IMPLEMENTATION OF MONKEY BANANA PROBLEM IN GOAL STACK PLANNING

AIM

To Implement the Monkey Banana Problem in Goal Stack planning using python

ALGORITHM

1. **Initialize the environment**
    - Place the monkey at **position 0**.
    - Place the bananas at **position 1** (ceiling).
    - Place the box at **position 2**.
2. **Check the goal**
    - If the monkey already has the bananas, stop.
    - Otherwise, continue with the following actions.
3. **Move the monkey to the box**
    - If the monkey is not at the same position as the box, move it there.
4. **Push the box under the bananas**
    - Once at the box, push the box to the bananas' position (position 1).
    - The monkey moves together with the box.
5. **Climb onto the box**
    - If the monkey is at the same position as the box, climb on top of it.
6. **Grab the bananas**

- If the monkey is on top of the box and the box is at the bananas' position, grab the bananas.

7. **Goal achieved**

- Monkey has successfully obtained the bananas.

PROGRAM

Monkey and Bananas Program

```
class MonkeyBananaProblem:
    def __init__(self):
        self.monkey_pos = 0     # Monkey starts at position 0
        self.box_pos = 2        # Box is at position 2
        self.banana_pos = 1     # Bananas are at position 1 (ceiling)
        self.on_box = False
        self.has_bananas = False

    def move(self, pos):
        print(f"Monkey moves from {self.monkey_pos} to {pos}")
        self.monkey_pos = pos

    def push_box(self, target_pos):
        if self.monkey_pos == self.box_pos:
            print(f"Monkey pushes box from {self.box_pos} to {target_pos}")
            self.box_pos = target_pos
            self.monkey_pos = target_pos
        else:
            print("Monkey must be at the box' s position to push it!")
```

```
def climb_box(self):
    if self.monkey_pos == self.box_pos:
        print("Monkey climbs onto the box")
        self.on_box = True
    else:
        print("Monkey must be at the box to climb it!")

def grab_bananas(self):
    if self.on_box and self.box_pos == self.banana_pos:
        print("Monkey grabs the bananas! ")
        self.has_bananas = True
    else:
        print("Monkey cannot reach the bananas yet!")

def solve(self):
    print("--- Monkey and Bananas Problem ---")
    # Step 1: Move to box at pos 2
    self.move(2)
    # Step 2: Push box to pos 1 (under bananas)
    self.push_box(1)
    # Step 3: Climb box
    self.climb_box()
    # Step 4: Grab bananas
    self.grab_bananas()

    if self.has_bananas:
        print("Goal achieved : Monkey has the bananas!")
    else:
        print("Goal not achieved ")
```

```
# Run Simulation

problem = MonkeyBananaProblem()

problem.solve()
```

OUTPUT

```
PS C:\Users\student\Documents\26270> c:; cd 'c:\Users\student\Documents\26270'; & 'c:\Program Files\Python313\python.exe' 'c:\Users\student\.vscode\extensions\ms-python.debugpy-2025.14.1-win32-x64\bundled\libs\debugpy\launcher' '59256' '--' 'C:\Users\student\Documents\26270\26270'
--- Monkey and Bananas Problem ---
Monkey moves from 0 to 2
Monkey pushes box from 2 to 1
Monkey climbs onto the box
Monkey grabs the bananas!
Goal achieved : Monkey has the bananas!
```

RESULT

Thus, the Implementation the Monkey Banana Problem in Goal Stack planning using python was successfully executed and output was verified.