**PROGRAM:8**

**Aim:** Write a program to implement iterative deepening search.

**Code:**

graph = {

    'a' : ['b', 'c', 'e'],

    'b' : ['d', 'f'],

    'c' : ['g','a'],

    'e' : ['f'],

    'f' : ['e'],

}

def IDDFS(root, goal):

    depth = 0

    while True:

        print ("LOOPING AT DEPTH %i " % (depth))

        result = DLS(root, goal, depth)

        print ("RESULT: %s, GOAL: %s" % (result, goal))

        if result == goal:

            return result

        depth = depth +1

def DLS(node, goal, depth):

    print ("NODE: %s, GOAL %s, DEPTH: %i" % (node, goal, depth))

    if depth == 0 and node == goal:

        print( "GOAL FOUND ,RETURN TO")

        return node

    elif depth > 0:

        print ("LOOPING THROUGH CHILD NODES: %s" % (graph.get(node, [])))

        for child in graph.get(node, []):

            if goal == DLS(child, goal, depth-1):

                return goal

IDDFS('a', 'g')

**Output:**

