Logic Programming with Prolog

Section 5

Created by: Rehab Mohamed

The read() Predicate

The read() predicate is used to read from console. User can write something in the console, that can be taken as input and process it.

Example 1

```
input:- write("Enter your name: "),nl,
        read(X),nl,
        write("Hello "),write(X).
```

```
?- input.
Enter your name:
|: adham.

Hello adham
true.
```

Example 2

❑ Calculate Sum and Average of 5 numbers

```prolog
go:-
write('Enter 5 numbers :  '),
    read(X1),read(X2),read(X3),read(X4),read(X5),nl,

    Sum is (X1+X2+X3+X4+X5),
    Avg is Sum / 5 ,

    write('sum = '),write(Sum),nl,
    write('avg = '),write(Avg).
```

```
?- go.
Enter 5 numbers : 1.
|: 2.
|: 3.
|: 4.
|: 5.

sum = 15
avg = 3
true.
```

Exercise

Consider the following table and explain by KBS how to classify the students to the following departments:

1. **Biology.**
2. **Chemistry.**
3. **Physics.**
4. **Mathematics.**

Exercise

name	markbi	markch	markphy	markmath
Khaled	95	80	70	75
Yaser	88	95	77	66
Hoda	87	70	85	95
Hamdy	90	85	65	70
Ranya	65	78	95	87
Hany	85	95	60	65

➢ **Admission requirements for the Department of <u>Biology</u>**
1. Biology mark>=95.
2. Chemistry mark>=85.   _____
3. Total summation>=280.

➢ **Admission requirements for the Department of <u>Chemistry</u>**
1. Biology mark>=85.
2. Chemistry mark>=95.
3. Total summation>=300.

➢ **Admission requirements for the Department of <u>Physics</u>**
1. Physics mark>=95.
2. Mathematic mark>=85.
3. Total summation>=285.

➢ **Admission requirements for the Department of <u>Mathematic</u>**
1. Physics mark>=85.
2. Mathematic mark>=95.
3. Total summation>=300

Answer

%Facts

mark(95,khaled,biology).
mark(80,khaled,chemistry).
mark(70,khaled,physics).
mark(75,khaled,mathematic).

mark(88,yaser,biology).
mark(95,yaser,chemistry).
mark(77,yaser,physics).
mark(66,yaser,mathematic).

mark(87,hoda,biology).
mark(70,hoda,chemistry).
mark(85,hoda,physics).
mark(95,hoda,mathematic).

mark(90,hamdy,biology).
mark(85,hamdy,chemistry).
mark(65,hamdy,physics).
mark(70,hamdy,mathematic).

mark(65,ranya,biology).
mark(78,ranya,chemistry).
mark(95,ranya,physics).
mark(87,ranya,mathematic).

mark(85,hany,biology).
mark(95,hany,chemistry).
mark(60,hany,physics).
mark(65,hany,mathematic).

```prolog
sum(X,Y) :-
        mark(B,Y,biology),
        mark(C,Y,chemistry),
        mark(P,Y,physics),
        mark(M,Y,mathematic),
        X is B+C+P+M.
dept(biology,Y):-
        mark(B,Y,biology),
        mark(C,Y,chemistry),
        sum(S,Y),
        B>=95,C>=85,S>=280,
        write(Y),nl,fail.

dept(chemistry,Y):-
        mark(B,Y,biology),
        mark(C,Y,chemistry),
        sum(S,Y),
        B>=85,C>=95,S>=300,
        write(Y),nl,fail.
dept(physics, Y):-
        mark(P, Y, physics),
        mark(M, Y, mathematic),
        sum(S,Y),
        P>=95, M>=85, S>=285,
        write(Y),nl,fail.
dept(mathematic, Y):-
        mark(P, Y, physics),
        mark(M, Y, mathematic),
        sum(S,Y),
        P>=85, M>=95, S>=300,
        write(Y),nl,fail.
```

Queries

?- mark(X,khaled,physics).
X = 70 .

?- mark(X,ranya,biology).
X = 65 .

?- mark(X,hany,chemistry).
X = 95.

?- mark(X,hoda,mathematic).
X = 95 .

?- sum(Result,khaled).
Result = 320 .

?- sum(Result,hoda).
Result = 337 .

?- sum(Result,yaser).
Result = 326 .

?- sum(Result,hamdy).
Result = 310 .

?- dept(biology,R).
false.

?- dept(chemistry,R).
yaser
hany
false.

?- dept(physics,R).
ranya
false.

?- dept(mathematic,R).
hoda
false.

Task

Create a simple calculator program that accepts two numbers, and calculate their summation, subtraction, multiplication, and division (Using read and write predicates).

```
?- start.
<<< Simple Calculator Program >>>

* Enter the 1st number: 5.
* Enter the 2nd number: |: 3.

>>Available operations:
 Enter (a) for Addition.
 Enter (s) for Subtraction.
 Enter (m) for Multiplication.
 Enter (d) for Division.

* Select an operation: |: a.
* The result is 8

Do you want to do it again (yes./no.)? |: no.
***********************************************
```