L18 16 Mar 2022

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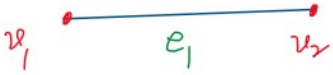
Unit-4 Graph Theory :

Graph :→ A graph $G = G(V, E)$ consists of two sets

i) $V (\neq \phi)$, the set of vertices.

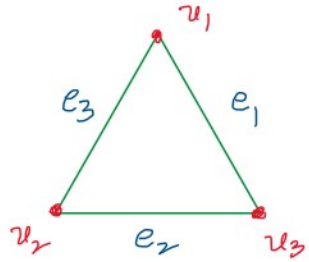
ii) E, the set of edges. (may or may not empty set)



$V = \{v_1, v_2\}$

$E = \{e_1\}$

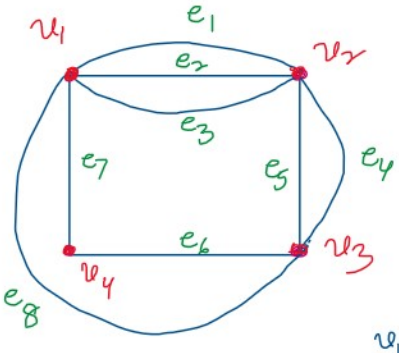
$G = G(V, E)$



$V = \{v_1, v_2, v_3\}$

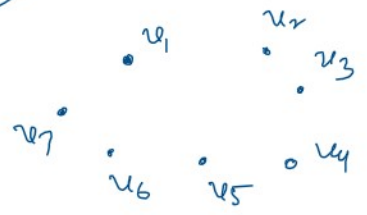
$E = \{e_1, e_2, e_3\}$

$G = G(V, E)$



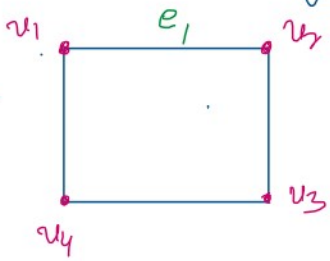
G

✓ graph



→ graph

Adjacent vertices :→ Two vertices are s.t.b adjacent vertices if there exists an edge b/w them.



Simple graph ←

v_1 and v_2 are adjacent vertices

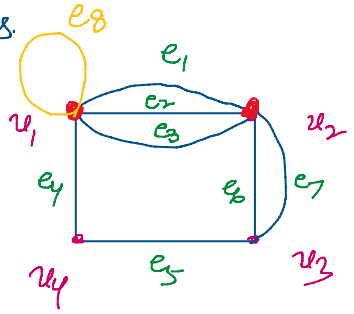
v_1 and v_3 are not adjacent vertices

If e_1 is an edge b/w v_1 and v_2 then v_1 and v_2 are called the endpoints of e_1

Multiple edges or Multi edges :→

Multiple edges or Multi edges :-

Two or more edges b/w the same end points are called multi edges.



e_1, e_2, e_3 are called multi edges

e_8 is a loop

Multi graph ✓

Why e_6 and e_7 are also multi edges

Loop :- An edges whose end points is the same vertex.

Finite Graph :-

↳ A graph in which the no. of vertices are finite

Infinite graph

A graph in which infinite no. of vertices are there

Multi Graph

A graph which Consists of either the multiple edges or loops are called Multi graph.

Graph means multigraph

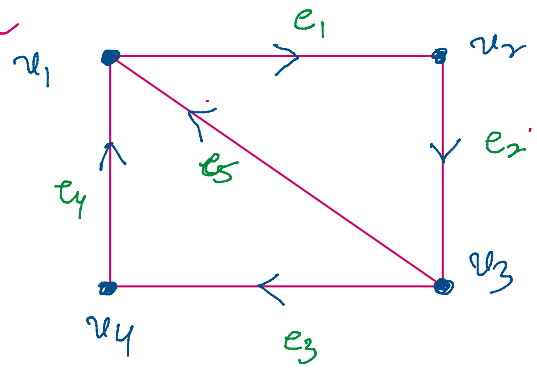
Simple graph

A graph which is free from multiple edges and loops called simple graph

Directed Graph

Undirected graph

Directed Graph



→ A graph is s.t.b directed graph if direction is given to each and every edge of the graph.

Undirected graph