**Assignment 2** **Uninformed and informed Search**

## Aims:

To perform an uninformed and an informed search for a given problem in a search space organized as a tree.

## Task:

Specify, design and deploy an application in python that solves your assigned problem using the specified search methods. The applications should follow the following conditions:

1. It must have a nice architecture (for example the following UML diagram - you can add functions and classes as need it)

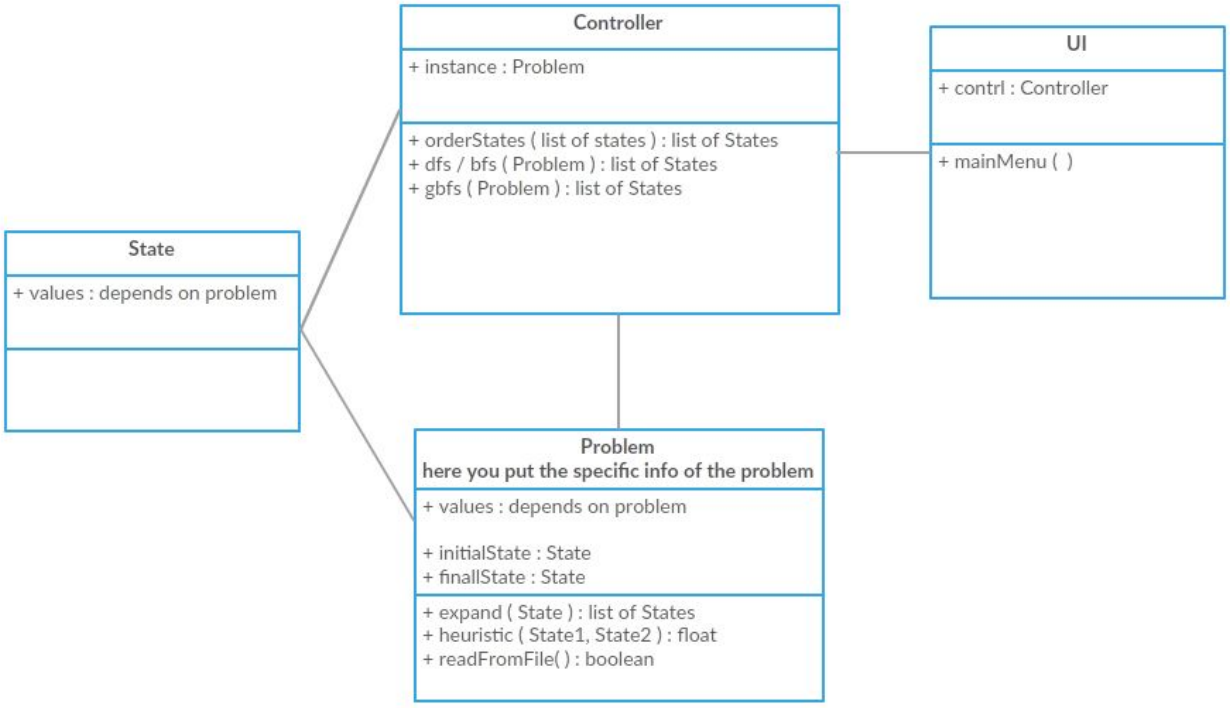


**Figure 1: The UML diagram**

2. the input data will be an integer
3. the user can choose in a text menu the method that will be used to solve the problem

**Each problem must be solved with both two methods!!!**
**AND NOT WITH OTHER ONES!!!**

## Points:

- 40 points / method.
- 20 points for the architecture and for the quality of your application.
- A minimum of 50 points must be obtained in order to validate your laboratory.

## Time:

**Deadline is at the beginning of the third lab.**

## General hints:

- Determine the search tree according to your problem! Will help you A LOT!
- Do not implement functions that you will NEVER use in your application!
- Do NOT solve the problem with other methods. You will not be granted points if you do this.

## Problem:

**Solve the following type of Latin Square (GREEDY, DFS)**

Fill the square matrix A from $M_{(n,n)}$, $n \in N^*$ with integers fulfilling the following constraints:

1. $a_{i,j} \in \{0,1\}$
2. $\sum_{i=1}^{n} a_{i,j} = 1, \ \forall j \in \{1, 2, ..., n\}$
3. $\sum_{j=1}^{n} a_{i,j} = 1, \ \forall i \in \{1, 2, ..., n\}$
4. $\left\{(a_{i_1,j_1}, b_{i_2,j_2}) | a_{i_1,j_1} \in A, b_{i_2,j_2} \in A, \left|i_1 - i_2\right| - \left|j_1 - j_2\right| = 0, a_{i_1,j_1} = 1, b_{i_2,j_2} = 1\right\} = \Phi$

If for a $n$ such a matrix does not exist, print a proper message.