

HW9. 黃浩維 106501015

A.

	S	A	B	C	D	E	F	T
distance	0	1	2	5	5	7	7	9
last	S	S	S	S	A	B	C	F

#

$$d(S, A) = 1, d(S, B) = 2,$$

$$d(S, C) = 5$$

$$d(S, D) = \min \begin{pmatrix} S \rightarrow A \rightarrow D \\ S \rightarrow B \rightarrow D \end{pmatrix} = 5$$

$$d(S, E) = \min \begin{pmatrix} S \rightarrow A \rightarrow E \\ S \rightarrow B \rightarrow E \end{pmatrix} = 7$$

$$d(S, F) = \min \begin{pmatrix} S \rightarrow B \rightarrow F \\ S \rightarrow C \rightarrow F \end{pmatrix} = 7$$

$$d(S, T) = \min \begin{pmatrix} d(S, D) + 18 \\ d(S, E) + 13 \\ d(S, F) + 2 \end{pmatrix} = 9$$

C.

for 1 :		distance	last
✓	1	0	1
	2	3	1
	3	8	1
	4	∞	0
	5	4	1

$$\text{for 2 : } \min_{1 \rightarrow 2 \rightarrow 4} (3+1, \infty) = 4$$

$$\min_{1 \rightarrow 2 \rightarrow 5} (3+1, 4) = 4$$

V	1	0	1
V	2	3	1
	3	8	1
	4	4	2
	5	4	1

$$\text{for } 4: \min^{1 \rightarrow 2 \rightarrow 4 \rightarrow 3}(4+5, 8) = 8$$

✓	1	0	1
✓	2	3	1
	3	8	1
✓	4	4	2
	5	4	1

$$\text{for } 5: \min^{1 \rightarrow 5 \rightarrow 4}(4+6, 8) = 8$$

✓	1	0	1
✓	2	3	1
✓	3	8	1
✓	4	4	2
✓	5	4	1

$1 \rightarrow 2 : 3, 1 \rightarrow 3 : 8, 1 \rightarrow 5 : 4,$

$1 \rightarrow 2 \rightarrow 4 : 4 \quad \text{X}$