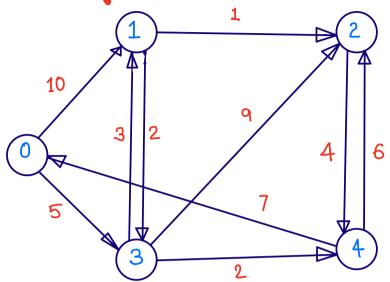
## Dijkstra's Algorithm (Directed Graph)



$$d[0] = 0$$
  $S[0] = 1$ 
 $S[0] = 1$ 
 $d[1] = [0 = d[0] + w[0,1]]$ 
 $d[3] = d[0] + w[0,3]$ 
 $= 0+5$ 
 $= 5$ 

parent node= 0

ie Sound

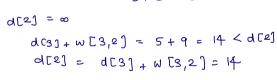
d[3] < d[1] .:. S[3] = 1

$$d(1) = 10$$

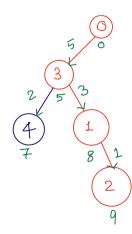
$$d(3) + w(3,1) = 5 + 3 < d(1)$$

$$d(1) = d(3) + w(3,1)$$

$$= 5 + 3 = 8$$



$$d[4] = \infty$$
 $d[3] + w[3,4] = 5 + 2 = 7 < d[4]$ 
 $d[4] = 7$ 
parent node = 3



SC4]=1

Node 2 & 0

$$dC3 = 0 - from source \times already selected$$

$$dC2] = 14$$

$$= dC4] + wC4, 2]$$

$$= 7 + 6 = 13 < 14$$
Hence,  $dC2] = [3]$  parent node = 4

$$dC2] = 14$$

$$dC2] = 14$$

$$via \quad vode 3$$

$$= dC1] + wC1, 2]$$

$$= 8 + 1 = 9 < 14$$
parent node = 1

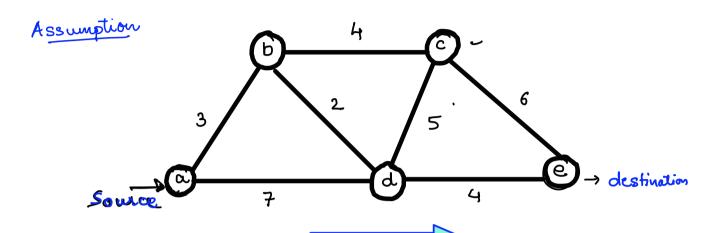
$$S[2]=1$$
Adjacent nodes = 4
$$but S[4]=1$$

No nodes left to be selected

Iteralions	set of selected	vertex severted	Distance				
			0	L	2	3	4
Initialize	<b>{o}</b>	_	0	10	æ	5	00
1	{0,3}	3	O	8	14	5	7`
2	{0,3,43	4	0	8	13	5	7
3	{0,3,4,1}	1	0	8	9	5	7
4	{0,3,4,1,2}	2	0	8	9	(5)	7

## Dijkstra's Algorithm (undirected Graph):





If 
$$(aist[w] > dist[v] + cost(v,w))$$
  
then
$$dist[w] = dist[v] + cost(v,\omega)$$

Iterations	selected vertex	a	b	c	d	e
Initialization	-	0*	œ	$\infty$	$\infty$	∞
Τ	a	0	<b>3*</b>	œ	7	œ
2_	a-b	0	3	7	5 <del>*</del>	œ
3	a-6-d	0	3	7*	5	9
4	a-b-c	0	3	7	5	9*
4	a-b-d-e	0	3	7	5	9

dist 
$$CeJ$$
 > dist  $CcJ$  + cost  $Ce_1e_2$ )

9 > 7 + 6

9 > 13

False

dist  $CeJ = 9$