Indian Institute of technology, Guwahati
Department of Computer Science and Engineering
Data Structure Lab: (CS210)
Offline Assignment: 3

Date: 21st August, 2017. **Total Marks: 20**
Deadline: 10PM, 27th August, 2017. (Hard Deadline)

1. Write a program to merge k ordered sequences of integers into single ordered sequence using **Winner tree.** Implement winner tree as array & sequences as linked list. **(10)**

   Input: k ordered sequences.

   Output: Single ordered sequence after merging k ordered sequences.

   Test 1
   2 4 9 11
   5 12 15 18
   1 3 6 8
   7 10 13 14
   Output: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 18

   Test 2
   2 5 7 11
   1 3 4
   6 8 12 13
   9 10 18
   14 20 23
   15 24 26
   25 28 30
   Output: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 18 20 23 24 25 26 28 30

2. Student was late to submit his assignment which was to be handed over in person to the Data Structure professor. Next day the professor was on leave and at home. The student needs to cross the jungle (may be good or bad) in order to reach professor's home. The jungle is good if it has exactly one point (Start Point) to enter into it and exactly one point (End Point) to exit out of it. In a good jungle, there must be exactly one way from start point to end point in order to reach professors' home. Entry point and Exit point must be on the border of the jungle/map. Initially the student is outside the jungle. Student can enter the jungle from any side. Given the rectangular (or square) map of jungle, will the student be able to submit his assignment? **(10)**

   Input Format:
   For every test case,
   First line contains rows in map and columns in map separated by a space.
   From 2nd line onwards, the map of jungle is given in which 'T' is a tree and student

can't proceed from there and 'L' is land area on which student can move to.
Stop taking input when input rows and columns are both zero.

Output Format:
For every test case, print output on newline.
Print "Submitted!"(without quotes) if student was able to submit assignment else
print "Bad Luck!"(without quotes).

Test1:
4 4
TTTT
TLLL
TLTT
TLTT
Submitted! (Entry point + Exit point exactly 2 and at least one path from one point to another)

Test2:
1 1
L
Bad Luck! (Entry point + Exit point not exactly 2)

Test3:
5 1
T
T
L
L
T
Submitted! (Entry point + Exit point exactly 2 and at least one path from one point to another)

Test4:
2 2
TL
LT
Bad Luck! (No path from one point to another)

Test5:
3 4
TLLT
TLTT
TLTT
Bad Luck! (Entry point + Exit point not exactly 2)