Test Cases for Misplaced Tiles

Case 1:

```
Enter the Start/Initial State for example [1 2 3 4 5 6 7 8 0] :~
1 2 3 7 4 5 6 8 0
Enter the Goal/End State for example [1 2 3 4 5 6 7 8 0] :~
1 2 3 8 6 4 7 5 0
1. Misplaced tiles
2. Manhattan distance
1
   1 2 3
   7 4 5
   6 8 0

   1 2 3
   7 4 0
   6 8 5

   1 2 3
   7 0 4
   6 8 5

   1 2 3
   7 8 4
   6 0 5

   1 2 3
   7 8 4
   0 6 5

   1 2 3
   0 8 4
   7 6 5

   1 2 3
   8 0 4
   7 6 5

   1 2 3
   8 6 4
   7 0 5

   1 2 3
   8 6 4
   7 5 0
Steps taken to reach goal: 8
Nodes visited:  23
Nodes generated: 44
```

Case 2:

```
Enter the Start/Initial State for example [1 2 3 4 5 6 7 8 0] :~
2 8 1 3 4 6 7 5 0
Enter the Goal/End State for example [1 2 3 4 5 6 7 8 0] :~
3 2 1 8 0 4 7 5 6
```

```
1. Misplaced tiles
2. Manhattan distance
1
   2 8 1
   3 4 6
   7 5 0

   2 8 1
   3 4 0
   7 5 6

   2 8 1
   3 0 4
   7 5 6

   2 0 1
   3 8 4
   7 5 6

   0 2 1
   3 8 4
   7 5 6

   3 2 1
   0 8 4
   7 5 6

   3 2 1
   8 0 4
   7 5 6
Steps taken to reach goal: 6
Nodes visited:  7
Nodes generated: 15
```

Case 3:

```
Enter the Start/Initial State for example [1 2 3 4 5 6 7 8 0] :~
7 2 4 5 0 6 8 3 1
Enter the Goal/End State for example [1 2 3 4 5 6 7 8 0] :~
1 2 3 4 5 6 7 8 0
1. Misplaced tiles
2. Manhattan distance
1
   7 2 4
   5 0 6
   8 3 1

   7 2 4
   5 3 6
   8 0 1

   7 2 4
   5 3 6
   8 1 0

   7 2 4
```

```
5 3 0
8 1 6

7 2 4
5 0 3
8 1 6

7 2 4
0 5 3
8 1 6

0 2 4
7 5 3
8 1 6

2 0 4
7 5 3
8 1 6

2 4 0
7 5 3
8 1 6

2 4 3
7 5 0
8 1 6

2 4 3
7 0 5
8 1 6

2 4 3
7 1 5
8 0 6

2 4 3
7 1 5
0 8 6

2 4 3
0 1 5
7 8 6

2 4 3
1 0 5
7 8 6

2 0 3
1 4 5
7 8 6

0 2 3
1 4 5
7 8 6

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

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

   1 2 3
   4 5 0
   7 8 6

   1 2 3
   4 5 6
   7 8 0
Steps taken to reach goal: 20
Nodes visited:  3812
Nodes generated: 5886
```

Case 4:

```
Enter the Start/Initial State for example [1 2 3 4 5 6 7 8 0] :~
3 5 1 4 2 6 7 8 0
Enter the Goal/End State for example [1 2 3 4 5 6 7 8 0] :~
1 3 5 4 2 6 7 8 0
1. Misplaced tiles
2. Manhattan distance
1
   3 5 1
   4 2 6
   7 8 0

   3 5 1
   4 2 0
   7 8 6

   3 5 0
   4 2 1
   7 8 6

   3 0 5
   4 2 1
   7 8 6

   3 2 5
   4 0 1
   7 8 6

   3 2 5
   4 1 0
   7 8 6

   3 2 5
   4 1 6
   7 8 0

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

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

   3 2 5
   0 1 6
   4 7 8

   3 2 5
   1 0 6
   4 7 8

   3 0 5
   1 2 6
   4 7 8

   0 3 5
   1 2 6
   4 7 8

   1 3 5
   0 2 6
   4 7 8

   1 3 5
   4 2 6
   0 7 8

   1 3 5
   4 2 6
   7 0 8

   1 3 5
   4 2 6
   7 8 0
Steps taken to reach goal: 16
Nodes visited:  645
Nodes generated: 1035
```

Case 5:

```
Enter the Start/Initial State for example [1 2 3 4 5 6 7 8 0] :~
1 2 3 7 4 5 6 8 0
Enter the Goal/End State for example [1 2 3 4 5 6 7 8 0] :~
1 2 3 8 6 4 7 5 0
1. Misplaced tiles
2. Manhattan distance
1
   1 2 3
   7 4 5
   6 8 0

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

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

   1 2 3
   7 8 4
   6 0 5

   1 2 3
   7 8 4
   0 6 5

   1 2 3
   0 8 4
   7 6 5

   1 2 3
   8 0 4
   7 6 5

   1 2 3
   8 6 4
   7 0 5

   1 2 3
   8 6 4
   7 5 0
Steps taken to reach goal: 8
Nodes visited:  23
Nodes generated: 44
```

Case 6:

```
Enter the Start/Initial State for example [1 2 3 4 5 6 7 8 0] :~
1 3 2 4 5 6 0 8 7
Enter the Goal/End State for example [1 2 3 4 5 6 7 8 0] :~
1 2 3 4 5 6 7 8 0
1. Misplaced tiles
2. Manhattan distance
1
   1 3 2
   4 5 6
   0 8 7

   1 3 2
   0 5 6
   4 8 7

   0 3 2
   1 5 6
   4 8 7

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

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

3 5 2
1 8 6
4 0 7

3 5 2
1 8 6
4 7 0

3 5 2
1 8 0
4 7 6

3 5 0
1 8 2
4 7 6

3 0 5
1 8 2
4 7 6

0 3 5
1 8 2
4 7 6

1 3 5
0 8 2
4 7 6

1 3 5
4 8 2
0 7 6

1 3 5
4 8 2
7 0 6

1 3 5
4 0 2
7 8 6

1 3 5
4 2 0
7 8 6

1 3 0
4 2 5
7 8 6

1 0 3
4 2 5
7 8 6

1 2 3
```

```
   4 0 5
   7 8 6

   1 2 3
   4 5 0
   7 8 6

   1 2 3
   4 5 6
   7 8 0
Steps taken to reach goal: 20
Nodes visited:  3945
Nodes generated: 6151
```