Lab report: TC1- AI/ML

- **Program:**

```python
# TC1_LAB3
# SIA VASHIST_ 20190802107
# Water Jug Problem

from collections import defaultdict

visited = defaultdict(lambda: False)

# To store J1, J2 and Aim
J1, J2, L = 0, 0, 0


def Water_Jug_problem(X, Y):
    global J1, J2, L

    if (X == L and Y == 0) or (Y == L and X == 0):
        print("(", X, ", ", Y, ")", sep="")
        return True

    if not visited[(X, Y)]:
        print("(", X, ", ", Y, ")", sep="")

        visited[(X, Y)] = True

        return (Water_Jug_problem(0, Y) or
                Water_Jug_problem(X, 0) or
                Water_Jug_problem(J1, Y) or
                Water_Jug_problem(X, J2) or
                Water_Jug_problem(X + min(Y, (J1 - X)),
                                      Y - min(Y, (J1 - X))) or
                Water_Jug_problem(X - min(X, (J2 - Y)),
                                      Y + min(X, (J2 - Y))))
    else:
        return False


# Main Code

J1 = int(input("Enter the Capacity of Jug1: "))
J2 = int(input("Enter the Capacity of Jug2: "))
L = int(input("Amount to be measured: "))

print("Path is as Follow:")

Water_Jug_problem(0, 0)
```
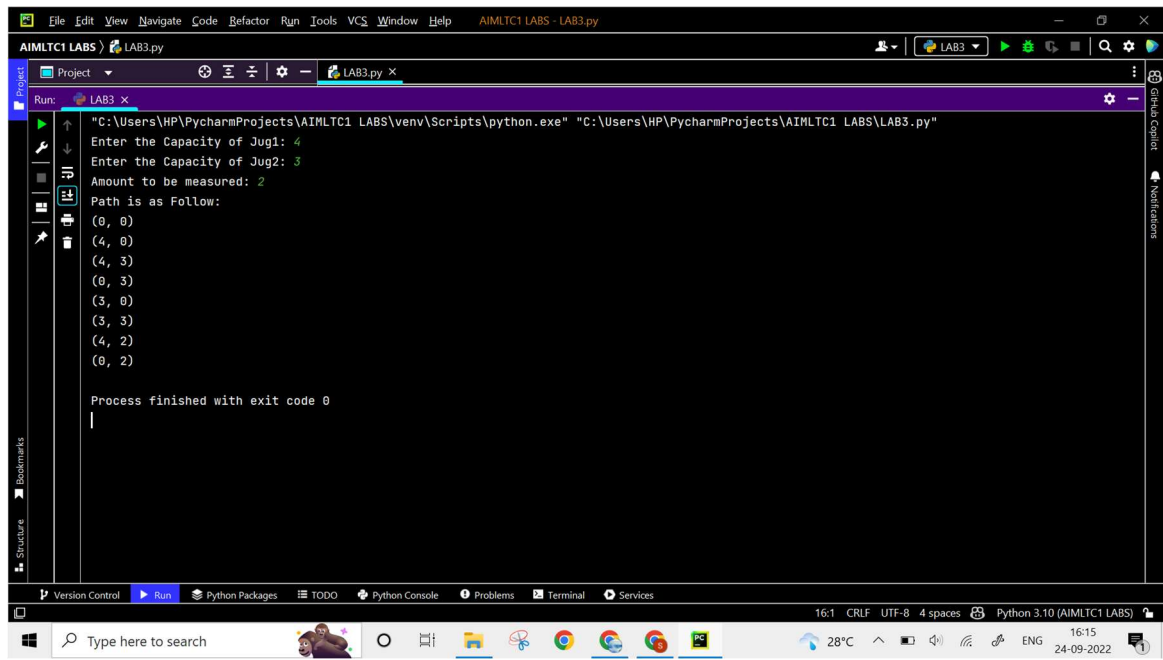
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- **<u>Output:</u>**