Activity Selection Problem :→ ① comparator

* Given a certain number of activities with their start & finish times, find the maximum number of activities that can be performed by a single person, on the condition that he/she can perform only one activity at a given time without overlapping.

Accenture – June 2025 Infosys – May – 2025 8.5

Activity	Start	Finish	Sort(finish)	Output
A1	5	7	A3(1, 4)	A3
A2	8	9	A6(3, 5)	A1
A3	1	4	A5(0, 6)	A2
A4	5	9	A1(5, 7)	3
A5	0	6	A2(8, 9)	
A6	3	5	A4(5, 9)	

Fractional Knapsack Problem :→ DXC

O/P (240)

N → items

weight → [ ]

value → [ ]

Knapsack ↓ bag or pouch

Max ← Val = [60, 100, 120]

Maersk wt = [10, 20, 30] → Capacity = 50 kg

pw = [6, 5, 4]

per unit value max

(1) 60/10 = 6

(4) 100/20 = 5

(W) 120/30 = 4

C = 50 = 10×6 + 20×5 + 20×4

10 60 20 100 80

20 20 60+100+80

x = 240

Minimum cost of connecting ropes :

[4, 3, 2, 6]

Sort 1 → 2, 3, 4, 6 (n log n)

2+3 = 5

5, 4, 6

Sort 2 → 4, 5, 6 (n log n)

4+5 = 9

9, 6

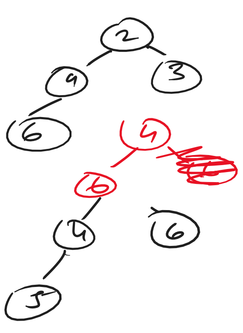
Sort 3 → 6, 9 (n log n)

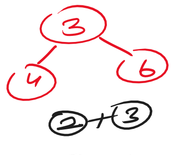
6+9 = 15

C = 5 + 9 + 15 = 29

code is not optimized (TLE)

(4, 3, 2, 6) → Priority Queue ↓ min Heap





2+3 = 5

3, 4 =

CBT

Min Heap

remove → O(1)

sort → n log n

* Huffman Encoding
* Policeman & Thieves
* Nikunj & Donuts

Graphs :→