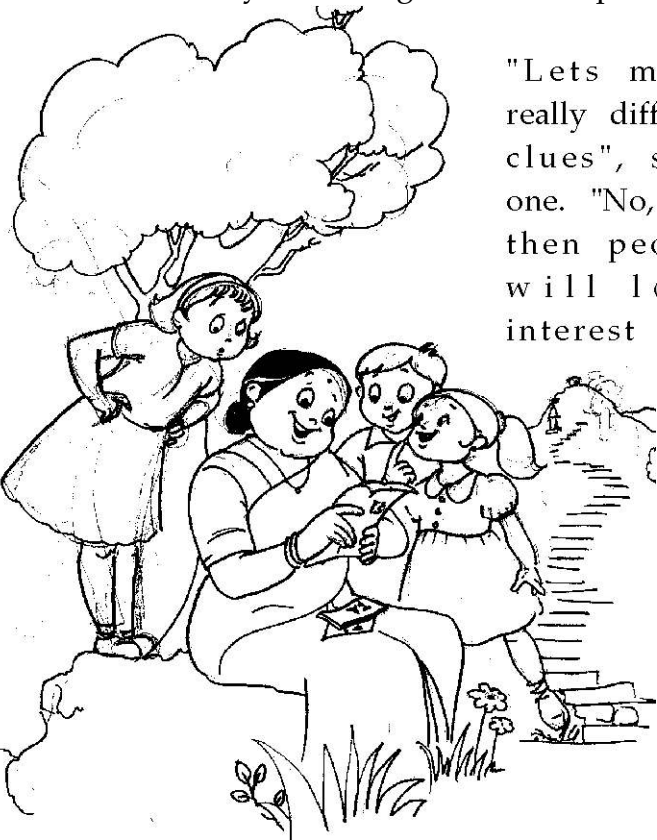# The Treasure ~ Hunt ~

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It was the day of the school picnic and all the children were excited. On the way, one of the teachers suggested "Let us have a treasure hunt". The 10th standard class enthusiastically took up the job of organizing the treasure hunt. Soon they were animatedly discussing the various options.

"Lets make really difficult clues", said one. "No, no, then people will lose interest and

nobody will reach the end", said another. "That's right, the clues should be only moderately hard", agreed a third. "Hey, if we set all the clues, then we'll know all the answers and wont get to take part in the event", observed the first. Meanwhile, Swetha was thinking along different lines and finally remarked, "You know, usually only one team wins in a treasure hunt. Let us do things differently so that many teams can win". The class immediately agreed that this was a good idea and asked her to explain how it could be done. Can you guess the answer?

She said, "Ok, if many teams have to win, we need to have many different treasures, instead of having only one treasure. We should set the clues such that each chain of clues leads to one of the treasures". Seeing a puzzled look on many faces, she continued, "Suppose we have 3 treasures.

All the clues leading to the first treasure will be marked as T1, all the clues leading to the second treasure will be marked as T2 and all the clues leading to the third treasure will be marked as T3. When a team goes to the place indicated by a clue, they will find a teacher there. The teacher will see whether the clue is marked as T1 or T2 or T3 and accordingly give them the next clue. This will continue till the treasures are found".

"Hey, this is great. If we also want to participate in treasure hunt ourselves, all we have to do is to get the teachers to set clues for an additional treasure T4", said someone.

"Also, we can keep a difficult set of clues for T1 and give them to the teams from the higher standards and keep easier clues for T2 and T3", added another.

Interestingly, a similar situation happens in computer networking.

Computers on the Internet are not directly connected to each other but inter-connected using devices called Routers. The work of a router is similar to that of a teacher in the above story.

A packet (team) starts from the source with a header (clue) indicating the destination (treasure). When a team reaches a teacher, the teacher looks at the destination (whether it is T1 or T2 or T3) in the clue and gives the next clue for that destination.
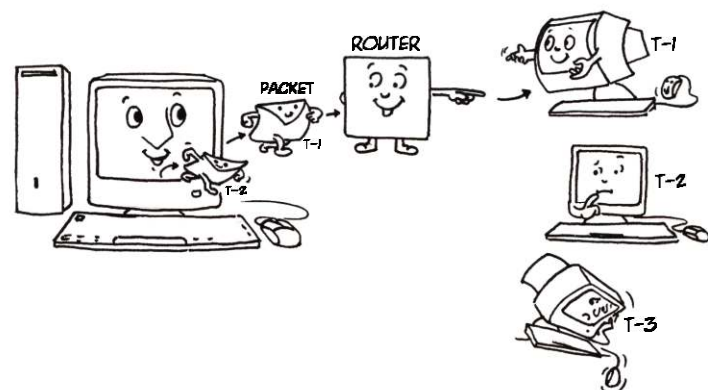
Similarly, when a packet reaches a router, the router looks at the destination in the header and forwards the packet appropriately to the next router, for reaching the destination.

Thus when computer A on the Internet wants to communicate with computer B, it simply puts packets onto the network with destination B in the header. The routers then do the job of forwarding the packets from A to B.

While this may sound simple, a lot of intricacies have to be taken care of before your email can reach your friend. For example, what if there are many packets for the same destination?

The corresponding routers will be overloaded and packets will have to be queued. How do the routers know which is the next router for each given destination?

Routing: The act of moving information across a network from source to destination. The information is typically called a packet.

Header: The part of a packet which specifies the destination.

Some interesting related websites are:
http://computer.howstuffworks.com/

Illustrations: Mrs. Kaumudi Sahasrabudhe