Date = 14/05/20

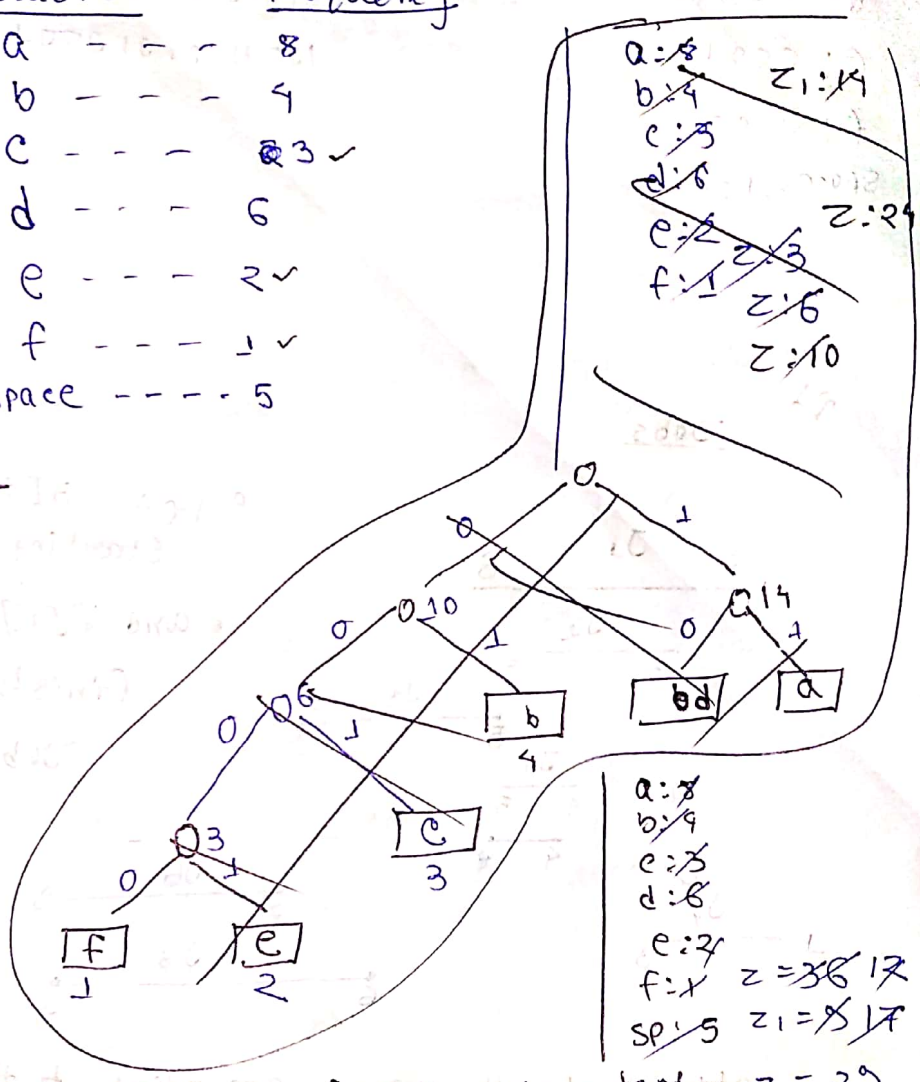
Name = Animesh Ganai

Roll = 20, Exam = Greedy Algorithm (DAA)

1> text: abad_aadb_cacdd_abde_fca_abde

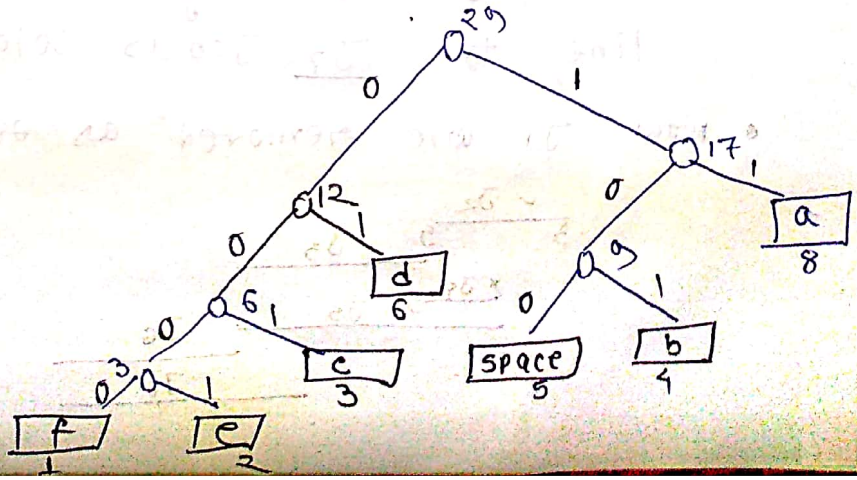
character	frequency
a	8
b	4
c	3
d	6
e	2
f	1
space	5

Diagram



~~Optimal appropriate code for the above text~~

Diagram



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optimal appropriate code for the above text

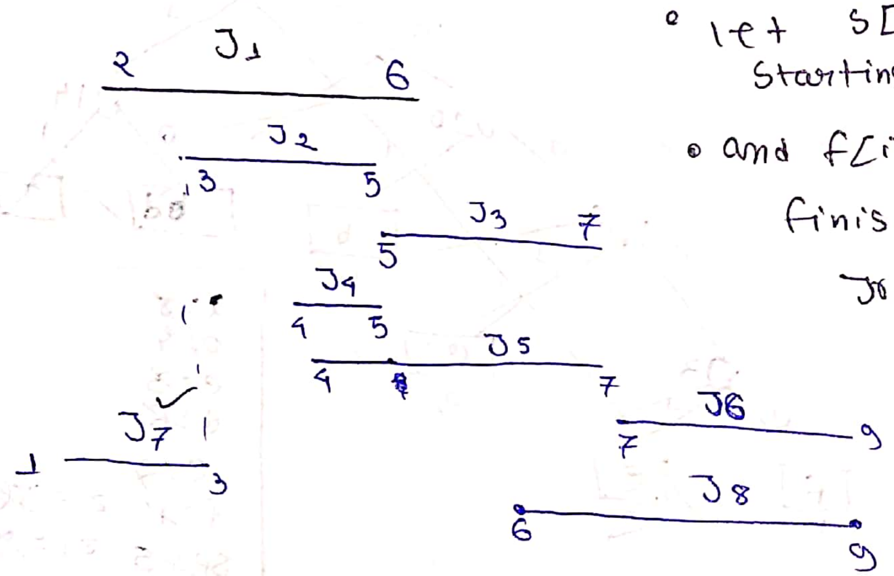
a : 11
b : 101
c : 001
d : 01
e : 0001
f : 0000
Space : 100

abad aadb cacdd abde fca abde

⇒ " 11 101 11 01 100 11 11 101 101 1 100 001 01 11 100 00111 00101010111 10101 00011000000 00111 100 11 101 01 0001 "

2)

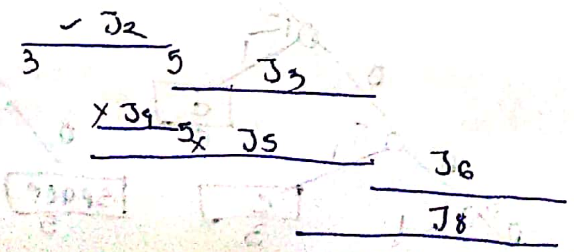
Jobs



- let S[i] denote the starting time of ith job
- and f[i] denotes the finishing time of ith job

lets sort the jobs according to their finishing time.

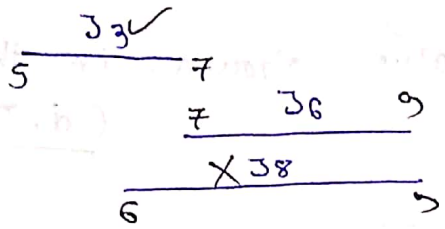
- then ~~0~~ J7 having the lowest finishing time to J7 job is selected J7 (1,3)
- Now J1 are removed as ~~overla~~ S[1] < f[7]



among all the remaining jobs J_2 or J_4 having lowest finishing time

we choose $J_2(3,5)$:

- Now jobs J_5 ~~are~~ ~~is remo~~ and J_4 are removed as $S[5] < f[2]$ and $S[4] < f[2]$



~~Now~~ among ~~all~~ all the remaining jobs J_3 is choose coz it has lowest finishing time $J_3(5,7)$

~~Job~~ Job $J_8(6,9)$ is removed as $S[8] < f[3]$

7 J6 ✓ 9.

- Now only one job is remaing J_6 and that is selected.

No remaining jobs are present.

- maximum number of jobs can be schedule on a macine is = 4

J_7, J_2, J_3, J_6
$(1,3)$ $(3,5)$ $(5,7)$ $(7,9)$

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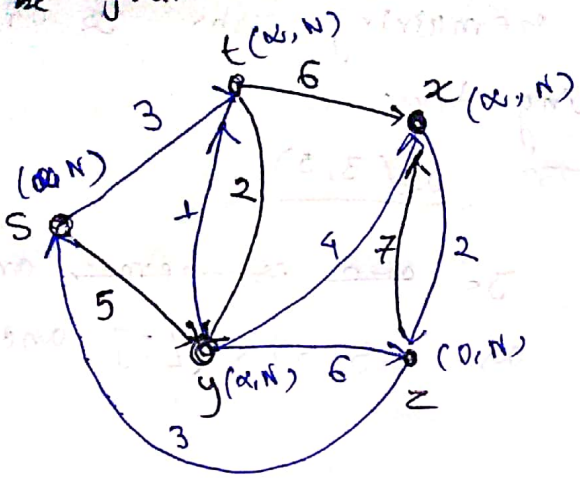
3> The graph

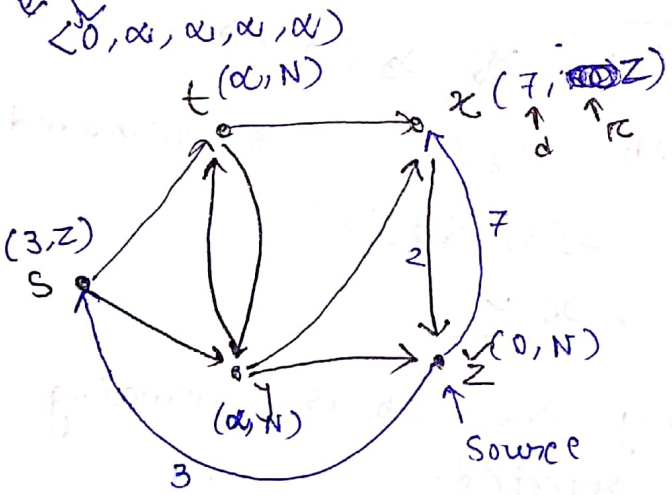


the d and pi value shown in the order (d, π)

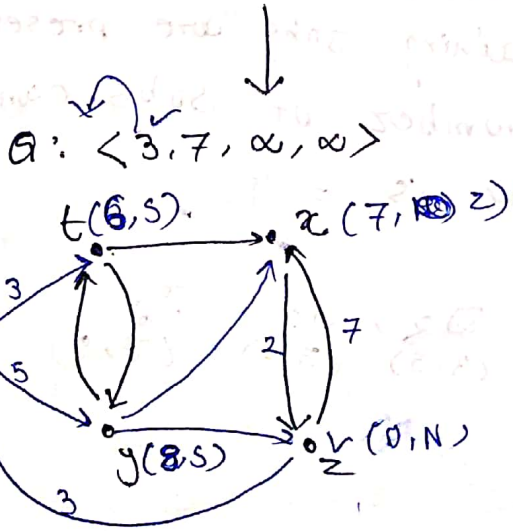
Steps

source vertex = z

So, d = 0, π = NULL (=N) (assume)



(d, π)
'N' means 'NULL'



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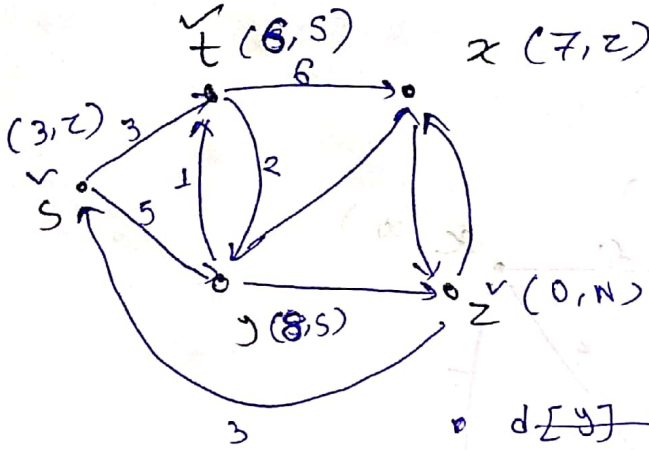
Q: <3, 5, 7> Q: <6, 7, 8>



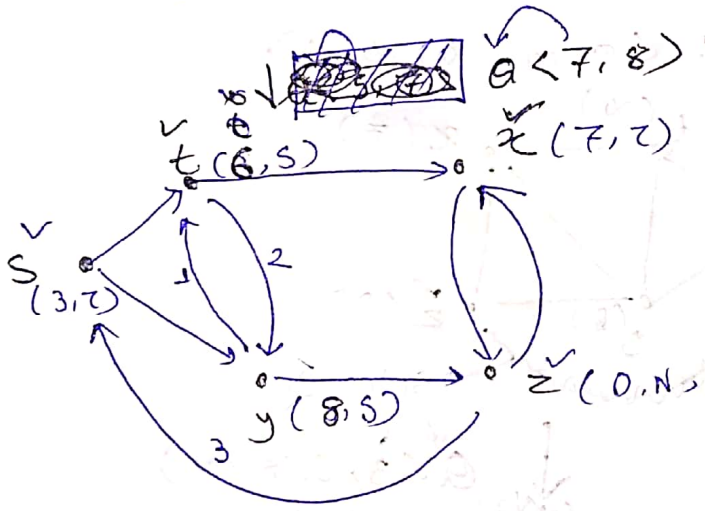
d[y] > d[t] + w(t, y)

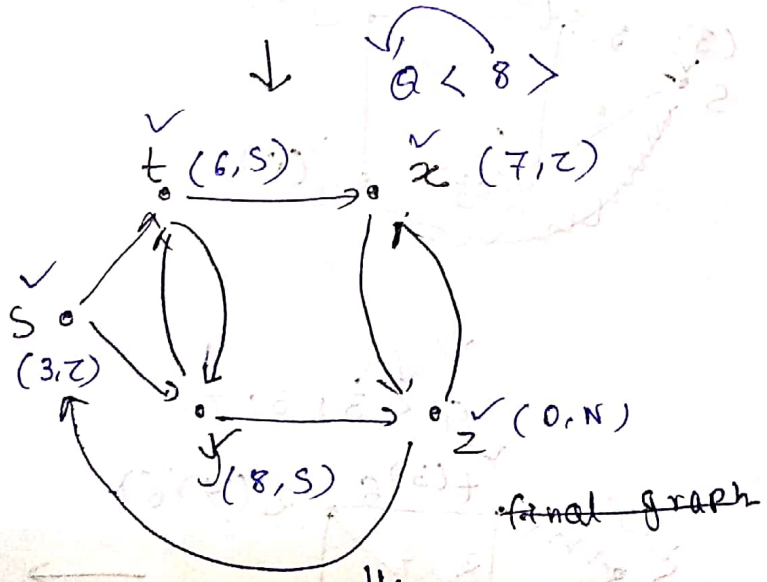
d[y] = 3

d[y] ≯ d[t] + w(t, y)

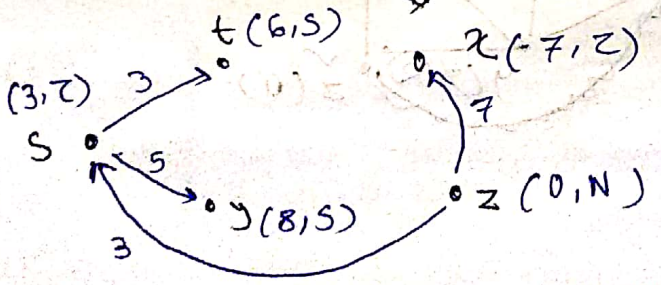
d[x] ≯ d[t] + w(t, x)

not update





final graph



- shortest path

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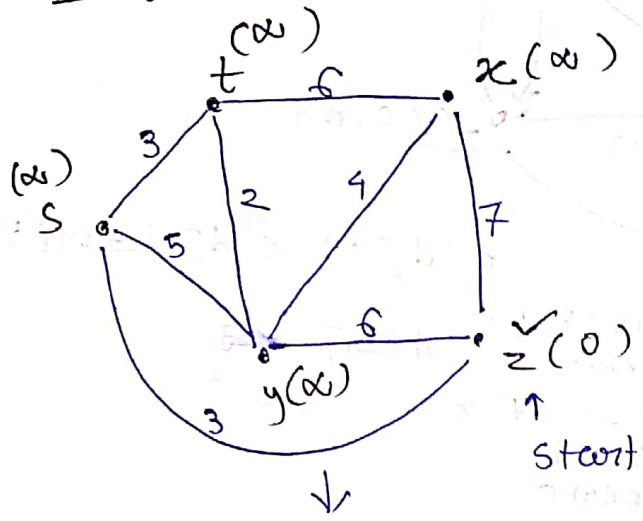
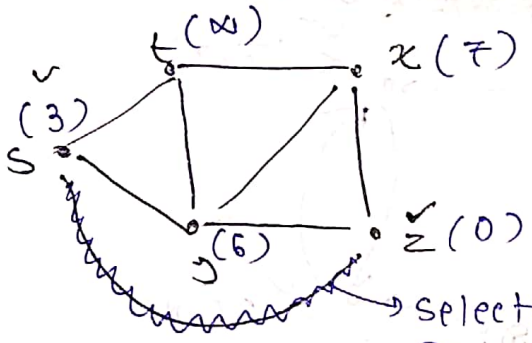
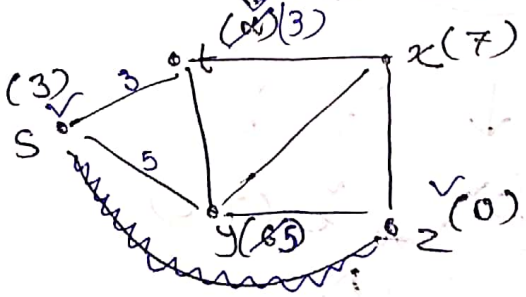
4) The graph



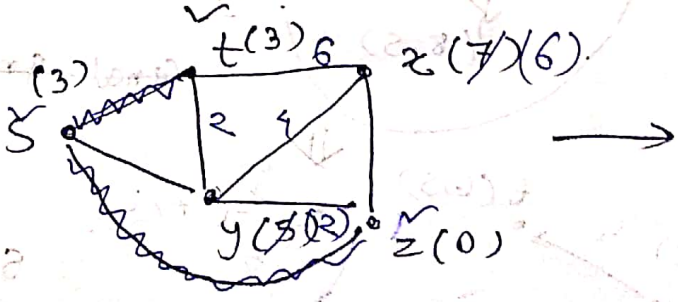
Q : <0, ∞, ∞, ∞, ∞>



Q : <3, 6, 7, ∞)



Q <3, 5, 7>



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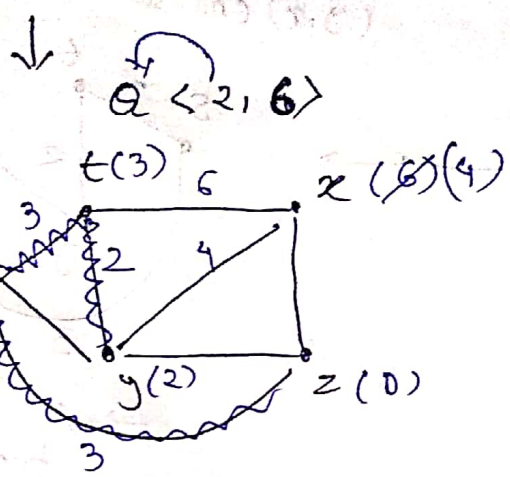
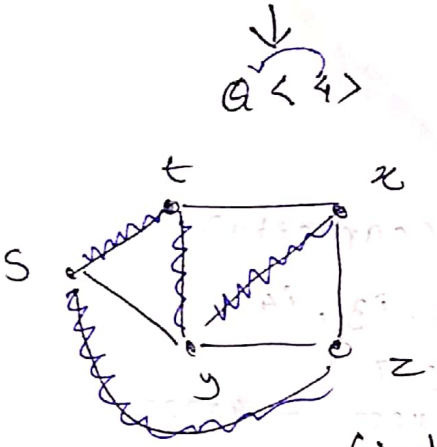
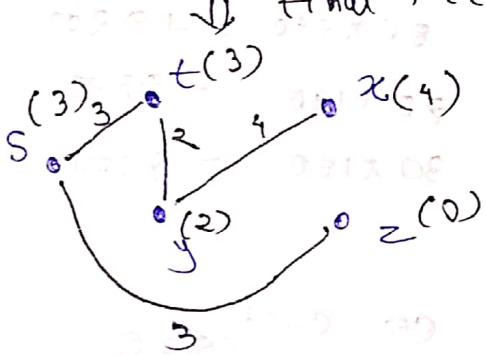
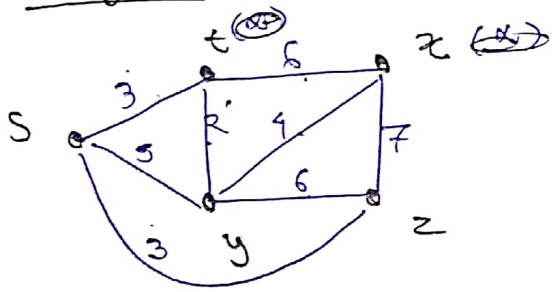




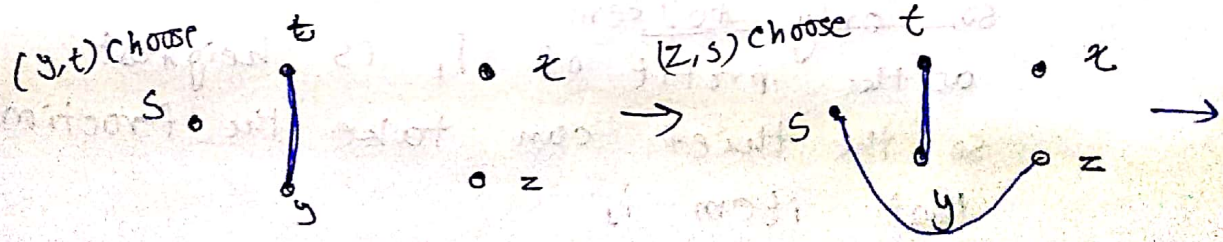


5) The graph



Sort the edges

2✓ (y,t) 3✓ (z,s) 3✓ (s,t) 4✓ (y,x) 5 (s,y) 6 (y,z) 6 (t,x) 7 (z,x)



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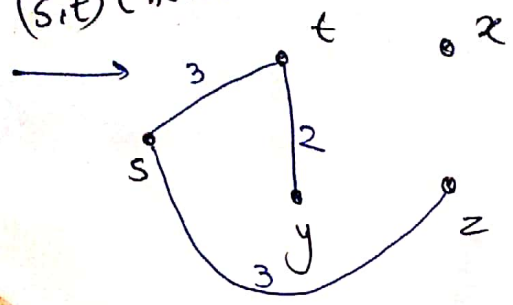
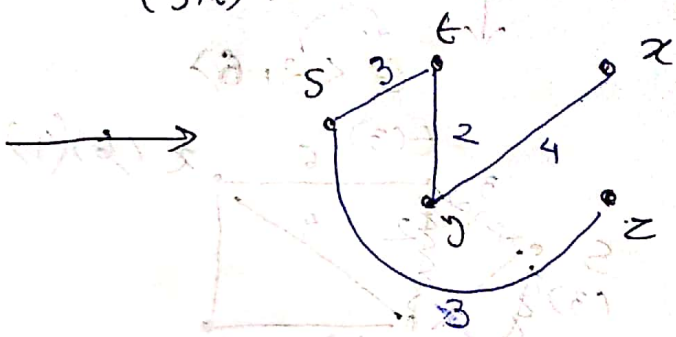
(s,t) choose



(y,x) choosen



final ~~for~~ spanning tree

6)

weight = 5 kgs (capacity)

4 items i_1, i_2, i_3, i_4

Item	wt[i]	cost[i]
i_1	200	200 x 200 = 40000
i_2	240	80 x 240 = 19200
i_3	140	70 x 140 = 9800
i_4	150	30 x 150 = 4500

Item ~~(wt)~~	profit = ~~(cost)~~ · cost/size
i_1	~~x~~ 200
i_2	~~0.33~~ 80
i_3	~~0.5~~ 70
i_4	~~0.2~~ 30

the capacity of thief's bag = 5 kg

~~so only 1 Item~~

as the profit of i_1 is heighest so the thief can take the fraction of that item i_1

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thief can take the $\frac{5}{200} = \frac{1}{40}$ of faction

of 200 kg (is item)

so, maximum profit of the thief

$$= \frac{1}{40} \times 1000$$

$$= 1000 \quad \text{Ans}$$

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