

## Coding Challenge (Theme: Code Optimization)

**Objective:** Achieve maximum gain by placing switches into rack

### Submission should include

1. Proposed solution with complexity analysis
2. Assumption(s) (if considered)
3. Limitations to proposed solution
4. Data structure employed
5. Programming language used for given challenge
6. Code should be submitted along with maximum 1 page processing manual

### Criteria for solution:

1. Volume of rack must not be greater than total volume of all switches
2. Switches must be placed horizontally in rack and not vertically and/or tilted

### Test cases: Check for following test cases and submit output with

1. Gain achieved
2. Rack volume utilized out of total volume
3. How many and which switches not placed
4. Placement position of switches (if possible)

Test Case	Rack Size (L x B x H)	Switch 1 (L x B x H)	Switch 2 (L x B x H)	Switch 3 (L x B x H)	Switch 4 (L x B x H)	Switch 5 (L x B x H)
1*	300 x 400 x 1000	20 x 5 x 20 No: 5 Gain: 25	30 x 15 x 10 No: 7 Gain: 30	20 x 15 x 7 No: 3 Gain: 20	25 x 20 x 10 No: 5 Gain: 35	10 x 8 x 10 No: 20 Gain: 15
2	70 x 45 x 60	20 x 5 x 10 No: 20 Gain: 25	30 x 15 x 10 No: 20 Gain: 30	20 x 15 x 10 No: 20 Gain: 20	25 x 20 x 10 No: 20 Gain: 35	10 x 8 x 10 No: 20 Gain: 15
3	70 x 42 x 60	20 x 5 x 20 No: 20 Gain: 25	30 x 15 x 10 No: 15 Gain: 30	20 x 15 x 7 No: 22 Gain: 20	25 x 20 x 10 No: 18 Gain: 35	10 x 8 x 10 No: 30 Gain: 15
4	50 x 30 x 40	20 x 20 x 5 No: 5 Gain: 25	30 x 15 x 10 No: 7 Gain: 30	20 x 15 x 17 No: 3 Gain: 20	20 x 20 x 10 No: 5 Gain: 35	10 x 8 x 10 No: 20 Gain: 15
5	60 x 50 x 75	20 x 20 x 5 No: 20 Gain: 25	30 x 15 x 10 No: 30 Gain: 30	20 x 15 x 17 No: 40 Gain: 20	20 x 20 x 10 No: 25 Gain: 35	10 x 8 x 10 No: 30 Gain: 15

\* Case 1 is invalid as rack space volume is greater than sum of volume of all switches

➔ Proposed solution with complexity analysis and other required detail as asked for, program code with 'read me', test cases results should be submitted to [Hitesh.Chhinkaniwala@aiim.ac.in](mailto:Hitesh.Chhinkaniwala@aiim.ac.in) | [Devang.pandya@aiim.ac.in](mailto:Devang.pandya@aiim.ac.in) | [Vijeta.Khare@aiim.ac.in](mailto:Vijeta.Khare@aiim.ac.in)

**Last date of submission (extended): Sunday, April 19, 2020**