# Introduction

During this first project, I was asked to implement a solution to solve an 11d-puzzle using different algorithms (uninformed and informed) combined with two heuristics of my choice. I also had to demonstrate some creativity making different experimentations. The final goal was to compare and analyze the different way to solve the puzzle.

In this report, I will detail exactly what I realised, so you can get an overview of my whole work. Then, you will find a section focussing on the 2 heuristics that I chose. They will be described in detail, so you will be able to understand how they work, and the way they help to solve the puzzle. In a third part, I will let you know the difficulties I encountered and how I addressed them. Finally, the last section will be dedicated to the analysis of the different solving methods.

# Realisation

## Description of the project

My solution is a Java project composed of 3 packages: grids, heuristics and utilities.

The first package, “grids” contains all the algorithms that I implement. There are 3 algorithms: Depth-First Search, Best-First Search and A star. However, because the computing time of the Depth-First Search was way too long, I also added an option allowing to set a cut-off and to execute the Depth-Limited Search. In that way, the DFS algorithm was able to solve more grids.

The second package, “heuristics” stores the different heuristics I used. You will be able to find 5 heuristics here.

## About creativity

# Heuristics

# Difficulties

# Analysis

## Heuristics analysis

## Algorithms analysis

## So, what is the best option ?