

# AI ASSIGNMENT 5

NAME: SOURABH PATEL

ADMISSION NO: U19CS082

## 1. Perform Towers of Hanoi.

### CODE:

```
%tower of hanoi
move(1,X,Y,_):-
    write('Move top disk from '),
    write(X),
    write(' to '),
    write(Y),
    nl.
move(N,X,Y,Z):-
    N>1,
    M is N-1,
    move(M,X,Z,Y),
    move(1,X,Y,Z),
    move(M,Z,Y,X).
```

### OUTPUT:

```
?- move(3,source,destination,temporary).
Move top disk from source to destination
Move top disk from source to temporary
Move top disk from destination to temporary
Move top disk from source to destination
Move top disk from temporary to source
Move top disk from temporary to destination
Move top disk from source to destination
true .

?- move(2,source,destination,temporary).
Move top disk from source to temporary
Move top disk from source to destination
Move top disk from temporary to destination
true
```

2. WAP to check whether the number is present in the list or not.
3. WAP to add a number in the list.
4. WAP to concat two lists and store the result in third list.
5. WAP to delete an element from the list.

## 6. WAP to sum the elements of a list of numbers.

### CODE:

```
%to check whether the number is present in the list or not.
present(X, [X|_]).
present(X,[_|T]) :-
    present(X,T).

%to add a number in the list.
append(N,L,N|L).

%concatenate two lists
concat([],L,L).
concat([H|T],L,[H|Z]):- concat(T,L,Z).

%to delete an element from the list.
deleteElement(X, [X|T], T).
deleteElement(X, [H|T], [H|Z]) :- deleteElement(X, T, Z).

%to sum the elements of a list of numbers.
sum(X,[]):-
    X is 0.
sum(X,[H|T]) :-
    sum(Y,T),
    X is H+Y.
```

### OUTPUT:

```
?- consult('ass5_23456').
true.
?- present(5,[1,3,7,2,0]).
false.
?- present(5,[1,3,5,2,0]).
true.
?- append(8,[3,7,1,0],Y).
Y = (8|[3, 7, 1, 0]).
?- concat([1,2,3],[4,5,6],Z).
Z = [1, 2, 3, 4, 5, 6].
```

```
?- deleteElement(3,[4,5,6,3,9],Z).  
Z = [4, 5, 6, 9] .
```

```
?- sum(X,[1,2,3,4,5]).  
X = 15.
```