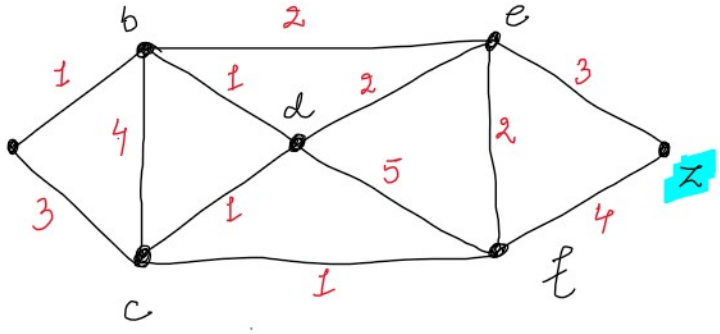
L32 20 April 2022

20 April 2022 10:09

Shortest path

Weighted Graph :- A graph is s.t.b weighted Graph if a non negative no (called the weight or length of the edge) is assigned to each and every edge of the graph



① $a-b-e-z = 6$

② $a-b-c-d-e-z = 11$

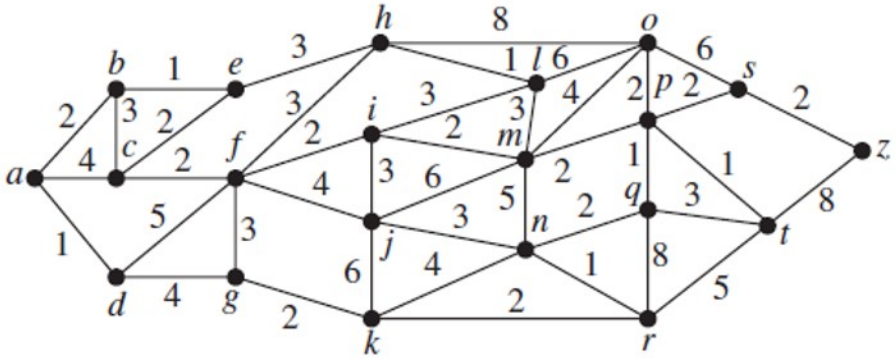
$a-b-d-f-z = 11$

$a-c-f-z$ 8

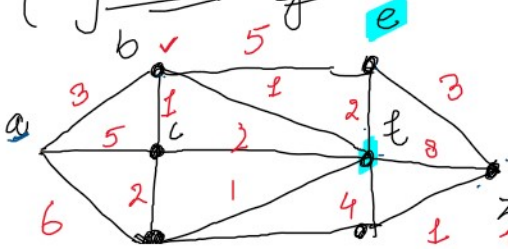
$a-b-d-e-f-z$ .....

Length of the path :- Sum of all the weights of the edges involve in that path.

Shortest path :- the path with minimum length

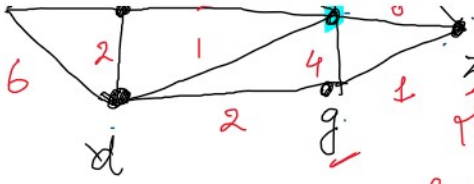


Dijkstra's Algorithm



a to z

Source vertex	b	c	d	e	f	g	z
{a}	3(a)	5(a)	6(a)	∞	∞	∞	∞
{a,b}	—	4(a-b)	6(a)	8(a-b)	4(a-b)	∞	∞



{a,b}	–	4(a-b)	6(a)	8(a-b)	4(a-b)	∞	∞
{a,b,c}	–	–	6(a)	8(a-b)	4(a-b)	∞	∞
{a,b,c,f}	–	–	5(a-b-f)	6(a-b-f)	–	8(a-b-f)	12(a-b-f)
{a,b,c,f,d}	–	–	–	6(a-b-f)	–	7(a-b-f-d)	12(a-b-f)
{a,b,c,f,d,e}	–	–	–	–	–	7(a-b-f-d)	9(a-b-f-e)
{a,b,c,f,d,e,g}	–	–	–	–	–	–	–

8(a-b-f-d-g)

Shortest

a-b-f-d-g-z

Length = 8