AI PRACTICAL FILE

Department of Computer Science
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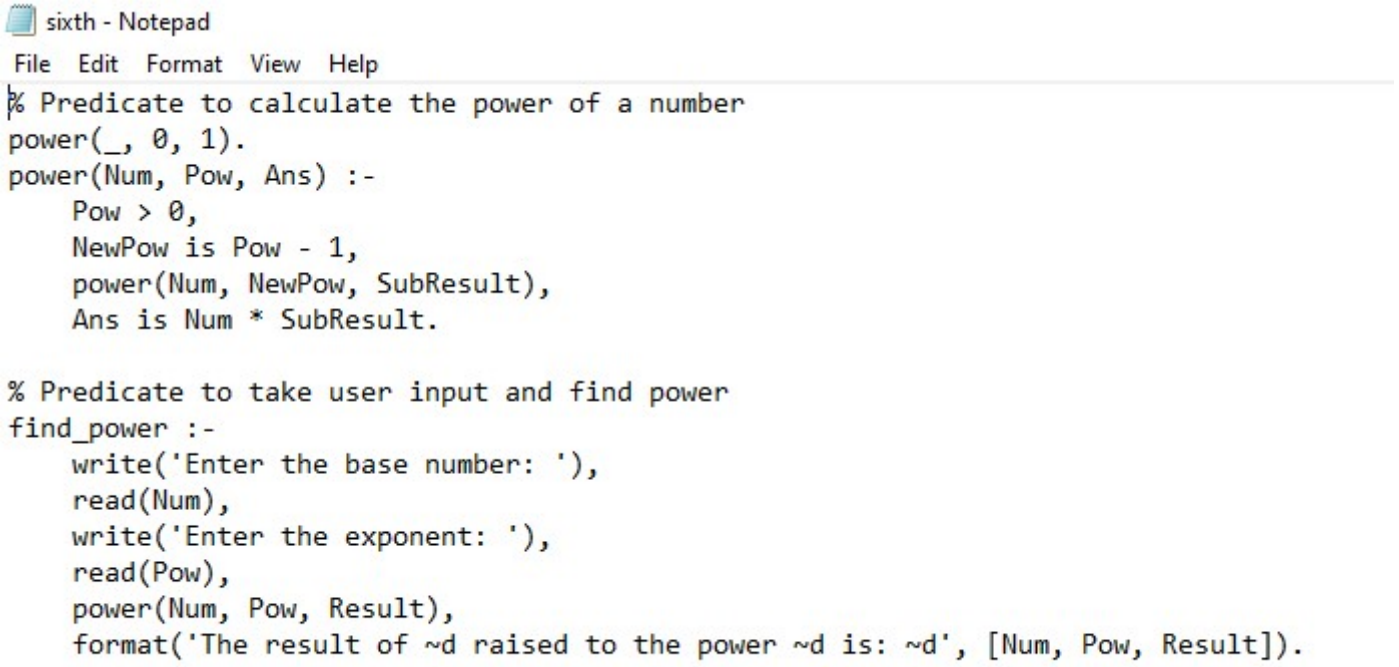
Q6. Write a prolog program to implement power (Num,Pow,Ans):where Num is Raised to the power to get Ans

```
% Predicate to calculate the power of a number
power(_, 0, 1).
power(Num, Pow, Ans) :-
    Pow > 0,
    NewPow is Pow - 1,
    power(Num, NewPow, SubResult),
    Ans is Num * SubResult.

% Predicate to take user input and find power
find_power :-
    write('Enter the base number: '),
    read(Num),
    write('Enter the exponent: '),
    read(Pow),
    power(Num, Pow, Result),
    format('The result of ~d raised to the power ~d is: ~d', [Num, Pow, Result]).
```



Output

```
?-
% f:/Himanshu_AI_practical/sixth.pl compiled 0.00 sec, 3 clauses
?- find_power.
Enter the base number: 5
|: .
Enter the exponent: |: 3.
The result of 5 raised to the power 3 is: 125
true .

?-
```

Q7. Prolog program to implement multi (N1, N2, R) : where N1 and N2 denotes the numbers to be multiplied and R represents the result

```
%Predicate to calculate the multiplication of two numbers
multi(_,0,0).
multi(N1,N2,R):-
    N2 > 0,
    NewN2 is N2 - 1,
    multi(N1,NewN2,SubResult),
    R is N1 + SubResult.

%Predicate to take user input and find multiplication
find_multiplication:-
    write('Enter the first number : '),
    read(N1),
    write('Enter the second number : '),
    read(N2),
    multi(N1,N2,Result),
    format('The result of ~d multiplied by ~d is : ~d',[N1,N2,Result]).
```

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```
%Predicate to calculate the multiplication of two numbers
multi(_,0,0).
multi(N1,N2,R):-
        N2 > 0,
        NewN2 is N2 - 1,
        multi(N1,NewN2,SubResult),
        R is N1 + SubResult.

%Predicate to take user input and find multiplication
find_multiplication:-
        write('Enter the first number : '),
        read(N1),
        write('Enter the second number : '),
        read(N2),
        multi(N1,N2,Result),
        format('The result of ~d multiplied by ~d is : ~d',[N1,N2,Result]).
```

Output

```
?-
% f:/Himanshu_AI_practical/seven.pl compiled 0.00 sec, 3 clauses
?- find_multiplication.
Enter the first number : 12
|: .
Enter the second number : |: 12.
The result of 12 multiplied by 12 is : 144
true .

?-
```

Q8. Write a Prolog program to implement memb(X, L): to check whether X is a member of L or not..

```
memb(X, [X|_]).
memb(X, [_|T]) :- memb(X, T).

main :-
        write('Enter the list : '),
        read(List),
        write('Enter the element to check : '),
        read(Element),
        (memb(Element, List)->
                format('~w is a member of the list. ~n',[Element])
        ;
                format('~w is not a member of the list. ~n',[Element])
        ).
```

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```
memb(X, [X|_]).
memb(X, [_|T]) :- memb(X, T).

main :-
        write('Enter the list : '),
        read(List),
        write('Enter the element to check : '),
        read(Element),
        (memb(Element, List)->
                format('~w is a member of the list. ~n',[Element])
        ;
                format('~w is not a member of the list. ~n',[Element])
        ).
```

Output

```
?-
% f:/Himanshu_AI_practical/eight.pl compiled 0.00 sec, 3 clauses
?- main.
Enter the list : 1,2,3,4,5,.

ERROR: Stream user_input:26:27 Syntax error: Unexpected `,' before `.'
?- main.
Enter the list : 1.2.3.4.5.
Enter the element to check : |: 2.
2 is not a member of the list.
true.

?- main.
Enter the list : [1,2,3,4,5,6].
Enter the element to check : |: 4.
4 is a member of the list.
true.
```

Q9. Write a Prolog program to implement conc (L1, L2, L3) where L2 is the list to be appended with L1 to get the resulted list L3.

```
conc([], L, L).
conc([X|L1], L2, [X|L3]) :- conc(L1, L2, L3).

main:-
        write('Enter list L1: '), read(L1),
        write('Enter list L2: '), read(L2),
        conc(L1, L2, L3),
        write('Concatenated list L3: '), write(L3).
```

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```
conc([], L, L).
conc([X|L1], L2, [X|L3]) :- conc(L1, L2, L3).

main:-
        write('Enter list L1: '), read(L1),
        write('Enter list L2: '), read(L2),
        conc(L1, L2, L3),
        write('Concatenated list L3: '), write(L3).
```

Output

```
Warning:    Previously defined at f:/himanshu_ai_practical/eight.pl:4
% f:/Himanshu_AI_practical/nine.pl compiled 0.00 sec, 3 clauses
?- main.
Enter list L1: [1,2,3,4,5,6].
Enter list L2: |: [8,12,43,5,6,'a'].
Concatenated list L3: [1,2,3,4,5,6,8,12,43,5,6,a]
true.
```

Q10. Write a Prolog program to implement reverse (L, R) where List L is original and List R is reversed list.

```
reverse([], []).
reverse([X|Xs], R) :- reverse(Xs, RevXs), conc(RevXs, [X], R).

conc([], L, L).
conc([X|L1], L2, [X|L3]) :- conc(L1, L2, L3).

main:-
        write('Enter list L: '), read(L),
        reverse(L, R),
        write('Reversed list R: '), write(R).
```

ten - Notepad

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```
reverse([], []).
reverse([X|Xs], R) :- reverse(Xs, RevXs), conc(RevXs, [X], R).

conc([], L, L).
conc([X|L1], L2, [X|L3]) :- conc(L1, L2, L3).

main:-
        write('Enter list L: '), read(L),
        reverse(L, R),
        write('Reversed list R: '), write(R).
```

Output

```
Warning:    Previously defined at f:/himanshu_ai_practical/eight.pl:4
% f:/Himanshu_AI_practical/ten.pl compiled 0.00 sec, 5 clauses
?- main.
Enter list L: ['a','b','c',4,5,1]
|: .
Reversed list R: [1,5,4,c,b,a]
true.

?-
```