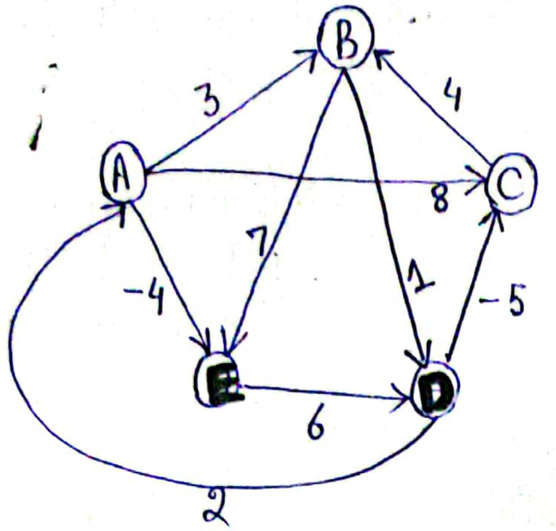

Adjacency Matrix: D^0

	A	B	C	D	E
A	0	3	8	∞	-4
B	∞	0	∞	1	7
C	∞	4	0	∞	∞
D	2	∞	-5	0	∞
E	∞	∞	∞	6	0

Create a new Matrix. (D^1)
Fill the diagonal with "0"
Fill the 1st row and 1st column with same values of D^0.

	A	B	C	D	E
A	0	3	8	∞	-4
B	∞	0			
C	∞		0		
D	2			0	
E	∞				0

Eq: $D'[u,v] = \min(D[u,v], D[u,K] + D[K,v])$

u = "B", v = "C", K = "A"

We are interested to determine the shortest path from u i.e., from (B) to v i.e., (C).

D[u,v] will provide the previously calculated results. We will check wether previously calculated value is minimum or we can get a minimum value via vertex "A"

$D[u,K] \Rightarrow$ cost from source vertex to intermediate vertex.

$D[K,v] \Rightarrow$ cost from intermediate vertex to destination vertex.

Read the values from the most recent calculated matrix and store them in a newly created matrix.

$$D'[B,C] = \min(D[B,C], D[B,A] + D[A,C])$$
$$\min(\infty, \infty + 8)$$

infinity will be stored.

$$D'[B,D] = \min(D[B,D], D[B,A] + D[A,D])$$
$$\min(1, \infty + \infty)$$

Minimum value is 1 so 1 will be stored at $D'[B,D]$

$D'[B,E] = \min(D[B,E],\ D[B,A] + D[A,E])$

$\min(7,\ \infty + (-4))$

7 will be stored at $D'[B,E]$

Now move to next row:

No change will take place in the entire next row. i.e, $D'[C,A]$, $D'[C,B]$, $D'[C,C]$, $D'[C,D]$ and $D'[C,E]$ will remain the same as calculated in the last matrix.

Move to next row:

$D'[D,A] = \min(D[D,A],\ D[D,A] + D[A,A])$

$\min(2,\ 2+0)$

2 will be stored at $D'[D,A]$

$D'[D,B] = \min(D[D,B],\ D[D,A] + D[A,B])$

$(\infty,\ 2 + 3)$

Since 5 is minimum so 5 will be stored at $D'[D,B]$

The next change will take place for $D'[D,E]$

$D'[D,E] = \min(D[D,E],\ D[D,A] + D[A,E])$

$\min(\infty,\ 2 + (-4))$

-2 is minimum so -2 will be stored at $D'[D,E]$

Overall matrix after all iterations: (D')

	A	B	C	D	E
A	0	3	8	∞	-4
B	∞	0	∞	1	7
C	∞	4	0	∞	∞
D	2	**5**	-5	0	**-2**
E	∞	∞	∞	6	0

Now check the shortest path via vertex "B".

→ Diagonal remains 0

→ Rows and column representing vertex "B" will remain unchanged

$D''[A,D] = \min(D'[A,D],\ D'[A,B] + D'[B,D])$

$\min(\infty,\ 3 + 1)$

4 is minimum so 4 will be stored at $D''[A,D]$

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