Programming for Artificial Intelligence Lab

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Task 04

Input:

water_jug.py > ...

```python
def water_puzzle(jugA_max, jugB_max, target, jugA=0, jugB=0, steps=0, visited=None):
    if visited is None:
        visited = set()
    if (jugA, jugB) in visited:
        return float('inf')
    visited.add((jugA, jugB))
    if jugA == target or jugB == target:
        return steps
    possible_moves = [
        (jugA_max, jugB),
        (jugA, jugB_max),
        (0, jugB),
        (jugA, 0),
        (jugA - min(jugA, jugB_max - jugB), jugB + min(jugA, jugB_max - jugB)),
        (jugA + min(jugB, jugA_max - jugA), jugB - min(jugB, jugA_max - jugA))
    ]
    return min(water_puzzle(jugA_max, jugB_max, target, a, b, steps + 1, visited) for a, b in possible_move
jug1_capacity = 4
jug2_capacity = 3
desired_amount = 2
result = water_puzzle(jug1_capacity, jug2_capacity, desired_amount)
print(f"Minimum steps required: {result}" if result != float('inf') else "No solution possible.")

```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                                   Python
PS C:\Users\DELL\Desktop\PAI Task 03> & C:/Users/DELL/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/DELL/Desktop/P
AI Task 03/water_jug.py"
Minimum steps required: 6
PS C:\Users\DELL\Desktop\PAI Task 03>
```