AI LAB – 8

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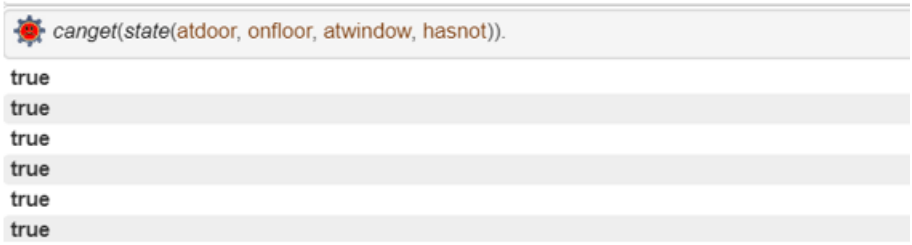
CSE H

1)Write a program using prolog to implement a monkey banana problem.

```
move(state(middle,onbox,middle,hasnot),
  grasp,
  state(middle,onbox,middle,has)).
move(state(P,onfloor,P,H),
  climb,
  state(P,onbox,P,H)).
move(state(P1,onfloor,P1,H),
  drag(P1,P2),
  state(P2,onfloor,P2,H)).
move(state(P1,onfloor,B,H),
  walk(P1,P2),
  state(P2,onfloor,B,H)).
canget(state(_,_,_,has)).
canget(State1) :-
  move(State1,_,State2),
```

canget(State2).

OUTPUT : -



2)Write a program using prolog to solve traveling salesman problem.

edge(a, b, 3).

edge(a, c, 4).

edge(a, d, 2).

edge(a, e, 7).

edge(b, c, 4).

edge(b, d, 6).

edge(b, e, 3).

edge(c, d, 5).

edge(c, e, 8).

edge(d, e, 6).

edge(b, a, 3).

edge(c, a, 4).

edge(d, a, 2).

edge(e, a, 7).

edge(c, b, 4).

edge(d, b, 6).

```
edge(e, b, 3).

edge(d, c, 5).

edge(e, c, 8).

edge(e, d, 6).

edge(a, h, 2).

edge(h, d, 1).


len([], 0).

len([H|T], N):- len(T, X), N is X+1 .


best_path(Visited, Total):- path(a, a, Visited, Total).



path(Start, Fin, Visited, Total) :- path(Start, Fin, [Start], Visited, 0, Total).



path(Start, Fin, CurrentLoc, Visited, Costn, Total) :-

   edge(Start, StopLoc, Distance), NewCostn is Costn + Distance, \+ member(StopLoc,
CurrentLoc),

   path(StopLoc, Fin, [StopLoc|CurrentLoc], Visited, NewCostn, Total).




path(Start, Fin, CurrentLoc, Visited, Costn, Total) :-

   edge(Start, Fin, Distance), reverse([Fin|CurrentLoc], Visited), len(Visited, Q),

   (Q\=7 -> Total is 100000; Total is Costn + Distance).



shortest_path(Path):-setof(Cost-Path, best_path(Path,Cost), Holder),pick(Holder,Path).
```

```
best(Cost-Holder,Bcost-_,Cost-Holder):- Cost<Bcost,!.
best(_,X,X).

pick([Cost-Holder|R],X):- pick(R,Bcost-Bholder),best(Cost-Holder,Bcost-Bholder,X),!.
pick([X],X).
```

OUTPUT:-