[EXPERT SYSTEM]

RULE BASE FOR CLIMATRON

INTRODUCTION

Our Expert System has following 3 Facts and 7 Rules .

FACTS :

1. Default values :

    a) room temperature : 40

    b) Humidity : 40

2. Temperature conversion

```
/* To convert temperature from fahrenheit to celsius */
 fahrenheit_to_celsius(F,C):-
        C is ((F - 32) * (5/9)).
/* To convert temperature from celsius to fahrenheit  */
 celsius_to_fahrenheit(C,F):-
        F is ((C * (9/5)) + 32).
```

3. Humidity and Temperature Calculation

```
/* To compute the relative humidity value from the given temperature value */
 calculate_humidity(T,Humid) :-
    default_values(Td,H),
    Humid is 100*(((112 - (0.1 * T) + Td) / (112 + (0.9*T))) ^ 8).

/* To compute the temperature value from the given relative humidity value */
 calculate_temp(Humid,Temp) :-
    default_values(Td,H),
    Temp is (Td - (112 * (Humid/100) ^ (1/8)) + 112) / ((0.9 * (Humid/100) ^ (1/8)) + 0.1).
```

RULES :

1. Preference:

If mean is less than or equal to median prefer mean

Else prefer median

Note : Preferred temperature is inferred from above mentioned rule

2. If indoor temperature is less than outdoor temperature and preferred temperature is greater than current temperature and less than or equal to the outdoor temperature

then set new room temperature as preferred temperature.

-> Turning off AC till preferred temperature is reached.

-> Heater may be turned to achieve the preferred temperature

3. If indoor temperature is less than outdoor temperature and preferred temperature is greater than current temperature and greater to the outdoor temperature then set new room temperature as preferred temperature.

->Turning off AC till indoor temperature equalizes with outside temperature.

->Heater will be turned on once the temperatures equalize.

4. If indoor temperature is less than outdoor temperature and preferred temperature is lesser than current temperature then set new room temperature as preferred temperature.

-> Turning on AC till desired temperature is reached.

->AC will be turned off when desired temperature is reached

5. If indoor temperature is greater than or equal to outdoor temperature and preferred temperature is greater than current temperature then set new room temperature as preferred temperature.

->Turning on heater till desired temperature is reached.

->Heater will be turned off once the desired temperature is reached.

6. If indoor temperature is greater than or equal to outdoor temperature and preferred temperature is lesser than current temperature and preferred temperature is less than or equal to outdoor temperature then set new room temperature as preferred temperature.

-> Turning on AC till desired temperature is reached.

-> AC will be turned off when desired temperature is reached.

7. If indoor temperature is greater than or equal to outdoor temperature and preferred temperature is lesser than current temperature and preferred temperature is greater than outdoor temperature then set new room temperature as preferred temperature.

-> Turning on AC till desired temperature is reached.

-> AC will be turned off when desired temperature is reached.