**3\_Best\_First\_Search\_Trversal:**

ENTER SOURCE : Arad

ENTER GOAL : Bucharest

BFS PATH:

PATH COST = 450

Arad -> Sibiu -> Fagaras -> Bucharest

**4\_8-puzzle problem(A\* Algorithm)**

Enter the start state matrix

1 2 \_

3 4 5

6 7 8

Enter the goal state matrix

\_ 1 2

3 4 5

6 7 8

|

|

\'/

1 2 \_

3 4 5

6 7 8

|

|

\'/

1 \_ 2

3 4 5

6 7 8

|

|

\'/

\_ 1 2

3 4 5

6 7 8

**5.Implement cryptarithmetic(Branch,Bound amd backtracking)**

Enter number of queens :4

[['\_', '\_', '\_', '\_'], ['\_', '\_', '\_', '\_'], ['\_', '\_', '\_', '\_'], ['\_', '\_', '\_', '\_']]

Q \_ \_ \_

\_ \_ \_ \_

\_ \_ \_ \_

\_ \_ \_ \_

Q \_ \_ \_

\_ \_ \_ \_

\_ Q \_ \_

\_ \_ \_ \_

....BackTracking here...

Q \_ \_ \_

\_ \_ \_ \_

\_ \_ \_ \_

\_ Q \_ \_

Q \_ \_ \_

\_ \_ Q \_

\_ \_ \_ \_

\_ Q \_ \_

....BackTracking here...

....BackTracking here...

....BackTracking here...

\_ \_ \_ \_

Q \_ \_ \_

\_ \_ \_ \_

\_ \_ \_ \_

\_ \_ \_ \_

Q \_ \_ \_

\_ \_ \_ \_

\_ Q \_ \_

\_ \_ Q \_

Q \_ \_ \_

\_ \_ \_ \_

\_ Q \_ \_

\_ \_ Q \_

Q \_ \_ \_

\_ \_ \_ Q

\_ Q \_ \_

Final Solution

\_ \_ Q \_

Q \_ \_ \_

\_ \_ \_ Q

\_ Q \_ \_

**6\_Goal\_Stack\_Planning**

Enter start state:- on B A^on\_table A^clear B^arm\_empty

Enter goal state:- on A B^on\_table B^clear A^arm\_empty

**7\_N\_Queen\_Hill\_Climbing**

Enter value of N in N-Queens Problem 4

i index= 0

j index= 3

['-', '-', '-', 'Q']

['-', '-', '-', '-']

['-', '-', '-', '-']

['-', '-', '-', '-']

Heuristic value is: 3

i index= 1

j index= 0

['-', '-', '-', 'Q']

['Q', '-', '-', '-']

['-', '-', '-', '-']

['-', '-', '-', '-']

Heuristic value is: 2

i index= 2

j index= 2

['-', '-', '-', 'Q']

['Q', '-', '-', '-']

['-', '-', 'Q', '-']

['-', '-', '-', '-']

Heuristic value is: 1

['-', '-', '-', 'Q']

['Q', '-', '-', '-']

['-', '-', 'Q', '-']

['-', '-', '-', '-']

Heuristic value is: 1

i index= 0

j index= 2

['-', '-', 'Q', '-']

['-', '-', '-', '-']

['-', '-', '-', '-']

['-', '-', '-', '-']

Heuristic value is: 3

i index= 1

j index= 0

['-', '-', 'Q', '-']

['Q', '-', '-', '-']

['-', '-', '-', '-']

['-', '-', '-', '-']

Heuristic value is: 2

i index= 2

j index= 3

['-', '-', 'Q', '-']

['Q', '-', '-', '-']

['-', '-', '-', 'Q']

['-', '-', '-', '-']

Heuristic value is: 1

i index= 3

j index= 1

['-', '-', 'Q', '-']

['Q', '-', '-', '-']

['-', '-', '-', 'Q']

['-', 'Q', '-', '-']

Heuristic value is: 0

Heuristic value is: 0

Following is the Global maxima solution for 4 Queen Problem with heuristic distance from goal state = 0

['-', '-', 'Q', '-']

['Q', '-', '-', '-']

['-', '-', '-', 'Q']

['-', 'Q', '-', '-']