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BE comps.

Experiment 04

- **Aim:-** write a Program to Implement Monkey & Banana Problem.

- **Theory:-**

A monkey enters the room via a door. In the room, near the window, is a box. In the middle of the room hangs a banana from the ceiling. The Monkey wants to group the banana and can do so after climbing on the box in the middle of the room.

- **States:-**

For each state we need to record:
- The position of the monkey (door, window, middle).
- The position of the box.
- If the monkey is on the box.
- If the monkey has the banana.

The Initial state (door, window, no, no)
The set of goal state is (*, *, *, yes)

- **Moves:-**

walk (P): from (M, B, no, H) to (P, B, no, H)
PUSH (P): from (M, M, no, H) to (P, P, no, H)
climb : from (M, M, no, H) to (M, M, yes, H)
grasp : from (middle, B, yes, no) to (middle, B, yes, yes)

Step by Step sol^n.

(a) Initial state description:

At (Monkey, A) ∧ At (Banana, B) ∧ At (Box, C) ∧ Height (Monkey, low) ∧ Height (Box, low) ∧ Height (Banana, High) ∧ Push (Box) ∧ Climbup (Box)

(b) 6 action schemas

1. Goto from one place to another: Action (Go(x,y))
   precondition: At(monkey, x)
   Effect: At (Monkey, y) ∧ ¬ At (Monkey, x)

2 Push an object from one place to another.
Action (push (b, x,y)
Precondition : At (Monkey, x) ∧ Can Push (b)
Effect : At (b, y) ∧ At (Monkey, y) ∧ ¬ At (Monkey, x) ∧ At (b, x)

3. Climb up onto an object
Action: Climbup (b)
Precondition: At (b, x) ∧ At (Monkey, x) ∧ (Climbup(b)
Effect: On (monkey, b) ∧ ¬ Height (monkey, High)

4. Climb down from an object
Action: Climb down(b);
Precondition: On (Monkey, b) ∧ Height (Monkey, High)
Effect → ¬On(Monkey, b) ∧ ¬ Height (Monkey, High) ∧ Height (Monkey, low).

5) Grasp an object

Action:- Grasp: (Object, Position, height)
Precondition: Height (Monkey, h) ∧ Height (b, h) ∧ At (Monkey, x)
Effect : Has (Monkey, G)

6) Ungrasp an object

Action: Ungrasp (b);
Precondition Have (Monkey, b);
Effect : Has (Monkey, object).

Conclusion:

Thus, we have successfuly implemented the monkey banana problem and understood the steps.