

# Lesson Plan - 1

## Computer Science

### Algorithms and Flowcharts

**Topic:** Introduction and Algorithms

<b>Class:</b>		<b>Period:</b>		<b>Mode:</b>	Classroom/Lab
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**Teacher:** \_\_\_\_\_

**Learning Support Assistant:** \_\_\_\_\_

#### S.M.A.R.T. Learning Objectives

By the end of this session, students will be able to:

1. Appreciate the significance of instructions for a computer to do tasks.
2. Define the term *Program*.
3. Define the term *Algorithm*.
4. List at least 4 advantages of algorithms in programming process.
5. Write algorithms for simple problems.

#### Resources

- video [https://youtu.be/kM9ASKAni\\_s](https://youtu.be/kM9ASKAni_s) (00:01 to 3:04)

#### Session Conduction

**Engage:** Ask students how would they prepare instant noodles on a Sunday at their homes. Let them answer. Then, emphasize on the steps involved. Also tell them that certain steps can appear in different sequences.

Next, refer to the fruit juice example in the beginning of the lesson. Let them have a look at the steps involved. Ask them – can they take the juice in the juicer without peeling the oranges? Stress on the significance of the sequence of steps.

**Concept introduction:** Stress on how the sequence of steps important for getting tasks done by a computer. Computer is not an intelligence machine. It is just faster. It needs concrete instructions in a specific sequence for a task to be done. Then, explain the term *Program*. Relate the terms *instructions*, *program* and *computer language*.

**Concept Demo/Explanation:** If possible, prepare a simple program in any programming language such as Python and show it to the students so that they understand how a real program looks like.

Then, explain what an algorithm is. Explain the advantages of an algorithm. Then, explain Example 1: Calculate the sum of three numbers and Example 2: Find the greater of the two numbers.

**Concept Practice:** Ask the students to complete the Brain Jogger activity.

**Optional Activity:** Watch the video [https://youtu.be/kM9ASKAni\\_s](https://youtu.be/kM9ASKAni_s) (2:29 min.) and discuss with the teacher.

### **Home Assignments**

Revise the topic covered.

### **Evaluation**

- After completing the lesson solve the exercises given in the book.
- Solve additional exercises on [playground.edusoft.co.in](http://playground.edusoft.co.in)

# Lesson Plan - 2

## Computer Science

### Algorithms and Flowcharts

**Topic:** Flowcharts

<b>Class:</b>		<b>Period:</b>		<b>Mode:</b>	Classroom/Lab
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**Teacher:** \_\_\_\_\_

**Learning Support Assistant:** \_\_\_\_\_

#### S.M.A.R.T. Learning Objectives

By the end of this session, students will be able to:

1. Understand the term *flowchart*.
2. Define the term *flowchart*.
3. Identify main 6 components of a flowchart.
4. List at least 4 advantages of flowcharts.
5. List at least 3 limitations of flowcharts.
6. Convert an algorithm into flowchart.
7. Understand the terms *loop* and *variable*.
8. Create flowcharts depicting loops.

#### Resources

- video [https://youtu.be/kM9ASKAni\\_s](https://youtu.be/kM9ASKAni_s) (3:08 onwards)

#### Session Conduction

**Engage:** Pick up any example of algorithm discussed earlier and ask students to represent it through a diagram of their own. Let them use their creativity. Analyse their drawings and then ask them if they show this diagram to someone, will the person be able to tell what the algorithm is doing? They will agree – yes. Tell them it is always easier to understand things in graphical forms like diagrams in science, charts in spreadsheets and various signs we see in the public places.

**Concept introduction:** Show them a flowchart made on the same example you asked the students to create the diagram. Let them interpret the flowchart. Interact with them to explain the flow of the flowchart.

Show them the components of the flowchart and explain their meaning. Then, explain the advantages and limitations of the flowcharts.

**Concept Demo/Explanation:** Through the examples in the book, demonstrate how algorithms are converted into flowcharts.

**Concept Practice:** Ask the students to complete the 3 Brain Jogger activities alternatively after each example.

**Concept Demo/Explanation:** Ask the students if they are asked to calculate the average age of 100 persons, how will they do that. Then, ask them, which step in the process is repeated multiple times. Tell them, if a computer has to do this then it will use a concept called loop to accept the 100 ages and add them up.

Then, explain loops with the help of two examples in the book. Next, explain them the significance of variables.

### **Guided Assignment**

Ask the students to visit <https://www.technokids.com/blog/teaching-strategies/how-to-make-a-flowchart-for-programming-easy-to-understand> and discuss their findings with the teachers.

### **Evaluation**

Solve the exercises at the end of the lesson.