

THE UM-SJTU JI HONOR CODE

I accept the letter and spirit of the honor code:

**I have neither given nor received unauthorized aid on this examination, nor have
I concealed any violations of the Honor Code by myself or others.**

Signature: 葛劲天

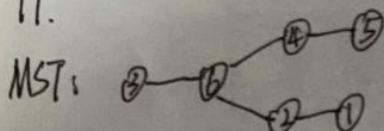


上海交通大学

SHANGHAI JIAO TONG

P1.

T1.

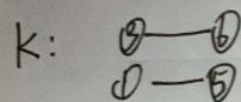


path: $5 \rightarrow 6 \rightarrow 4 \rightarrow 5 \rightarrow 4 \rightarrow 6 \rightarrow 2 \rightarrow 1 \rightarrow 2 \rightarrow 6 \rightarrow 3$

solution: $3 \rightarrow 6 \rightarrow 4 \rightarrow 5 \rightarrow 2 \rightarrow 1$

$$\text{cost} = 2 + 4 + 5 + 9 + 2 + 10 = 973$$

T2.



path: $3 \rightarrow 6 \rightarrow 4 \rightarrow 5 \rightarrow 1 \rightarrow 2 \rightarrow 6 \rightarrow 3$

solution: $3 \rightarrow 6 \rightarrow 4 \rightarrow 5 \rightarrow 1 \rightarrow 2$

$$\text{cost} = 2 + 4 + 5 + 3 + 10 = 54$$

P2.

T1. Using Bottom-Up Algorithm

i \ w	0	1	2	3	4	5	6	7	8
0	0	0	0	0	0	0	0	0	0
1	0	0	0	4	4	4	4	4	4
2	0	0	0	4	4	4	8	8	8
3	0	0	0	4	4	4	8	8	8
4	0	0	0	4	4	5	8	8	9

Solution is $M=9$, with item 1 and item 4

T2.

$$\frac{4}{3}, \frac{4}{3}, 1, \frac{6}{8}$$

$M=8$, with item 1 and item 2

It is smaller than T1, so it is not optimal



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SHANGHAI JIAO

P3.

T1.

Iteration 1: $\frac{6}{7}, \frac{15}{7}, \frac{7}{5}$

choose S1.

Iteration 2: $\frac{15}{5}, \frac{7}{2}$

choose S3.

Iteration 3: choose S2.

$$\text{cost} = 6 + 15 + 7 = 28$$

T2.

$$S_2 \text{ and } S_3, \text{ cost} = 15 + 7 = 22$$