Name: Nilesh Kawar
Roll No. 59

Practical 3

1) Implementation of Logic programming using Prolog for Water jug Problem

Program:

Water Jug Using Prolog

Implementation of Logic programming using Prolog for Water jug Problem

```
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:

```
Steps:
0 0
4 0
4 3
0 3
3 0
3 3
4 2
0 2
True
```