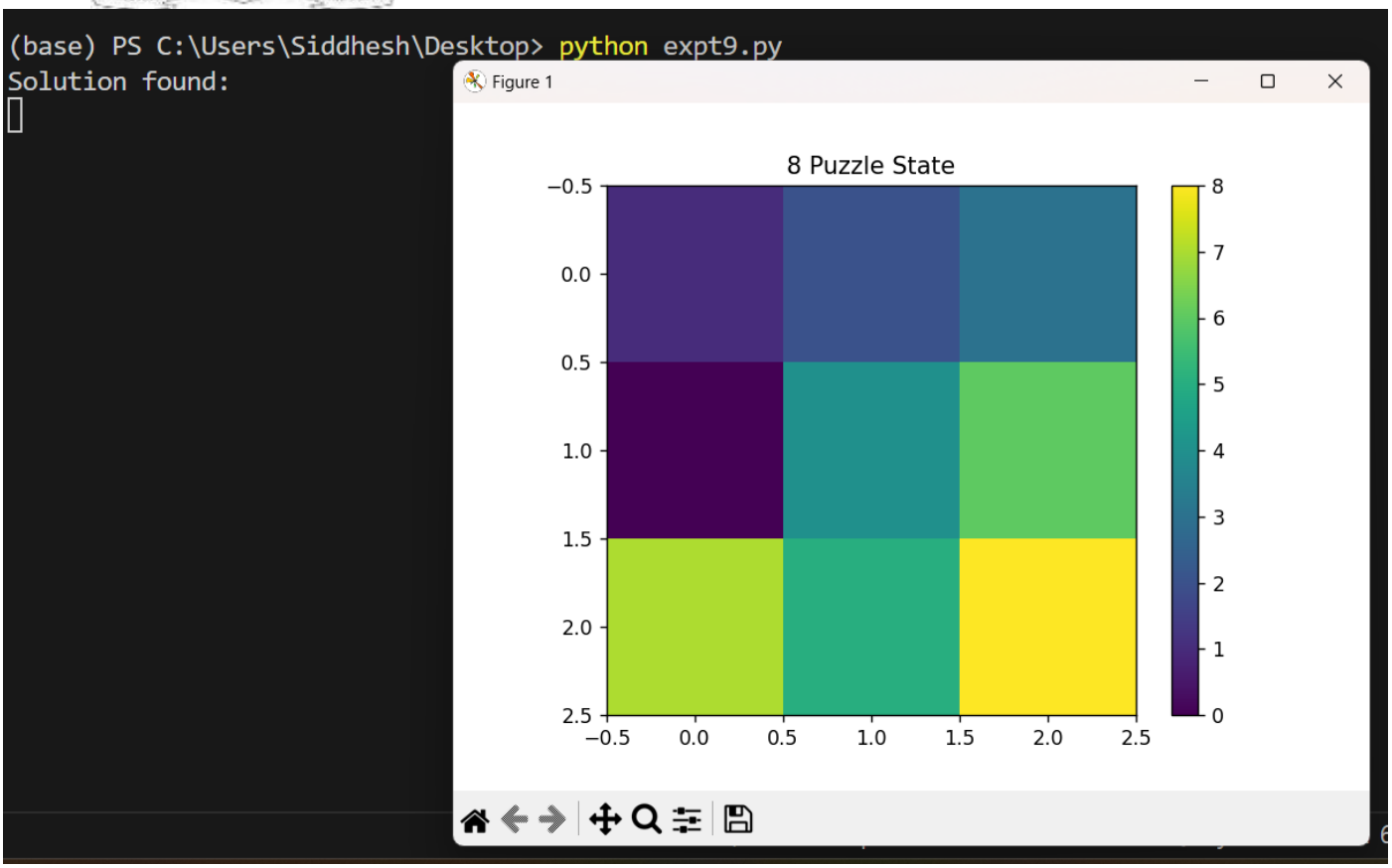
OUTPUT:



Post Lab Assignment:

1. Explain the Time Complexity of the A* Algorithm.
2. What are the limitations of A* Algorithm?
3. Discuss A*, BFS, DFS and Dijkstra's algorithm in detail with examples.

9632

AI Expt 9 Pathb

1. Explain the Time Complexity of the A* algorithm.

Ans:- Time Complexity of A* Algorithm

- A* algorithm time complexity depends on the heuristics quality problem space size.
- Generally expressed as $O(b^d)$, where b is the branching factor and d is the depth of the solution.
- Efficiency improves with a good heuristic function.

2. What are the limitations of A* algorithm?

Ans:- Limitations of A* Algorithm

- Can be inefficient or incorrect with a poor heuristic
- Faces challenges with large or dynamic search spaces
- Memory-intensive for large space due to storing explored states.

3. Discuss A*, BFS, DFS and Dijkstra's algorithm in detail with example

Ans: A*: Combines best features of greedy search and Dijkstras algorithm Depends on heuristic quality.

BFS: Guarantees shortest path in unweighted graphs. Memory intensive but suitable for small spaces

DFS: Does not guarantee shortest path Memory-efficient but may get stuck in infinite loops

Dijkstra's: Finds shortest path in weighted graphs suitable for non-negative edge weights