## Assignment 1

## Assignment Group B

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**Compare result of DFS and result of BFS:**
**BFS explored more nodes and needed more running time.**
Elapsed time (s):  0.0015206060000000007
Solution found at depth:  11
Number of nodes explored:  27
Cost of solution:  11
Estimated effective branching factor:  1.2435752279123709

Elapsed time (s):  0.001653346
Solution found at depth:  11
Number of nodes explored:  31
Cost of solution:  11
Estimated effective branching factor:  1.2435752279123709

**Remove the check for already visited states in DFS:**
The search keep running, can not find the solution( time out)

**BFS with and without already visited states check:**
**BFS without already visited states check explored more nodes and needed more time.**
Elapsed time (s):  0.002053353000000001
Solution found at depth:  11
Number of nodes explored:  31
Cost of solution:  11
Estimated effective branching factor:  1.2435752279123709

Elapsed time (s):  1.197917355
Solution found at depth:  11
Number of nodes explored:  24279
Cost of solution:  11
Estimated effective branching factor:  1.2435752279123709

**IDS algorithm:**
Elapsed time (s):  0.014887645000000005
Solution found at depth:  11
Number of nodes explored:  213
Cost of solution:  11

Estimated effective branching factor:  1.2435752279123709

**Greedy search with h1 and h2:**
**Greedy search with h1 explored more nodes and needed more time.**
Elapsed time (s):  0.057398369000000005
Solution found at depth:  38
Number of nodes explored:  644
Cost of solution:  38
Estimated effective branching factor:  1.1004574440337318

Elapsed time (s):  0.027018926
Solution found at depth:  36
Number of nodes explored:  202
Cost of solution:  36
Estimated effective branching factor:  1.1046650785974952

**A\* search with h1 and h2:**
**A\* search with h1 explored more nodes and needed more time.**
Elapsed time (s):  455.809961823
Solution found at depth:  26
Number of nodes explored:  93566
Cost of solution:  26
Estimated effective branching factor:  1.1335013764587079

Elapsed time (s):  3.6286170209999997
Solution found at depth:  26
Number of nodes explored:  8595
Cost of solution:  26
Estimated effective branching factor:  1.1335013764587079

**Eight puzzle With BFS, DFS and IDS:**
All time out