Nama : EDWARD
NIM   : 2201741971
JURUSAN : Master Track Teknik Informatika

Solution

from	To	Distance (km)
A	B	6
A	C	2
B	A	5
B	D	5
C	A	4
C	B	3
C	D	3
D	A	4
D	C	7

Matrix Conversion

$D°$

	A	B	C	D
A	∞	6	2	∞
B	5	∞	∞	5
C	4	3	∞	3
D	4	∞	7	∞

Row Reduction

∞	4	0	∞	2
0	∞	∞	0	5
1	0	∞	0	3
0	∞	3	∞	4

+ 14

Column Reduction

∞	4	0	∞
0	∞	∞	0
1	0	∞	0
0	∞	3	∞

0 0 0 0 | 0

(reduction) $r = 14 + 0 = 14$

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Cost A – B

$$\begin{bmatrix} \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & 0 \\ 1 & \infty & \infty & 0 \\ 0 & \infty & 3 & \infty \end{bmatrix} = \begin{bmatrix} \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & 0 \\ 1 & \infty & \infty & 0 \\ 0 & \infty & 0 & \infty \end{bmatrix}$$ Total Cost = 14 + 3 + 4 = 21

-3

Cost A – C

$$\begin{bmatrix} \infty & \infty & \infty & \infty \\ 0 & \infty & \infty & 0 \\ \infty & 0 & \infty & 0 \\ 0 & \infty & \infty & \infty \end{bmatrix}$$ Total cost = 14 + 0 + 0 = 14

Karena total cost A – C Lebih Kecil Dari A – B, maka node A – C dipilih.

Cost A - C – B

$$\begin{bmatrix} \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & 0 \\ \infty & \infty & \infty & \infty \\ 0 & \infty & \infty & \infty \end{bmatrix}$$ Total cost = 14 + 0 + 0 = 14

Cost A - C – D

$$\begin{bmatrix} \infty & \infty & \infty & \infty \\ 0 & \infty & \infty & \infty \\ \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & \infty \end{bmatrix}$$ Total cost = 14 + 0 + 0 = 14

Karena total cost C – B Sama dengan C – D, maka dicoba keduanya mulai dari yang kiri.

Cost A – C - B – D

$$\begin{bmatrix} \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & 0 \\ \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & \infty \end{bmatrix} =$$ Total cost = 14 + 0 + 0 = 14

Cost A – C - D – B

$$\begin{bmatrix} \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & \infty \\ \infty & \infty & \infty & \infty \end{bmatrix} =$$ Total cost = 14 + 0 + 0 = 14

Karena keduanya sama, maka keduanya merupakan shortest path.

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Shortest path menjadi :

- **A – C – B – D**
- **A – C – D – B**

Dengan total cost 14