

EX.NO:7

DATE:

INTRODUCTION TO PROLOG

AIM

To learn PROLOG terminologies and write basic programs.

TERMINOLOGIES

1. Atomic Terms: -

Atomic terms are usually strings made up of lower- and uppercase letters, digits, and the underscore, starting with a lowercase letter.

Ex:

dog
ab_c_321

2. Variables: -

Variables are strings of letters, digits, and the underscore, starting with a capital letter or an underscore.

Ex:

Dog
Apple_420

3. Compound Terms: -

Compound terms are made up of a PROLOG atom and a number of arguments (PROLOG terms, i.e., atoms, numbers, variables, or other compound terms) enclosed in parentheses and separated by commas.

Ex:

is_bigger(elephant,X)
f(g(X,_),7)

4. Facts: -

A fact is a predicate followed by a dot.

Ex:

bigger_animal(whale).
life_is_beautiful.

5. Rules: -

A rule consists of a head (a predicate) and a body (a sequence of predicates separated by commas).

Ex:

is_smaller(X,Y):-is_bigger(Y,X).
aunt(Aunt,Child):-sister(Aunt,Parent),parent(Parent,Child).

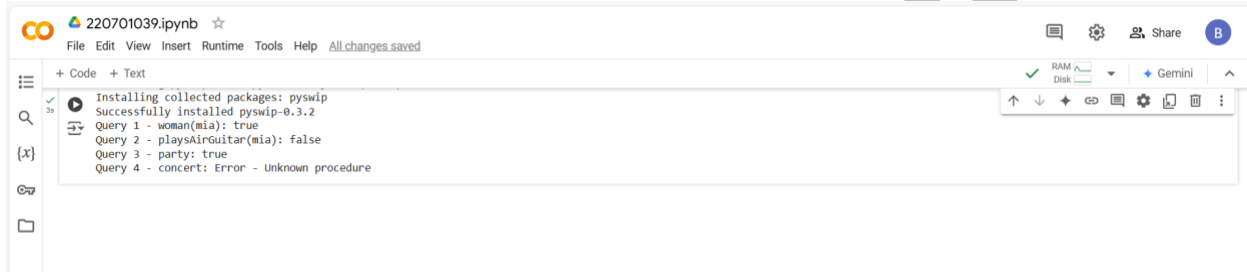
SOURCE CODE:

KB1:

woman(mia).

woman(jody).
woman(yolanda).
playsAirGuitar(jody).
party.
Query 1: ?-woman(mia).
Query 2: ?-playsAirGuitar(mia).
Query 3: ?-party.
Query 4: ?-concert.

OUTPUT: -



A Jupyter Notebook interface for file 220701039.ipynb. The code cell contains Prolog queries and their results. The output shows that 'woman(mia)' is true, 'playsAirGuitar(mia)' is false, 'party' is true, and 'concert' is an error due to an unknown procedure.

```
Installing collected packages: pyswip  
Successfully installed pyswip-0.3.2  
Query 1 - woman(mia): true  
Query 2 - playsAirGuitar(mia): false  
Query 3 - party: true  
Query 4 - concert: Error - Unknown procedure
```

KB2:

OUTPUT: -



A Jupyter Notebook interface for file 220701039.ipynb. The code cell contains a Prolog query for 'playsAirGuitar(someone_not_in_facts)' and a print statement. The output shows that 'playsAirGuitar(mia)' is true, 'playsAirGuitar(yolanda)' is true, and 'playsAirGuitar(someone_not_in_facts)' is false.

```
result = list(prolog.query("playsAirGuitar(someone_not_in_facts)"))  
print("Query 3 - playsAirGuitar(someone_not_in_facts):", "true" if result else "false")  
Query 1 - playsAirGuitar(mia): true  
Query 2 - playsAirGuitar(yolanda): true  
Query 3 - playsAirGuitar(someone_not_in_facts): false
```

KB3:

OUTPUT: -



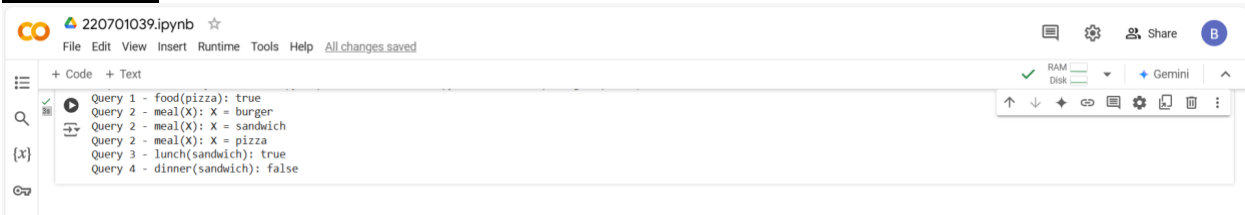
A Jupyter Notebook interface for file 220701039.ipynb. The code cell contains Prolog queries and their results. The output shows that 'likes(dan, X)' is true for 'sally', 'married(dan, sally)' is true, and 'married(john, brittney)' is false.

```
Requirement already satisfied: pyswip in /usr/local/lib/python3.10/dist-packages (0.3.2)  
Query 1 - likes(dan, X): X = sally  
Query 2 - married(dan, sally): true  
Query 3 - married(john, brittney): false
```

KB4:

food(burger).
food(sandwich).
food(pizza).
lunch(sandwich).
dinner(pizza).
meal(X):-food(X).

OUTPUT:



A screenshot of a Jupyter Notebook interface. The top bar shows the file name '220701039.ipynb' and a star icon. Below the bar is a menu with 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', 'Help', and 'All changes saved'. The left sidebar has icons for a list, search, and a variable '{x}'. The main area contains a code cell with the following queries:

```
Query 1 - food(pizza): true
Query 2 - meal(X): X = burger
Query 2 - meal(X): X = sandwich
Query 2 - meal(X): X = pizza
Query 3 - lunch(sandwich): true
Query 4 - dinner(sandwich): false
```

On the right, there are icons for RAM, Disk, Gemini, and a share button.

KB5:

owns(jack,car(bmw)).
owns(john,car(chevy)).
owns(olivia,car(civic)).
owns(jane,car(chevy)).
sedan(car(bmw)).
sedan(car(civic)).
truck(car(chevy)).

OUTPUT:



A screenshot of a Jupyter Notebook interface. The top bar shows the file name '220701039.ipynb' and a star icon. Below the bar is a menu with 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', 'Help', and 'Saving...'. The left sidebar has icons for a list, search, and a variable '{x}'. The main area contains a code cell with the following output:

```
Requirement already satisfied: pyswip in /usr/local/lib/python3.10/dist-packages (0.3.2)
Query 1 - owns(john, X): X = car(chevy)
Query 2 - owns(john, _): true
Query 4 - owns(jane, X), sedan(X): false
Query 5 - owns(jane, X), truck(X): X = car(chevy)
```

On the right, there are icons for RAM, Disk, Gemini, and a share button.

RESULT: