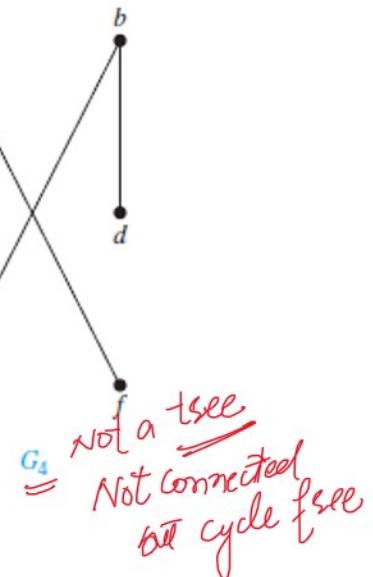
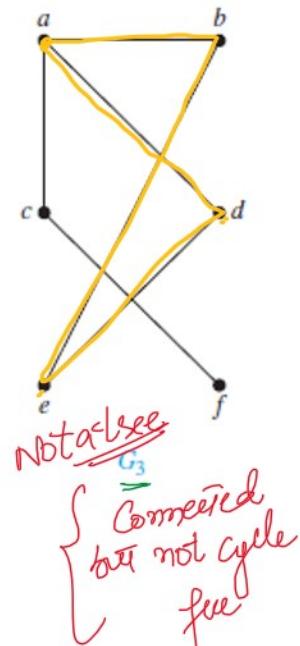
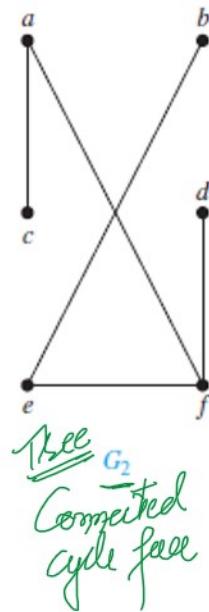
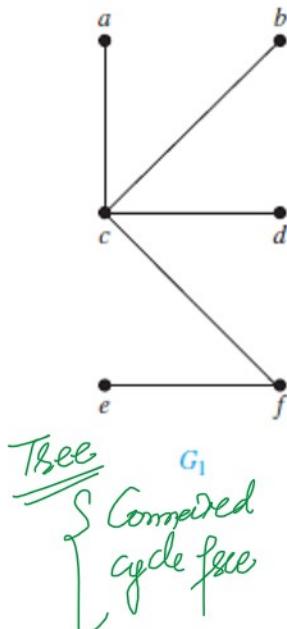
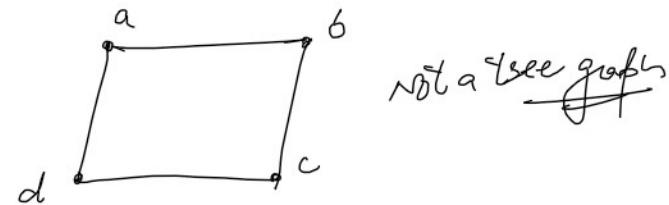
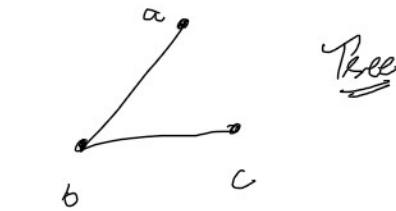


Tree Graph

Tree:→ An undirected connected graph with no simple circuit is called a tree graph.

A graph $\stackrel{\text{of}}{\approx}$ which is **connected** and **cycle free** is called a tree.
 $(\exists$ path b/w every pair of its vertices)

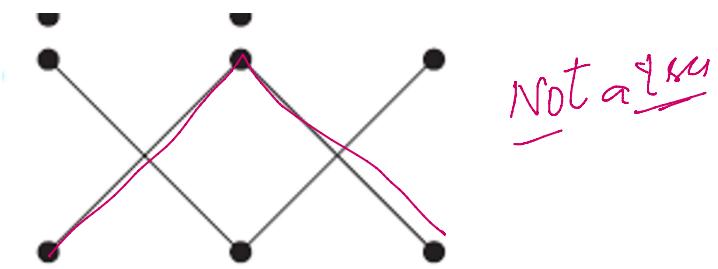
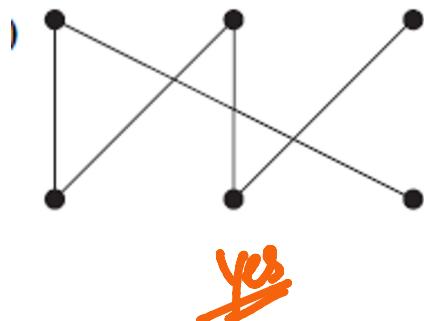
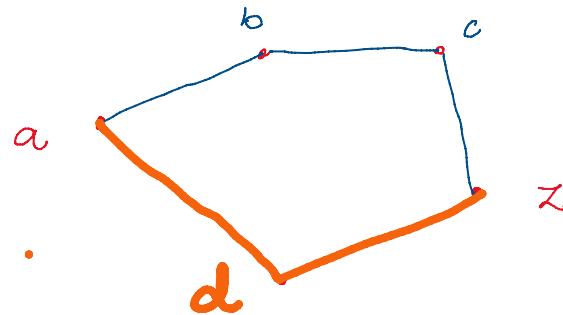


Forest:→ is a graph which is not necessarily connected but must be cycle free!

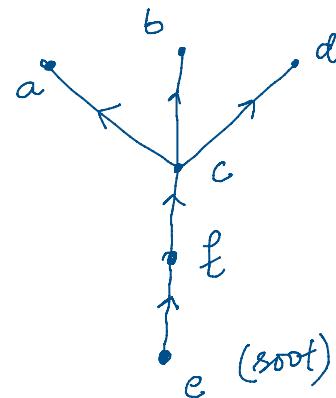
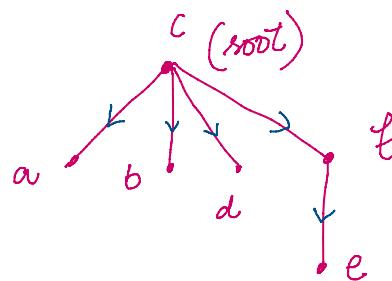
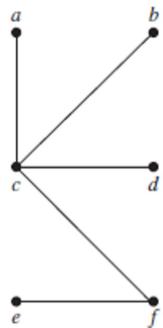
An undirected graph is a tree if and only if there is a unique simple path between any two of

An undirected graph is a tree if and only if there is a unique simple path between any two of its vertices.

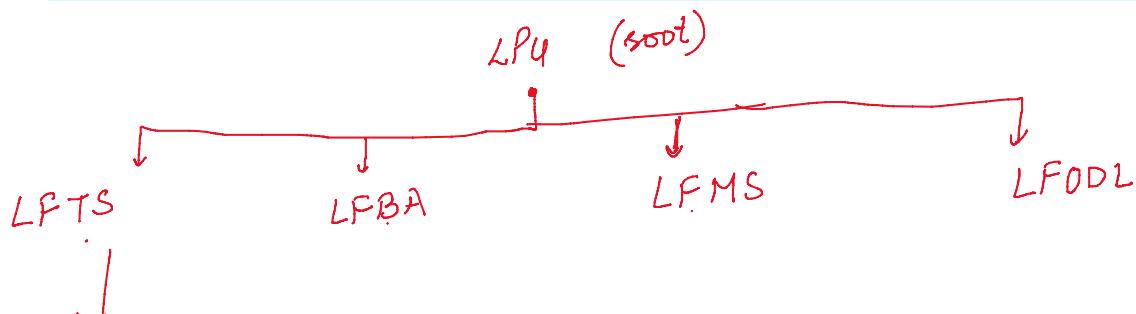
$T \rightarrow \text{connected}$

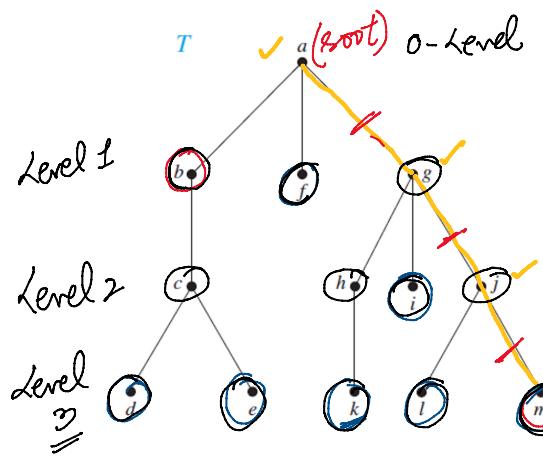
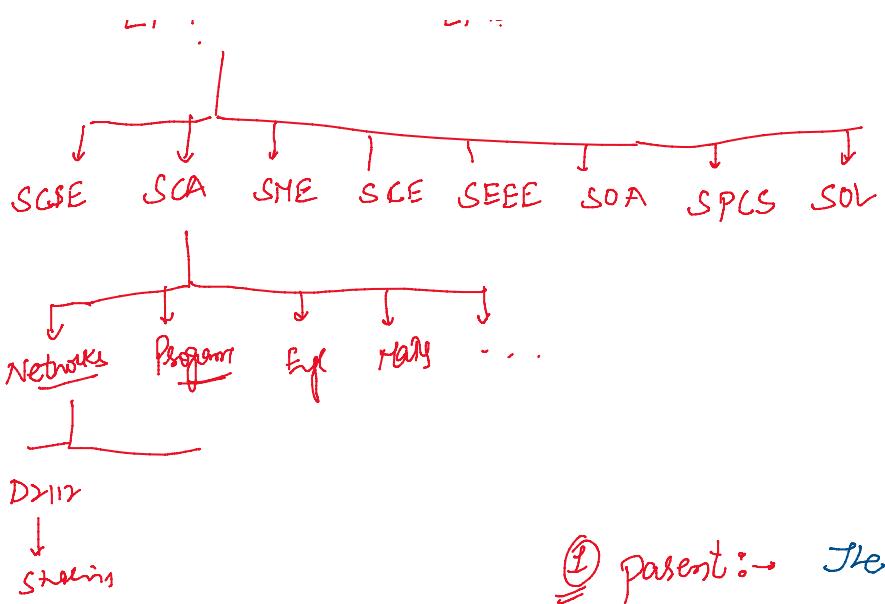


Rooted Tree :-



A *rooted tree* is a tree in which one vertex has been designated as the root and every edge is directed away from the root.





① parent :- The parent of a vertex u (except the root) is the vertex v such that there exists a direct edge from v to u .

e.g. j is the parent of m, n, o
If v is the parent of u then u is the child of v

e.g. j, h, i are children of g

② child :- vertices with same parent.
e.g. b, f, d are siblings

④ ancestors :-

The ancestors of the vertex u are the vertices which lies in the unique path from root to the vertex u .

e.g. a, g and j are ancestors of m .

⑤ Descendant

The descendants of a vertex v are all those vertices whose ancestor is v .

e.g. The descendants of b are c, d and e

⑥ leaf :-

vertices with no children

⑦ internal vertices

vertices with children

- vertices with children
- ⑦ Internal vertices
 - ⑧ Level of the vertex
 - ⑨ Depth | Height of the tree