



Computer Networking

CSE 261

A Project on IOT-Smart Home

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IOT-Smart Home:

Home automation building automation for a home, called a smart home or smart house. Home automation system will control lighting and appliances it also include home security such as access control and alarm systems when connected with the Internet, home devices are an important constituent of the Internet of Thing

Objectives:

A smart home will be automated. Our smart home can make life easier and secure. It also can save energy and time. The house is monitoring all the time by some automated webcam that we are added in the house. And the most important thing is the owner of the house can access the house from anywhere of the world by using his laptop.

Tools:

Central Server (ip config :192.168.0.10)

Laptop(control device)(dhcp ip)

6 Router()

Central Switch

6 Switch

IOT Device: Webcam, Street Lamp, Fan, Light, Coffee-Maker, Sensor, etc.

Motion Detector

Lawn Sprinkler

Wind Detector

Air Conditioner

LED Light

Simulator:

Cisco Packet Trace

implementation Details :

1.Taking server,IOT devices,routers,switches,smart phone,wires etc for making IOT – Smart Home

2.We will connect all the routers.After that we will connect the routers

with the switches.Then we will connect all the switches & then all switches will connect with the all IOT devices/home devices,server & laptop.

3.enable and config the switch.

```
Switch#en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
```

4.making the vlan and give it name.

```
Switch(config)#vlan 2
Switch(config-vlan)#name iot
Switch(config-vlan)#exit
```

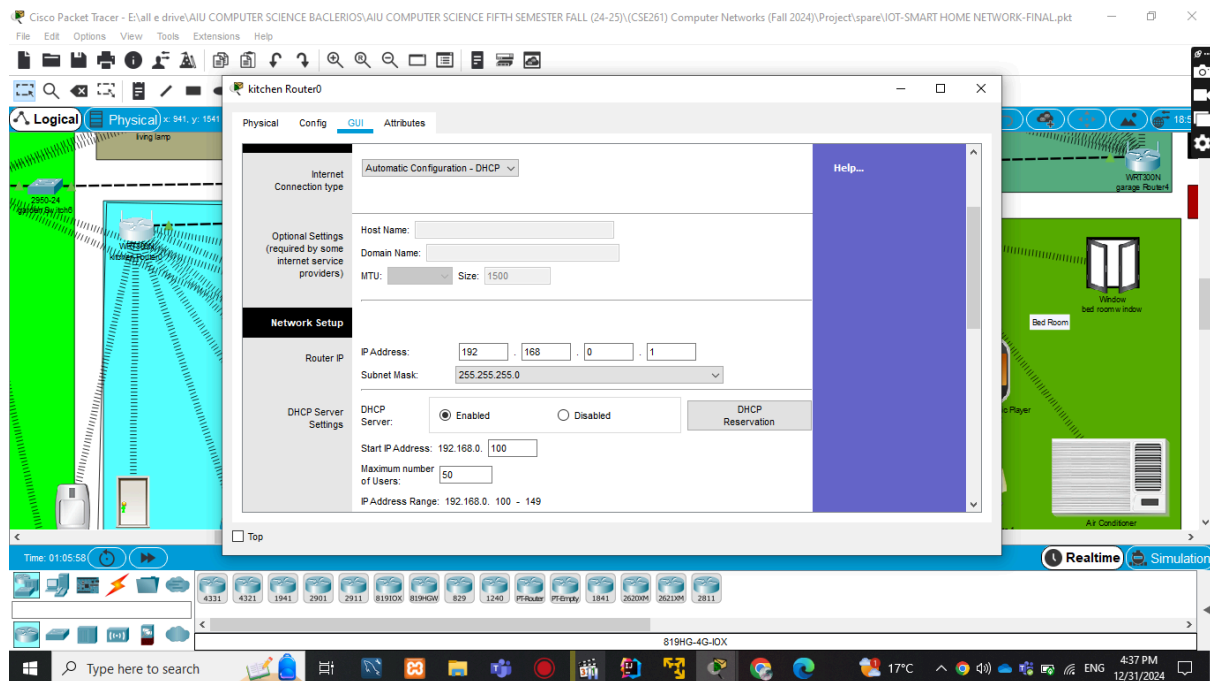
5.vlan access.

```
Switch(config)#interface FastEthernet0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
```

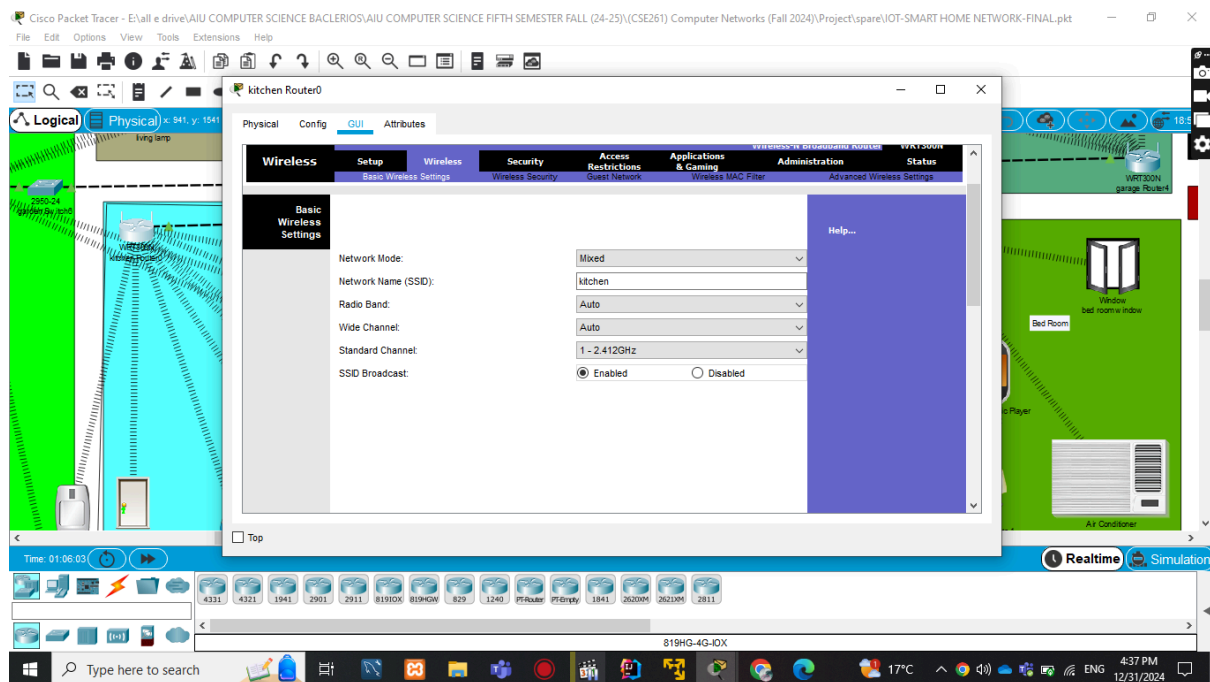
6.vlan trunk.

```
Switch(config)#interface FastEthernet0/2
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#exit
Switch#
```

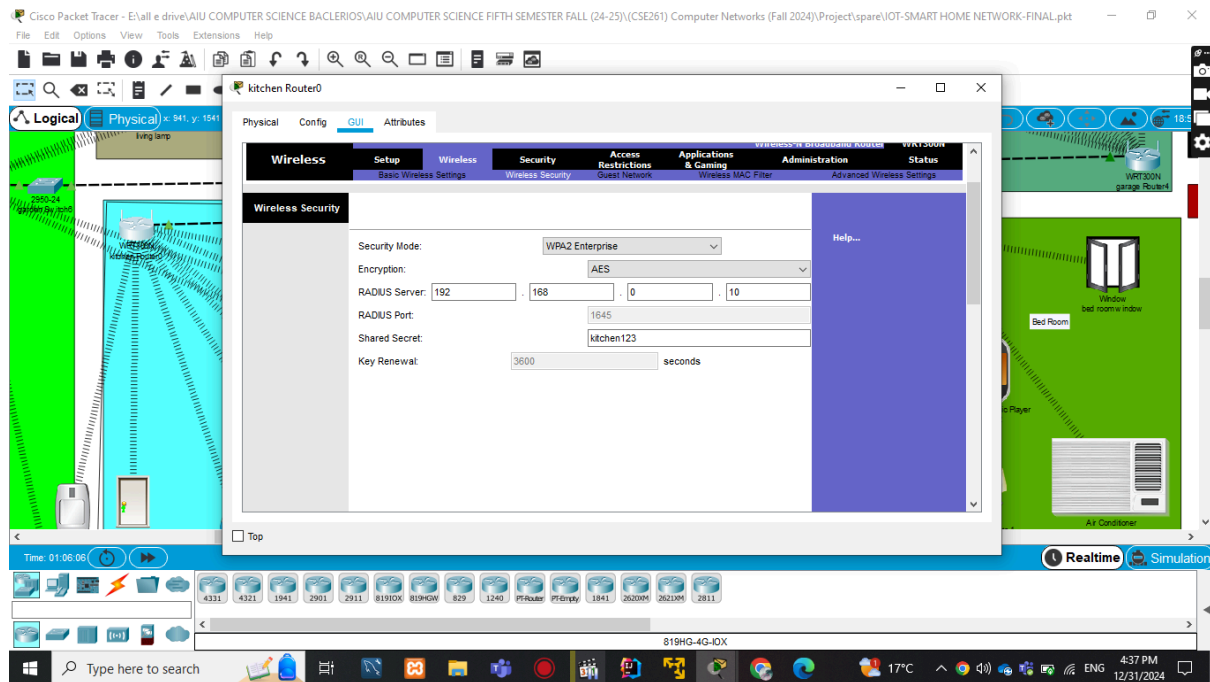
7. Now we will setup wireless network for router 1 to router 6 for giving ip address to routers



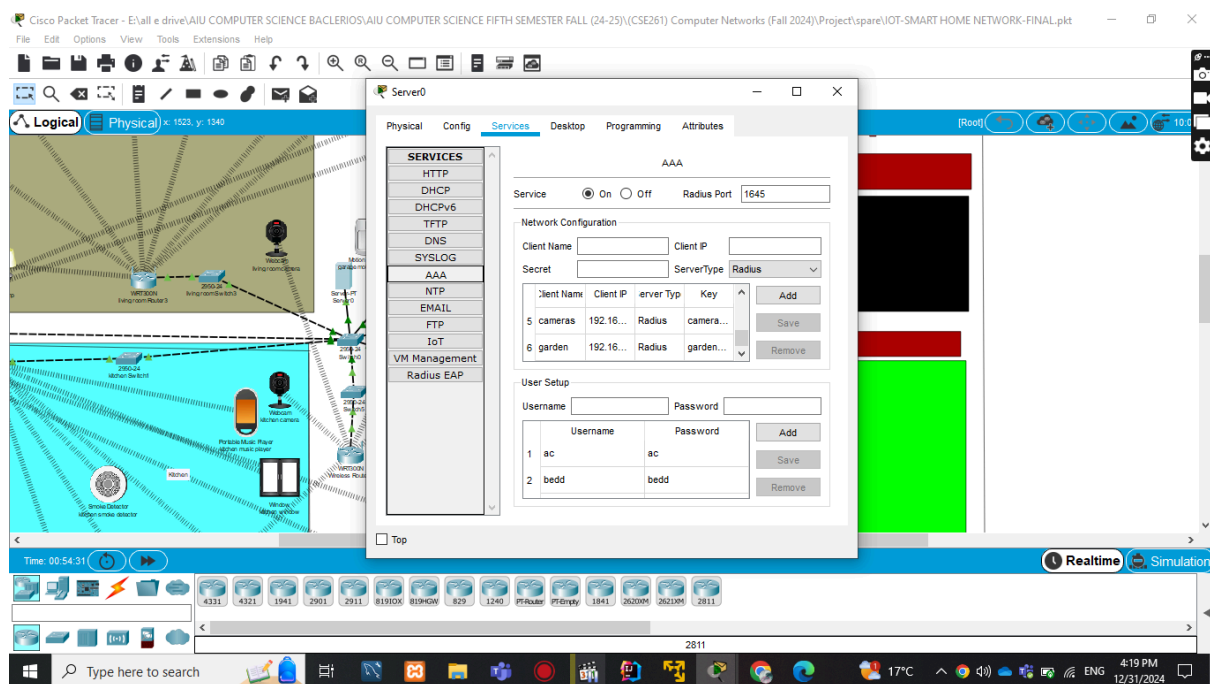
8. Give name to specific network:



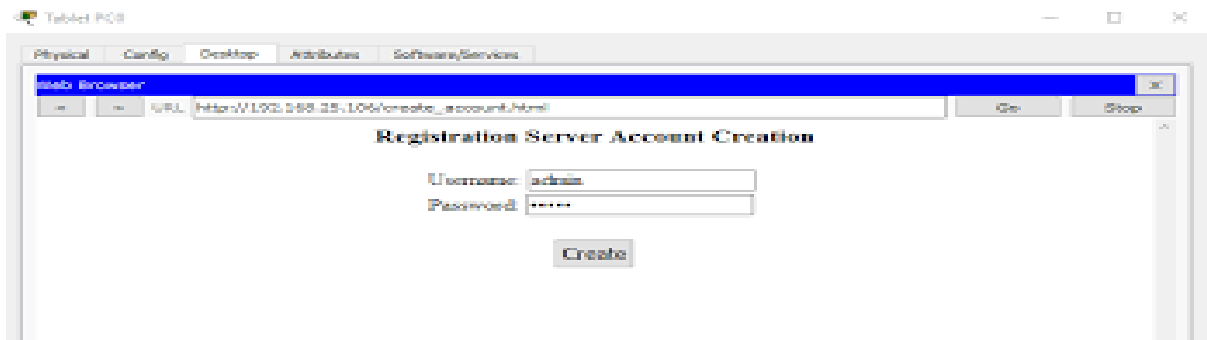
9. Setup security mode (WPA 2 enterprise) and encryption (AES) and giving the server ip and shared secret to the network :



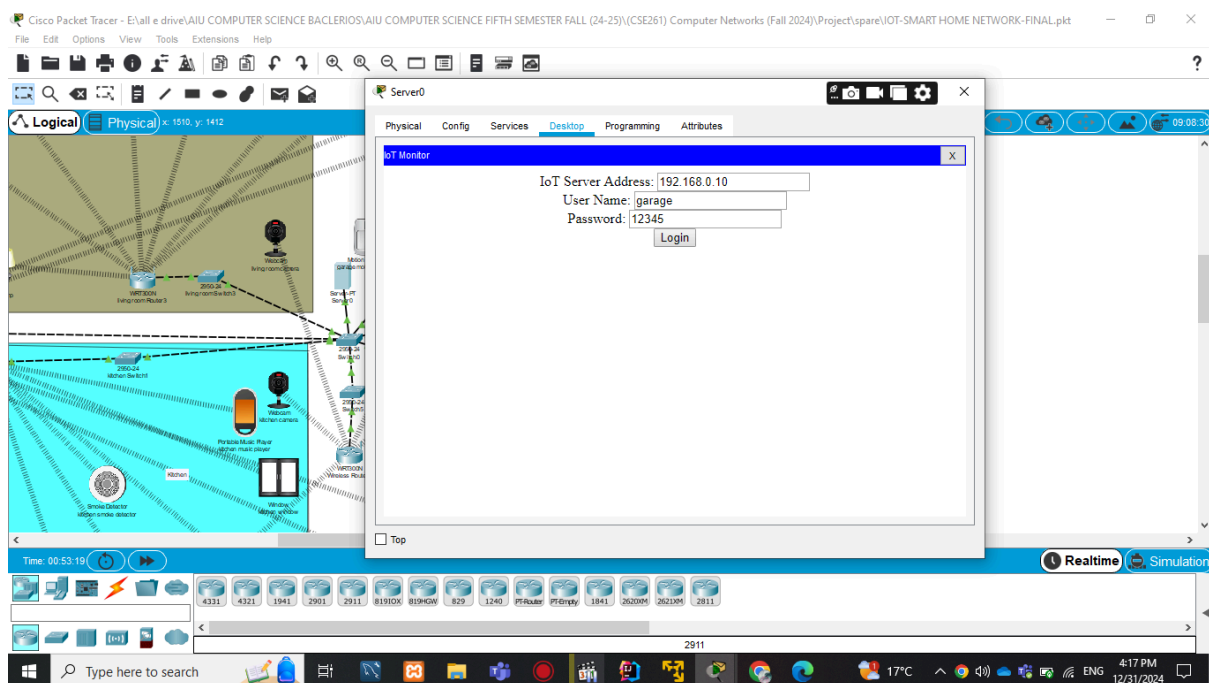
10. Go to the server in (AAA) and turn on service and add the specific network to the server by giving the network name and secret to the network and router ip and setup user to the iot devices finally in services go to iot and turn on it :



Repeat this steps to the 6 routers and added to the server.

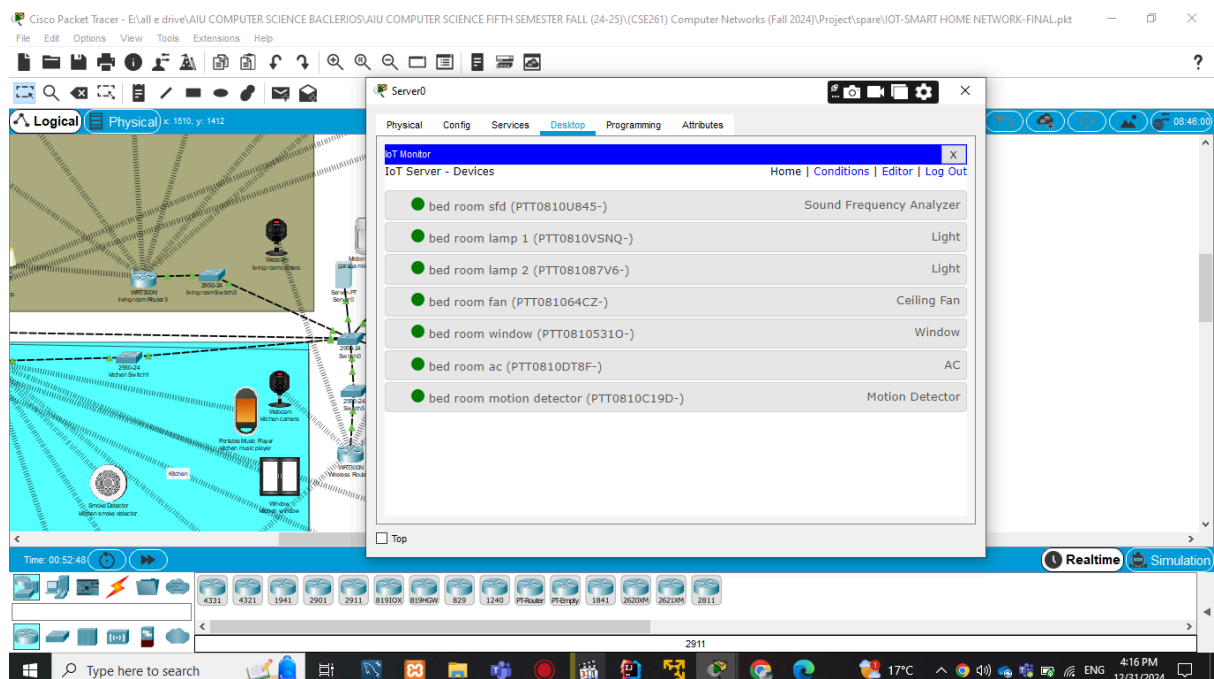
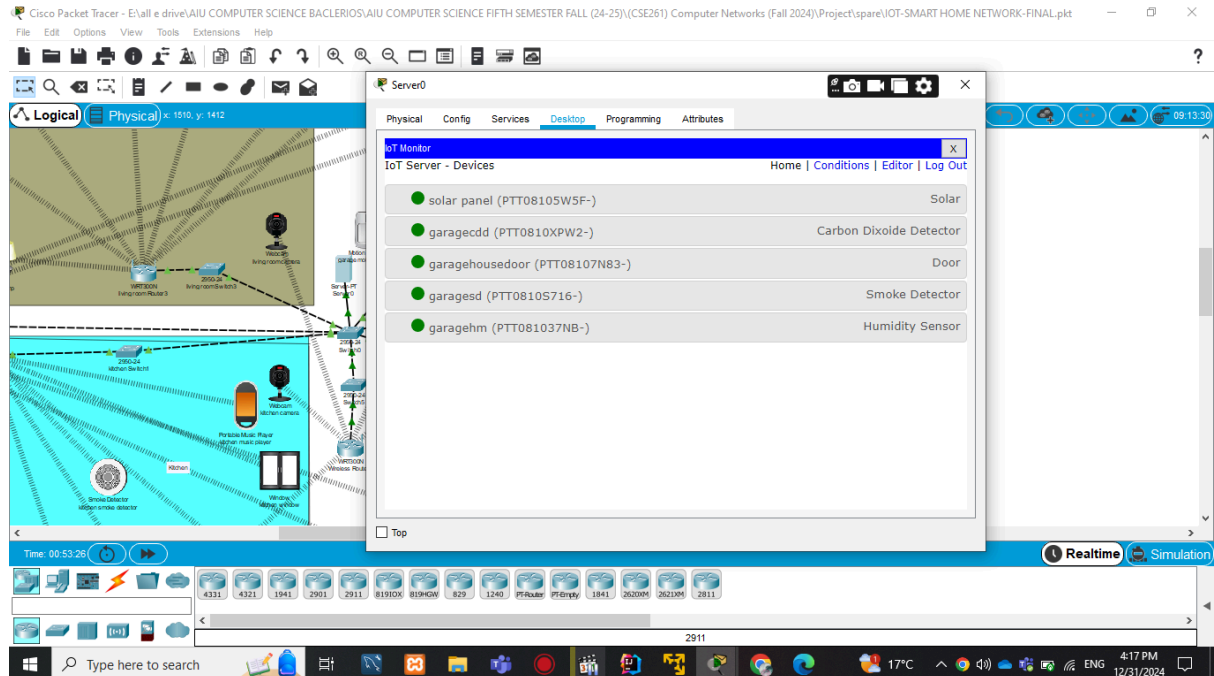


Registration of an account in the server.

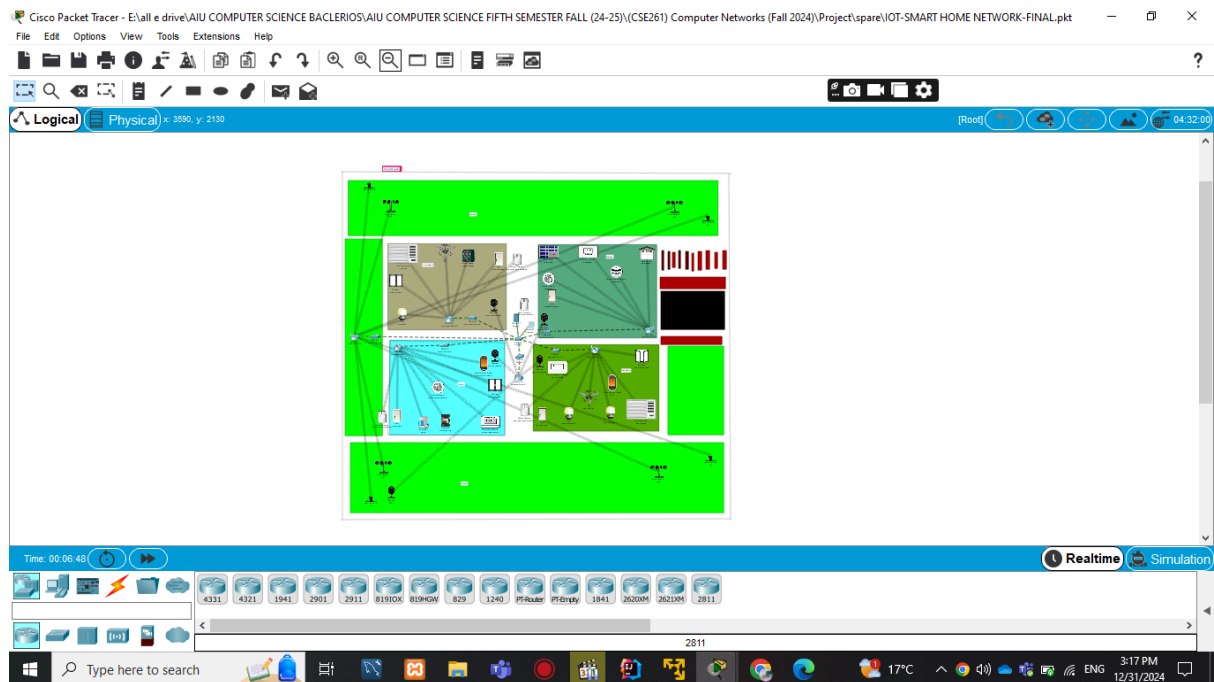


laptop accessing the specific network by sign in to the server.

After sign in to the server by using laptop in above pic you have access monitor to control all of the devices in this network.



Monitor of bed room .



The diagram to the whole smart home.

Divides to:

Kitchen.

Bed room.

Living room.

Garage.

Garden.

Result and discussion :

In our smart home we are taking front of the house, living room, bed room, Garage, and Kitchen and also making them automated. We are using the server for the main connection and to connect laptop we are using router . For routing

1.In the living room we have:

Motion detector

Camera

Lamp

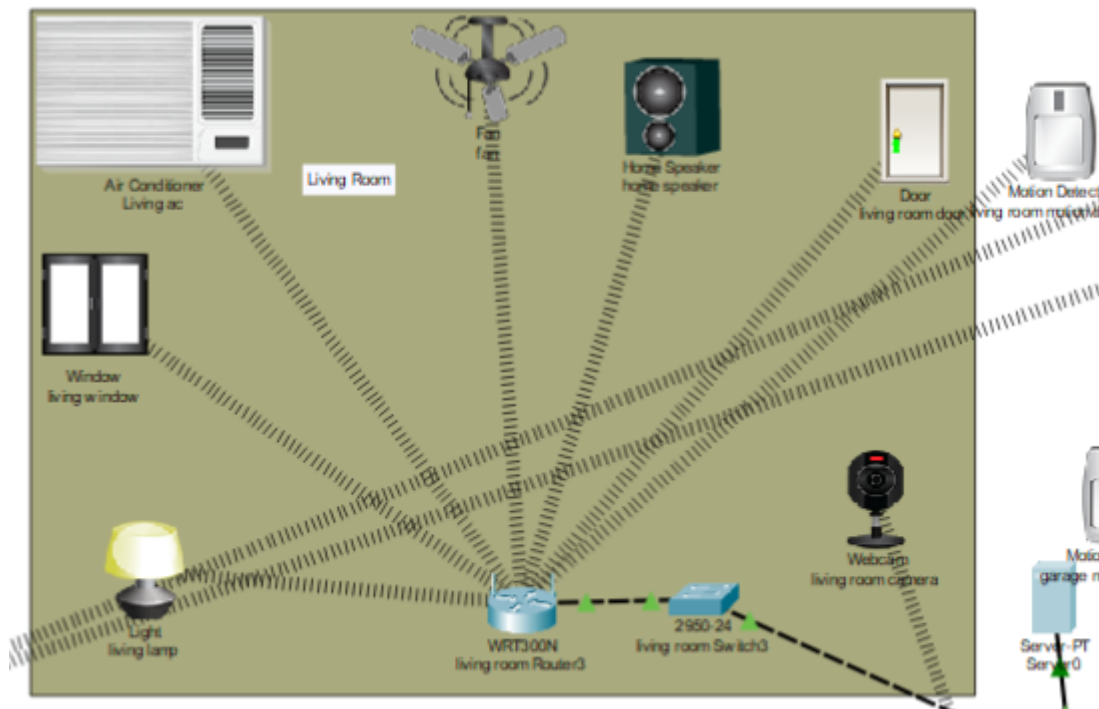
fan

door

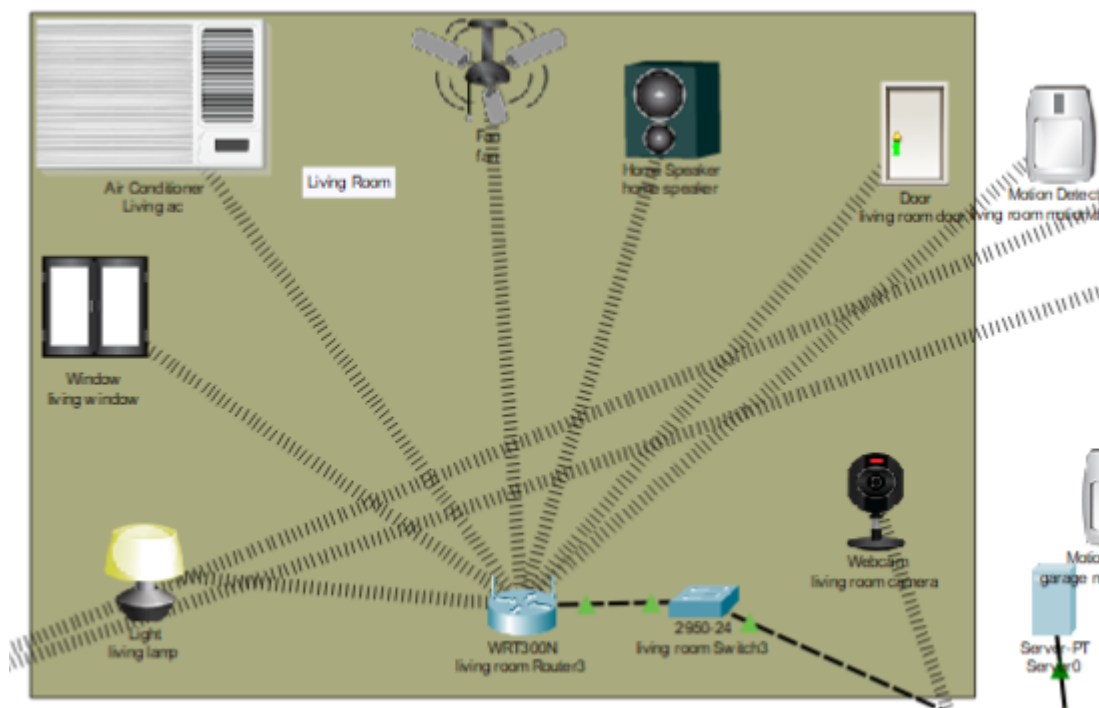
Home speaker

Window

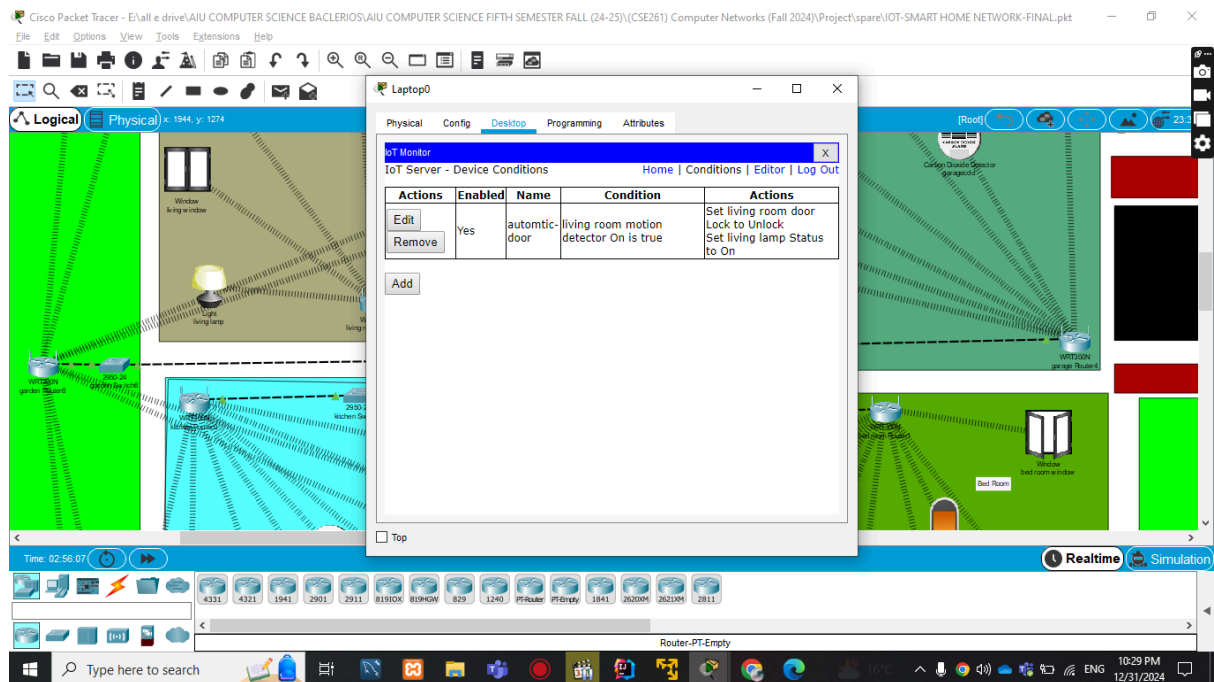
Initially all things are off:



After connect the wireless router all devices connect to the router and will be able to be controlled by the laptop.



Making condition:



2. In the bedroom we have:

Motion detector

Camera

2 Lamp

fan

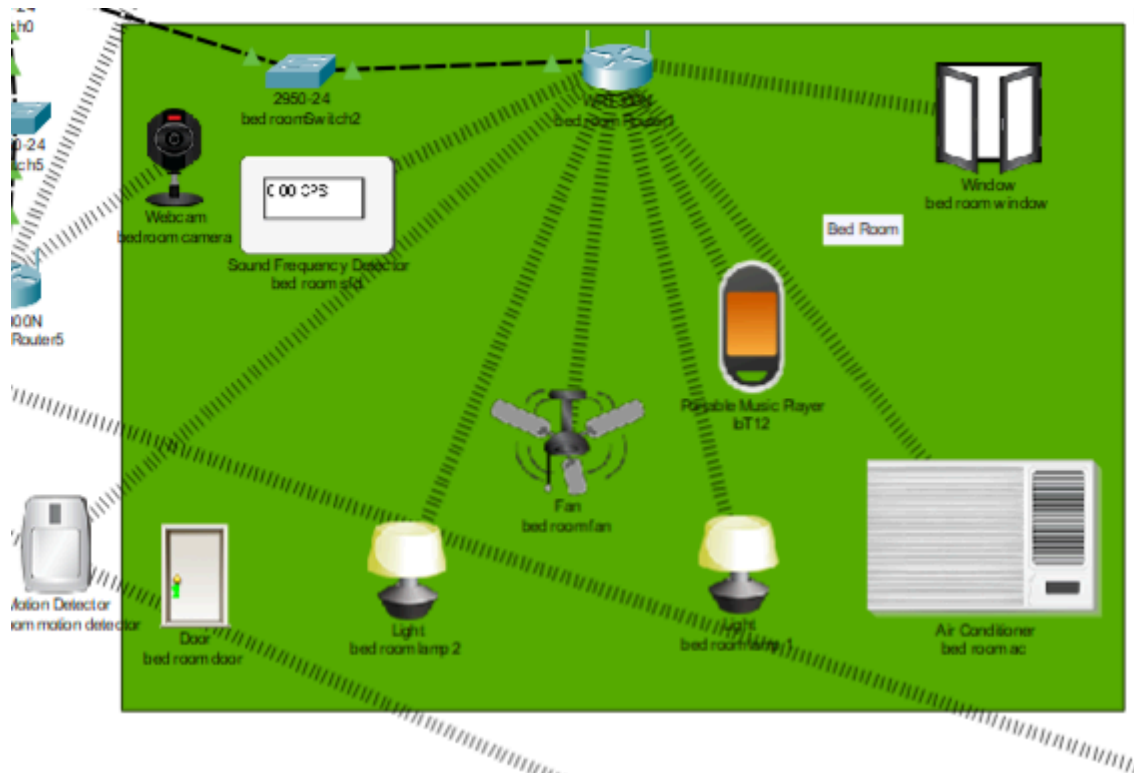
door

Window

Portable music player

Sound frequency detector.

Ac



Making the conditions:

The screenshot shows a Windows 10 desktop with a file explorer window open, displaying a grid of screenshots. A 'IoT Monitor' window is open, showing a table of device conditions and actions.

Actions	Enabled	Name	Condition	Actions
Edit Remove	Yes	automatic door	bed room motion detector On is true	Set bed room lamp 1 Status to On Set bed room lamp 2 Status to On Set bed room door Lock to Unlock

The 'IoT Monitor' window also includes a search bar, a 'Log Out' button, and a 'Top' button. The file explorer window shows a grid of screenshots, with the first one labeled 'AIU Bank Account number.png'.

3. In the kitchen we have:

Motion detector

Camera

Cattle

Coffee machine

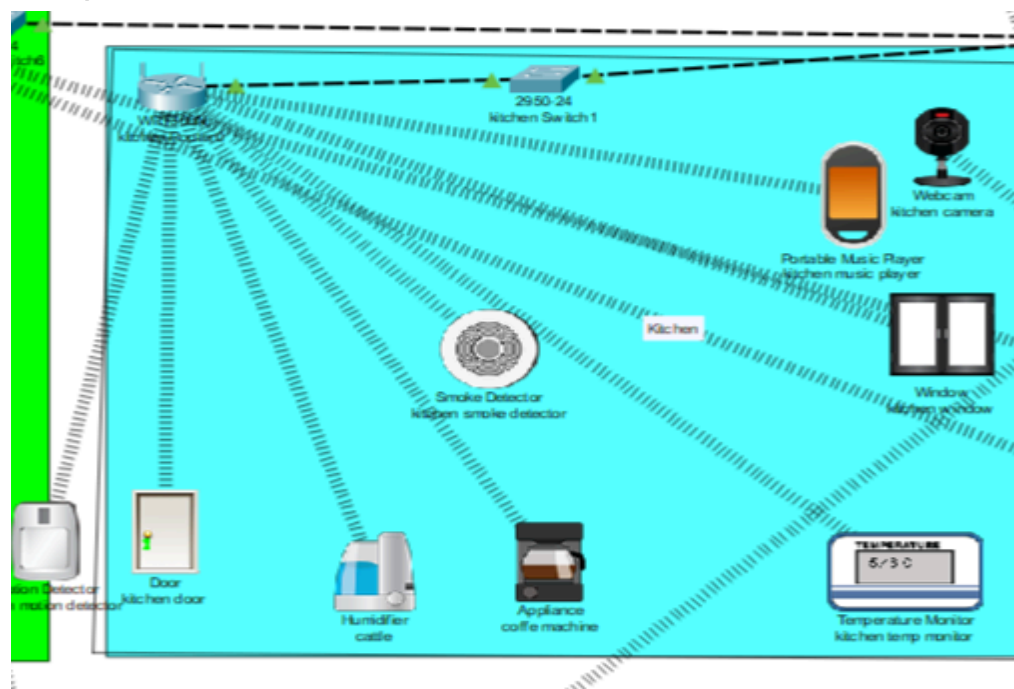
door

Window

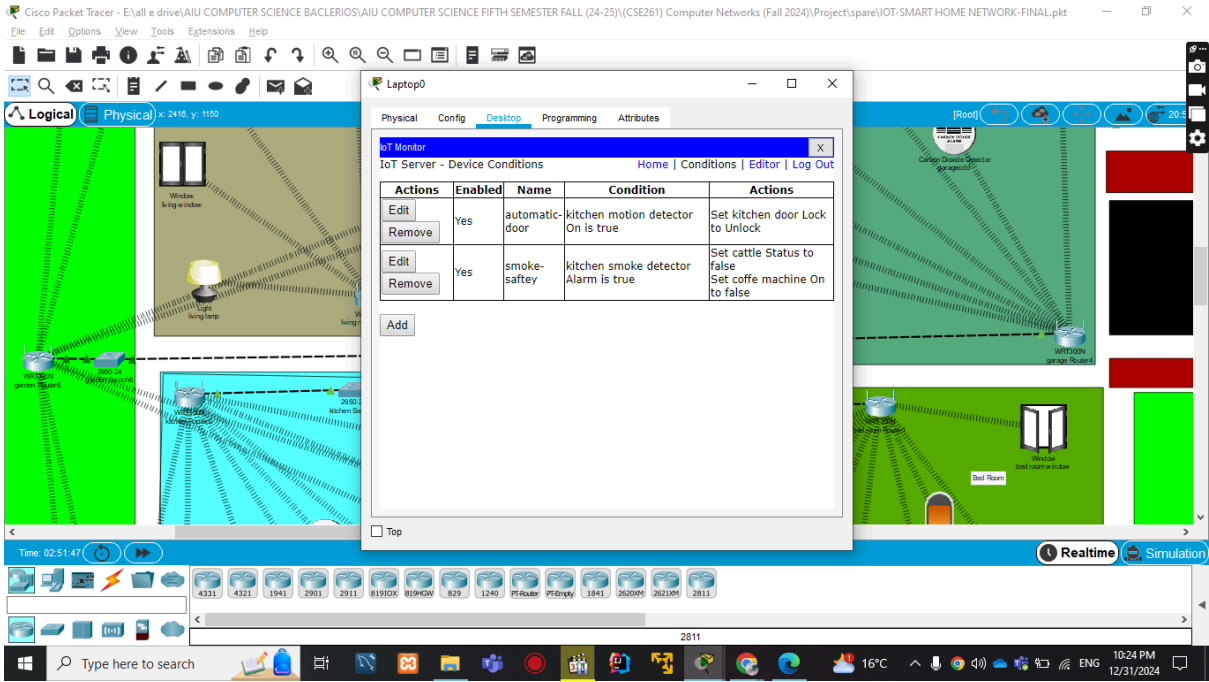
Portable music player

Smoke detector

Temp monitor



Making the conditions:



4. In the garage we have:

Garage door

Motion detector

Door

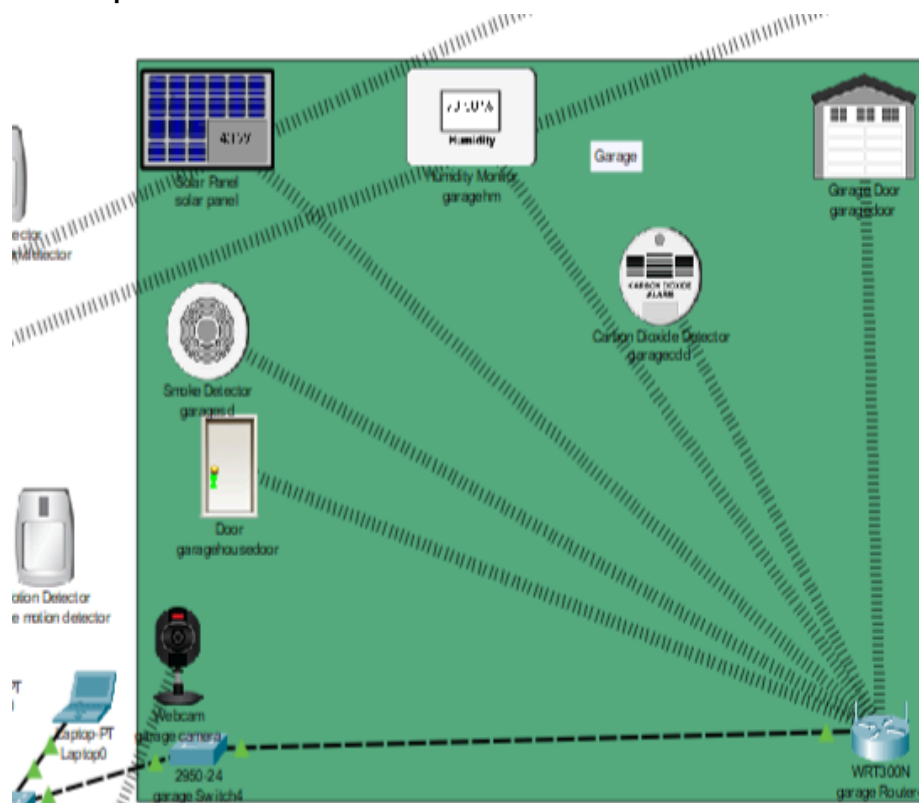
Smoke detector

Carbon dioxide detector

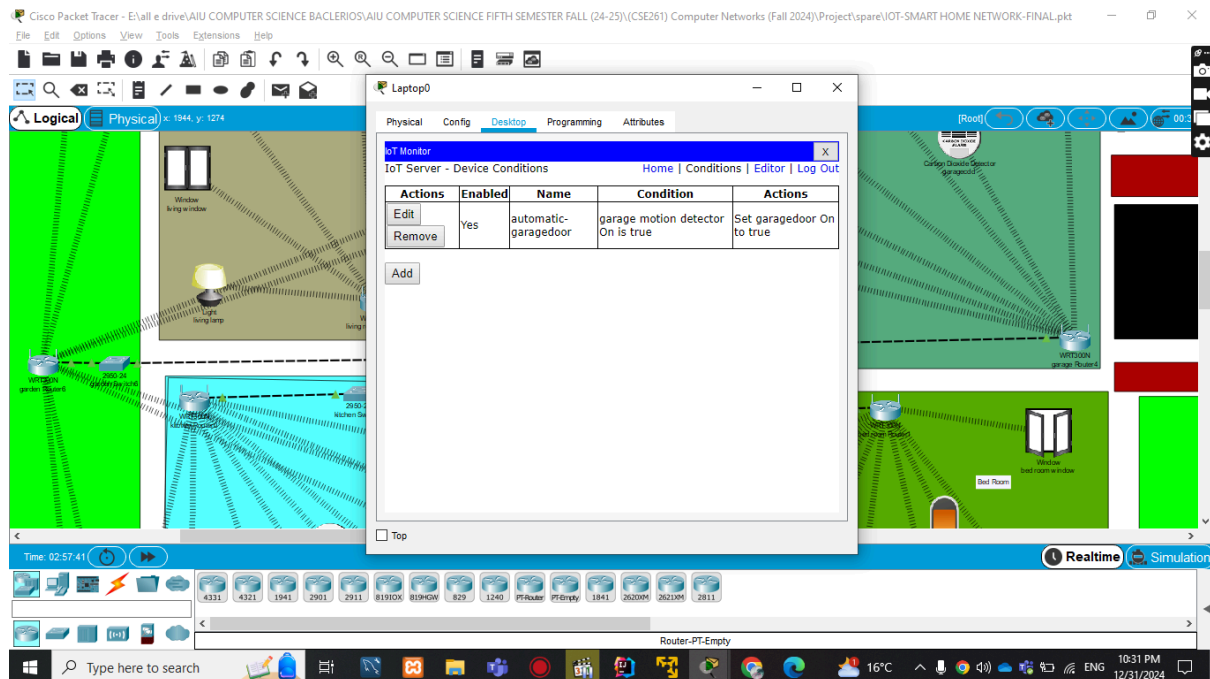
Humidity monitor

Camera

Solar panel



Making the conditions:



Conclusion:

In the IOT-Smart Home project we have tried to build an automated home that can make life easier, secure, and comfortable. And the house also will save power. The owner of the house can access the house from anywhere of the world by using his laptop or smart home . Though it is a costly project but after implemented it, our life will be easier and time saving.

