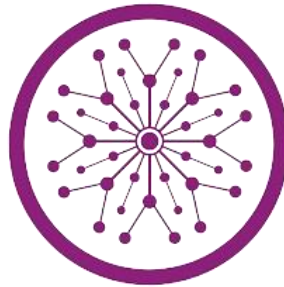


Programming for AI

Lab

Task 3



The Superior University

Faculty of Computer Science & Information

Technology

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Overview

The Water Jug Problem is a classic puzzle that involves two jugs of different capacities and a goal to measure an exact amount of water using a set of predefined operations. This code provides a solution using Depth-First Search (DFS).

Function:

def water_jug_problem(capacityjug1, capacityjug2, goal):

The function `water_jug_problem(capacityjug1, capacityjug2, goal)` solves the Water Jug Problem using Depth-First Search (DFS). It explores different states of two jugs (filling, emptying, or pouring water between them) to determine if an exact amount of water (goal) can be measured. If the goal is achieved, it prints the sequence of steps and returns True; otherwise, it returns False.

Parameters

- `capacityjug1 (int)`: First jug capacity.
- `capacityjug2 (int)`: Second jug capacity.
- `goal (int)`: Target water amount.

Algorithm

1. Use a stack for DFS and track visited states.
2. Start with (0,0), applying operations:
 - Fill, empty, or pour between jugs.
3. If goal is reached, print steps and return True, else return False.

User Input

- Takes jug1, jug2 capacities and target from user input.