LAB 3 | Artificial Intelligence

Aim : To learn simple input and output predicates in prolog and to build rule based consultation program.

1. Predict the user‟s nature based on colour user likes.

Code:

```
domains
        User, name = string
        colour_name, characteristic_name = symbol

predicates
        colour(colour_name).
        likes(name).
        response(char).
        characteristic(colour_name,characteristic_name).
        result(colour_name,characteristic_name).
        go.

clauses

        colour(red).
        colour(orange).
        colour(yellow).
        colour(green).
        colour(blue).
        colour(purple).
        colour(brown).
        colour(grey).
        colour(black).

        characteristic(red,very_social).
        characteristic(red,assertive).
        characteristic(red,energetic).
        characteristic(red,moody).
        characteristic(red,impulsive).
        characteristic(red,sympathetic).
        characteristic(red,easiy_swayed).
        characteristic(red,optimist).
        characteristic(red,complainer).
        characteristic(red,brave).
```

```
characteristic(orange,good_natured).
characteristic(orange,very_social).
characteristic(orange,easiy_swayed).
characteristic(orange,loyal).
characteristic(orange,pure_heart).
characteristic(orange,good_work_ethics).

characteristic(yellow,very_imaginative).
characteristic(yellow,urge_to_help).
characteristic(yellow,free_spirit).
characteristic(yellow,shy).
characteristic(yellow,wise).
characteristic(yellow,mental_loner).
characteristic(yellow,keep_secrets_of_friends).

characteristic(green,sensitive).
characteristic(green,good_citizen).
characteristic(green,etiquette).
characteristic(green,frank).
characteristic(green,moral).
characteristic(green,reputable).
characteristic(green,deep_affection_towards_your_family).

characteristic(blue,deliberate).
characteristic(blue,introspective).
characteristic(blue,sensitive).
characteristic(blue,loyal).
characteristic(blue,sober).
characteristic(blue,dreamer).
characteristic(blue,ego).

characteristic(purple,good_mind).
characteristic(purple,observer).
characteristic(purple,angry).
characteristic(purple,creative).
characteristic(purple,appreciator).

characteristic(brown,good_citizen).
characteristic(brown,clever).
characteristic(brown,stubborn).
characteristic(brown,dependable).
characteristic(brown,not_implusive).
characteristic(brown,bargainer).

characteristic(grey,cautious).
characteristic(grey,compromiser).
characteristic(grey,peaceful).
```

```
characteristic(black,above_average).
characteristic(black,conventional).
characteristic(black,decent).
characteristic(black,polite).
characteristic(black,regal).


result(X,Y):-characteristic(X,Y),
        write("\t=",Y,"\n"),
        fail.

likes(User):-colour(X),
        write("Does ",User," like ",X," colour (y/n) ? : "),
        response(Flag),
        Flag='y',!,
        write(User," is :\n"),
        result(X,_),
        write("\n").

go:-write("Enter Your Name : "),nl,
   readln(User),
   likes(User).

response(Flag) :-readchar(Flag),
write(Flag),nl.
```

Output:

```
Goal: go
Enter Your Name :
Raj
Does Raj like red colour (y/n) ? : n
Does Raj like orange colour (y/n) ? : n
Does Raj like yellow colour (y/n) ? : n
Does Raj like green colour (y/n) ? : n
Does Raj like blue colour (y/n) ? : y
Raj is :
        =deliberate
        =introspective
        =sensitive
        =loyal
        =sober
        =dreamer
        =ego
No
```

2. Predict user‟s health based on habits user practices.

Code :

```
domains
        User,name=string
        status,habit = symbol

predicates
        health(string,status).
        habitof(name,habit).
        response(char).
        go.

clauses
        go:-write("Enter Your Name : "),nl,
           readln(User),
           health(User,Status),
           write(User,"'s health is ",Status),nl.

        go:-write("Sorry, I can't say about your health."),nl.

        habitof(User,"regular smoking"):-
                                        write("Does ",User," have habit of regular smoking ?
(y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"excessive drinking regularly"):-
                                        write("Does ",User," have habit of excessive drinking
regularly ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"taking drugs"):-
                                        write("Does ",User," have habit of taking drugs ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"eating oily food"):-
                                        write("Does ",User," have habit of eating oily food ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.
```

```
        habitof(User,"taking too much sugar with foods"):-
                                        write("Does ",User," have habit of taking too much sugar
with foods ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"sleep hours are less"):-
                                        write("Does ",User," acts like an ownl ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"drinking milk regularly"):-
                                        write("Does ",User," have habit of drinking milk regularly ?
(y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"eating green vegetables or eggs in meal"):-
                                        write("Does ",User," have habit of eating green
vegetables or eggs in meal ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"regular exercise"):-
                                        write("Does ",User," have habit of regular exercise ?
(y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"drinking enough water during day"):-
                                        write("Does ",User," have habit of drinking enough water
during day ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"regular sufficient sleep hours"):-
                                        write("Does ",User," have habit of regular sufficient sleep
hours ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"regular walk"):-
                                        write("Does ",User," have habit of regular walk ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        habitof(User,"brushing teeth and washing hair and using showers regularly"):-
```

```
                                        write("Does ",User," have habit of brushing teeth and
washing hair and using showers regularly ? (y/n)"),
                                        response(Reply),
                                        Reply='y'.

        health(User,bad):-habitof(User,"regular smoking"),
                          habitof(User,"excessive drinking regularly"),
                          habitof(User,"taking drugs"),
                          habitof(User,"eating oily food"),
                          habitof(User,"taking too much sugar with foods"),
                          habitof(User,"sleep hours are less").

        health(User,good):-habitof(User,"drinking milk regularly"),
                           habitof(User,"eating green vegetables or eggs in meal"),
                           habitof(User,"drinking enough water during day"),
                           habitof(User,"regular exercise"),
                           habitof(User,"regular sufficient sleep hours"),
                           habitof(User,"regular walk"),
                           habitof(User,"brushing teeth and washing hair and using showers
regularly").

        health(User,moderate):-habitof(User,"eating oily food"),
                               habitof(User,"regular walk"),
                               habitof(User,"taking too much sugar with foods").


   response(Reply):-readchar(Reply),
                    write(Reply),nl.
```

Output :

```
Enter Your Name :
Raj
Does Raj have habit of regular smoking ? (y/n)y
Does Raj have habit of excessive drinking regularly     ? (y/n)y
Does Raj have habit of taking drugs ? (y/n)n
Does Raj have habit of drinking milk regularly ? (y/n)y
Does Raj have habit of eating green vegetables or eggs in meal ? (y/n)y
Does Raj have habit of drinking enough water during day ? (y/n)n
Does Raj have habit of eating oily food ? (y/n)y
Does Raj have habit of regular walk ? (y/n)y
Does Raj have habit of taking too much sugra with foods ? (y/n)y
Raj's health is moderate
Yes
```