



Sorting

Lesson Plan: Class 08 / ALG / 01



Overall goal of the lesson: Children will learn the concept of linear search.

Prior knowledge required:

MODULE 1:

Module time: 35 X 2 minutes

Goal: To understand the concept of bubble sort using a game.

Description: Children will learn understand the concept of sorting.

Material required:

Physical:

1. One copy of the worksheet per child.
2. Writing material to solve the worksheet: pencil and eraser.

Electronic:

PPT Presentation

Procedure Summary:

1. Run through the presentation
2. Do all the activities that are in the presentation
3. Distribute the worksheets
4. Let children try to solve them in class and help them with the answers

Procedure Details:

Slide 2

Learning objectives: explain to the students in brief about ascending and descending order and tell them that they will learn how a computer sorts numbers

Slide 3: This slide is to explain the importance of sorting. Show them two pictures one which is an untidy room and the other which is a neat and tidy room. Ask them which room they will prefer to study and why. Typical answers expected are the first room is untidy where as the second one is tidy. The books are arranged neatly. There is no clutter in the second room etc.

Explain the importance of keeping their rooms clean and sorted so that they don't need to search for anything they need. Now tell that a computer also uses sorting so that it will be easy for it to search for a given number when asked.

Slide 4: Touch upon the two types of sorting ascending and descending order.

Slide 5: Explain the game we are going to play. Here we are sorting numbers using a robot which cannot see so well. It can pick one number in its left hand, the other one in its right hand, take it close to its eyes to read the numbers. If the number on the left hand is greater than the number on the right hand then it will swap the numbers and place them back.

The robot will do this exercise until no more numbers require to be swapped.

Slide 6 to 26 gives a pictorial representation of bubble sort algorithm. This can be explained to students taking a robot which cannot see so well. In order to read the numbers it has to hold the numbers close to its eyes to see. Number on the right hand is greater than the left hand, then the robot swaps the numbers and places them down.

Slide 27: Summary slide: Ask the students if the robot could arrange all the numbers just by going through the list once?

The answer is no because every time it went through the list it was able to find the right place for the largest number in the list.

It had to go through the list again and again until no more swap is required.

Explain the concept of worst case execution time for a bubble sort algorithm. It takes $O(n^2)$ for a n numbers. This concept is just for teachers. You can simplify that if we have 5 numbers to sort then we can take a maximum of $5 \times 5 = 25$ iterations to complete the sorting process