

Assignment Project Exam Help

Prolog

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Some Additional Features

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(Read/Write, etc.)

Fariba Sadri

- `listing.` Lists all user definitions currently loaded.
- `listing(p).` Lists the definition of a given predicate `p`.

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In Linux to be able to use `listing` you must use `consult(<program>)`, rather than `compile(<program>)`.

Input / Output

- `write(T)` writes a term `T`
- `read(X)` unifies with `X` the next term
read (the term must be followed by “.” and carriage return if written from keyboard)
- `nl` writes a new line character
- `tab(N)` produces `N` tab spaces

`tab` may not work in some Prologs. But we can program it easily.

tab(0).

tab(N) :- N>0, write(' '), M is N-1, tab(M).

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Example

A Prolog program that writes the content of a list, one element per line:

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```
writelist([]).
```

```
writelist([X|L]):- write(X), nl, writelist(L).
```

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```
| ?- writelist(['Ready', 'Steady', 'Go']).
```

Ready

Steady

Go

yes

Another Example

```
/*
```

A program for practising the squares of number:

- It asks the user if they want to play.
- If they do then it generates an integer at random, and
- asks them to input the square of the integer.
- If they get it right it says correct, otherwise it says wrong and outputs the correct square.

```
*/
```

% Load the random number generator library.

% This is called a *directive*.

:- use_module(random).

check_squares:-

nl, write('Do you want to play ?'),

nl, read(X),

(X=no -> (write(goodbye), nl, nl);

random(1,20,Y),

% Randomly generates an integer between 1 and 20.

nl, askabout(Y)).

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random(+L, +U, -R)

unifies R with a random integer in $[L, U)$

when L and U are integers (note that U will
never be generated).

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askabout(X):-

writeMessage(['what is the square of', X, '?']),
read(Y),

Z is X*X, <https://tutorcs.com>

(Y is Z -> write(correct), nl ;

write(wrong), tab(4),
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writeMessage(['the square of', X, is, Z])),
check_squares.

Example cntd.

askabout(X):-

writeMessage(['what is the square of',
X, '?']),

read(Y),

(Y is X*X->write(correct), nl ;
write(wrong),nl),

check_squares.

Example cntd.

```
writeMessage([]).
```

```
writeMessage([X|L]):  
    write(X),  
    write(' '),  
    writeMessage(L),  
    nl.
```

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Comparison operators in Prolog

Comparison	Definition	Evaluates?
$X = Y$	succeeds if X and Y unify (match) in the Prolog sense	No
$X \neq Y$	succeeds if X and Y do not unify; i.e. if not ($X = Y$)	No
$T1 == T2$	succeeds if terms T1 and T2 are identical; e.g. names of variables have to be the same	No
$T1 \neq T2$	succeeds if terms T1 and T2 are not identical	No
$E1 =:= E2$	succeeds if values of expressions E1 and E2 are equal	Yes
$E1 \neq E2$	succeeds if values of expressions E1 and E2 are not equal	Yes
$E1 < E2$	succeeds if numeric value of expression E1 is < numeric value of E2	Yes
$E1 \leq E2$	succeeds if numeric value of expression E1 is \leq numeric value of E2	Yes
$E1 > E2$	succeeds if numeric value of expression E1 is > numeric value of E2	Yes
$E1 \geq E2$	succeeds if numeric value of expression E1 is \geq numeric value of E2	Yes
$T1 @< T2$	succeeds if T1 is alphabetically < T2	No
$T1 @\leq T2$	succeeds if T1 is alphabetically \leq T2	No
$T1 @> T2$	succeeds if T1 is alphabetically > T2	No
$T1 @\geq T2$	succeeds if T1 is alphabetically \geq T2	No

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Inserting clauses at the terminal

```
| ?- [user].
```

```
% consulting user ...
```

```
| p(X):-q(X). Assignment Project Exam Help
```

```
| p(X):-r(X).
```

```
| q(1). https://tutorcs.com
```

```
| r(2). WeChat: cstutorcs
```

```
| end_of_file.
```

```
% consulted user in module user, 0 msec 560 bytes
```

```
yes
```

```
| ?-
```

Instead of

| ~~end_of_file.~~

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You can type

| <Ctrl> z

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How do you save the terminal entered program to a file?

If you wish to save the program you have entered at the terminal as a text file, you can use the following steps:

- After the “[user].” part you have to declare all your predicates *dynamic*.
- Then enter the program, ending with *end_of_file* or *<Ctrl>z*.
- Then use *tell, listing, told*.

Example

| ?- [user].

| dynamic(plus_one/2).

| plus_one(X, Y) :- Y is X + 1.

| end_of_file. (or '<Ctrl>-Z').

| ?- tell(yourFilename).

| ?- listing.

| ?- told.

yes

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In windows use the file -> Working directory menu to choose directory where the file will go.

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In Linux give the full file name.

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Reading and writing from files

(not part of this course)

Not needed in this course.

But Prolog has a variety of predicates for these tasks, such as:

- `see(F)` opens file F as the input file
- `seen` closes F as input file
- `tell(F)` opens file F as the output file
- `told` closes F as output file

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