3.Write the python program for Water Jug Problem.

Program:

```
from collections import defaultdict
jug1, jug2, aim = 4, 3, 2
visited = defaultdict(lambda: False)
def waterJugSolver(amt1, amt2):
        if (amt1 == aim and amt2 == 0) or (amt2 == aim and amt1 == 0):
                print(amt1, amt2)
                return True
        if visited[(amt1, amt2)] == False:
                print(amt1, amt2)
                visited[(amt1, amt2)] = True
                return (waterJugSolver(0, amt2) or
                                waterJugSolver(amt1, 0) or
                                waterJugSolver(jug1, amt2) or
                                waterJugSolver(amt1, jug2) or
                                waterJugSolver(amt1 + min(amt2, (jug1-amt1)),
                                amt2 - min(amt2, (jug1-amt1))) or
                                waterJugSolver(amt1 - min(amt1, (jug2-amt2)),
                                amt2 + min(amt1, (jug2-amt2))))

        else:
                return False

print("Steps: ")

waterJugSolver(0, 0)
```

OUTPUT:

```
ile  Edit  Shell  Debug  Options  Window  Help
Python 3.10.4 (tags/v3.10.4:9d38120, Mar 23 2022, 23:13:41) [MSC v.1929 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>
== RESTART: C:\Users\Rohith kumar\OneDrive\Desktop\AI LAB\Water Jug Problem.py =
Steps:
0 0
4 0
4 3
0 3
3 0
3 3
4 2
0 2
>>
```