FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE
Lab Exercise – 4

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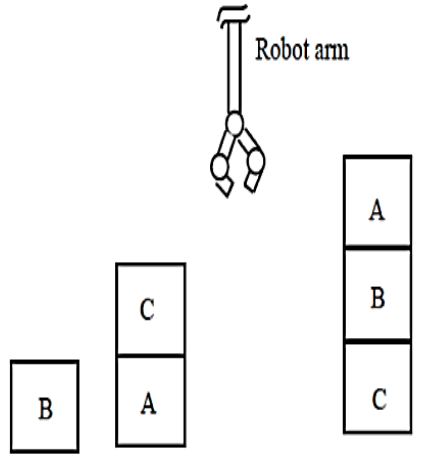
CDAC – NOIDA
PGDAI

Q1. Given the blocks world indicated in Fig. Solve using Global heuristic function



Assume that following rules for moves will be followed by the robot arm for carrying out this job:

- stack(x, y): stack block x on block y,
- lift(x): lift-up the block x,
- putg(x): put block x on ground,
- unstack(x, y): unstack block x from block y.

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- **Unstack(C, A)** → Lift **C** from **A**
- **Putg(C)** → Place **C** on the ground
- **Lift(A)** → Pick up **A**
- **Putg(A)** → Place **A** on the ground
- **Lift(B)** → Pick up **B**
- **Stack(B, C)** → Place **B** on top of **C**
- **Lift(A)** → Pick up **A**
- **Stack(A, B)** → Place **A** on top of **B**

Q2.Solve using A* Algorithm ()

2	8	3
1	6	4
7		5

→

1	2	3
8		4
7	6	5

Initial State — Goal State

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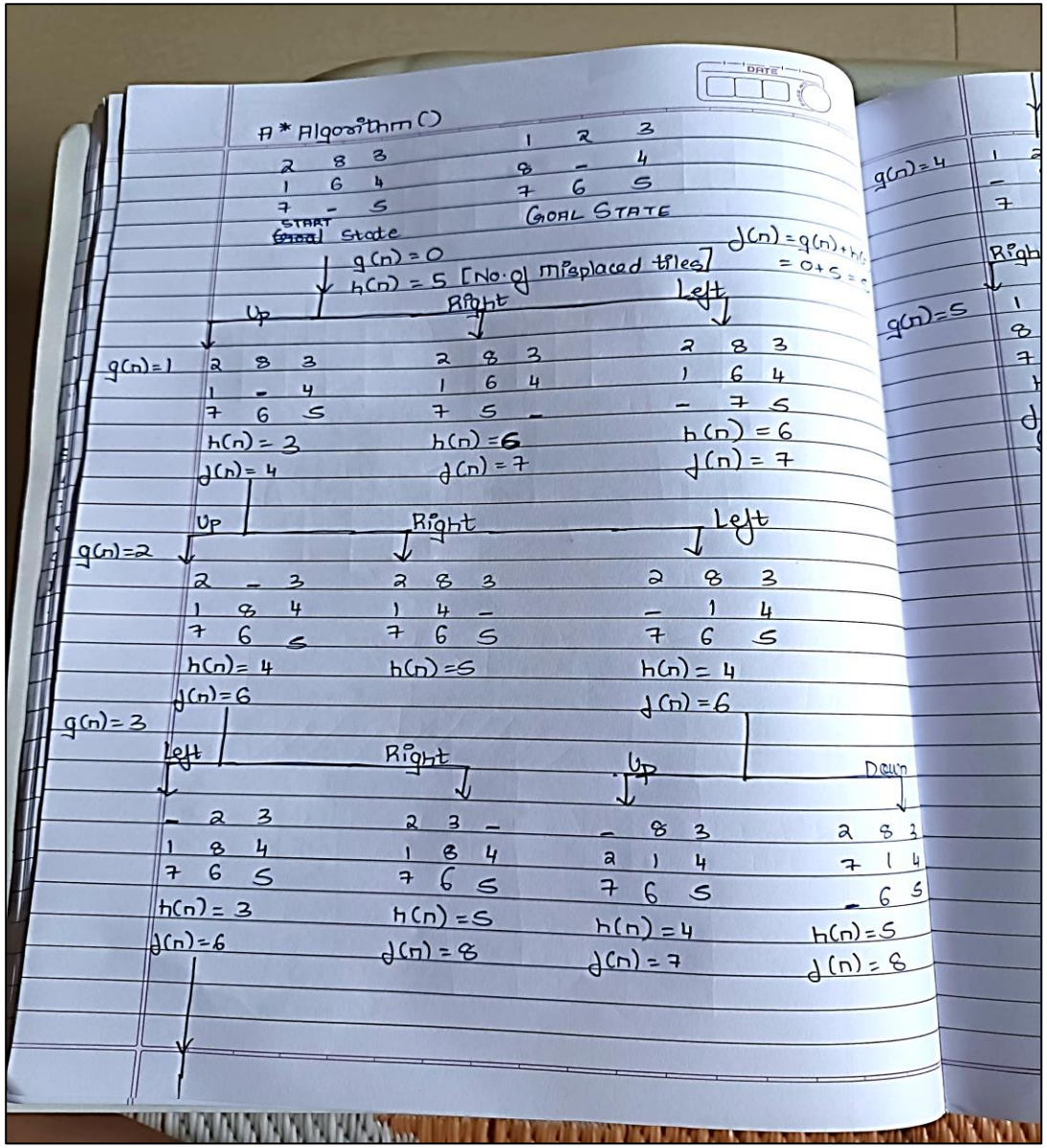
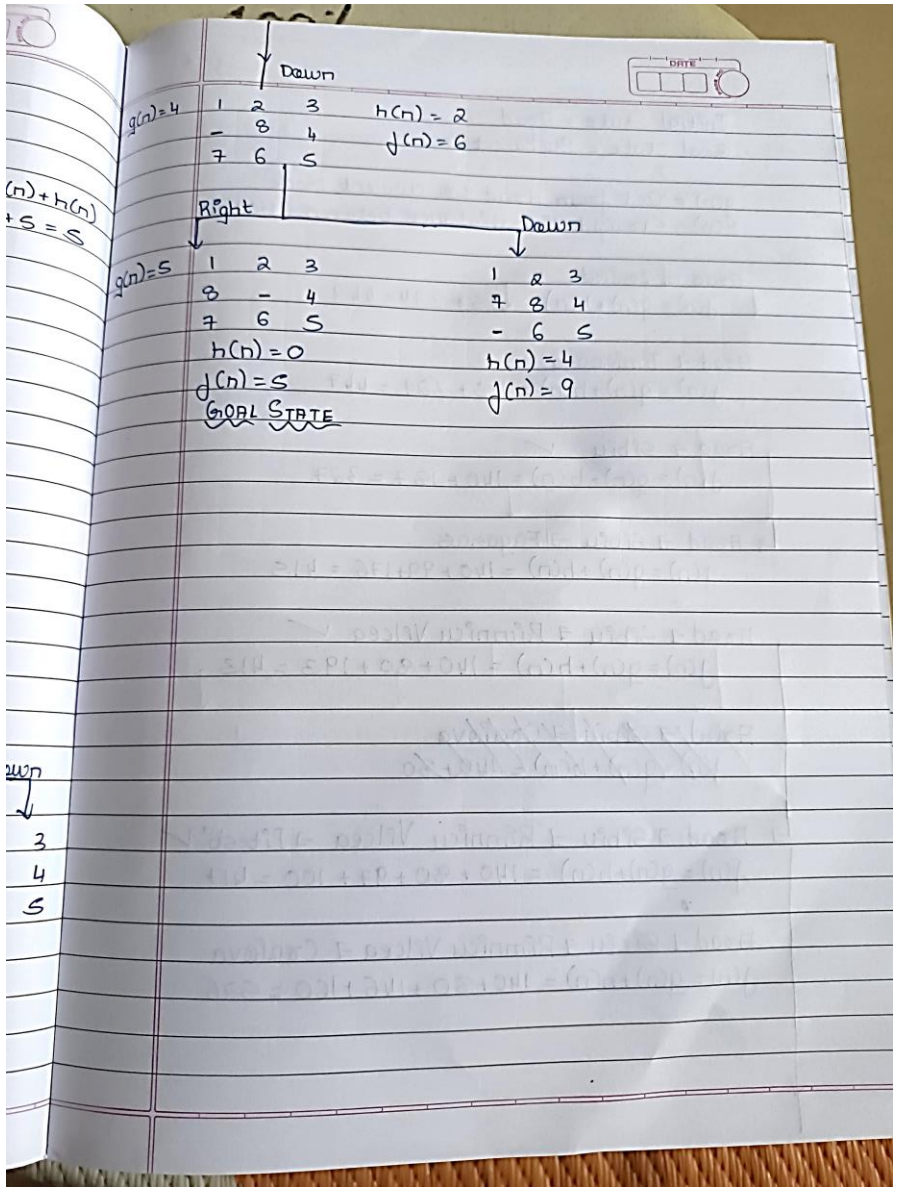
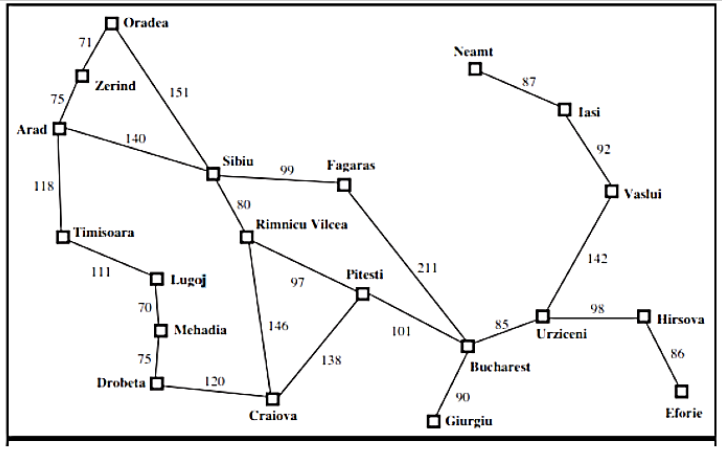




Q3. The map of Romania is given. Start node is Arad and Goal node is Bucharest. Find the optimal path using informed search algorithm.



City	Hueristic value	City	Heuristic value
Arad	366	Mehadia	241
Bucharest	0	Neamt	234
Craiova	160	Oradea	380
Eforie	161	Pitesti	100
Fagaras	176	Rimnicu Vilcea	193
Dobreta	242	Timisoara	329
Hirsova	151	Urziceni	80
Iasi	226	Vaslui	199
Lugoj	244	Zerind	374

Sibiu 187

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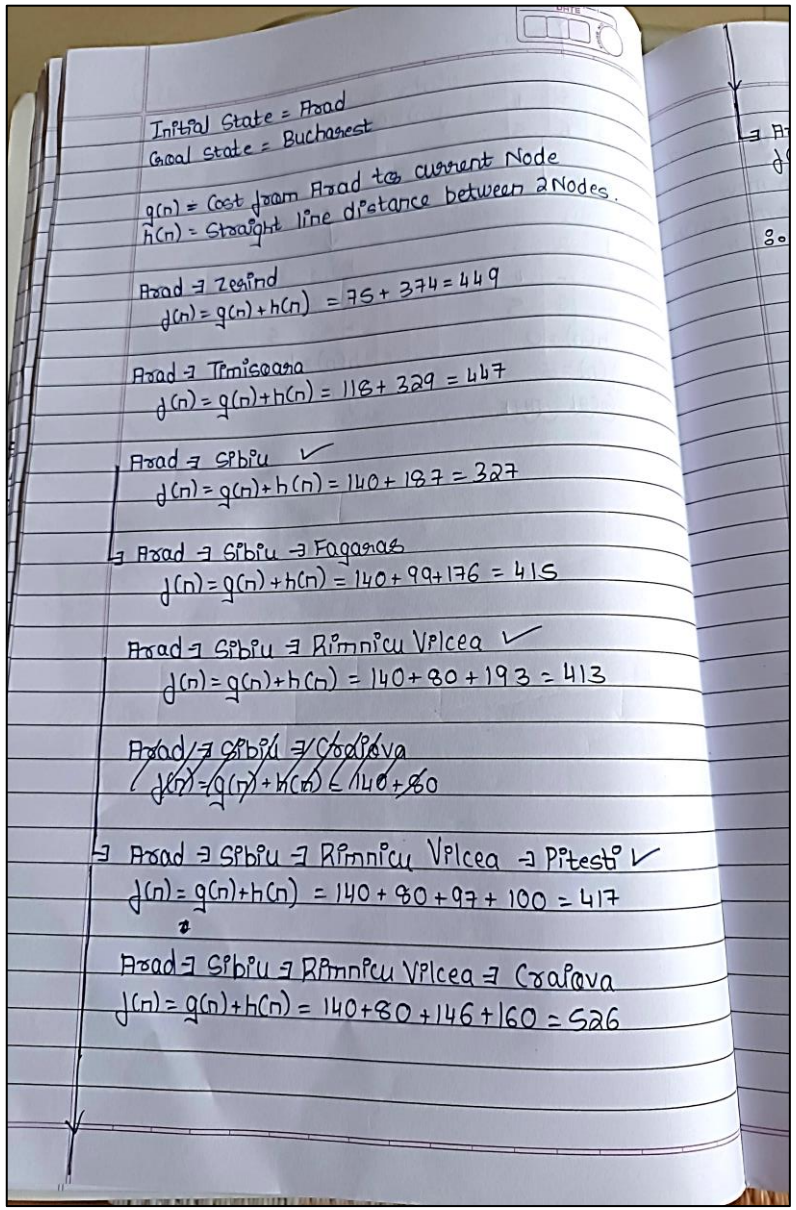

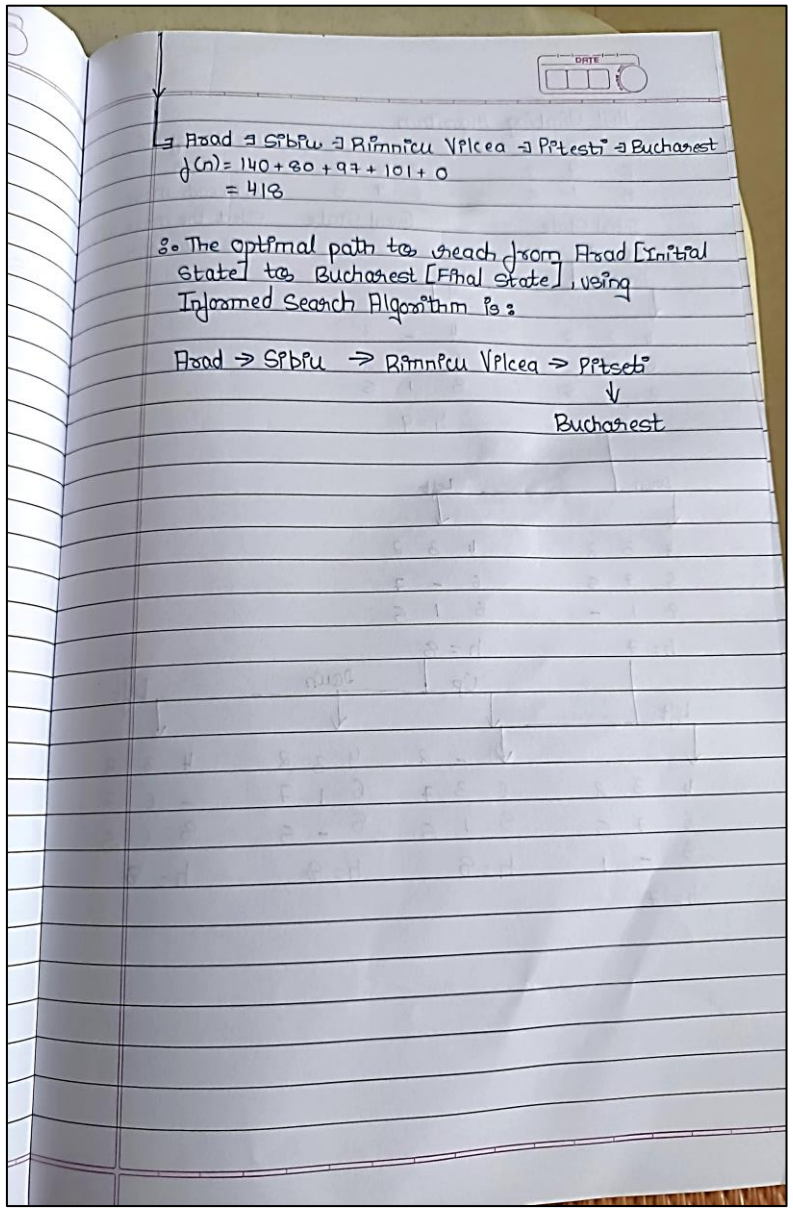

Q4. Solve using hill climbing Algorithm

4	3	
6	7	2
8	1	5

(Initial state)

	1	2
3	4	5
6	7	8

(Goal state)

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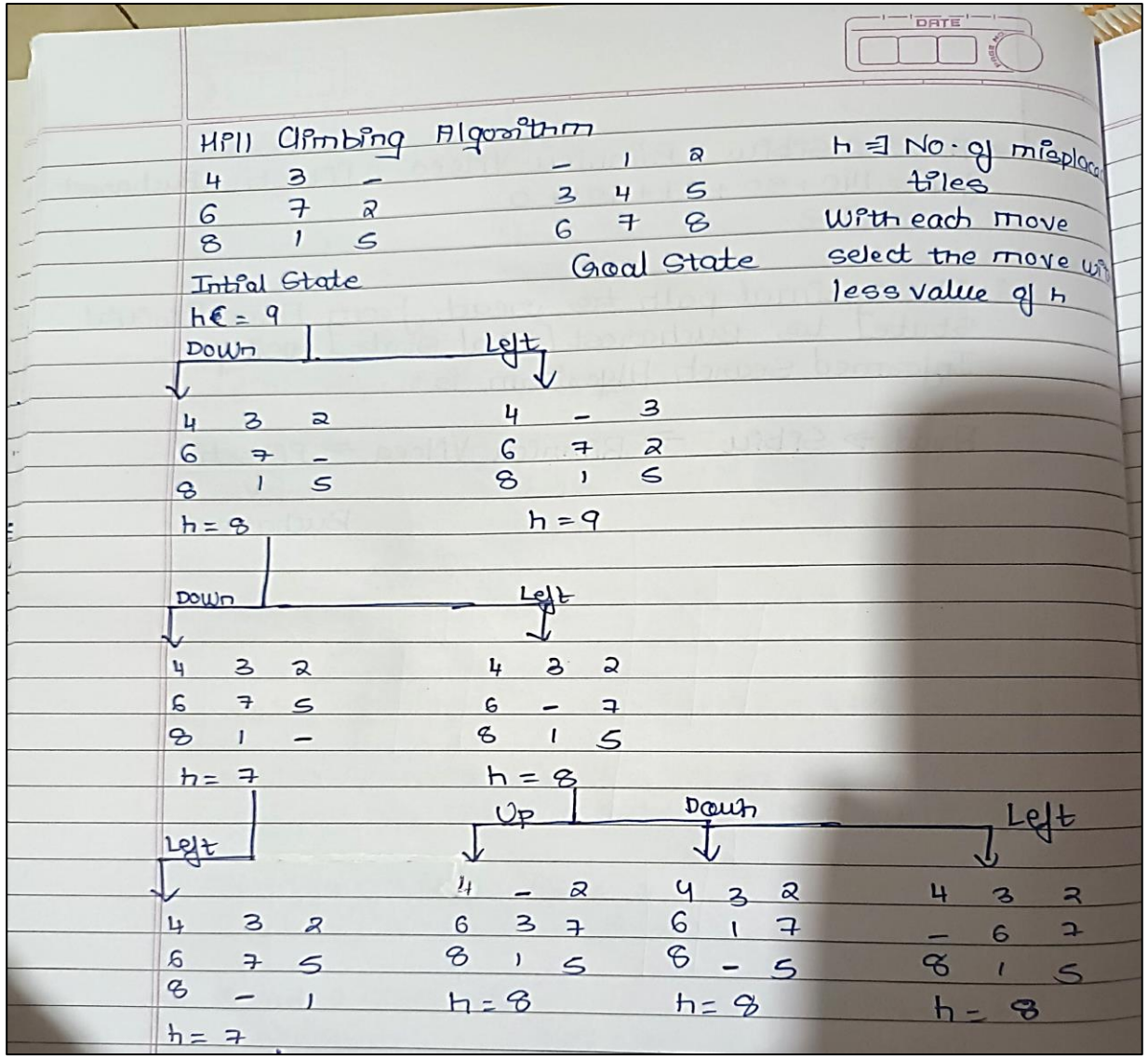

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