Laboratory Assignment 1 | State Space Search | Modeling and BFS | Week-1 January, 2018

Problem 1:
Three jealous husbands and their wives need to cross a river using a single boat. At no time should any of the women be left in company with any of the men, unless her husband is present. The boat can carry up to two passengers and can not move by itself.

1. Model the problem as a state space search problem. How large is the search space?
2. Define moveGen and GoalTest functions.
3. Solve the problem using BFS. What is an optimal solution? The optimal solution is the one with the fewest number of steps. The program should print out the solution by listing a sequence of steps and operators needed to reach the goal state from the initial state.

Problem 2:
Objective is to use the given six numbers to arithmetically calculate a random chosen number. Only the four arithmetic operations of addition, subtraction, multiplication and division may be used, and no fraction may be introduced into the calculation. Each number may be used at most once.

The initial six numbers should be taken as input from the user. The target number should be generated randomly from 100 to 999.

If the exact expression is not found, the program should print out the expression that evaluates to a value that is the closest to the target value.

Submission:
Prepare a short report (individually) and submit the same along with the implementation details to the course TA, Mr. Ashish Patel, by 5 pm on January 9, 2018. In case you have worked in a group, mention all the members who were part of the group in your report at the beginning.

Evaluation: 10 Points
Component 1: In-lab assessment | 5 Points | You will be asked to explain the solution during the lab session.
Component 2: Submission evaluation | 5 Points | Criteria: Approach, Pseudocode, Implementation and Report.