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 Course 2 AOA

Q.No.1

$$1 + n + n - 1 \left\{ 2 + 1 + n + n - 1 \left[2 + 2 + 1 + n + n - 1 [8] \right] \right\}$$

$$1 + n + (n - 1) \left\{ 3 + n + n - 1 \left[5 + n + (n - 1) [8] \right] \right\}$$

$$1 + n + (n - 1) \left\{ 3 + n + (n - 1) \left[5 + n + 8n - 8 \right] \right\}$$

$$1 + n + (n - 1) \left\{ 3 + n + (n - 1) \left[9n - 3 \right] \right\}$$

$$1 + n + (n - 1) \left\{ \cancel{3 + n^2} \cancel{9n^2 + 3 - 3n - 9n} \right\}$$

$$1 + n + (n - 1) \left\{ 9n^2 - 11n + 6 \right\}$$

$$1 + n + 9n^3 - 11n^2 + 6n - 9n^2 + 11n - 6.$$

$$9n^3 - 20n^2 + 18n - 5$$

Result:- The time complexity is $O(n^3)$.

Q. No. 2

Brute force.

$(2,3), (5,7), (8,2), (1,9), (6,5), (10,4), (3,8)$

By using Brute force.

1)

$(2,3) \times (5,7)$ Not minimal.
 $(8,2)$

$(1,9)$

$(6,5)$

$(10,4)$

$(3,8)$

2) $(5,7) \checkmark (2,3)$ minimal.

$\checkmark (8,2)$

$\checkmark (1,9)$

$\checkmark (6,5)$

$\checkmark (10,4)$

$\checkmark (3,8)$

ترجع:

نـ:

3) $(8, 2)$ ✓ $(\overset{x}{2}, \overset{\checkmark}{3})$

✓ $(\overset{x}{5}, \overset{\checkmark}{2})$

✓ $(\overset{x}{1}, \overset{\checkmark}{9})$

✓ $(\overset{x}{6}, \overset{\checkmark}{5})$

✗ $(\overset{\checkmark}{10}, \overset{\checkmark}{4})$

nat minimal.

4) $(1, 9)$ ✓ $(\overset{\checkmark}{2}, \overset{x}{3})$

✓ $(\overset{\checkmark}{5}, \overset{x}{7})$

✓ $(\overset{\checkmark}{8}, \overset{x}{2})$

✓ $(\overset{\checkmark}{6}, \overset{x}{5})$

✓ $(\overset{\checkmark}{10}, \overset{x}{4})$

✓ $(\overset{\checkmark}{3}, \overset{x}{8})$

minimal.

5) $(6, 5)$ ✓ $(\overset{x}{2}, \overset{x}{3})$

✓ $(\overset{x}{5}, \overset{\checkmark}{7})$

✓ $(\overset{\checkmark}{8}, \overset{x}{2})$

✓ $(\overset{x}{1}, \overset{\checkmark}{9})$

✓ $(\overset{\checkmark}{10}, \overset{x}{4})$

✓ $(\overset{x}{3}, \overset{\checkmark}{8})$

maximal.

: دن

$$(10, 4) \quad \checkmark \quad (\overset{x}{2}, \overset{x}{3})$$
$$\checkmark \quad (\overset{x}{5}, \overset{\checkmark}{7}) \quad \text{minimal.}$$
$$\checkmark \quad (\overset{x}{8}, \overset{x}{2})$$
$$\checkmark \quad (\overset{x}{1}, \overset{\checkmark}{9})$$
$$\checkmark \quad (\overset{x}{6}, \overset{\checkmark}{5})$$
$$\checkmark \quad (\overset{x}{3}, \overset{x}{8})$$

$$(3, 8) \quad \checkmark \quad (\overset{x}{2}, \overset{x}{3})$$
$$\checkmark \quad (\overset{\checkmark}{5}, \overset{x}{7}) \quad \text{minimal.}$$
$$\checkmark \quad (\overset{\checkmark}{8}, \overset{x}{2})$$
$$\checkmark \quad (\overset{x}{1}, \overset{\checkmark}{9})$$
$$\checkmark \quad (\overset{\checkmark}{6}, \overset{x}{5})$$
$$\checkmark \quad (\overset{\checkmark}{10}, \overset{x}{4})$$

B

تاریخ:

وَلَنْ:

By using plane sweep.

(2,3), (5,7), (8,2), (1,9), (6,5)
(1) (3,8)

$(10, 4), (3, 7)$
arranging n in ascending order
 $(2, 3), (3, 8), 1$

arranging n in ascending order
 $(1, 9), (2, 3), (3, 8), (5, 7), (6, 5)$
 $(8, 2), (10, 4)$

mammal
point is

P	W	i	o	s	10	15	20	25	30	35	40	45	50
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0
60	10	1	0	0	60	60	60	60	60	60	60	60	60
25.	15	2	0	0	60	75	75	135	135	135	135	135	135
100	20	3	0	0	60	75	100	135	160	125	175	235	235
90	25	4	0	0	60	75	100	135	160	175	175	255	255
120	30	5	0	0	60	75	100	95	160	145	175	235	235
130	35	6	0	1	60	75	100	135	160	145	175	235	235

$$2+6 = 35 + 15 \Rightarrow 205 \neq 235$$

$\approx 50 \text{ Kg.}$

$$3+5 = 30+20 = 50 \text{ kg} \quad 220 \neq 235$$

$$4+2+1 = 25 + 15 + 10 = 50 \quad 135 + 90 = 225$$

Q-No.4

①

					P
50	10	30	70	20	

i i

\Rightarrow	50	10	30	70	20	
	i	i	j			

$j < P$, swap $i = j$

10	50	30	70	20	
i	i	j	j	j	

$j = 0$, swap $i = P$.

10	20	30	70	50	
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②

10	20
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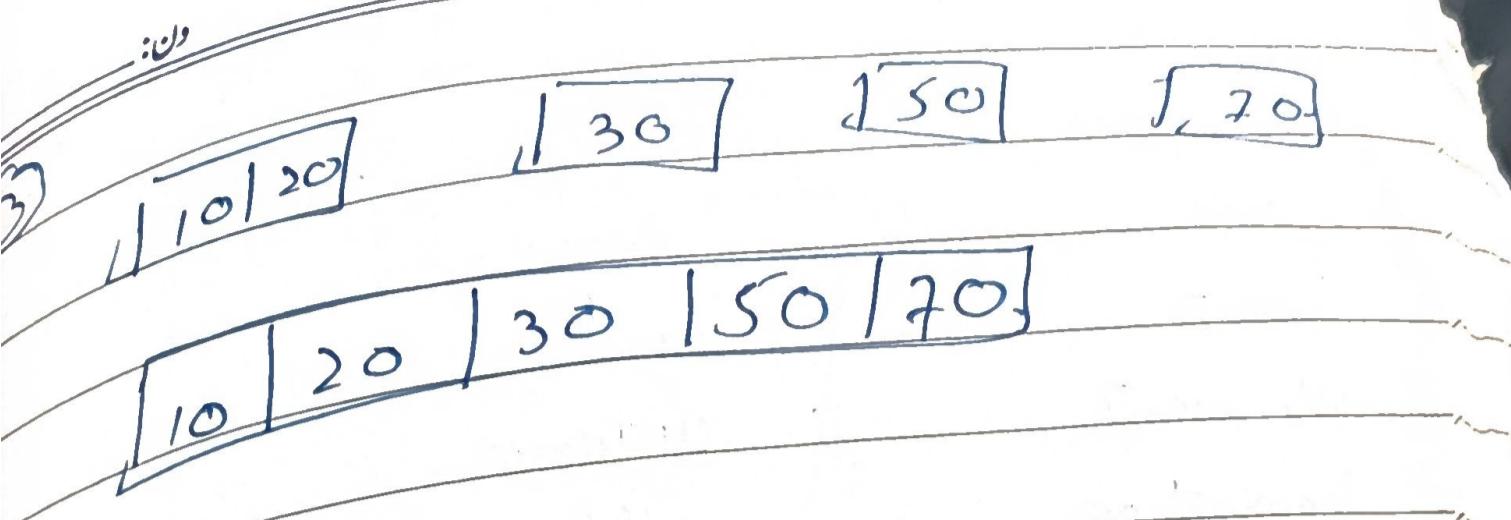
30	70	50	
i	j		

30	70	50	
i	j		

swap $P = I$.

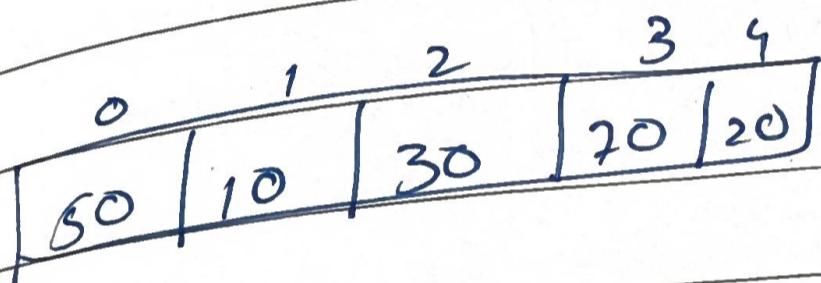
P.

30	50	70
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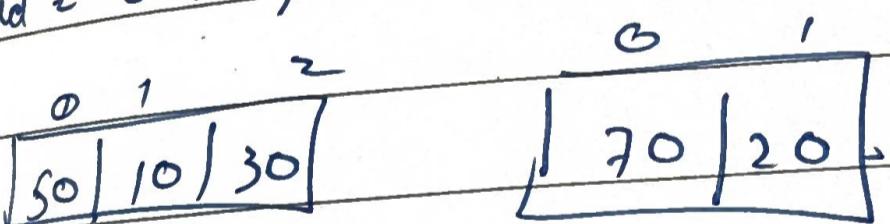


Q. No. 5

$[50, 10, 30, 70, 20]$



$$\text{mid} = 0 + 4 / 2 = 2.$$



$$\text{mid} = 0 + 2 / 2 = 1. \quad \text{mid} = 0 + 1 / 2 = 0.5 < 0$$

