ASSIGNMENT 1

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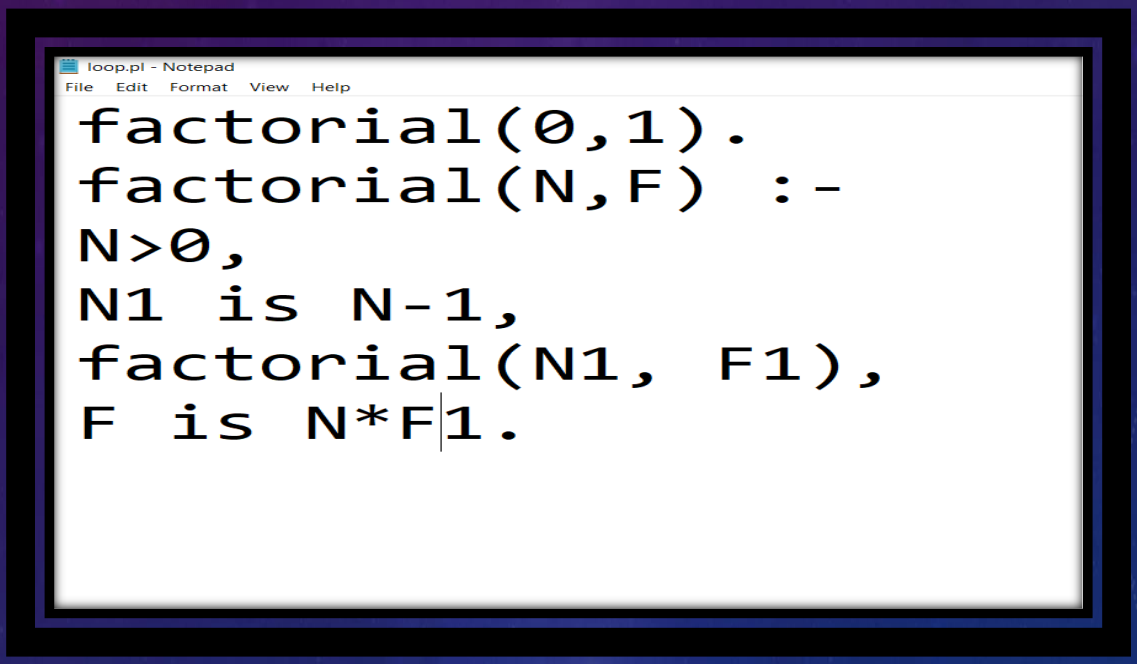
COURSE CODE — CAP379: (ARTIFICIAL INTELLIGENCE LABORATORY)

(SET – A)

QUE1. WRITE A PROLOG PROGRAM TO FIND THE FACTORIAL OF A NUMBER WITH THE HELP OF INPUT OUTPUT FUNCTIONS. IMPLEMENT THE PROGRAM IN PROLOG AND ATTACH OUTPUT SCREENSHOT ALSO

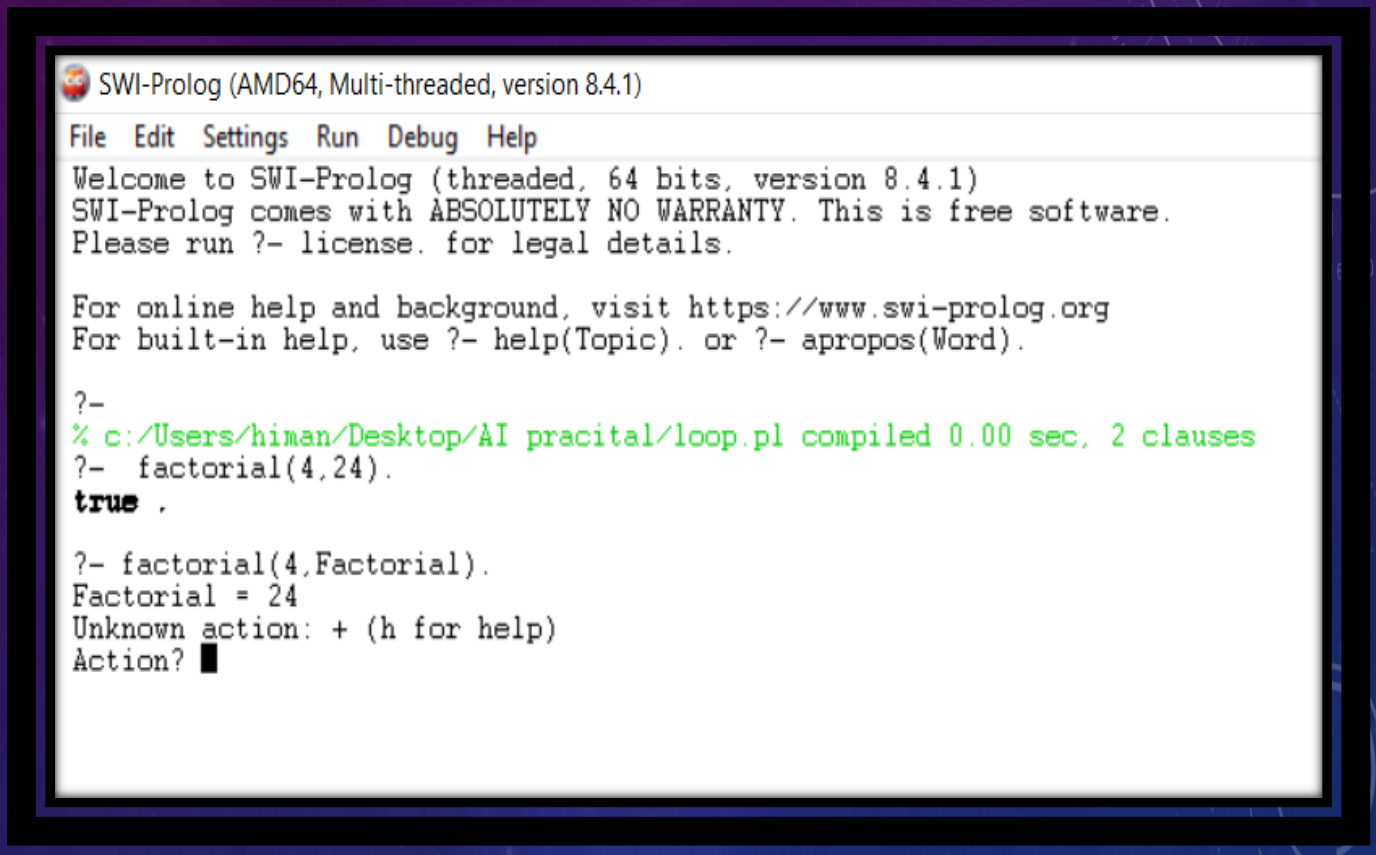
- Prolog Factorial function definition is also similar to a normal factorial function.
- Factorial(0,1) i.e., factorial of 0 is generally 1.
- Factorial(N,M), if any temporary value N1 is assigned to N-1.
- Factorial(N1,M1), and is factorial of N1 is F1.
- M is NM1 i.e., assigning M to N*M1, then value of N is F.
- The above happens to be the recursive relation between N and factorial F. It reviews rules for particular relation in the top to bottom order.



Factorial(4,24)

4>0	3 is 4-1	factorial(3,3)	24 is 4*6
3>0	2 is 3-1	factorial(2,2)	6 is 3*2
2>0	1 is 2-1	factorial(1,1)	2 is 2*1
1>0	0 is 1-1	factorial(0,1)	1 is 1*1

OUTPUT OF THE CODE



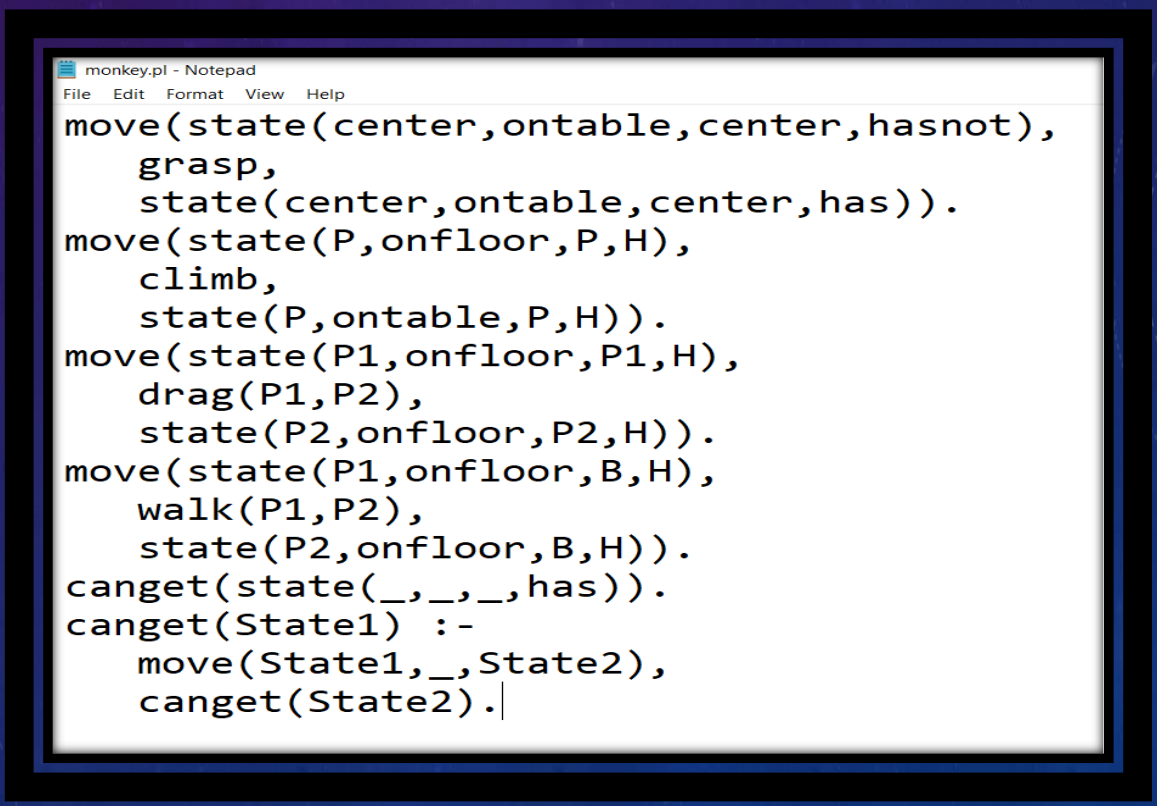
QUE2. HOW MONKEY BANANA PROBLEM CAN BE IMPLEMENTED IN PROLOG? WRITE A PROLOG PROGRAM TO IMPLEMENT MONKEY BANANA PROBLEM. IMPLEMENT THE PROGRAM IN PROLOG AND ATTACH OUTPUT SCREENSHOT ALSO

Initial state:

- monkey on ground
- with empty hand
- bananas suspended

Goal state:

- monkey eating



SET OF OPERATION

- When the table is at the center, and monkey is on top of the table, and monkey does not have the banana (i***has not*** state), then using the ***grasp*** action, it will change from ***has not*** state to ***have*** state.
- From the floor, it can move to the top of the table (***on top*** state), by performing the action ***climb***.
- The **push** operation moves the table from one place to another.
- Monkey can move from one place to another using **walk** or **move** clauses.
- Another predicate will be canget(). Here we pass a state, so this will perform move predicate from one state to another using different actions, then perform canget() on state 2. When we have reached to the state '**has>**', this indicates '**has banana**'. We will stop the execution.

OUTPUT OF THE PROGRAM