**NAME:HAIDER IQBAL**

**REGNO:SP23-BCS-082**

1. Compare the solution paths found by BFS, DFS, and A\*.
2. Which algorithm gives the shortest path? Why?
3. Which algorithm is more efficient in terms of time and memory?
4. **Compare the solution paths found by BFS, DFS, and A\*.**
   * BFS and A\* found the **shortest path (3 steps)**.
   * DFS found a **longer path (7 steps)** due to its depth-first nature.
5. **Which algorithm gives the shortest path? Why?**
   * **BFS and A**\* both guarantee the shortest path:
     + BFS → because it explores in layers (smallest depth first).
     + A\* → because it uses a heuristic to guide the search but still ensures optimality.
6. **Which algorithm is more efficient in terms of time and memory?**
   * **DFS** is most memory efficient but not reliable (doesn’t guarantee shortest path).
   * **BFS** uses a lot of memory and time on large problems.
   * **A**\* is the **best balance**: efficient and finds the shortest path quickly, especially if the heuristic is good.