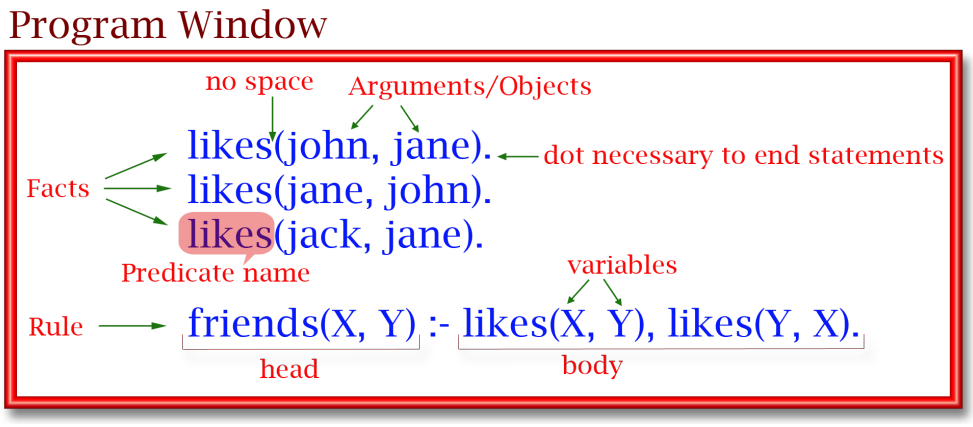
Logic Programming

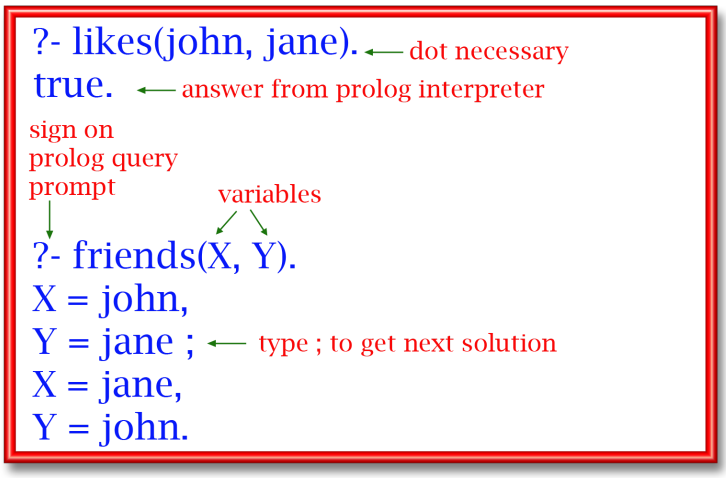
A Courseware

Prolog Examples

sample program & query window figure with notations



Query Window



prolog examples with explanations

Prolog always performs depth-first-search, Matches facts & rules (i.e. knowledge base) in top-down manner and resolves the goals or subgoals in left-to-right manner. Most important thing to keep in mind while writing prolog program - "order of writing facts & rules always matters".

Example 1 : Below food table shows the facts, rules, goals and their english meanings.

Facts	English meanings
food(burger).	// burger is a food
food(sandwich).	// sandwich is a food
food(pizza).	// pizza is a food
lunch(sandwich).	// sandwich is a lunch
dinner(pizza).	// pizza is a dinner
Rules	
meal(X) :- food(X).	// Every food is a meal OR Anything is a meal if it is a food
Queries / Goals	
?- food(pizza).	// Is pizza a food?
?- meal(X), lunch(X).	// Which food is meal and lunch?
?- dinner(sandwich).	// Is sandwich a dinner?

EXAMPLE - 1 EXPLANATION & MORE

Example 2 : Below student-professor relation table shows the facts, rules, goals and their english meanings.

Facts	English meanings
studies(charlie, csc135).	// charlie studies csc135
studies(olivia, csc135).	// olivia studies csc135
studies(jack, csc131).	// jack studies csc131
studies(arthur, csc134).	// arthur studies csc134
teaches(kirke, csc135).	// kirke teaches csc135
teaches(collins, csc131).	// collins teaches csc131
teaches(collins, csc171).	// collins teaches csc171
teaches(juniper, csc134).	// juniper teaches csc134

Rules	
professor(X, Y) :- teaches(X, C), studies(Y, C).	// X is a professor of Y if X teaches C and Y studies C.

Queries / Goals	
?- studies(charlie, What).	// charlie studies what? OR What does charlie study?
?- professor(kirke, Students).	// Who are the students of professor kirke.

EXAMPLE - 2 EXPLANATION & MORE

Try it yourself in SWI-prolog : Use above Example 1 & Example 2 and try below queries by yourself and find out why did you get those answers.

From Example 1 :

```
(1)    ?- meal(X), dinner(X).
(2)    ?- meal(What).
(3)    ?- meal(X), dinner(Y).
```

From Example 2 :

`(1)  ?- studies(Who, csc135).` (hint : after getting first solution type ' ; ' to find all the possible solutions)

Fun Bonus : Using Example-2 just copy paste below query and see the result -

```
?- studies(charlie, Which), teaches(Who,Which), write('charlie studies '),
write(Which), write(' and professor '), write(Who), write(' teaches '),
write(Which).
```

More Prolog Programming Examples

Example - 3 Arithmetic Example - 4 Car & Owner Example - 5 List in Prolog Example - 6 Own pet & Love

Try SWI-Prolog online
More Prolog Examples

Quiz Prolog Exercises