**Lab 3**

**( Before 09th April groups have to show to Research scholar (Koti) in their laptop. Maximum 4 students in a group )**

1.Write a programto input a graph *G* = (*V*, *E*) as an adjacency matrix. In following you assume [**adjacency matrix** representation](http://en.wikipedia.org/wiki/Adjacency_list) of graph.

a. Write a program to implement following.

* 1. Test if G is complete.
  2. Obtain the degree of a node *u*, if *G* is undirected, and indegree and outdegree of node *u* if *G* is directed.
  3. To check that there exist a path between two vertices.

b. Write a program to implement BFT algorithm. The program should output order of vertices traversed in Breadth First Search and shortest distance of the vertices of given graph from the source.

c. Write a program to implement DFT algorithm. The program should output the following.

a. Order of vertices traversed in Depth First Search.

b. To check whether graph has a cycle.

c. Finishing time of the vertices of the graph.

2.Write a programto input a graph *G* = (*V*, *E*) as an adjacency matrix.

Write a program to implement 1(a), 1(b) and 1(c) assuming [**adjacency list** representation](http://en.wikipedia.org/wiki/Adjacency_list) of graph.