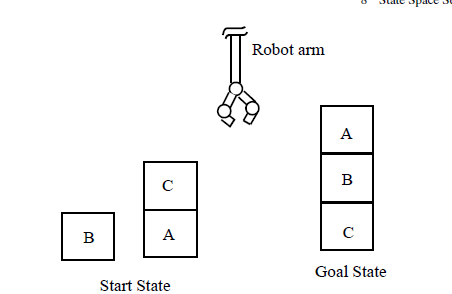
ASSIGNMENT NO 4

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.

Answer:

Initial state:

Block B on ground

Block C on top of block A

Block A on the ground

Goal state:

Block A on top of block B

Block B on top of block C

Block C on ground

Possible moves:

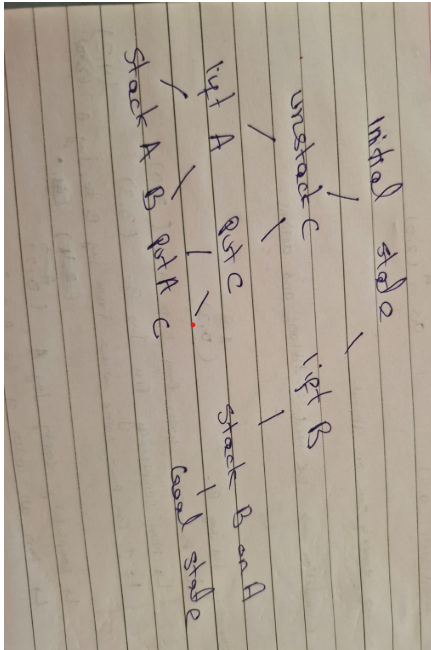
• stack(x, y): stack block x on block y,

• lift(x): lift-up the block x,

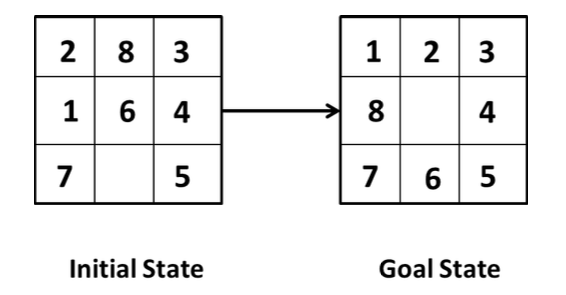
• putg(x): put block x on ground,

• unstack(x, y): unstack block x from block y.

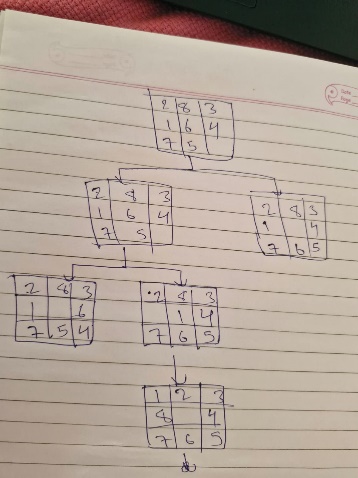
Global heuristic function



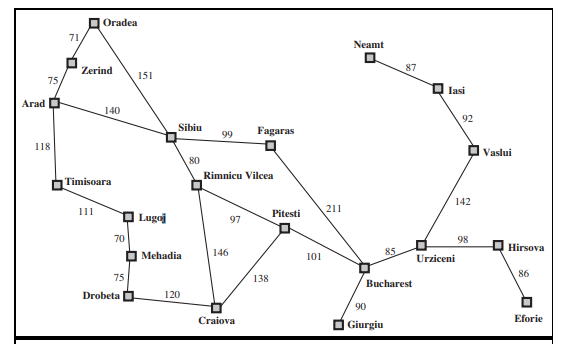
Q2.Solve using A\* Algorithm ()

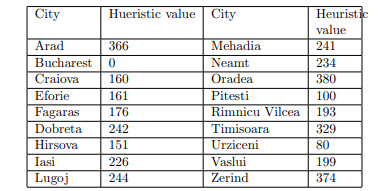


Answer:



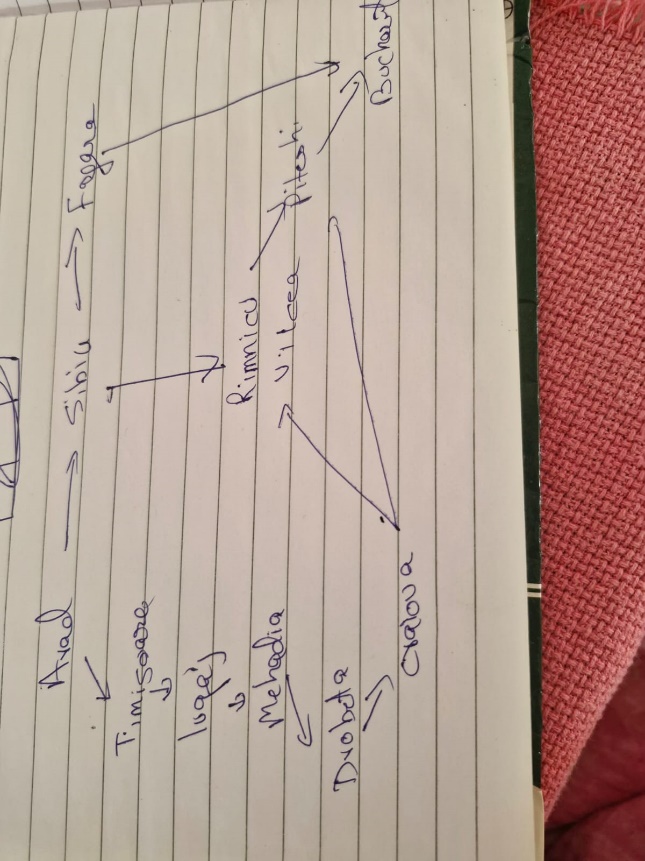
Q3. The map of Romania is given. Start node is Arad and Goal node is Bucharest. Find the optimal path using informed search algorithm.



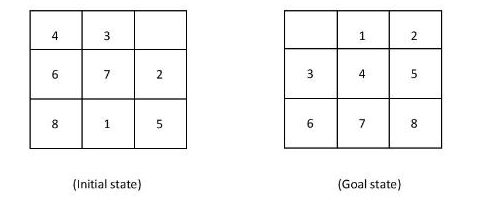


Sibiu 187

Answer:



Q4. Solve using hill climbing Algorithm

.

### ****Initial State****

4 3 \_

6 7 2

8 1 5

### ****Step 1****: Move ****3**** left

4 \_ 3

6 7 2

8 1 5

### ****Step 2****: Move ****4**** down

\_ 4 3

6 7 2

8 1 5

### ****Step 3****: Move ****6**** right

6 4 3

\_ 7 2

8 1 5

### ****Step 4****: Move ****7**** up

6 4 3

7 \_ 2

8 1 5

### ****Step 5****: Move ****2**** left

6 4 3

7 2 \_

8 1 5

### ****Step 6****: Move ****5**** up

6 4 3

7 2 5

8 1 \_

### ****Step 7****: Move ****1**** right

6 4 3

7 2 5

8 \_ 1

### ****Step 8****: Move ****8**** up

6 4 3

7 \_ 5

8 2 1

### ****Step 9****: Move ****7**** right

6 4 3

\_ 7 5

8 2 1

### ****Step 10****: Move ****6**** down

\_ 4 3

6 7 5

8 2 1

### ****Step 11****: Move ****4**** left

4 \_ 3

6 7 5

8 2 1

### ****Step 12****: Move ****3**** down

4 3 \_

6 7 5

8 2 1

### ****Step 13****: Move ****5**** left

4 3 5

6 7 \_

8 2 1

### ****Step 14****: Move ****1**** up

4 3 5

6 7 1

8 2 \_

### ****Step 15****: Move ****2**** right

4 3 5

6 7 1

8 \_ 2

### ****Step 16****: Move ****8**** up

4 3 5

6 \_ 1

8 7 2

### ****Step 17****: Move ****6**** right

4 3 5

\_ 6 1

8 7 2

### ****Step 18****: Move ****4**** down

\_ 3 5

4 6 1

8 7 2

### ****Step 19****: Move ****3**** left

3 \_ 5

4 6 1

8 7 2

### ****Step 20****: Move ****5**** up

3 5 \_

4 6 1

8 7 2

### ****Step 21****: Move ****1**** left

3 5 1

4 6 \_

8 7 2

### ****Step 22****: Move ****2**** up

3 5 1

4 6 2

8 7 \_

### ****Step 23****: Move ****7**** right

3 5 1

4 6 2

8 \_ 7

### ****Step 24****: Move ****8**** up

3 5 1

4 \_ 2

8 6 7

### ****Step 25****: Move ****4**** right

3 5 1

\_ 4 2

8 6 7

### ****Step 26****: Move ****3**** down

\_ 5 1

3 4 2

8 6 7

### ****Step 27****: Move ****5**** left

5 \_ 1

3 4 2

8 6 7

### ****Step 28****: Move ****1**** up

5 1 \_

3 4 2

8 6 7

### ****Step 29****: Move ****2**** left

5 1 2

3 4 \_

8 6 7

### ****Step 30****: Move ****7**** up

5 1 2

3 4 7

8 6 \_

### ****Step 31****: Move ****6**** right

5 1 2

3 4 7

8 \_ 6

### ****Step 32****: Move ****8**** up

5 1 2

3 4 7

\_ 8 6

### ****Step 33****: Move ****5**** down

\_ 1 2

5 4 7

3 8 6

### ****Step 34****: Move ****1**** left

1 \_ 2

5 4 7

3 8 6

### ****Step 35****: Move ****2**** left

CopyEdit

1 2 \_

5 4 7

3 8 6

### ****Step 36****: Move ****7**** up

1 2 7

5 4 \_

3 8 6

### ****Step 37****: Move ****6**** right

1 2 7

5 4 6

3 8 \_

### ****Step 38****: Move ****8**** up

1 2 7

5 4 6

\_ 8 3

### ****Step 39****: Move ****5**** down

1 2 7

\_ 4 6

5 8 3

### ****Step 40****: Move ****4**** left

1 2 7

4 \_ 6

5 8 3

### ****Step 41****: Move ****6**** up

1 2 7

4 6 \_

5 8 3

### ****Step 42****: Move ****3**** left

1 2 7

4 6 3

5 8 \_

### ****Step 43****: Move ****8**** up

1 2 7

4 6 3

5 \_ 8

### ****Step 44****: Move ****5**** right

1 2 7

4 6 3

\_ 5 8