

AI Assignment 6 – Implementation of an Expert system using PROLOG

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Code :

```
% Facts about fruits
```

```
fruit(apple).
```

```
fruit(banana).
```

```
fruit(orange).
```

```
fruit(grape).
```

```
fruit(mango).
```

```
fruit(pineapple).
```

```
fruit(strawberry).
```

```
fruit(blueberry).
```

```
fruit(kiwi).
```

```
fruit(peach).
```

```
fruit(pomegranate).
```

```
fruit(pear).
```

```
% Types of fruits
```

```
fruit_type(apple, red).
```

```
fruit_type(banana, yellow).
```

```
fruit_type(orange, orange).
```

```
fruit_type(grape, purple).
```

```
fruit_type(mango, yellow).
```

```
fruit_type(pineapple, yellow).
```

```
fruit_type(strawberry, red).
```

```
fruit_type(blueberry, blue).
```

```
fruit_type(kiwi, green).
```

```
fruit_type(peach, orange).
```

```
fruit_type(pomegranate, red).
```

```
fruit_type(pear, green).
```

```
% Tastes
```

```
taste(apple, sweet).
```

```
taste(banana, sweet).
```

```
taste(orange, sweet).
```

```
taste(grape, sweet).
```

```
taste(mango, sweet).
```

```
taste(pineapple, sweet).
```

```
taste(strawberry, sweet).
```

```
taste(blueberry, sweet).
taste(peach, sweet).
taste(pear, sweet).
```

```
% Sizes
```

```
size(apple, small).
size(banana, medium).
size(orange, medium).
size(grape, small).
size(mango, medium).
size(pineapple, large).
size(strawberry, small).
size(blueberry, small).
size(kiwi, small).
size(peach, medium).
size(pomegranate, small).
size(pear, medium).
```

```
% Colors
```

```
color(apple, red).
color(banana, yellow).
color(orange, orange).
color(grape, purple).
color(mango, yellow).
color(pineapple, yellow).
color(strawberry, red).
color(blueberry, blue).
color(kiwi, green).
color(peach, orange).
color(pomegranate, red).
color(pear, green).
```

```
% Rule to check if two fruits are of the same type
```

```
same_type(Fruit1, Fruit2) :-
    fruit_type(Fruit1, Type),
    fruit_type(Fruit2, Type),
    Fruit1 \= Fruit2.
```

```
% Rule to determine which fruits pair well together
```

```
pairs_well_with(Fruit1, Fruit2, Color) :-
    taste(Fruit1, sweet),
    taste(Fruit2, sweet),
    same_type(Fruit1, Fruit2),
    size(Fruit1, Size1),
    size(Fruit2, Size2),
    color(Fruit1, Color1),
```

```
color(Fruit2, Color2),
Size1 \= Size2,
Color1 = Color2,
Color1 = Color.
```

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
Copyright (C) 1999-2021 Daniel Diaz

compiling C:/Users/siddh/Desktop/fruits.pl for byte code...
C:/Users/siddh/Desktop/fruits.pl compiled, 86 lines read - 7067 bytes written, 21 ms
| ?- same_type(X,Y).

X = apple
Y = strawberry ? ;

X = apple
Y = pomegranate ? .
Action (; for next solution, a for all solutions, RET to stop) ?

yes
| ?- pairs_well_with('banana',Fruit,Color).

Color = yellow
Fruit = pineapple ? ;

(16 ms) no
| ?- fruit_type('kiwi',X).

X = green

yes
| ?-
```