AI Lab | 17 October 2023

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Roll No.: 120CS0124

Exercise 1:

Code:

animal(lion).

animal(tiger).

animal(cow).

carnivore(lion).

carnivore(tiger).

check_carnivore(X):- animal(X),carnivore(X).

Output:

```
GNU Prolog console                                                    —  □  ✕
File  Edit  Terminal  Prolog  Help
GNU Prolog 1.5.0 (64 bits)
Compiled Jul  8 2021, 12:22:53 with gcc
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| ?- change_directory('C:/Users/NITR/Desktop/120CS0124/17Oct').

yes
| ?- consult('C:/Users/NITR/Desktop/120CS0124/17Oct/exercise1.pl').
compiling C:/Users/NITR/Desktop/120CS0124/17Oct/exercise1.pl for byte code...
C:/Users/NITR/Desktop/120CS0124/17Oct/exercise1.pl compiled, 4 lines read - 591 bytes written, 0 ms

yes
| ?- listing(animal).

% file: C:/Users/NITR/Desktop/120CS0124/17Oct/exercise1.pl

animal(lion).
animal(tiger).
animal(cow).

yes
| ?- animal(tiger).

yes
| ?- listing(cow),listing(tiger).

yes
| ?- animal(lion),carnivore(lion).

yes
| ?- animal(cow),carnivore(cow).

no
| ?- listing(carnivore).

% file: C:/Users/NITR/Desktop/120CS0124/17Oct/exercise1.pl

carnivore(lion).
carnivore(tiger).

yes
```

Exercise 2:

Code:

animal(mammal,tiger,carnivore,stripes).

animal(mammal,hyena,carnivore,ugly).

animal(mammal,lion,carnivore,mane).

animal(mammal,zebra,herbivore,stripes).

animal(bird,eagle,carnivore,large).

animal(bird,sparrow,scavenger,small).

animal(reptile,snake,carnivore,long).

animal(reptile,lizard,scavenger,small).

mammal(W):-animal(mammal,X,Y,Z).

carnivore(W):-animal(X,Y,carnivore,Z).

Output:

```
GNU Prolog console                                                    —   □   ×
File  Edit  Terminal  Prolog  Help
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| ?- change_directory('C:/Users/NITR/Desktop/120CS0124/17Oct').

yes
| ?- consult('C:/Users/NITR/Desktop/120CS0124/17Oct/exercise2.pl').
compiling C:/Users/NITR/Desktop/120CS0124/17Oct/exercise2.pl for byte code...
C:/Users/NITR/Desktop/120CS0124/17Oct/exercise2.pl:10: warning: singleton variables [W,X,Y,Z] for mammal/1
C:/Users/NITR/Desktop/120CS0124/17Oct/exercise2.pl:11: warning: singleton variables [W,X,Y,Z] for carnivor
C:/Users/NITR/Desktop/120CS0124/17Oct/exercise2.pl compiled, 11 lines read - 1925 bytes written, 0 ms

yes
| ?- animal(mammal,X,Y,Z).

X = tiger
Y = carnivore
Z = stripes ? ;

X = hyena
Y = carnivore
Z = ugly ? ;

X = lion
Y = carnivore
Z = mane ? ;

X = zebra
Y = herbivore
Z = stripes

yes
| ?- animal(mammal,X,carnivore,Y).

X = tiger
Y = stripes ? ;

X = hyena
Y = ugly ? ;

X = lion
Y = mane ? ;

no
| ?- animal(X,Y,Z,stripes).

X = mammal
Y = tiger
Z = carnivore ? ;

X = mammal
Y = zebra
Z = herbivore ? ;

no
| ?- animal(reptile,X,Y,mane).

no
| ?- |
```

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Exercise 3:

Code:
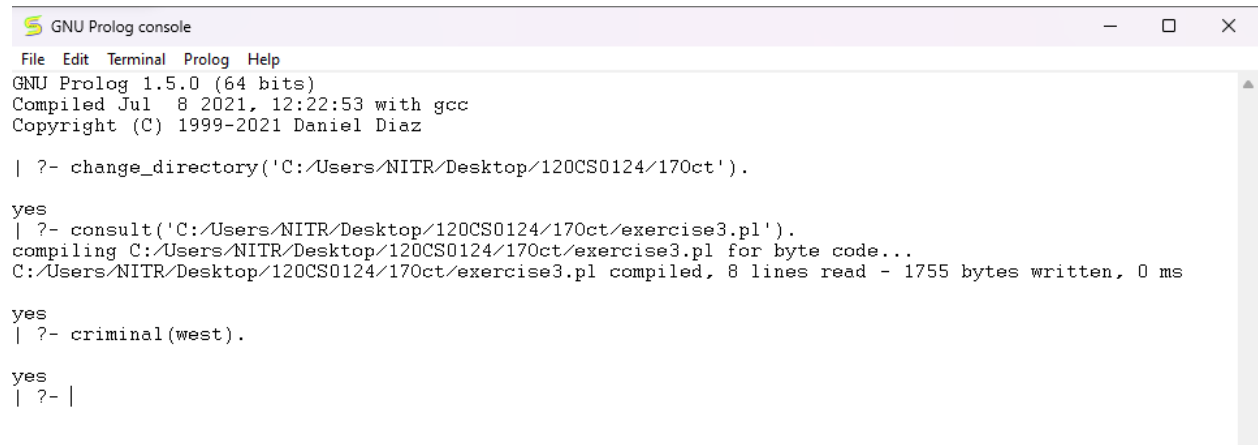
american(west).

country(nono).

missile(m1).

hostile(nono).

criminal(X) :- american(X), sells_weapons_to_hostile(Y), country(Y), hostile(Y).

sells_weapons_to_hostile(Y) :- american(X), missile(Z), country(Y), hostile(Y), sells(X,Z,Y).

sells(west,m1,nono).

Output:

```
GNU Prolog console                                                    —    □    ×

File  Edit  Terminal  Prolog  Help
GNU Prolog 1.5.0 (64 bits)
Compiled Jul  8 2021, 12:22:53 with gcc
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| ?- change_directory('C:/Users/NITR/Desktop/120CS0124/17Oct').

yes
| ?- consult('C:/Users/NITR/Desktop/120CS0124/17Oct/exercise3.pl').
compiling C:/Users/NITR/Desktop/120CS0124/17Oct/exercise3.pl for byte code...
C:/Users/NITR/Desktop/120CS0124/17Oct/exercise3.pl compiled, 8 lines read - 1755 bytes written, 0 ms

yes
| ?- criminal(west).

yes
| ?- |
```