Artificial Intelligence: Assignment 2

Due date: September 19 (Thursday)

Problem 1 (4 points)
Read Chapter 3 of the textbook and identify two important concepts that have not been presented in class. Give a brief description of these concepts and discuss their significance.

Problem 2 (6 points)
Suppose that the cost of a move in the 8-puzzle is equal to the number of the moved tile. That is, the cost of moving tile 1 is $1, the cost of moving tile 2 is $2, and so on. Implement a program that finds a *cheapest* solution; it should read a start state from a file, and print out a cheapest sequence of moves that leads to the goal state given in Figure 3.4 of the textbook. You may assume that the puzzle always has a solution; that is, the program does not have to deal with unsolvable states. The format for encoding start states is as follows:

```
<tile> <tile> <tile>
<tile> <tile> <tile>
<tile> <tile> <tile>
```

Each `<tile>` is a digit from 0 to 8, where 0 marks the blank space, and the other digits are real tiles. For example, the following file encodes the start state from Figure 3.4:

```
5 4 0
6 1 8
7 3 2
```