

Grand Canyon University

First-Order Predicate Calculus Assignment

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CST-301: Principles of Programming Languages Lecture and Lab

Commissioner Gordon

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If it is raining or snowing, then there is precipitation.



SWI-Prolog (AMD64, Multi-threaded, version 8.4.2)

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```
?- precipitation(raining).  
true.
```

```
?- precipitation(snowing).  
true.
```

```
?- █
```

If it is freezing and there is precipitation, then it is snowing.



SWI-Prolog (AMD64, Multi-threaded, version 8.4.2)

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```
?- snowing(freezing, raining).  
true.
```

```
?- snowing(freezing, snowing).  
true.
```

```
?- █
```

If it is not freezing and there is precipitation, then it is raining.



SWI-Prolog (AMD64, Multi-threaded, version 8.4.2)

File Edit Settings Run Debug Help

```
?- raining("anything but freezing", snowing).  
true.
```

```
?- █
```

In your own words describe how logic programming is different from other languages you have worked with. (100-150 words)

The Prolog language works like a database by allowing us to assign facts, relations and rules. Instead of directly telling the Prolog language what to do, Prolog figures it out itself by observing these facts, relations and rules. This is a much different approach to typical programming languages like C++, where you have to tell it EXACTLY what you want it to do OR ELSE. While I can imagine a lot of things Prolog would be bad at, there are also some tasks it would excel at as well. Prolog is well-suited for specific tasks that benefit from rule-based logical queries such as searching databases, voice control systems, and filling templates.

Screenshot of code:

```
weather(raining).
weather(snowing).

too_cold(freezing).

/*If it is raining or snowing, then there is precipitation.*/
precipitation(X) :-
    weather(X).

/*If it is freezing and there is precipitation, then it is snowing.*/
snowing(X,Y) :-
    too_cold(X),
    precipitation(Y).

/*If it is not freezing and there is precipitation, then it is raining.*/
raining(X,Y) :-
    true, \+ too_cold(X),    /*if it is not freezing*/
    precipitation(Y).
```