



# **NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY**

School of Mechanical and Manufacturing Engineering

**Artificial Intelligence (CSE-860)**

**ASSIGNMENT# 02**

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**PROGRAMME** PhD-RIME

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## Task 1 Output: Misplaced Tiles (H1) Greedy Best First Search

```
Misplaced Tiles (H1) Greedy Best First Search.cpp
Misplaced Tiles (H1) Greedy Best First Search.cpp > main()
150
151     cout << "Goal state not reachable!" << endl;
152 }
153
154 int main()
155 {
156     //// Example initial and goal states for the 8-puzzle
157     cout << "Enter 9 integer from 0-to-9 like 807612354\n";
158     int a[9];
159     for (int i = 0; i < 9; i++)
160     {
161         cout << "enter an integer and then press Enter: ";
162         cin >> a[i];
163     }
164 }
```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS

```
Enter 9 integer from 0-to-9 like 9807612354
enter an integer and then press Enter: 8
enter an integer and then press Enter: 7
enter an integer and then press Enter: 6
enter an integer and then press Enter: 5
enter an integer and then press Enter: 4
enter an integer and then press Enter: 3
enter an integer and then press Enter: 2
enter an integer and then press Enter: 1
enter an integer and then press Enter: 0
Goal state reached!
[1] + Done
"/usr/bin/gdb" --interpreter=mi --tty=${DbgTerm} 0<"/tmp/Microsoft-
MIEngine-In-c4ileflq.pli" 1>"/tmp/Microsoft-MIEngine-Out-veoi5dfr.qm0"
(base) muhammad@muhammad-aspire-es1-572:~/1Renamed AI assignment/1Misplaced Tiles (H1) using Greedy
Best First Search$
```

Ln 157, Col 47 Spaces: 4 UTF-8 LF {} C++ Go Live Linux

## Task 2 Output: Manhattan distance (H2) Greedy Best First Search

```
manhattan distance (h2) Using Greedy Best Frist Search.cpp x
manhattan distance (h2) Using Greedy Best Frist Search.cpp > main()
131     }
132
133     // looking through neighbor states
134     exploreNeighbors(current, goal, pq, visited);
135 }
136
137 cout << "Goal state not reachable!" << endl;
138 }
139
140
141
142 int main() {
143     //// Example initial and goal states for the 8-puzzle
144
145     // ... (rest of the code) ...
146 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Enter 9 integer from 0-to-9 like 807612354
enter an integer and then press Enter: 8
enter an integer and then press Enter: 7
enter an integer and then press Enter: 6
enter an integer and then press Enter: 5
enter an integer and then press Enter: 4
enter an integer and then press Enter: 3
enter an integer and then press Enter: 2
enter an integer and then press Enter: 1
enter an integer and then press Enter: 0
Goal state reached!
[1] + Done
"/usr/bin/gdb" --interpreter=mi --tty=${DbgTerm} 0<"/tmp/Microsoft-
MIEngine-In-zq3bvuxw.ue4" 1>"/tmp/Microsoft-MIEngine-Out-2guiqyuc.spw"
(base) muhammad@muhammad-aspire-es1-572:~/1Renamed AI assignment/2Manhattan distance (h2) Using Gree
dy Best Frist Search$
```

Ln 144, Col 57 Spaces: 4 UTF-8 LF {} C++ Go Live Linux

## Task 3 Output: Manhattan distance (H2) A\* Search Algorithm

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
+ ~ ... v x
C/C++: ... ✓
cppdbg: M...

8-Puzzle Game
Enter 9 number like 806547231
806547231

806      860      867      867      807
547 ==> 547 ==> 540 ==> 504 ==> 564 ==>
231      231      231      231      231

087      587      587      587      587
564 ==> 064 ==> 264 ==> 264 ==> 204 ==>
231      231      031      301      361

587      580      508      058      258
240 ==> 247 ==> 247 ==> 247 ==> 047 ==>
361      361      361      361      361

258      258      258      258      250
347 ==> 347 ==> 347 ==> 340 ==> 348 ==>
061      601      610      617      617

205      025      325      325      325
348 ==> 348 ==> 048 ==> 408 ==> 418 ==>
617      617      617      617      607

325      325      320      302      312
418 ==> 410 ==> 415 ==> 415 ==> 405 ==>
670      678      678      678      678

312      012
045 ==> 345
678      678

[1] + Done      "/usr/bin/gdb" --interpreter=mi --tty=${DbgTerm} 0<"/tmp/Microsoft-
MIEngine-In-qwfgrxs1.xjn" 1>"/tmp/Microsoft-MIEngine-Out-o3oexb4o.b3h"
(base) muhammad@muhammad-aspire-es1-572:~/1Renamed AI assignment/3Manhattan distance (h2) using 8-Pu
zzle Game Using A-Star$
```

Ln 1, Col 3 (56 selected) Spaces: 4 UTF-8 LF {} C++ Go Live Linux

## Task 4 Output: Misplaced Tiles (H1) A\* Search Algorithm

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

8-Puzzle Game
Enter 9 number like 806547231
806547231

806    086    586    586    586
547 ==> 547 ==> 047 ==> 247 ==> 247 ==>
231    231    231    031    301

586    586    580    508    058
247 ==> 240 ==> 246 ==> 246 ==> 246 ==>
310    317    317    317    317

258    258    258    250    205
046 ==> 406 ==> 460 ==> 468 ==> 468 ==>
317    317    317    317    317

025    425    425    425    425
468 ==> 068 ==> 608 ==> 618 ==> 618 ==>
317    317    317    307    037

425    425    425    425    425
018 ==> 108 ==> 138 ==> 138 ==> 130 ==>
637    637    607    670    678

420    402    042    142    142
135 ==> 135 ==> 135 ==> 035 ==> 305 ==>
678    678    678    678    678

102    012
345 ==> 345
678    678

[1] + Done          "/usr/bin/gdb" --interpreter=mi --tty=${DbgTerm} 0<"/tmp/Microsoft-
MIEngine-In-w2evqx4x.deb" 1>"/tmp/Microsoft-MIEngine-Out-ymwzj35c.1lo"
(base) muhammad@muhammad-aspire-es1-572:~/1Renamed AI assignment/4Misplaced tiles (h1) using 8-Puzzl
e Game Using A-Star$
```