Optimization Strategies
Lesson Plan: Class 07 / DA / 01

Overall goal of the lesson	**Evaluation and improvement of algorithms**
Prior knowledge required	Algorithms

MODULE 1: **Module time: 2 *** 35 minutes

Goal:	Evaluation and improvement of algorithm efficiency and execution
Description:	Tackle simple problem from everyday life, come up with multiple ways to solve it and compare these ways to see which one is optimal
Material required:	**Physical:** Writing material, printouts of the marksheet and 3 stickies used in Example 2, some sticking tape to tack them to the board **Electronic:** None
Procedure Details:	1. Set the agenda by recalling 'al-go-rithm' and explaining what we want to do. 2. Example 1 – the task is to fill a certain number of liters every day, using 2 buckets and 2 taps. Shaila fills the water and Shyam empties the buckets. ● It is important to make them understand the idea of "liters per minute". So take one or two quick examples – if T1 fills 10 liters in 1 minute, how many liters in 5 minutes? How much time to fill 30 liters? ● Draw the two buckets on the board for easy reference. In the smaller bucket write 16 liters and in the bigger one 24 liters. Similarly draw the taps and write their speeds. ● Make sure the children understand the task before moving on. 3. Ask the children to work out on paper (before showing what is worked on Slide 4) so they understand the calculation. After trying both buckets ask them – so which one was faster? They should answer B2! 4. On Slide 5 – you should try to let the children realise that one bucket and one tap is free (idle). 5. Slide 6 – ● First explain the idea of a timeline using their morning routine 7am – get up, 7.30am – finish bath etc, 7.45 – finish breakfast, 7.50 – reach bus stop, 7.55 – catch bus, and so on. Timeline means: what happens at what time! ● Now come back to the example. ****Explain the Note**** ● Now start going through each row. At the 0^{th} second, Shaila puts B1 under T1 and B2 under T2. After 96 seconds B1 fills up. So at 96^{th} second, Shyam takes it. He brings it back in 10 seconds – so Shaila puts back B1 under T1 at 106^{th} second. B2 is also filling up now – at 120^{th} second, B2 fills up! So Shyam takes it and returns it at 130^{th} second. So, at 130^{th} second Shaila puts B2 back under T2. And so on… the arrows will appear to link preceding and succeeding events for one tap. ● Go slow on this slide since it is the first exposure to 'timeline' 6. Slide 7 – make sure children understand (and appreciate) what we tried to do! 7. Slide 8 – you can go slightly faster than Slide 6 because by now they should have understood timeline concept.

	8. Before starting next example confirm that the children understand what we're doing. 9. Recap of what we learned.