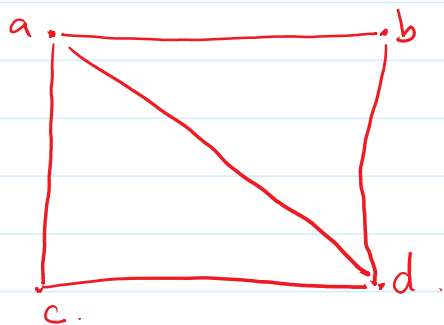
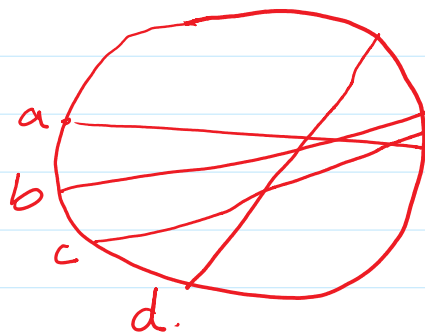


lecture 25 :- Circular Graph.



Graph.



Circular Graph.

Adjacency Matrix \rightarrow Graph \rightarrow Circular.

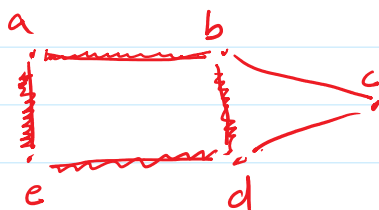
Exercise 556-559.

CONNECTIVITY:-

PATH. a to b.

$(a, x_1) (x_1, x_2) \dots (x_n, b)$.

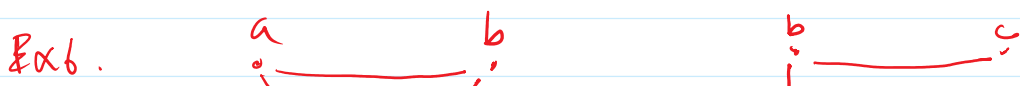
Ex 1
560.



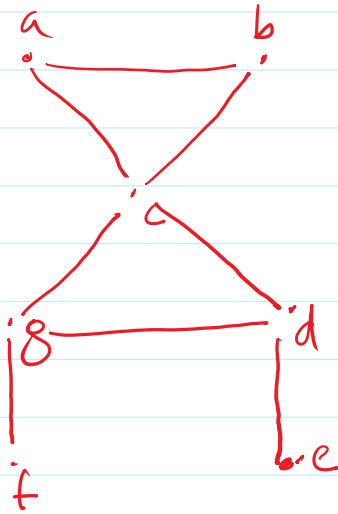
a b d e a ?

Simple path :-
Simple cycle:-

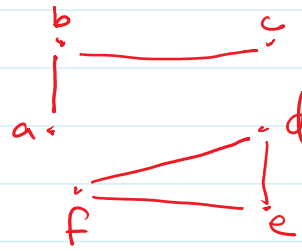
Def:- An Undirected Graph is called Connected if \exists a path btw every pair of distinct Vertices.



Ex 6.



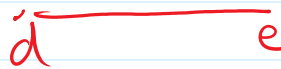
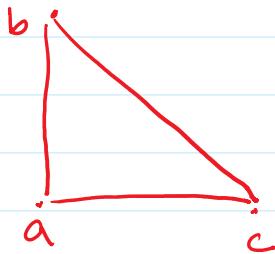
G_1
Connected.



G_2 -
Not Connected.

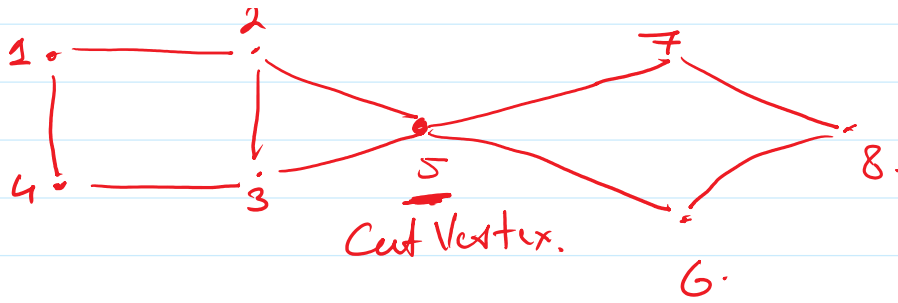
Theorem:- There is always a simple path between every pair of distinct vertices of a connected undirected graph.

Connected Component:- G is a subgraph of G which is not a proper subgraph of another subgraph of G .

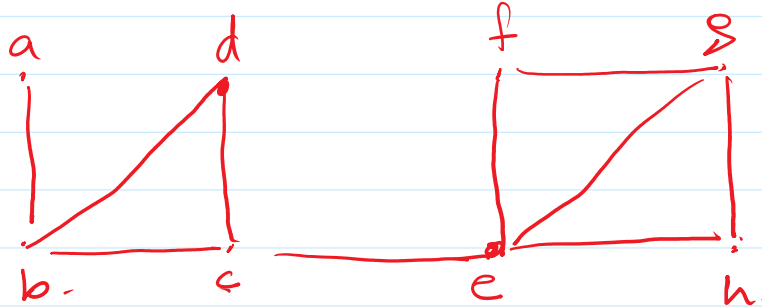


(H).

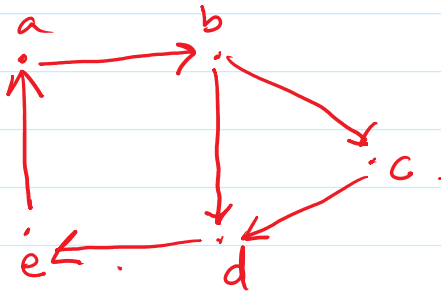
Cut Vertex.



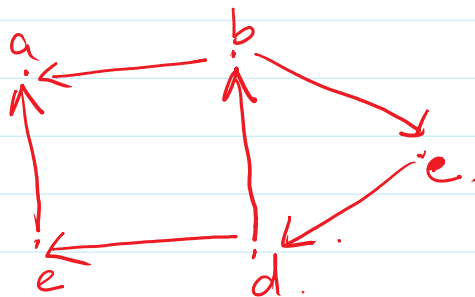
Cut Edge:-



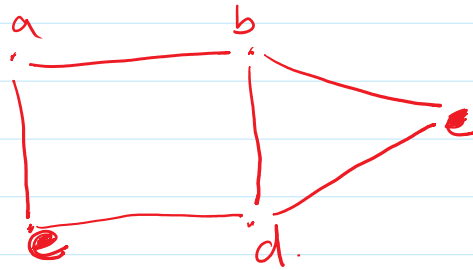
Strongly Connected:- A directed Graph is if \exists a path from a to b & b to a $\forall a, b \in V$.



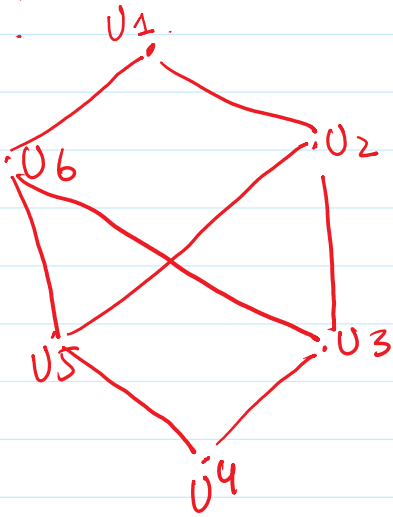
Weakly Connected:- if \exists a path from a to b in the underlying Undirected Graph $\forall a, b \in V$.



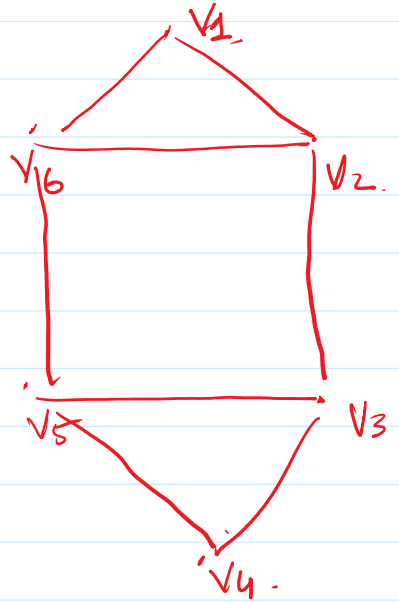
a to b .



Ex 14
566.

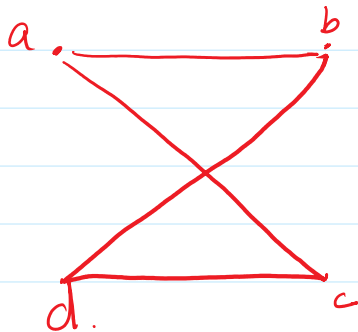


G



H

Ex 16.



$$A = \begin{matrix} & \begin{matrix} a & b & c & d \end{matrix} \\ \begin{matrix} a \\ b \\ c \\ d \end{matrix} & \begin{bmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix} \end{matrix}$$

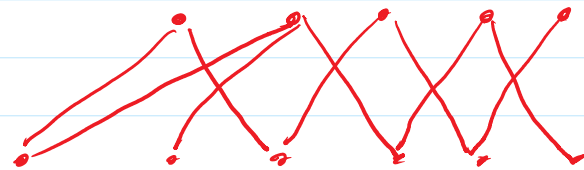
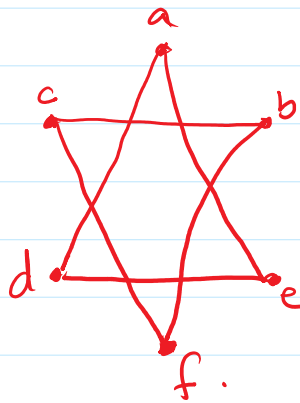
Ex 567-570.

a - to - a.
1 ababa

$$14 \quad \begin{bmatrix} 8 & 0 & 0 & 8 \\ 0 & 8 & 8 & 0 \\ - & - & - & - \end{bmatrix}$$

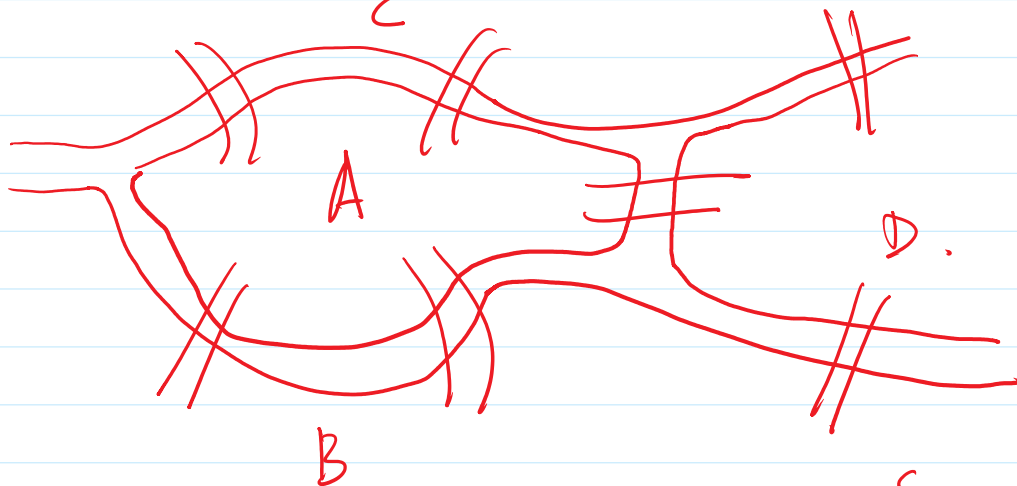
- 1 ababa
- 2 acaca
- 3 abdca
- 4 abaca
- 5 acaba
- 6 acdba
- 7 abdba
- 8 acdca.

$$A^4 = \begin{bmatrix} 0 & 8 & 8 & 0 \\ 0 & 8 & 8 & 0 \\ 8 & 0 & 0 & 8 \\ 8 & 0 & 0 & 8 \end{bmatrix}$$



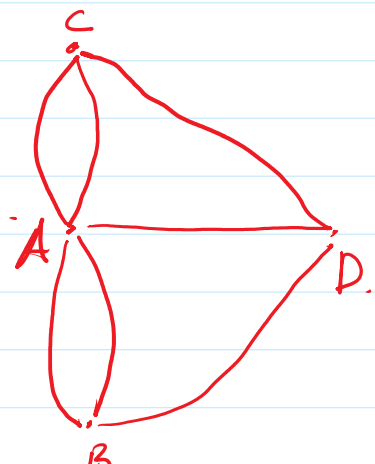
Cut Vertices: \nearrow
Cut Edges: \nearrow

Euler Path.



Euler Circuit :- \rightarrow Simple Circuit
 \rightarrow Contains Every Edge.

Euler Path :- \rightarrow Simple path
 \rightarrow Contains Every Edge.



→ Contain Every Edge.

