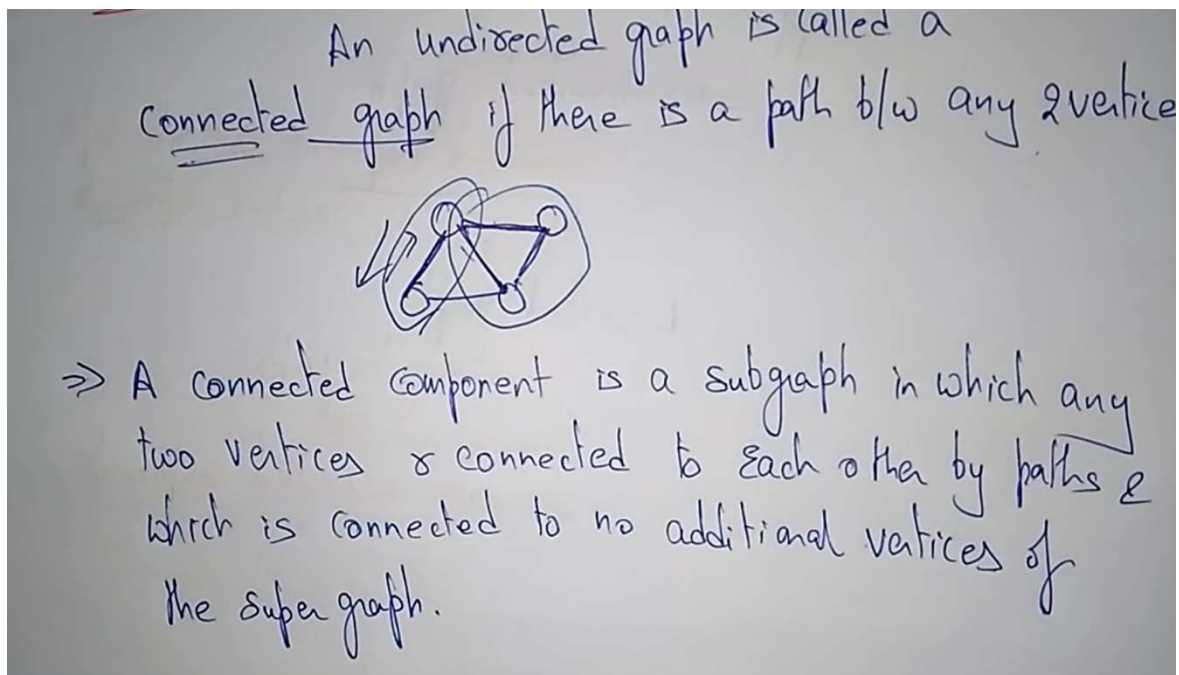


COURSE HANDOUT

Course Code	ACSC13
Course Name	Design and Analysis of Algorithms
Class / Semester	IV SEM
Section	A-SECTION
Name of the Department	CSE-CYBER SECURITY
Employee ID	IARE11023
Employee Name	Dr K RAJENDRA PRASAD
Topic Covered	connected components, biconnected components
Course Outcome/s	Find the connected components of the graphs.
Handout Number	25
Date	27 March, 2023

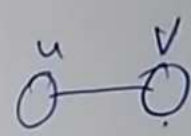
Content about topic covered: Connected components, Biconnected components



Algorithm for connected-components

Connected-components (A)

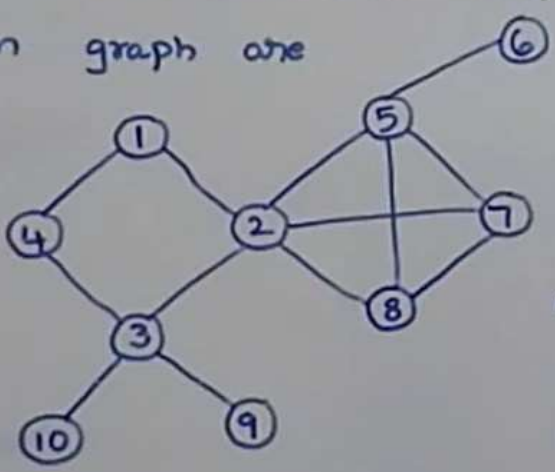
1. for each vertex $V \in G.V$
2. Make-set(V)
3. for each edge $(u, v) \in G.E$
4. if Find-set(u) \neq Find-set(v)
5. Union(u, v)



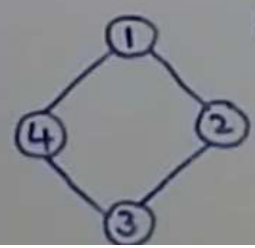
Biconnected component :-

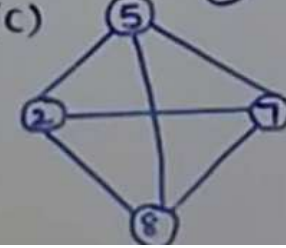
A Maximal biconnected Subgraph is a Biconnected Component.

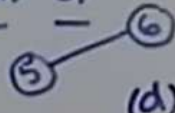
The Biconnected Components of the given graph are



Given Graph G_1

a) 

(c) 

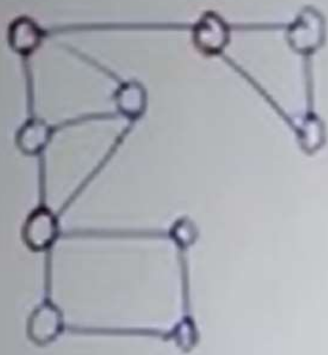
(d) 

Note:- Two Biconnected components can have at most one vertex in common and that vertex is an Articulation point.

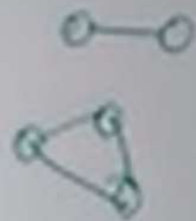
\Rightarrow A graph is biconnected if it contains no 'articulation' point.

removal of any vertex results in disconnection

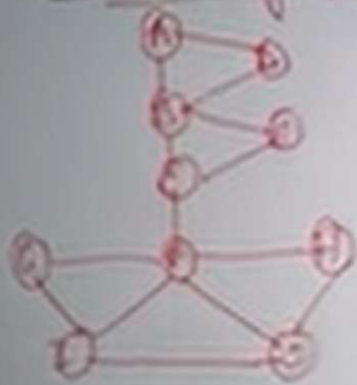
\Downarrow
is any vertex of a graph whose removal results in a disconnected graph.



\Rightarrow A graph is biconnected if it contains no articulation pts.



Undirected graph



biconnected components

