ARTIFICIAL INTELLIGENCE
ASSIGNMENT 3

U20CS005
BANSI MARAKANA

1. Which functions are used to take input and show output in PROLOG? Write a program to input your name from the keyboard and display it on screen.

read(Variable_name) or read_line_to_string(user_input, Variable_name) function is used to take input in PROLOG and write(Variable_name) function is used to show output in PROLOG.

```
name :- write('Write your name: '), read_line_to_string(user_input, Name),
        write('Your name is '), write(Name), write(.).
```

```
Write your name:
Bansi Marakana
Your name is Bansi Marakana.
```

2. Write a PROLOG program for solving the following:
i) Implement a Menu Driven Calculator having functionalities like: Addition, Subtraction, Multiply, Divide. Take two variables, input it from the keyboard then display the result in the third variable on screen.

```
menu :- nl,nl,write('1. Addition'),nl,write('2. Subtraction'),nl,write('3. Multiplication'),
        nl,write('4. Division'),nl,write('5. Power'),nl,write('6. Modulus'),nl,
        write('7. Integer Division'),nl,write('8. Exit'),nl,write('Enter your choice: '),
        read(Choice), calculator(Choice).

calculator(X) :- X=1 ->  nl,write('Enter two numbers: '),read(A),read(B),
                         Z is A + B,write('Answer is '),write(Z),menu;
                 X=2 ->  nl,write('Enter two numbers: '),read(A),read(B),
                         Z is A - B,write('Answer is '),write(Z),menu;
                 X=3 ->  nl,write('Enter two numbers: '),read(A),read(B),
                         Z is A * B,write('Answer is '),write(Z),menu;
                 X=4 ->  nl,write('Enter two numbers: '),read(A),read(B),
                        (B=0 ->  write('Error Denominator cannot be 0!!');
                         Z is A / B,write('Answer is '),write(Z),menu);
                 X=5 ->  nl,write('Enter two numbers: '),read(A),read(B),
                         Z is A ** B,write('Answer is '),write(Z),menu;
                 X=6 ->  nl,write('Enter two numbers: '),read(A),read(B),
                         Z is A mod B,write('Answer is '),write(Z),menu;
                 X=7 ->  nl,write('Enter two numbers: '),read(A),read(B),
                         (B=0 ->  write('Error Denominator cannot be 0!!');
                          Z is A // B,write('Answer is '),write(Z),menu);
                 X=8 ->  nl,write('Program terminated!!').
```

```
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Modulus
7. Integer Division
8. Exit
Enter your choice:
1
Enter two numbers:
5
7
Answer is 12
```

```
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Modulus
7. Integer Division
8. Exit
Enter your choice:
4
Enter two numbers:
5
0
Error Denominator cannot be 0!!
```

```
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Modulus
7. Integer Division
8. Exit
Enter your choice:
5
Enter two numbers:
2
5
Answer is 32
```

ii) Find maximum and minimum of 3 numbers, read numbers from the keyboard.

```
min_max :- write('Enter three numbers: '),
           read(A),read(B),read(C),max(A,B,C),min(A,B,C).

find_max(X, Y, Z) :- (X >= Y, Z = X); (X < Y, Z = Y).
find_min(X, Y, Z) :- (X =< Y, Z = X); (X > Y, Z = Y).

max(A,B,C) :- find_max(A,B,D), find_max(D,C,Maximum),
              write('Maximum of '),write(A),write(', '),write(B),write(' and '),
              write(C),write(' is '),write(Maximum),write('.'),nl.

min(A,B,C) :- find_min(A,B,E), find_min(E,C,Minimum),
              write('Minimum of '),write(A),write(', '),write(B),write(' and '),
              write(' and '),write(C),write(' is '),write(Minimum),write('.').
```

```
Enter three numbers:
659
251
-96
Maximum of 659, 251 and -96 is 659.
Minimum of 659, 251 and and -96 is -96.
```

iii) A traffic signal system has rules as follows:
a. ODD date number plate vehicles are eligible for Monday, Wednesday and Friday.
b. EVEN number plate vehicles are eligible for Tuesday, Thursday and Saturday.
c. On Sunday all vehicles are eligible for running in traffic.
Read a vehicle number from the keyboard & display its eligible days.

```
vehicle_num :- write('Enter vehicle number: '), read(Number), day(Number).

day(X) :- (0 is X mod 2, write('Vehicle is eligible for Tuesday, Thursday, Saturday and Sunday.'));
          (write('Vehicle is eligible for Monday, Wednesday, Friday and Sunday.')).
```

```
Enter vehicle number:
8952
Vehicle is eligible for Tuesday, Thursday, Saturday and Sunday.
Enter vehicle number:
8963
Vehicle is eligible for Monday, Wednesday, Friday and Sunday.
```