Logic Programming – Laboratory 8

Defining new operators in Prolog

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1 Exercises

1. Example

What will be written in myfile after the following command?

```
?- tell('C:\\Users\\ISABELA\\Desktop\\myfile'),
write(green(snow)),write('.'),nl,write(red(sky)),
write('.'),nl,told.
true.
```

2. For an easier way to define the predicates in Prolog try the following example:

a)

```
----in the txt file:
:-op(100,xfx,is_father_of).

michael is_father_of cathy.
X is_father_of Y:-male(X),parent(X,Y).

male(john).
male(michael).
male(anthony).
male(bobi).

parent(john,marie).
parent(paul,kenedy).
parent(bobi,julie).

----interogation:
 ?- X is_father_of cathy.

 ?- X is_father_of Y.
X = michael,
Y = cathy ;
X = john,
Y = marie ;
```

```
X = bobi,
Y = julie.
```

b) Write also the other predicates such that can be read more easier.

3. Write the predicate

```
likes(john,marie).
```

as

```
    john likes marie.
```

Details you can find in the lecture at page 58.

4. Redefine the arithmetic operators +,-,*,/ such that you change their priority. All the following expressions have to be evaluated from right to left

Example:

```
?-X is 2*3+4.
X=14.
  %has to return X=14, not X=10.

?-X is 1.0/2.5-5.6.
X=-0.32258.
   % X=-0.32258, not -5.2
```

5. Define new operators for negation, conjunction, disjunction, implication and equivalence. Return also the conjunctive normal form and the disjunctive normal form of an expression:

For example:

```
?-transform(~(~p),X).
X=p.

?-transform(p equivalent (q equivalent r), NormalForm).
```

6. Read from a file one.txt all the lines (on each line we have a number followed by dot) and write the result of multiple operations into another file

a) return the numbers in decreasing order by applying at least two methods of sorting;

b) check and return if the file contains only natural numbers.

c) return the maximal value from the file.

d) return the minimum value from the file.

e) return the arithmetic mean of the numbers.