1. Using the algorithm discussed in class, insert the elements 2,5,8,10,12,15,20 in that order into a heap.
   The heap after insertion of all the elements look as follows:

   ![Heap Diagram]

2. Show the preorder traversal of the heap
   - 20,10,2,8,15,5,12

3. Show the inorder traversal of the heap
   - 2,10,8,20,5,15,12

2. Show the postorder traversal of the heap
   - 2,8,10,5,12,15,20

Let G = (V, E) be the undirected graph represented by the adjacency list below.

a) Draw G.
b) Starting with node 0, create a spanning tree using depth first search. Process children in node order.
c) Starting with node 5, create a spanning tree using breadth first search. Process children in node order.

![Diagram showing tree structure]

d) Prove or disprove the relation R corresponding to G is transitive.

-Disproving with counterexample
(2,0) and (0,5) are in relation R. If R was transitive then (2,5) should also be in R. But (2,5) is not in R. So R corresponding to G is not transitive.