Part 1

GraphA Solution

A computer screen shot

Description automatically generated with low confidence

GraphB Solution

A screenshot of a computer

Description automatically generated

Part 2

🡺I have attached screenshots for the example that is provided in the assignment to perform. These are all the photos that of the output, basically they take the input from the user and give the output accordingly.

A screenshot of a computer

Description automatically generated with medium confidence

A picture containing text, screenshot, monitor, electronics

Description automatically generated

A picture containing text, screenshot, monitor

Description automatically generated

🡺In this part I have made the source code to perform accordingly that it can generate 5 random solvable 8 puzzle instances without taking input from the user. Also I have not attached the screenshots rather I have copied and pasted the output over here as it had too many photos to attach.

C:\Users\nihar\PycharmProjects\first\_programm\venv\Scripts\python.exe C:/Users/nihar/Documents/AI\_assignments/Assign2PyCharm/puzNihar.py

The 8 puzzle is solvable !

3 1 2

4 \* 5

7 8 6

3 1 2

4 5 \*

7 8 6

3 1 \*

4 5 2

7 8 6

3 \* 1

4 5 2

7 8 6

\* 3 1

4 5 2

7 8 6

4 3 1

\* 5 2

7 8 6

4 3 1

5 \* 2

7 8 6

4 \* 1

5 3 2

7 8 6

4 1 \*

5 3 2

7 8 6

4 1 2

5 3 \*

7 8 6

4 1 2

5 \* 3

7 8 6

4 1 2

\* 5 3

7 8 6

\* 1 2

4 5 3

7 8 6

1 \* 2

4 5 3

7 8 6

1 2 \*

4 5 3

7 8 6

1 2 3

4 5 \*

7 8 6

1 2 3

4 5 6

7 8 \*

Steps to reach goal: 16

Total nodes visited: 250

Total generated: 404

The 8 puzzle is solvable !

7 3 \*

5 4 2

8 1 6

7 \* 3

5 4 2

8 1 6

7 4 3

5 \* 2

8 1 6

7 4 3

5 1 2

8 \* 6

7 4 3

5 1 2

\* 8 6

7 4 3

\* 1 2

5 8 6

\* 4 3

7 1 2

5 8 6

4 \* 3

7 1 2

5 8 6

4 1 3

7 \* 2

5 8 6

4 1 3

7 2 \*

5 8 6

4 1 3

7 2 6

5 8 \*

4 1 3

7 2 6

5 \* 8

4 1 3

7 2 6

\* 5 8

4 1 3

\* 2 6

7 5 8

\* 1 3

4 2 6

7 5 8

1 \* 3

4 2 6

7 5 8

1 2 3

4 \* 6

7 5 8

1 2 3

4 5 6

7 \* 8

1 2 3

4 5 6

7 8 \*

Steps to reach goal: 18

Total nodes visited: 241

Total generated: 384

The 8 puzzle is solvable !

5 7 1

8 \* 2

4 3 6

5 7 1

8 3 2

4 \* 6

5 7 1

8 3 2

\* 4 6

5 7 1

\* 3 2

8 4 6

\* 7 1

5 3 2

8 4 6

7 \* 1

5 3 2

8 4 6

7 1 \*

5 3 2

8 4 6

7 1 2

5 3 \*

8 4 6

7 1 2

5 \* 3

8 4 6

7 1 2

\* 5 3

8 4 6

\* 1 2

7 5 3

8 4 6

1 \* 2

7 5 3

8 4 6

1 2 \*

7 5 3

8 4 6

1 2 3

7 5 \*

8 4 6

1 2 3

7 \* 5

8 4 6

1 2 3

7 4 5

8 \* 6

1 2 3

7 4 5

\* 8 6

1 2 3

\* 4 5

7 8 6

1 2 3

4 \* 5

7 8 6

1 2 3

4 5 \*

7 8 6

1 2 3

4 5 6

7 8 \*

Steps to reach goal: 20

Total nodes visited: 441

Total generated: 708