

INPUTS & OUTPUTS

PYTHON PROGRAMS:

1.8-PUZZLE PROBLEM

```
8 puzzle x
:
C:\Users\91630\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\91630\PycharmProjects\pythonProject\8_puzzle.py"
Solution found:
[0, 1, 2]
[3, 4, 5]
[6, 7, 8]

Process finished with exit code 0
```

2.8-QUEEN PROBLEM.

```
Run 8queens x
:
C:\Users\91630\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\91630\PycharmProjects\pythonProject\8queens.py
Solution found:
1 0 0 0 0 0 0 0
0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 1
0 0 0 0 0 1 0 0
0 0 1 0 0 0 0 0
0 0 0 0 0 0 1 0
0 1 0 0 0 0 0 0
0 0 0 0 0 0 1 0
0 1 0 0 0 0 0 0
0 0 0 1 0 0 0 0
```

3. WATER JUG PROBLEM.

```
Python 3.11.2 (tags/v3.11.2:878ead1, Feb 7 2023, 16:38:35) [MSC v.1934 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:\Users\91630\Documents\AI output images\A I python programs\water jug program.py
Step 1: Jug 1 has 0 units and Jug 2 has 0 units
Step 1: Pour water from Jug 1 to Jug 2 - Jug 1 has 3 units and Jug 2 has 1 units
Step 2: Pour water from Jug 1 to Jug 2 - Jug 1 has 2 units and Jug 2 has 2 units
Step 3: Pour water from Jug 1 to Jug 2 - Jug 1 has 1 units and Jug 2 has 3 units
Step 4: Empty Jug 2 - Jug 1 has 1 units and Jug 2 has 0 units
Step 5: Jug 1 has 1 units and Jug 2 has 0 units
Step 5: Pour water from Jug 1 to Jug 2 - Jug 1 has 0 units and Jug 2 has 1 units
Step 6: Jug 1 has 0 units and Jug 2 has 1 units
Step 6: Pour water from Jug 1 to Jug 2 - Jug 1 has 3 units and Jug 2 has 2 units
Step 7: Pour water from Jug 1 to Jug 2 - Jug 1 has 2 units and Jug 2 has 3 units
Step 8: Empty Jug 2 - Jug 1 has 2 units and Jug 2 has 0 units

Target amount of 2 units achieved!
```

4.CRIPT-ARITHMETIC PROBLEM.

```
File Edit Debug Options Window Help
Python 3.11.4 (tags/v3.11.4:d2340ef, Jun 7 2023, 0
Type "help", "copyright", "credits" or "license()"
==== No Subprocess ====

WARNING: Running IDLE without a Subprocess is depre
and will be removed in a later version. See Help/ID
for details.

>>> 1337 + 8337 + 9674
>>> |
```

5.MISSIONARIES AND CANNIBALS PROBLEM

```
38
39 root.children[0].children = [Node(9), Node(1)]
40 root.children[1].children = [Node(12)]
if __name__ == "__main__":
    Run Missionale Cannibal x
    C:\Users\91630\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\91630\PycharmProjects\pythonProject\Missionale Cannibal.py"
    Solution found:
    Left Bank: 3 missionaries, 3 cannibals | Boat: Right
    Left Bank: 3 missionaries, 1 cannibals | Boat: Left
    Left Bank: 3 missionaries, 2 cannibals | Boat: Right
    Left Bank: 3 missionaries, 0 cannibals | Boat: Left
    Left Bank: 3 missionaries, 1 cannibals | Boat: Right
    Left Bank: 1 missionaries, 1 cannibals | Boat: Left
    Left Bank: 2 missionaries, 2 cannibals | Boat: Right
    Left Bank: 0 missionaries, 2 cannibals | Boat: Left
    Left Bank: 0 missionaries, 3 cannibals | Boat: Right
    Left Bank: 0 missionaries, 1 cannibals | Boat: Left
    Left Bank: 1 missionaries, 1 cannibals | Boat: Right
    Left Bank: 0 missionaries, 0 cannibals | Boat: Left
    Process finished with exit code 0
```

6.VACUUM CLEANER PROBLEM.

```
Run vacumm cleaner x
Enter the No. of Rows: 2
Enter the No. of Columns: 2
Enter clean status for each cell (1 - dirty, 0 - clean)
1 0
0 0

The Floor matrix is as below:
>1< 0
0 0

The Floor matrix is as below:
>0< 0
0 0

The Floor matrix is as below:
0 >0<
0 0

The Floor matrix is as below:
0 0
0 >0<

The Floor matrix is as below:
0 0
>0< 0

Process finished with exit code 0
```

7.BREADTH FIRST SEARCH

```
Graph > bfs() > while queue > for neighbor in self.graph[vert... > if neighbor not in visited

BFS
C:\Users\91630\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\91630\PycharmProjects\pythonProject\BFS.py
BFS Traversal:
2 0 3 1
Process finished with exit code 0
```

8.DEPTH FIRST SEARCH

```
g.dfs(2) # Starting DFS traversal from vertex 2

DFS
C:\Users\91630\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\91630\PycharmProjects\pythonProject\DFS.py
DFS Traversal:
2 0 1 3
Process finished with exit code 0
```

9.TRAVELLING SALES MAN PROBLEM



```
Tic Tac Toe x
:
-----
Player X, enter row (0, 1, or 2): 1
Player X, enter column (0, 1, or 2): 1
X | |
-----
| X | 0
-----
| |
-----
Player O, enter row (0, 1, or 2): 2
Player O, enter column (0, 1, or 2): 1
X | |
-----
| X | 0
-----
| 0 |
-----
Player X, enter row (0, 1, or 2): 2
Player X, enter column (0, 1, or 2): 2
X | |
-----
| X | 0
-----
| 0 | X
-----
Player X wins!

Process finished with exit code 0
```

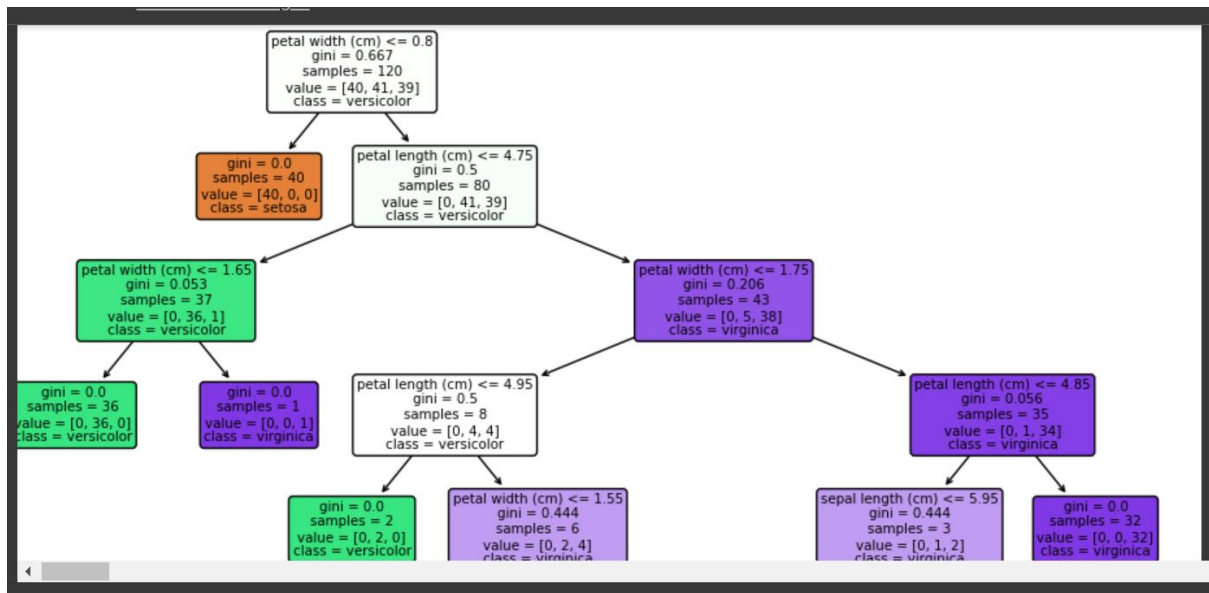
13.MIN MAX ALGORITHM.

```
30 root.children = [Node(5), Node(6), Node(7)]
if __name__ == "__main__":
    Run min max algorithm x
C:\Users\91630\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\91630\PycharmProjects\pythonProject\min_max_algorithm.py"
Best decision value: 12
Process finished with exit code 0
```

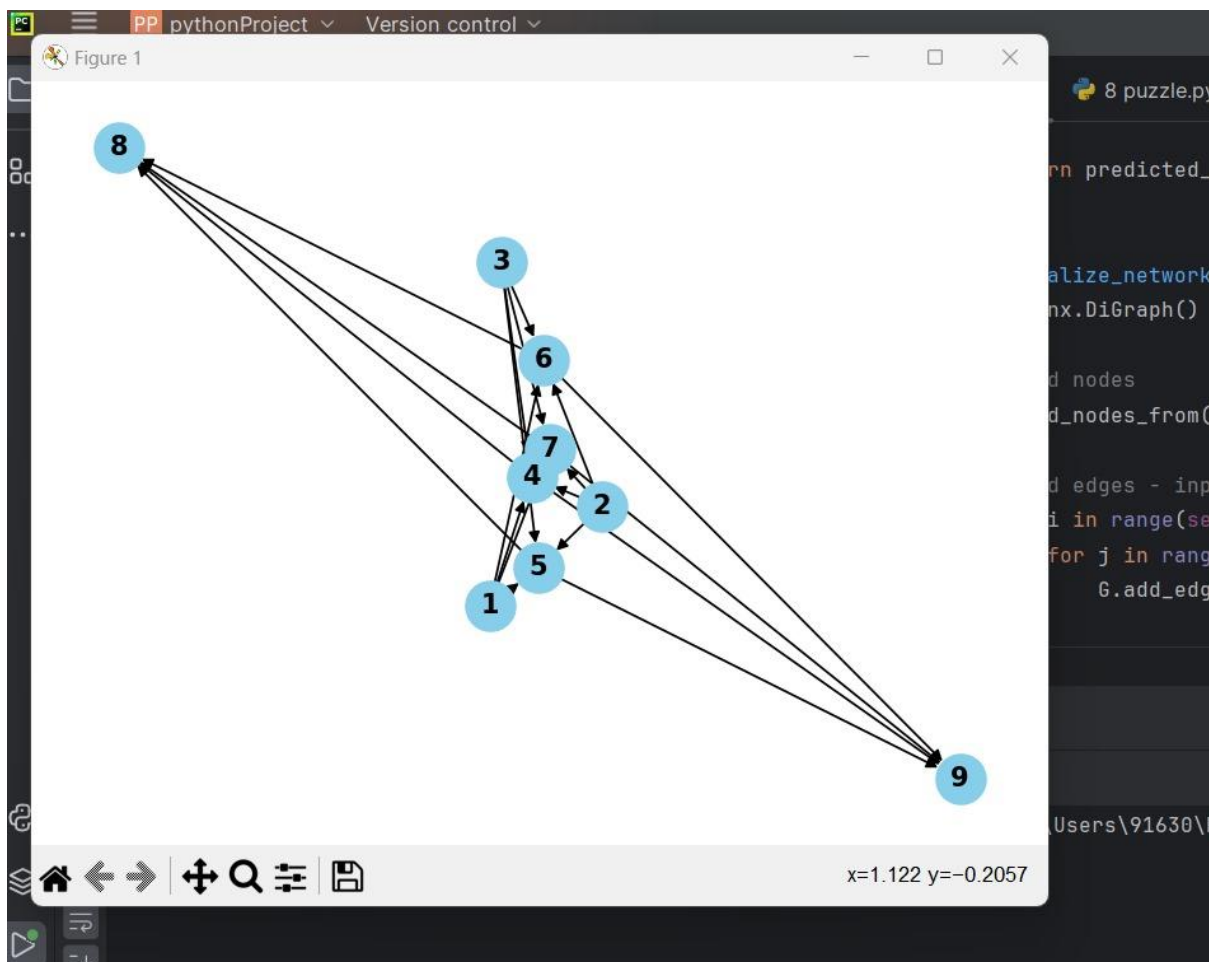
14.ALPHA &BETA PRUNING.

```
eval = minimax(child, depth - 1, alpha, beta, is_maximizing_player, root)
Node
Run alpha beta pruning x
C:\Users\91630\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\91630\PycharmProjects\pythonProject\alpha_beta_pruning.py"
Best decision value: 12
Process finished with exit code 0
```

15.DECESION TREE.



16.FEED FORWARD NEURAL NETWORK.



PROLOG PROGRAMS:

17 TO 20:

```
GNU Prolog console
File Edit Terminal Prolog Help
compiling C:/GNU-Prolog/bin/Sum of integers from 1.pl for byte code...
C:/GNU-Prolog/bin/Sum of integers from 1.pl compiled, 15 lines read - 875 bytes written, 10 ms

yes
| ?- sum_integers(5, Sum).

Sum = 15 ?

yes
| ?- consult('C:/GNU-Prolog/bin/Database with name,dob.pl').
compiling C:/GNU-Prolog/bin/Database with name,dob.pl for byte code...
C:/GNU-Prolog/bin/Database with name,dob.pl compiled, 12 lines read - 2040 bytes written, 10 ms

yes
| ?- dob(mike, date(1993, 3, 9)).

yes
| ?- consult('C:/GNU-Prolog/bin/Student Teacher.pl').
compiling C:/GNU-Prolog/bin/Student Teacher.pl for byte code...
C:/GNU-Prolog/bin/Student Teacher.pl compiled, 22 lines read - 1489 bytes written, 14 ms

yes
| ?- enrolled(Student, cs105).

Student = kate ?

yes
| ?- consult('C:/GNU-Prolog/bin/Planets Database.pl').
compiling C:/GNU-Prolog/bin/Planets Database.pl for byte code...
C:/GNU-Prolog/bin/Planets Database.pl compiled, 21 lines read - 2434 bytes written, 5 ms

yes
| ?- planet(Planet, Type, Size, Distance).

Distance = 0.39000000000000001
Planet = mercury
Size = small
Type = rocky ? |
```

21 TO 23:

```
GNU Prolog console
File Edit Terminal Prolog Help
compiling C:/GNU-Prolog/bin/Towers of Hanoi.pl for byte code...
C:/GNU-Prolog/bin/Towers of Hanoi.pl compiled, 17 lines read - 1579 bytes written, 16 ms

yes
| ?- hanoi(3).
Move disk from A to B
Move disk from A to C
Move disk from B to C
Move disk from A to B
Move disk from C to A
Move disk from C to B
Move disk from A to B

true ?

yes
| ?- consult('C:/GNU-Prolog/bin/Bird fly or not.pl').
compiling C:/GNU-Prolog/bin/Bird fly or not.pl for byte code...
C:/GNU-Prolog/bin/Bird fly or not.pl compiled, 28 lines read - 842 bytes written, 13 ms

yes
| ?- can_fly(ostrich).

no
| ?- consult('C:/GNU-Prolog/bin/Family Tree.pl').
compiling C:/GNU-Prolog/bin/Family Tree.pl for byte code...
C:/GNU-Prolog/bin/Family Tree.pl compiled, 56 lines read - 5928 bytes written, 11 ms

yes
| ?- family_details(john).
Details for john:
Children: [mike,lily]
Parents: []
Siblings: []
Grandchildren: [tom,jerry,sarah]
Father: mike

(16 ms) yes
```

24 TO 26:

```
GNU Prolog console
File Edit Terminal Prolog Help

| ?- consult('C:/GNU-Prolog/bin/Diet suggestions based on diseases.pl').
compiling C:/GNU-Prolog/bin/Diet suggestions based on diseases.pl for byte code...
C:/GNU-Prolog/bin/Diet suggestions based on diseases.pl compiled, 19 lines read - 2949 bytes written, 8 ms

yes
| ?- suggest_diet(diabetes).
Diet suggestions for diabetes:
- Avoid sugary foods.
- Limit carbohydrates intake.
- Consume more vegetables and lean protein.

yes
| ?- consult('C:/GNU-Prolog/bin/Monkey banana.pl').
compiling C:/GNU-Prolog/bin/Monkey banana.pl for byte code...
C:/GNU-Prolog/bin/Monkey banana.pl:33: warning: singleton variables [GoalState] for (?-)/1
C:/GNU-Prolog/bin/Monkey banana.pl compiled, 33 lines read - 4546 bytes written, 11 ms

yes
| ?- solve([at(monkey, floor), at(box, room_center), at(banana, ceiling)], GoalState, [at(monkey, floor), at(box, room_center), at(banana, c

no
| ?- consult('C:/GNU-Prolog/bin/Fruit colours using backtracking.pl').
compiling C:/GNU-Prolog/bin/Fruit colours using backtracking.pl for byte code...
C:/GNU-Prolog/bin/Fruit colours using backtracking.pl compiled, 14 lines read - 1755 bytes written, 14 ms
warning: C:/GNU-Prolog/bin/Fruit colours using backtracking.pl:14: redefining procedure (?-)/1
C:/GNU-Prolog/bin/Monkey banana.pl:33: previous definition

yes
| ?- color_of_fruit(Fruit, Color), write('The color of '), write(Fruit), write(' is '), write(Color), nl, fail.
The color of apple is red
The color of banana is yellow
The color of grape is purple
The color of orange is orange
The color of watermelon is green

no
| ?- |
```

27 TO 29:

```
GNU Prolog console
File Edit Terminal Prolog Help
GNU Prolog 1.5.0 (32 bits)
Compiled Jul 8 2021, 12:47:53 with gcc
Copyright (C) 1999-2021 Daniel Diaz

| ?- consult('C:/GNU-Prolog/bin/Best first search.pl').
compiling C:/GNU-Prolog/bin/Best first search.pl for byte code...
C:/GNU-Prolog/bin/Best first search.pl compiled, 34 lines read - 4280 bytes written, 13 ms

yes
| ?- best_first_search(Start, Goal, [Start], Path).

Path = [Goal]
Start = Goal ?

yes
| ?- consult('C:/GNU-Prolog/bin/Medical Diagnosis.pl').
compiling C:/GNU-Prolog/bin/Medical Diagnosis.pl for byte code...
C:/GNU-Prolog/bin/Medical Diagnosis.pl compiled, 21 lines read - 1974 bytes written, 20 ms

yes
| ?- diagnose(john, Disease).

Disease = cold ?

yes
| ?- consult('C:/GNU-Prolog/bin/Forward Chaining.pl').
compiling C:/GNU-Prolog/bin/Forward Chaining.pl for byte code...
C:/GNU-Prolog/bin/Forward Chaining.pl compiled, 34 lines read - 2057 bytes written, 15 ms
warning: C:/GNU-Prolog/bin/Forward Chaining.pl:2: redefining procedure symptom/2
C:/GNU-Prolog/bin/Medical Diagnosis.pl:2: previous definition
warning: C:/GNU-Prolog/bin/Forward Chaining.pl:15: redefining procedure disease/2
C:/GNU-Prolog/bin/Medical Diagnosis.pl:10: previous definition

yes
| ?- forward_chaining(jane, Disease).
Patient jane has been diagnosed with cold.

Disease = cold ? |
```

30:


```
GNU Prolog console
File Edit Terminal Prolog Help
GNU Prolog 1.5.0 (32 bits)
Compiled Jul  8 2021, 12:47:53 with gcc
Copyright (C) 1999-2021 Daniel Diaz

| ?- consult('C:/GNU-Prolog/bin/Backward Chaining.pl').
compiling C:/GNU-Prolog/bin/Backward Chaining.pl for byte code...
C:/GNU-Prolog/bin/Backward Chaining.pl compiled, 24 lines read - 1683 bytes written, 9 ms

yes
| ?- ancestor(john, lisa).

true ?

yes
| ?- |
```