



SUPERIOR UNIVERSITY

Name: Esha asif

Roll no:034

Section:BSAI 4A

Subject:Programming for AI

LAB TASK 3

HOW AND WHY:

This is a water jug problem, so basically in this problem we use a series of steps where we fill and empty water between 2 jugs until we get the exact amount of water we need in 1 jug. For example if the question says you need to measure 2 liters with a 4 liter jug and a 3 liter jug, we will start by filling any 1 jug. Lets take the 3 liter jug we will fill it and then pour it into the 4 liter jug, so our state becomes (3,0) from (0,0). Then we fill the 3 liter jug again and pour it into the 4 liter jug. Now the 4 liter jug is filled, so the state becomes (3,4). Now we will empty the 4 liter jug and pour the 3 liter jug into the 4 liter jug. Then we fill the 3 liter jug again and pour it into the 4 liter jug. Now the 4 liter jug is full, and the 3 litre jug contains exactly 2 liters. This is how we reach the end of this problem.

```
solulu found
(0, 0)
(4, 0)
(0, 3)
(4, 3)
(1, 3)
(3, 0)
(3, 3)
(1, 0)
(4, 2)
1 fill Jug1
2 dill Jug2
3 empty Jug1
4 empty Jug2
5 pour Jug1 into Jug2 until its full
6 pour Jug2 into Jug1 until Jug1 its full
7 pour all water from Jug1 into Jug2
8 pour all water from Jug2 into Jug1
○ PS C:\Users\eshaa>
```

In this code we start by our initial state which is (0,0) as we fill and empty the jugs using and of the main 8 rules we reach to our solution.