

PROGRAM 30

BACKWARD CHAINING

CODE:

% Define facts representing relationships between animals and their characteristics

mammal(dog).

mammal(cat).

bird(parrot).

bird(eagle).

has_feathers(parrot).

has_feathers(eagle).

has_fur(dog).

has_fur(cat).

% Define rules for inferring additional information

can_fly(X) :- bird(X), has_feathers(X).

has_fur_animal(X) :- mammal(X), has_fur(X).

% Backward chaining algorithm

backward_chaining(Goal) :-

Goal,

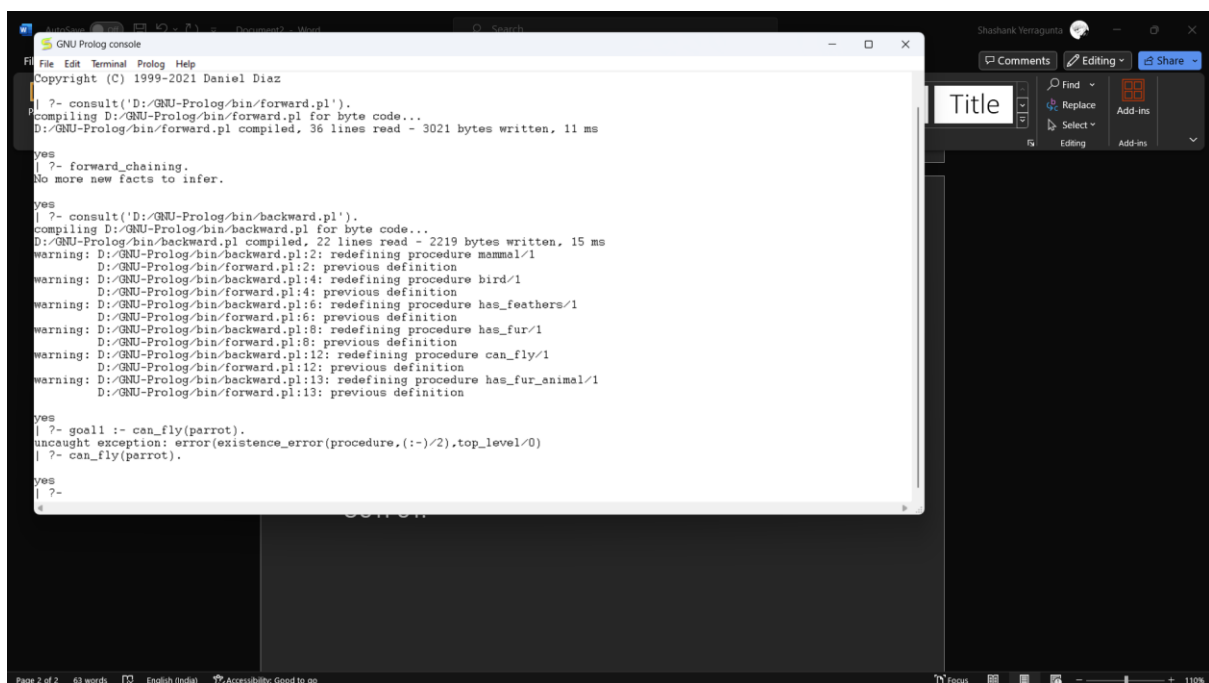
`write('Goal: '), write(Goal), write(' is satisfied.').`

% Define queries for goals

`goal1 :- can_fly(parrot).`

`goal2 :- has_fur_animal(dog).`

OUTPUT:



```
GNU Prolog console
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[ ?- consult('D:/GNU-Prolog/bin/forward.pl').
compiling D:/GNU-Prolog/bin/forward.pl for byte code...
D:/GNU-Prolog/bin/forward.pl compiled, 36 lines read - 3021 bytes written, 11 ms

yes
[ ?- forward_chaining.
No more new facts to infer.

yes
[ ?- consult('D:/GNU-Prolog/bin/backward.pl').
compiling D:/GNU-Prolog/bin/backward.pl for byte code...
D:/GNU-Prolog/bin/backward.pl compiled, 22 lines read - 2219 bytes written, 15 ms
warning: D:/GNU-Prolog/bin/backward.pl:2: redefining procedure mammal/1
D:/GNU-Prolog/bin/forward.pl:2: previous definition
warning: D:/GNU-Prolog/bin/backward.pl:4: redefining procedure bird/1
D:/GNU-Prolog/bin/forward.pl:4: previous definition
warning: D:/GNU-Prolog/bin/backward.pl:6: redefining procedure has_feathers/1
D:/GNU-Prolog/bin/forward.pl:6: previous definition
warning: D:/GNU-Prolog/bin/backward.pl:8: redefining procedure has_fur/1
D:/GNU-Prolog/bin/forward.pl:8: previous definition
warning: D:/GNU-Prolog/bin/backward.pl:12: redefining procedure can_fly/1
D:/GNU-Prolog/bin/forward.pl:12: previous definition
warning: D:/GNU-Prolog/bin/backward.pl:13: redefining procedure has_fur_animal/1
D:/GNU-Prolog/bin/forward.pl:13: previous definition

yes
[ ?- goal1 :- can_fly(parrot).
uncaught exception: error(existence_error(procedure, (-)/2), top_level/0)
[ ?- can_fly(parrot).

yes
[ ?-
```