

BUILD MAX-HEAP FROM FOLLOWING

45, 36, 34  
- 27, 63, 72, 61, 18

A hand-drawn diagram on lined paper. It features a central vertical column with several horizontal lines extending from it to the left and right. Six circles are drawn, each containing a number (1 through 6). Arrows point from circle 1 to circle 2, from circle 2 to circle 3, from circle 3 to circle 4, from circle 4 to circle 5, and from circle 5 to circle 6. There are also arrows pointing from circle 1 to circle 5, from circle 2 to circle 6, and from circle 3 to circle 6.

11 DAG = N1 S1 (1)

A vertical column of handwritten numbers and symbols. From top to bottom, the sequence is: a circled '0' at the top, followed by a circled '3' with a checkmark inside, a circled '1' with a checkmark inside, a downward-pointing arrow, a circled '3' with a checkmark inside, and finally a circled '2' at the bottom.

A vertical strip of paper with a large circle at the top, a downward-pointing arrow in the middle, and a large circle at the bottom.

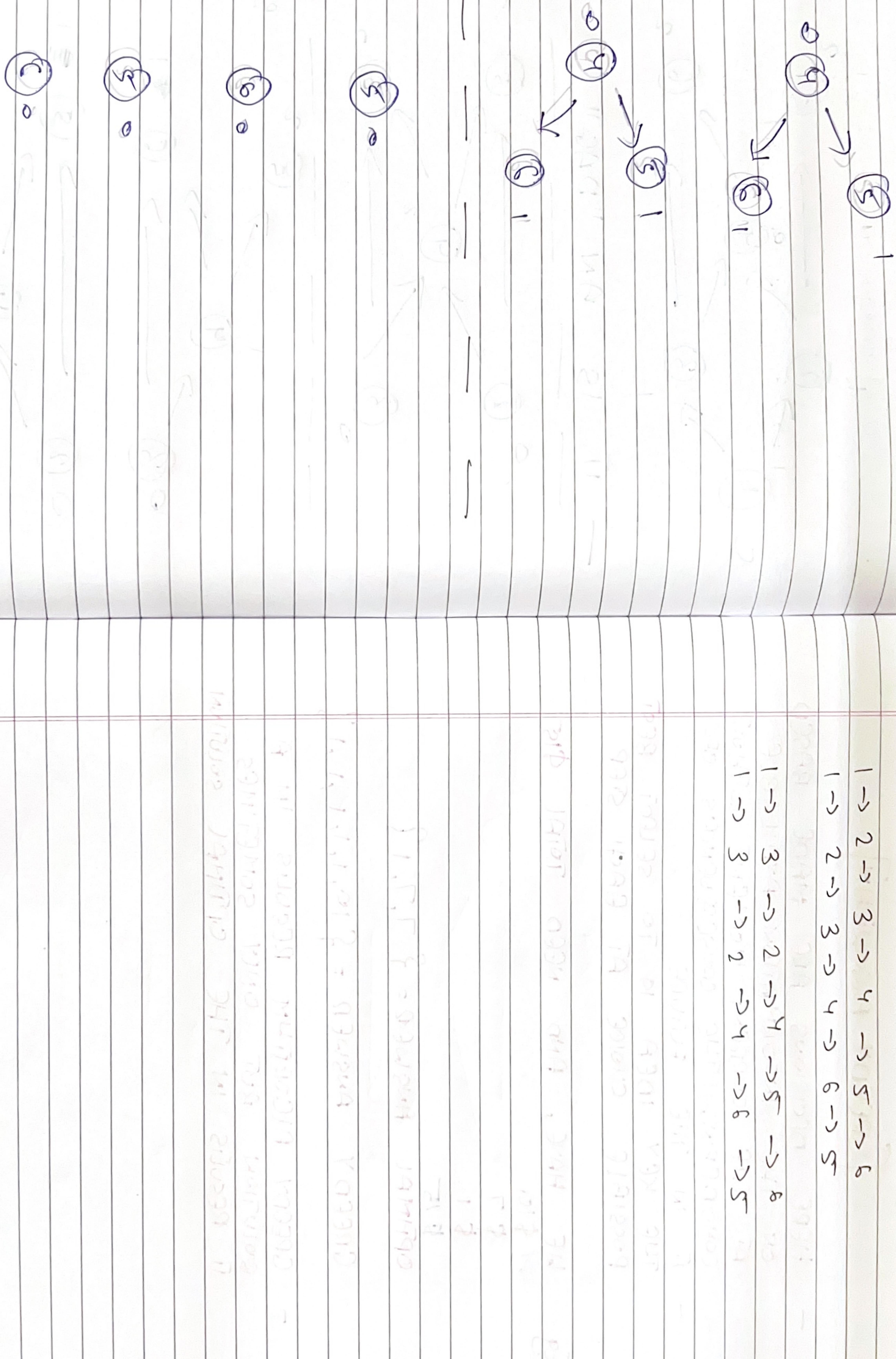
- 1
- 2

1  
1  
1

A vertical decorative border on the left side of the page, featuring a repeating pattern of stylized floral or leaf-like motifs in purple ink.

This image shows a vertical strip of paper with some faint pencil markings. At the top, there is a large, roughly circular outline. Below this, towards the bottom third of the strip, there is a wavy, horizontal line that dips slightly. The rest of the strip is mostly blank.

# GRAPHING



## [GREEDY ALGORITHM]

- HERE DECISIONS ARE MADE BASED ON THE INFORMATION AVAILABLE AT THE CURRENT MOMENT WITHOUT CONSIDERING THE CONSEQUENCES OF
- IF IN THE FUTURE THE KEY IDEA IS TO SELECT BEST POSSIBLE CHOICE AT EACH STEP

Eg. WE HAVE, AND NEED TOTAL \$15

\$10  
\$7  
\$1  
\$15

OPTIMAL ANSWER = {7, 7, 1}

- GREEDY ALGORITHM RESULTS IN A SOLUTION BUT ONLY SOMETIMES IT RESULTS IN THE OPTIMAL SOLUTION

## [KNAPSACK PROBLEM]

- THE "i<sup>th</sup>" ITEM CONTRIBUTES THE WEIGHT "x<sub>i</sub>. w<sub>i</sub>" TO THE TOTAL WEIGHT IN THE KNAPSACK AND PROFIT "x<sub>i</sub>. p<sub>i</sub>" TO THE PROFIT TOTAL
- OBJECTIVE OF THIS ALGORITHM:

$$\text{maximize } \sum_{i=1}^n (x_i, p_i)$$

- SUBJECT TO CONSTRAINT:

$$\sum_{i=1}^n (x_i * w_i) \leq W$$

WHERE W = TOTAL WEIGHT

- OPTIMAL SOLUTION:

$$\text{such that } \sum_{i=1}^n (x_i * w_i) = W$$

(SIP) + AND = 100% PROFIT  
(SIP) < 0% + 0% = 0%

0%

Eg.

$$W = 60$$

Item	A	B	C	D
Profit	280	100	120	120
Weight	40	10	20	24
Ratio	7	10	6	5

ARRANGE IN RATIO DESCENDING ORDER

ARRANGING IN DESCENDING PROFIT

Item

1

2

3

4.

5

Item	1	2	3	4.	5
Profit	30	40	45	77	90
Weight	5	10	15	22	25
Ratio	R	S	T	U	V

ARRANGE IN RATIO DESCENDING ORDER

ARRANGING IN DESCENDING PROFIT

Item

1

2

3

4.

5

Item	1	2	3	4.	5
Profit	30	40	45	77	90
Weight	5	10	15	22	25
Ratio	R	S	T	U	V

PROFIT TOTAL = B + A + (C/2)

$$" 100 + 280 + (120/2)$$

WEIGHT TOTAL = B + A + (C/2)

$$" 10 + 40 + (20/2)$$

$$" 60$$

$$\underline{\text{PROFIT TOTAL}} = S + 10 + 25 + 20 = 60$$

$$= 1 + 2 + 5 + (4/1.1)$$

$$\underline{\text{WEIGHT TOTAL}} = 30 + 40 + 90 + 70 = 230$$

$$= 230$$



Q. Job Job Job Job Job Job Job Job Job Job

DD	26	16	3	21	10
DD	60	100	20	40	20
OP	100	60	40	20	10

### — ARRANGE IN DESCENDING PROFIT —

Job Job Job Job Job Job Job Job Job Job

DD	11	82	162	113	11
OP	100	60	40	20	10
OP	100	60	40	20	10

### — DRAW GANTT CHART —

Job Job Job Job Job Job Job Job Job Job

0	1	2	3
16	16	16	16
16	16	16	16
16	16	16	16
16	16	16	16

### Profit

$$= J_2 + J_1 + J_3 \\ = 100 + 60 + 20 \\ = 180$$

$$16 + 16 + 16 + 16 + 16 = 160$$

$$16 + 16 + 16 + 16 + 16 = 160$$

OPP

## [QUICK SORT]

PAGE No. / /  
DATE / /

1] 20, 30, 14, 56, 9, 72, 45, 5

Pivot = 45  
20 30 14 9 5 45 56 72

Pivot = 5

Pivot =

## [QUICK SORT]

PAGE No. / /  
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2] 50, 31, 71, 38, 77, 81, 12, 33

Pivot = 50  
12 31 38 77 81

Pivot = 31  
12 31 38 77 81

Pivot = 38  
12 31 38 50 71 77 81

Pivot = 50  
12 31 38 50 71 77 81

Pivot = 71  
12 31 38 50 71 77 81

Pivot = 77  
12 31 38 50 71 77 81

Pivot = 81  
12 31 38 50 71 77 81

Pivot = 31  
12 31 38 50 71 77 81

Pivot = 33  
12 31 38 50 71 77 81

Pivot = 33  
12 31 38 50 71 77 81

Pivot = 33  
12 31 38 50 71 77 81

$$Q. (P_1, P_2, P_3) = (5, 10, 2)$$

$$\underline{\text{CASE 1}} (P_1, P_2, P_3) \Rightarrow \left( \frac{5 + (5+10) + (5+10+2)}{12.333} \right)$$

$$\underline{\text{CASE 2}} (P_1, P_3, P_2) \Rightarrow \left( \frac{5 + (5+2) + (5+2+10)}{9.666} \right)$$

$$\underline{\text{CASE 3}} (P_2, P_1, P_3) \Rightarrow \left( \frac{10 + (10+5) + (10+5+2)}{13} \right)$$

$$\underline{\text{CASE 4}} (P_2, P_3, P_1) \Rightarrow \left( \frac{10 + (10+2) + (10+2+5)}{13} \right)$$

$$\underline{\text{CASE 5}} (P_3, P_1, P_2) \Rightarrow \left( \frac{2 + (2+5) + (2+5+10)}{10.333} \right)$$

~~$$Q. n=4, (P_1, P_2, P_3, P_4) = (100, 10, 15, 27)$$~~

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Q.

$$n=4 \quad P_1, P_2, P_3, P_4 = (9, 9, 9, 9), \quad T = 100$$

$$(P_1, P_2, P_3, P_4) = (100, 10, 15, 27)$$

Priority

$$= (2, 1, 2, 1)$$

