L24 04 April 2022

04 April 2022 10:06

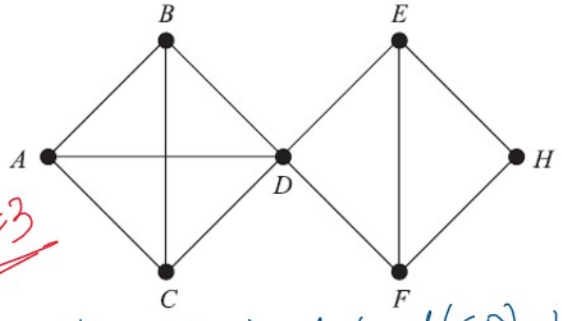
Distance and Diameter :-

Distance :→

Let G be a Connected graph.

The distance b/w the vertices u and v is denoted by $d(u,v)$

$d(u,v)$ = the length of the shortest path between u and v.



$d(A,H) = 3$

A-B-D-E-F-H → (5)

A-B-C-D-F-E-H → (6)

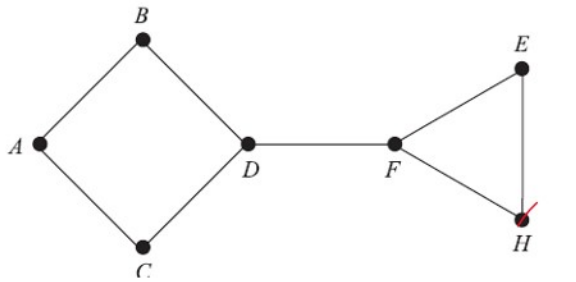
A-D-E-H → (3)

A-D-E-F-H → (4)

diam(G) = 3

$d(A,B)=1$	$d(B,C)=1$	$d(C,D)=1$	$d(D,E)=1$	$d(E,F)=1$
$d(A,C)=1$	$d(B,D)=1$	$d(C,E)=2$	$d(D,F)=1$	$d(E,H)=1$
$d(A,D)=1$	$d(B,E)=2$	$d(C,F)=2$	$d(D,H)=2$	$d(F,H)=1$
$d(A,E)=2$	$d(B,F)=2$	$d(C,H)=3$		
$d(A,F)=2$	$d(B,H)=3$			
$d(A,H)=3$				

(4) $d(A,E) = 4$ ✓



diam(G) = 4

Diameter of the graph :→

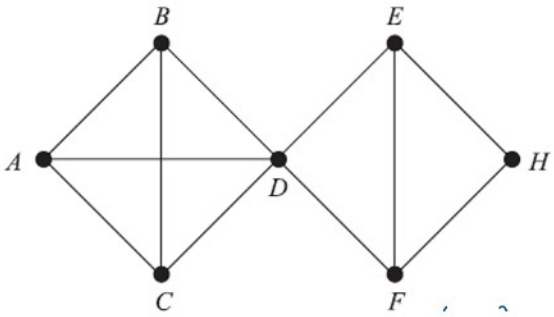
Let G be the Connected graph.

The diameter of the graph G is denoted by diam(G) (length of the shortest path)

distance

The diameter of the graph

diam(G) = the maximum distance between any pair of vertices.



Cut vertices or cut points :→

Let G be a connected graph.

Then v is s.t.b cut vertex if G − v is disconnected.

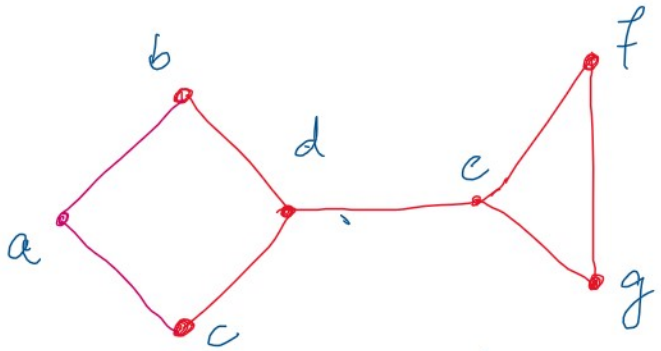
(Remove the vertex v and its associated edges)

Cut edge or Bridge

Let G be a connected graph

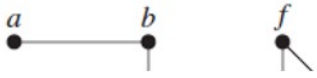
Then e is s.t.b cut edge or bridge if G − e is disconnected

(Remove the edge e)

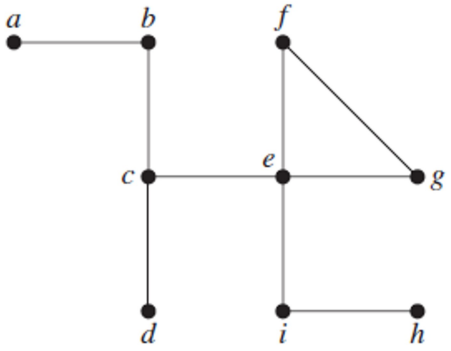


Cut vertices → d, e

Cut edges → d − e



The no. of cut vertices = 4



The no. of cut vertices = 4

b, c, e, i

Cut edges = 6

a-b, b-c, ~~c-d~~, c-e, e-i, i-h