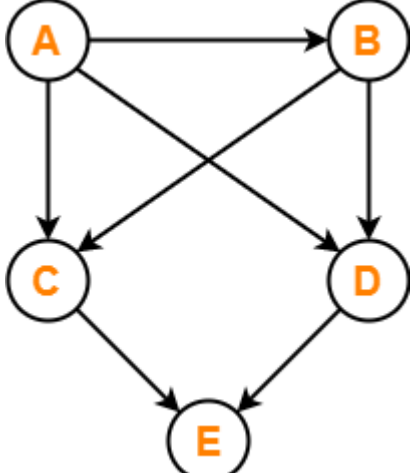
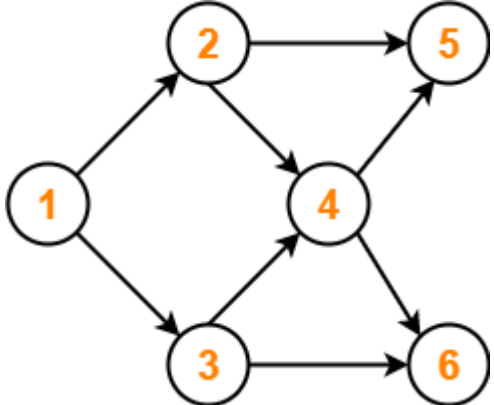
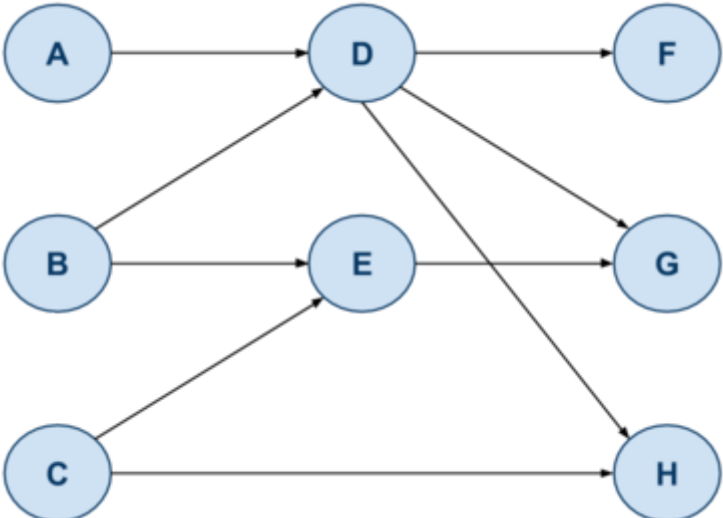


1	What are the three major variations of Decrease and Conquer design strategy?
2	Write the algorithm for Insertion Sort and derive its best and worst case time complexities. Explain Insertion Sort Algorithm with the following data 12, 6, 2, 5, 11, 4, 8, 1
2	A priority queue is implemented as a Max Heap. Initially it has 5 elements. The level order traversal of heap is 11, 9, 6, 4, 3. Two new elements 2 and 8 are inserted into the heap in that order. Find out the level order traversal of the heap after the insertion of elements. Answer: 11, 9, 8, 4, 3, 2, 6
3	Write an algorithm for max-heapify(A,i). Illustrate the operation of max-heapify(A,3) on the array A= 27, 17, 3, 16, 13, 10, 1, 5, 7, 12, 4, 8, 9, 0
4	Write the algorithm to build a max heap. Describe your algorithm to build a max heap from the array A= 5, 7, 8, 2, 1, 0, 3, 9, 4, 5, 6 in a step by step process. Derive the time complexity of building max heap.
5	Write an algorithm for the procedure heap-extract-max(A), where the procedure removes and returns the element of max-heap with largest key. Illustrate the operation of heap-extract-max on the heap A = 1, 3, 2, 6, 4, 5, 7, 8, 9
6	Find the number of different topological orderings possible for the given graph- 
7	Find the number of different topological orderings possible for the given graph- 
8	Finishing the interiors of a lecture hall consists of several steps, such as laying electrical cables, installing audio-visual equipment, attaching the blackboard, etc. Suppose there are 10 steps, labelled A, B, C, D, E, F, G, H, I, J. Each step takes a day to complete and we have the following A must happen before J

	<p> B must happen before D B must happen before G C must happen before B D must happen before A D must happen before E E must happen before J F must happen before C G must happen before D H must happen before F H must happen before I I must happen before B I must happen before G What is the minimum number of days required to complete the interiors? Answer:8 </p>
9	<p>Given the following graph, which of the following orders are topological sorts (select all that apply)?</p>  <pre> graph LR A((A)) --> D((D)) B((B)) --> D B --> E((E)) C((C)) --> E C --> H((H)) D --> F((F)) D --> G((G)) D --> H E --> G </pre> <p>1. A, D, H, F, G, E, B, C</p> <p><input type="checkbox"/> C, B, E, A, D, H, F, G</p> <p><input type="checkbox"/> A, B, C, E, D, H, G, F</p> <p><input type="checkbox"/> C, A, B, E, D, F, G, H</p> <p><input type="checkbox"/> B, A, D, C, H, E, G, F</p> <p><input type="checkbox"/> A, B, D, F, C, E, G, H</p> <p><input type="checkbox"/> B, A, D, F, C, G, H, E</p> <p><input type="checkbox"/> A, B, C, D, E, F, G, H</p>

10	Give an algorithm for Topological Sort using DFS
11	<div data-bbox="359 331 726 616"><pre>graph TD; 5((5)) --> 2((2)); 4((4)) --> 1((1)); 2((2)) --> 3((3)); 3((3)) --> 1((1)); 5((5)) --> 0((0)); 4((4)) --> 0((0));</pre></div> <p>Apply Topological Sort to above graph</p>