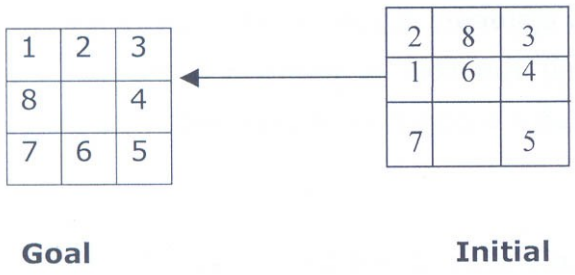
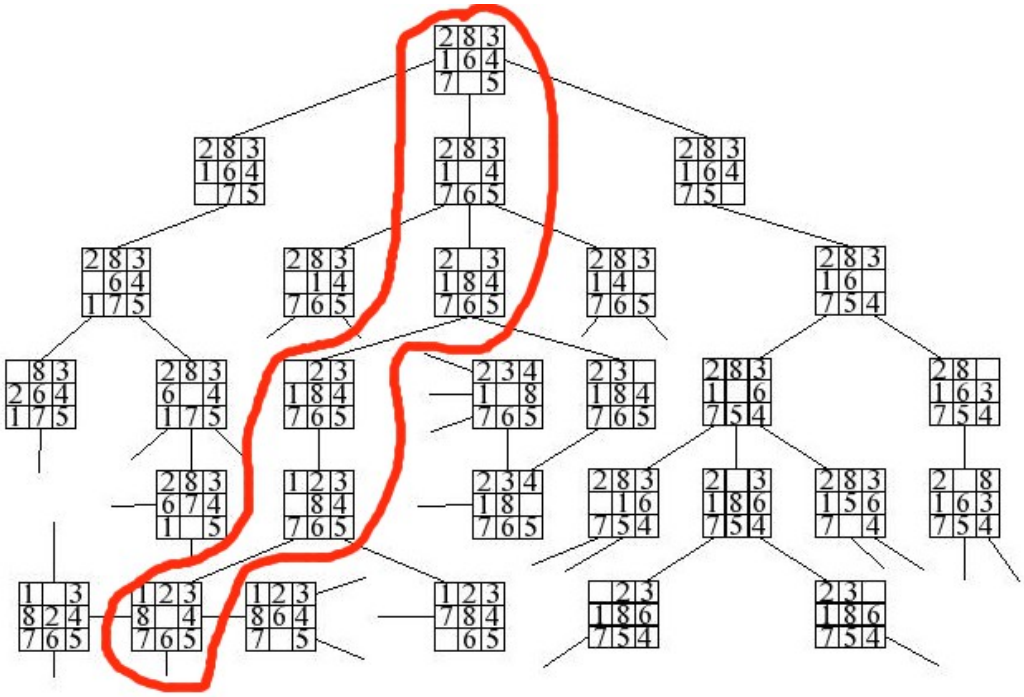
GIT Department of Computer Engineering
CSE 222/505
Spring 2014
Homework 08

Graphs and Search
Due date: May 30th 2014 23:59

In this homework, you will use the graph traversal algortihms to solve the 8 Puzzle problem, which can be described by 8 pieces of square tiles that can slide on a board. Your are supposed to move the tiles one by one to reach the sorted tile state. For example, if you start from the start node below, you are supposed to reach the goal as shown.



You can represent each board state as a graph node. Each graph node can have between 4 and 2 adjacent nodes. After you construct your graph (you will have 9! nodes), you can start your graph traversal from any node and reach the goal node. The partial graph below shows a sample solution that reaches the goal in 5 steps.



For the above example, your program should work as follows.

```
Please enter the initial node in row-wise (use - for space)
2831647-5
Please enter the search type (1 for BFS, 2 for DFS)
1
Your solution takes 5 steps
```

```
283
164
7 5

Step 1
283
1 4
765

Step 2
2 3
184
765

Step 3
 23
184
765

Step 4
123
 84
765

Step 5
123
8 4
765
```

In your implementation, you should use only the BFS and DFS classes of the textbook. Do not use any other code from any other source.

Bonus 50 pts: Use graphical user interface to animate the 8 puzzle board for the moves.

Notes.

- Do not forget to include your project files in your submission.
- Do not modify the classes from the textbook.
- Provide at least 3 different runs for each graph traversal algorithm.
- For some start nodes there may not a any solution! Be careful on this.