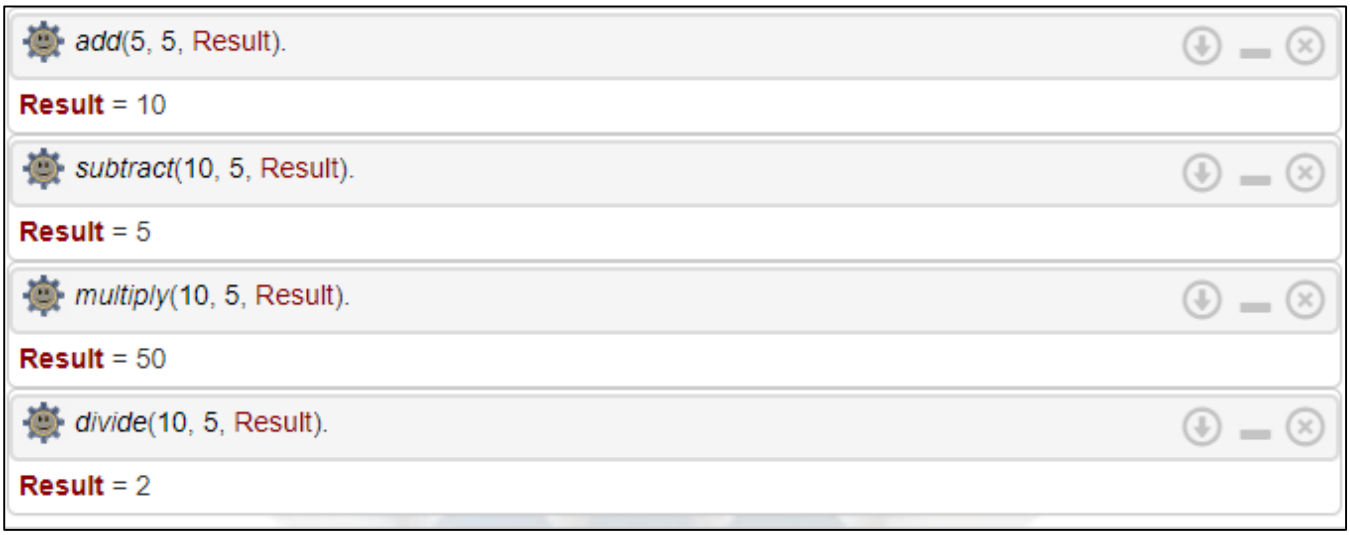
Experiment No. 8

1) Program to perform Arithmetic Operations –

```
add(X, Y, Z) :- Z is X + Y.

subtract(X, Y, Z) :- Z is X - Y.

multiply(X, Y, Z) :- Z is X * Y.

divide(X, Y, Z) :- Z is X / Y.
```

Output –



2) Program to check the number is even, odd or prime –

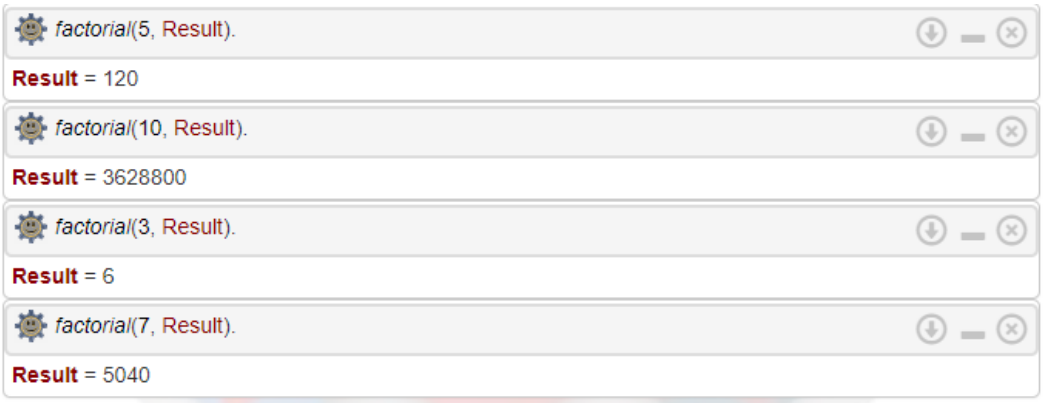
```
is_even(X) :-
    X mod 2 =:= 0.
is_odd(X) :-
    X mod 2 =:= 1.


is_prime(X) :-
    X > 1,
    Upper is floor(sqrt(X)),
    \+ (between(2, Upper, Y), X mod Y =:= 0).
```

Output –

3) Program to calculate factorial of a number –

```
factorial(0, 1).
factorial(N, Result) :-
    N > 0,
    Prev is N - 1,
    factorial(Prev, PrevResult),
    Result is N * PrevResult.
```

Output –



4) Program to find the greatest among three numbers –

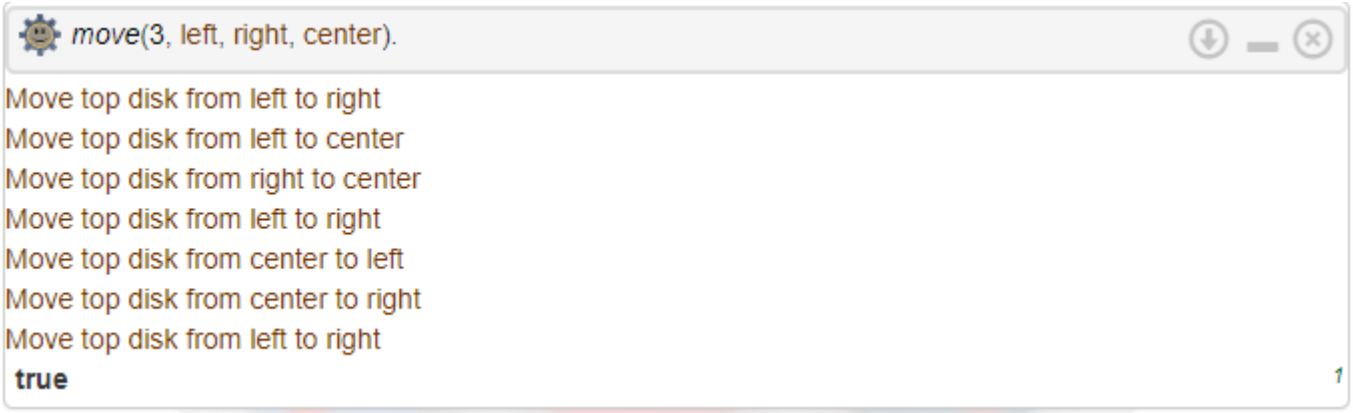
```
greatest(X, Y, Z, G) :-
    X >= Y, X >= Z,
    G is X.
greatest(X, Y, Z, G) :-
    Y >= X, Y >= Z,
    G is Y.
greatest(_, _, Z, G) :-
```

Output –

5) Program to solve the problem of Tower Of Honoi (TOH) –

```
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,_),
   move(M,Z,Y,X).
```

Output –


move(3, left, right, center).
Move top disk from left to right
Move top disk from left to center
Move top disk from right to center
Move top disk from left to right
Move top disk from center to left
Move top disk from center to right
Move top disk from left to right
true
1