

What is Prolog?

Prolog is a logic programming language used for solving problems that involve reasoning and knowledge representation.

Why is Prolog Used?

Artificial Intelligence (AI) Applications

- Used in Natural Language Processing (NLP).
- Develops Expert Systems that simulate human decision-making

Database Querying

- Efficient for searching and managing data.

Modeling and Planning

Helps create models for complex scenarios.

Educational Tools

- Simplifies teaching logic and reasoning concepts.

Applications of Prolog

- **Puzzles and Games**
 - Used to solve logic puzzles and create games.

Medical Diagnosis Systems

Helps identify diseases based on symptoms.

Robotics and Automation

- Assists in automated decision-making for robots.

Natural Language Processing (NLP)

- Understands and processes human languages.

In Prolog, a **fact** is a basic statement that declares a relationship between entities. Here's how you write the given relationship as a fact:

Syntax for Writing the Fact:

likes(john, mary).

Explanation:

1. **likes:** This is the predicate (relationship or action).
2. **john:** The first argument (subject of the relationship).
3. **mary:** The second argument (object of the relationship).
4. **∴** The period marks the end of the fact.
5. Here are some additional facts you can use to expand the knowledge base:

Example Facts:

```
6.prolog
7.CopyEdit
8.likes(john, mary).      % John likes Mary
9.likes(mary, ice_cream). % Mary likes ice cream
10.likes(susan, books).   % Susan likes books
11.likes(alex, music).    % Alex likes music
12.likes(paul, football). % Paul likes football
13.likes(anna, painting). % Anna likes painting
14.likes(john, pizza).    % John likes pizza
15.likes(susan, hiking).  % Susan likes hiking
16.likes(mary, dancing).  % Mary likes dancing
17.likes(alex, coding).   % Alex likes coding
```

Explanation:

- Each **fact** consists of a predicate (likes) and two arguments.
- The arguments can represent people, objects, or concepts.
- You can define any relationships to build a more detailed knowledge base.
- **How to Use These Facts:**

1. Querying Relationships:

- To check if John likes Mary:

?- likes(john, mary).

O/P This will return true.

Facts for Relationships and Attributes

1. Likes Relationship

likes(john, mary).

likes(susan, chocolate).

likes(alex, movies).

likes(paul, football).

likes(mary, traveling).

2. Dislikes Relationship

dislikes(john, spiders).

dislikes(susan, noise).

dislikes(paul, rainy_days).

dislikes(mary, homework).

3. Friendship

friends(john, alex).

friends(susan, mary).

friends(alex, paul).

friends(john, susan).

4. Family Relationships

parent(john, susan).

parent(mary, paul).

parent(alex, anna).

sibling(susan, paul).

sibling(john, alex).

5. Occupation

occupation(john, doctor).

occupation(mary, teacher).

occupation(alex, engineer).

occupation(paul, artist).

occupation(susan, scientist).

6. Owns/Has

owns(john, car).

owns(mary, house).

owns(alex, laptop).

owns(paul, bike).

owns(susan, garden).

7. Animal Relationships

has_pet(john, dog).

has_pet(mary, cat).

has_pet(alex, rabbit).

has_pet(susan, parrot).

8. Hobbies

hobby(john, reading).

hobby(mary, painting).

hobby(susan, cycling).

hobby(alex, programming).

hobby(paul, photography).