**Subject: Artificial Intelligence (DJ19DSC502)**

**AY: 2023-24**

**Experiment 3**

**(Heuristic Search)**

**Aim:** Comparative analysis of Heuristic based methods.

**Theory:**

**Diagram

Description automatically generatedDiagram

Description automatically generated**

**Algorithm for Best First Search**

Best-First-Search(S)

1 OPEN ← (S, null, h(S)) []

2 CLOSED ← empty list

3 while OPEN is not empty

4 nodePair ← head OPEN

5 (N, , ) ← nodePair

6 if GoalTest(N) = true

7 return ReconstructPath(nodePair, CLOSED)

8 else CLOSED ← nodePair CLOSED

9 neighbours ← MoveGen(N)

10 newNodes ← RemoveSeen(neighbours, OPEN, CLOSED)

11 newPairs ← MakePairs(newNodes, N)

12 OPEN ← sorth( newPairs ++ tail OPEN )

13 return empty list

**Algorithm Hill climbing**

Hill-Climbing(S)

1 N ← S

2 do bestEver ← N

3 N ← head sorth MoveGen(bestEver)

4 while h(N) is better than h(bestEver)

5 return bestEver

**Lab Assignment to do:**

1. Design any two different heuristics for a given blocks world problem and show that one is better than another using Hill Climbing and Best First Search.

