Artificial Intelligence (CS60045)

Assignment 2 (Programming assignment)

Name: **Roll Number:**

Read the following problem and implement it using any language of your choice (C, C++ , Java or Python). Submit a Report on this problem along with your codes. Also show the input and intermediate stages for a few instances.

Your Report should contain the heuristic used for the search, the number of nodes expanded and the time taken by the different algorithms.

This assignment should be submitted by ***15th August, 2016.***

Q1:

Implement **A*** and **IDA*** search to solve the 8-puzzle problem. Implement the following heuristics:

a. $h_a(n)=0$; i.e. leading to breadth-first search
b. $h_b(n)$=the number of misplaced tiles (excluding the blank tile)
c. $h_c(n)$= the sum of the distances of the tiles from their goal positions (excluding the blank tile)

Generate a set of 100 random initial boards and test A* and IDA*, running all the heuristics on each of the 100 problems. Compare the number of nodes expanded and the running time of A* and IDA* for each of the problems.