NAME: REGINA D

PROJECT: 3

SMART GARDEN SIMULATION IN CISCO PACKET TRACER

OBJECTIVE

1. To automate water irrigation.
2. To secure the garden by automating alarm when intruders are detected.

RESOURCES

1. Cisco Packet Tracer

CISCO PACKET TRACER

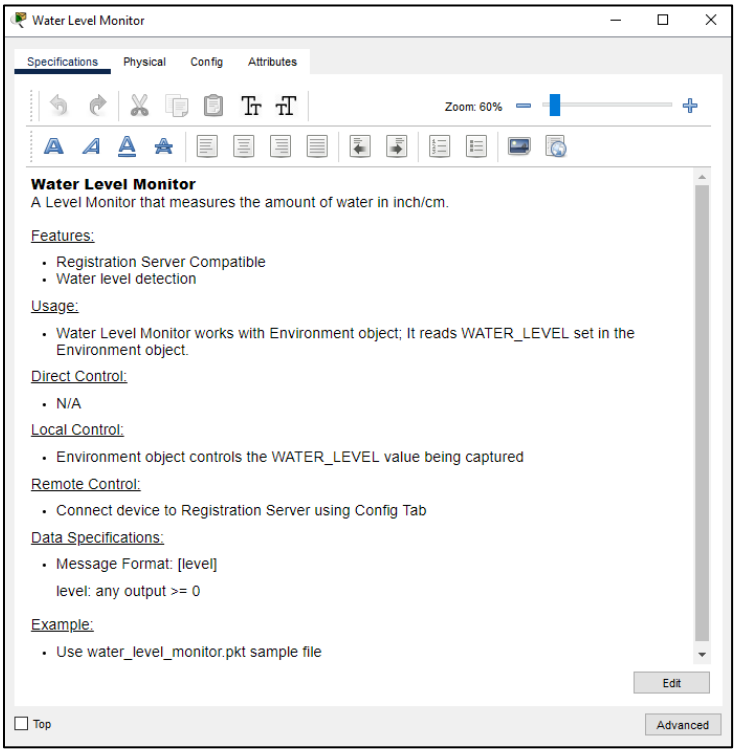
Cisco Packet Tracer is a network simulation tool developed by Cisco to help students, educators, and networking professionals learn, design, and test computer networks. It allows users to simulate real-world networking environments without the need for physical hardware.

COMPONENTS USED IN THIS PROJECT

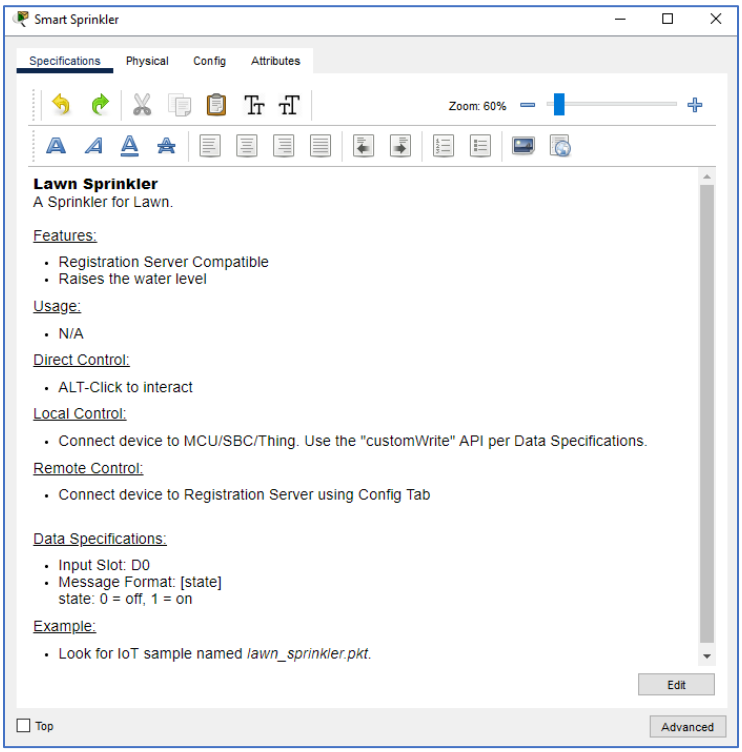
S. No	NAME	USE
1.	Cloud-PT	To Simulate cloud storage, allowing devices to send/receive data remotely.
2.	Cable Modem	To connect the home network to the Internet Service Provider (ISP).
3.	Home Gateway	To connect smart IoT devices (such as sensors, actuators, and smart appliances) to the internet.
4.	Water Level Monitor	Monitors the water level in a tank, reservoir, or underground water storage. In this project it is used instead of soil moisture sensor (not available in cisco packet tracer)
5.	Lawn Sprinkler	Sprays water to irrigate a lawn, garden, or plants**.**
6.	Motion Detector	Detects movement in the area.
7.	Webcam	a digital camera that sends video and snapshots to a computer or network over the internet
8.	Siren	Produces a loud alarm sound to alert about intrusions.
9.	Tablet	To monitor and control the smart devices.

SPECIFICATIONS OF COMPONENTS

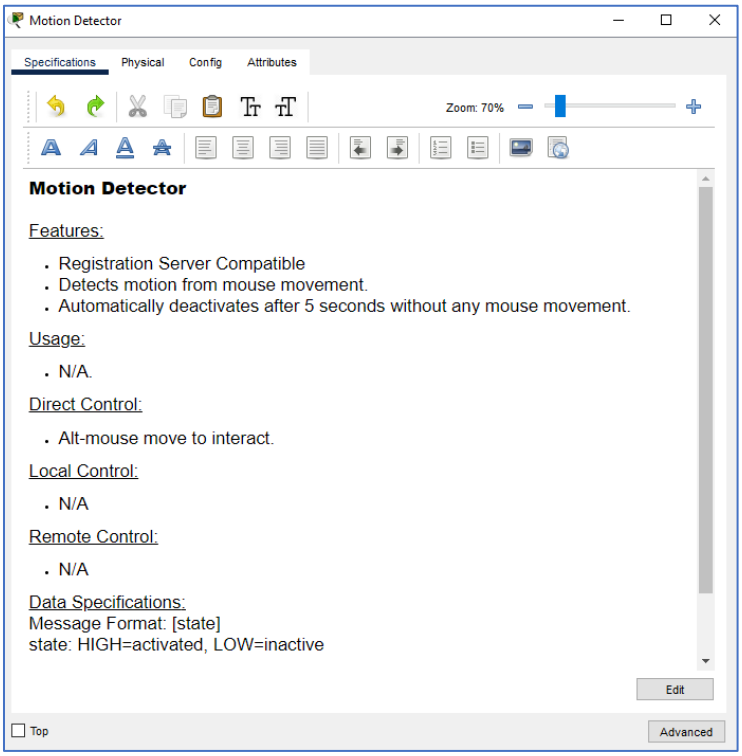
1. WATER LEVEL MONITOR



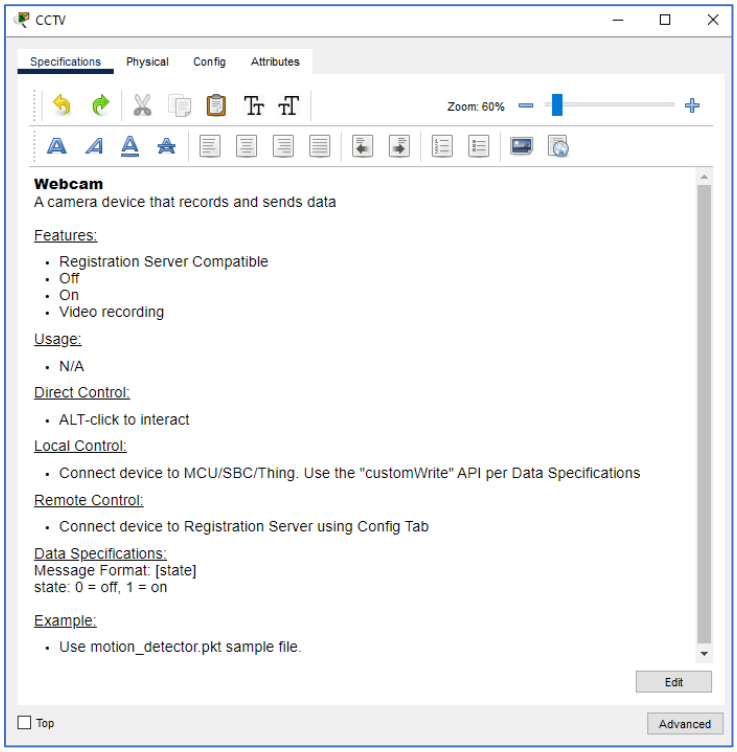
2. SPRINKLER



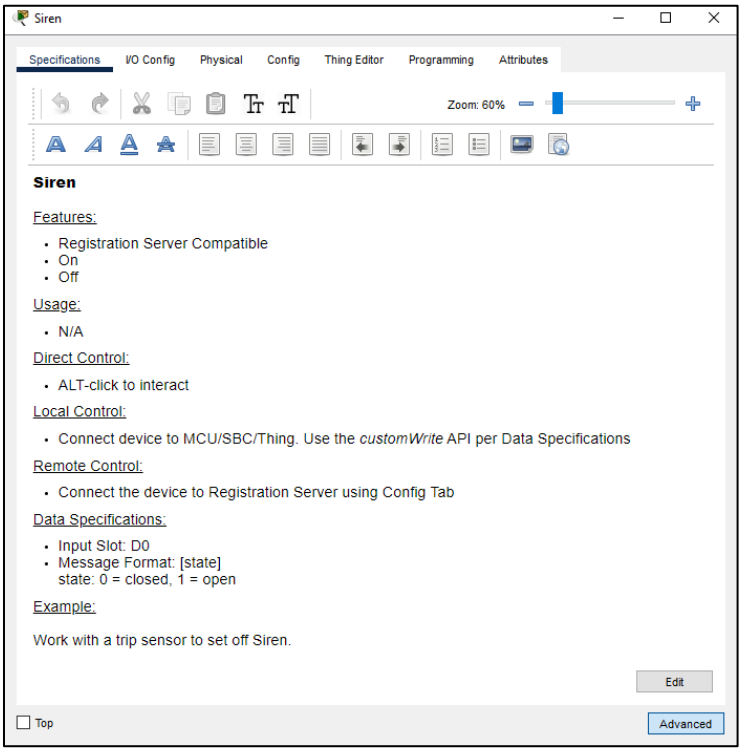
3. MOTION DETECTOR



4. CCTV



5. SIREN



DEVICE CONFIGURATION

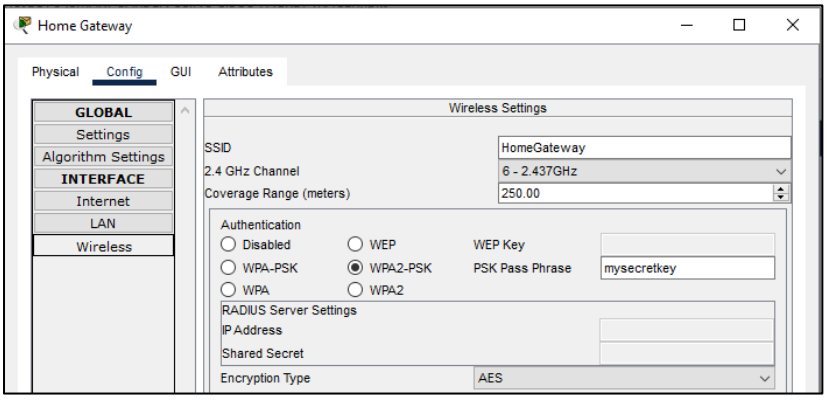
To connect the devices wirelessly to the home gateway, they need to be configured individually.

1. CONFIGURE THE HOME GATEWAY

a. Click home gateway, a new tab will open. Click config tab and click wireless in the left pane.

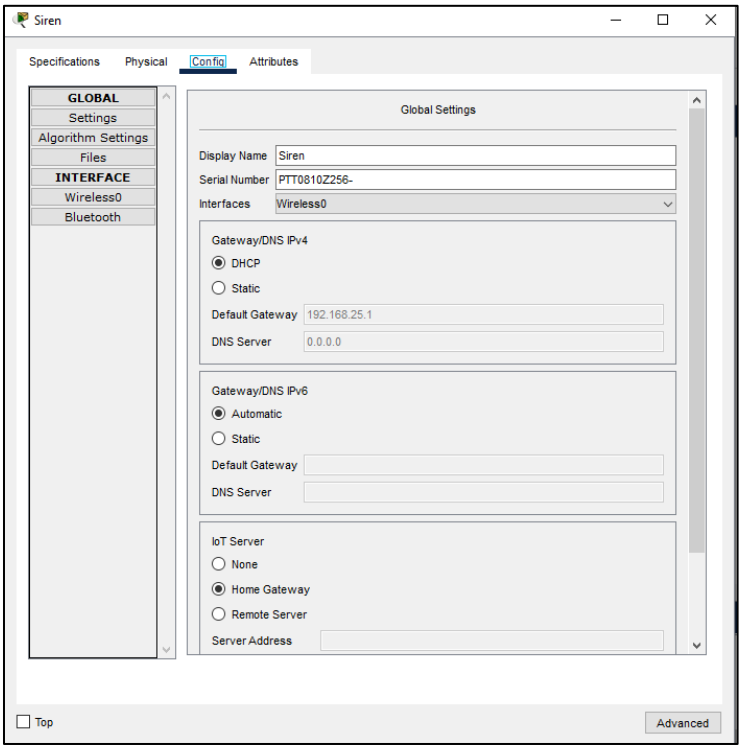
b. Set a SSID (HomeGateway) and a password by selecting WPA2-PSK in the authentication pane.

c. The above SSID and password should be filled in the devices that are need to be connected with the home gateway.

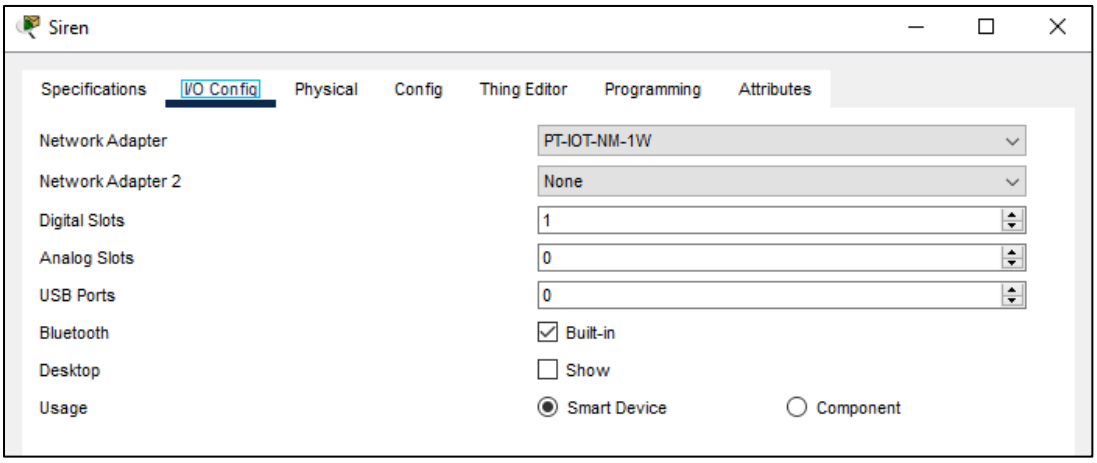


2. CONFIGURING SIREN (As an example for all the other devices)

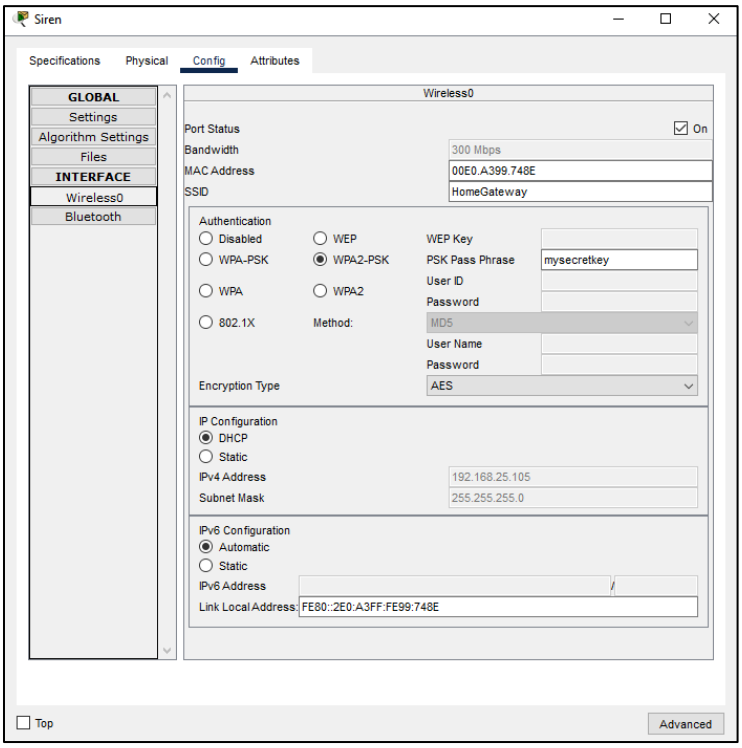
a. Click the device which should be configured for wireless connection. Go to config tab. Change the device name. Select wireless option in Interfaces.
b. Select DHCP in Gateway DNS IPv4.
c. Select Home Gateway in IoT Server.
d. Click Advanced.



e. Go to I/O config. Choose network adapter as PT-IOT-NM-1W for wireless connection. Select Smart Device in usage.

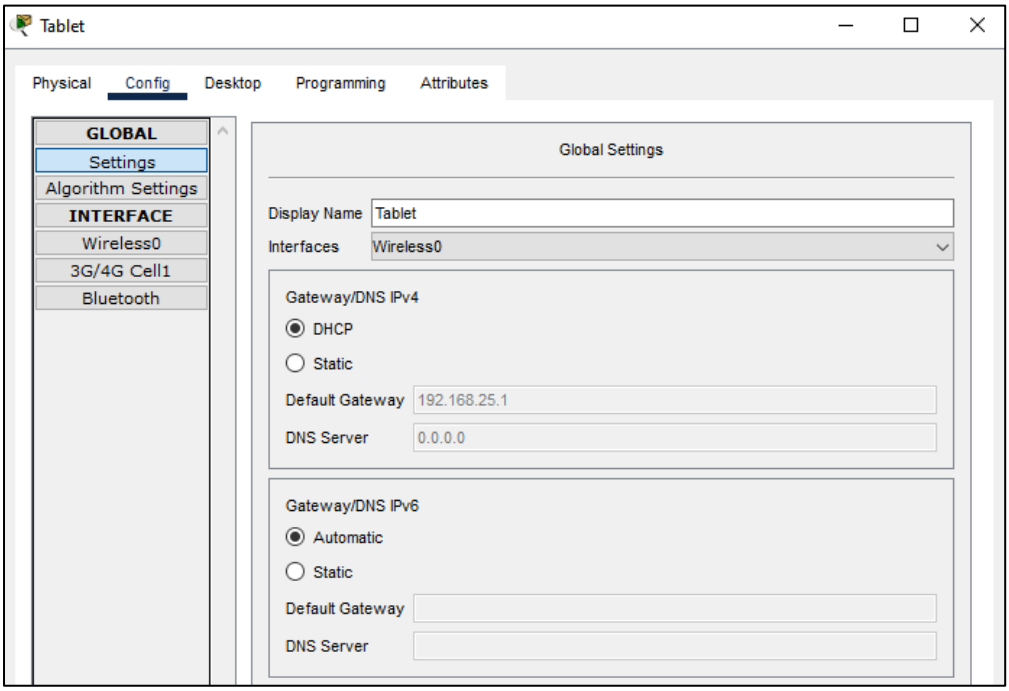


f. Go to config tab. Click Wireless0. Set the SSID (HomeGateway) and password(mysecretkey) as it is configured in home gateway. Choose DHCP in IP Configuration tab. Close the tab.

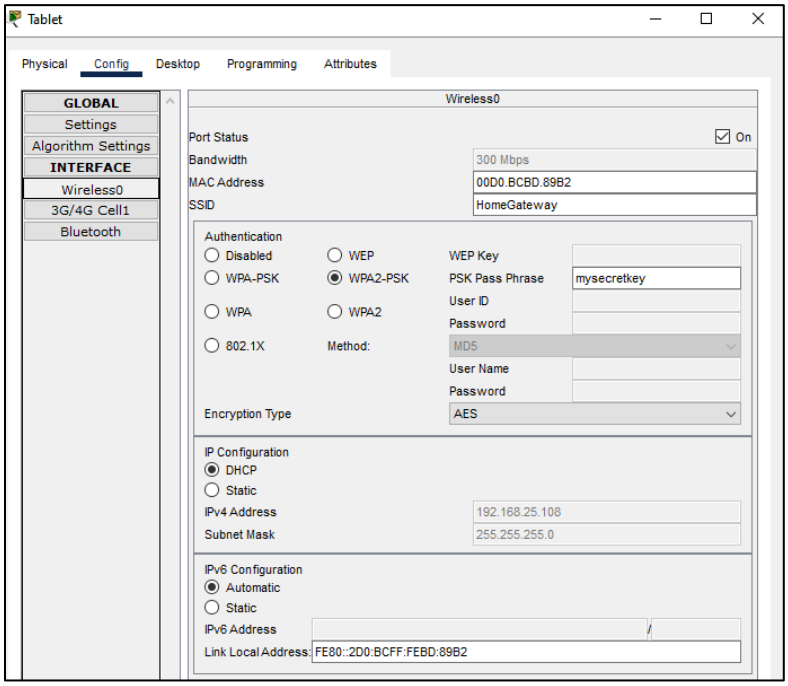


3. TABLET CONFIGURATION

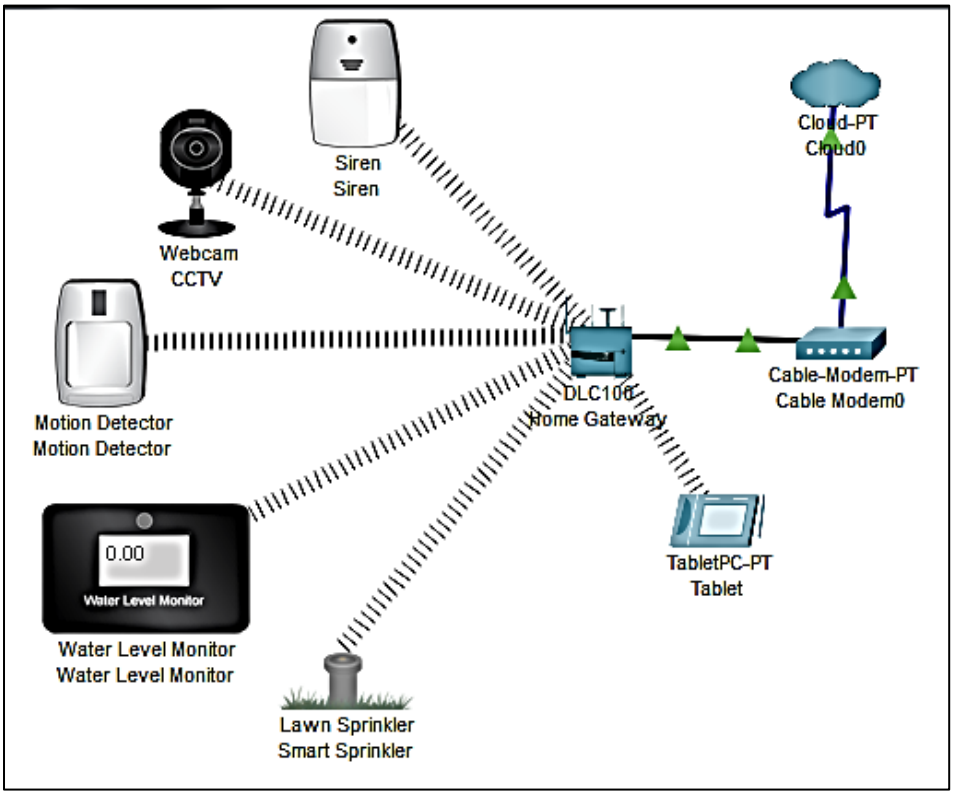
a. Click Tablet. Go to config tab. Change display name and choose DHCP in GatewayDNS IPv4.



b. Click Wireless0 on the left pane. Set the SSID, password of the Home Gateway. Select DHCP in IP Confifuration.



CONNECTION DIAGRAM

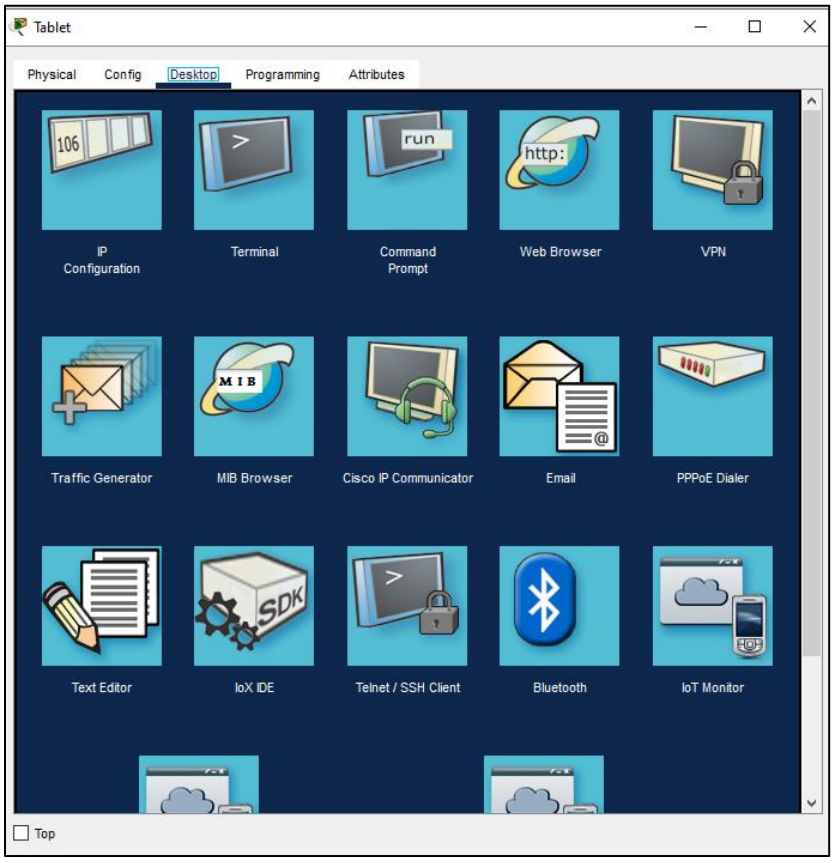


CONNECTION PROCEDURE

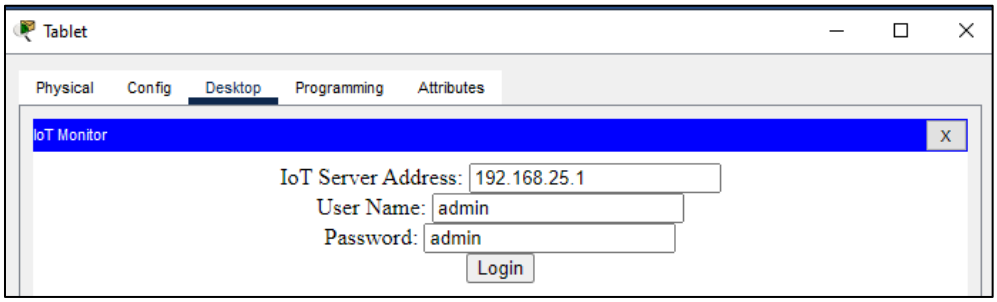
1. Take the required components from the bottom pane at the left corner of the workspace.
2. Connect home gateway (internet) and cable-modem (port 1) using copper straight through cable.
3. Connect cable-modem (port 0) and cloud-pt (coaxial 0) using coaxial cable.
4. All the smart devices are connected to home gateway by configuring each device to wireless connection as explained above.

SETTING CONDITION

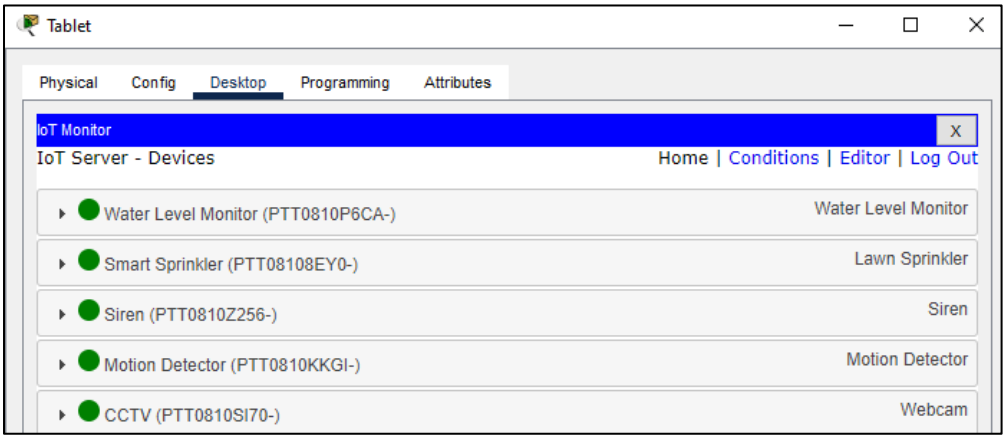
1. Connect the circuit as above.
2. Click Tablet
3. Go to Desktop
4. Click IoT Monitor



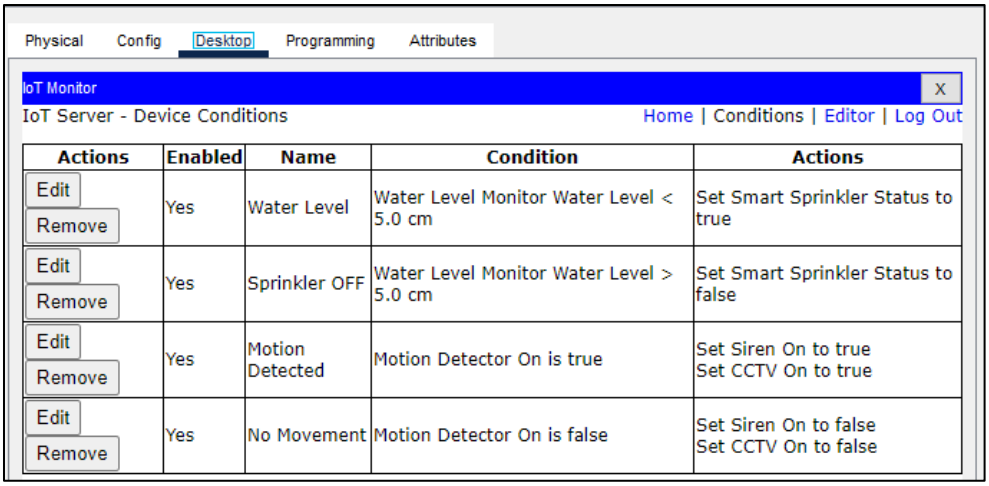
5. Login by typing admin as User Name and Password.



6. All the devices which is connected to the Iot Server Address 192.168.25.1 will be listed



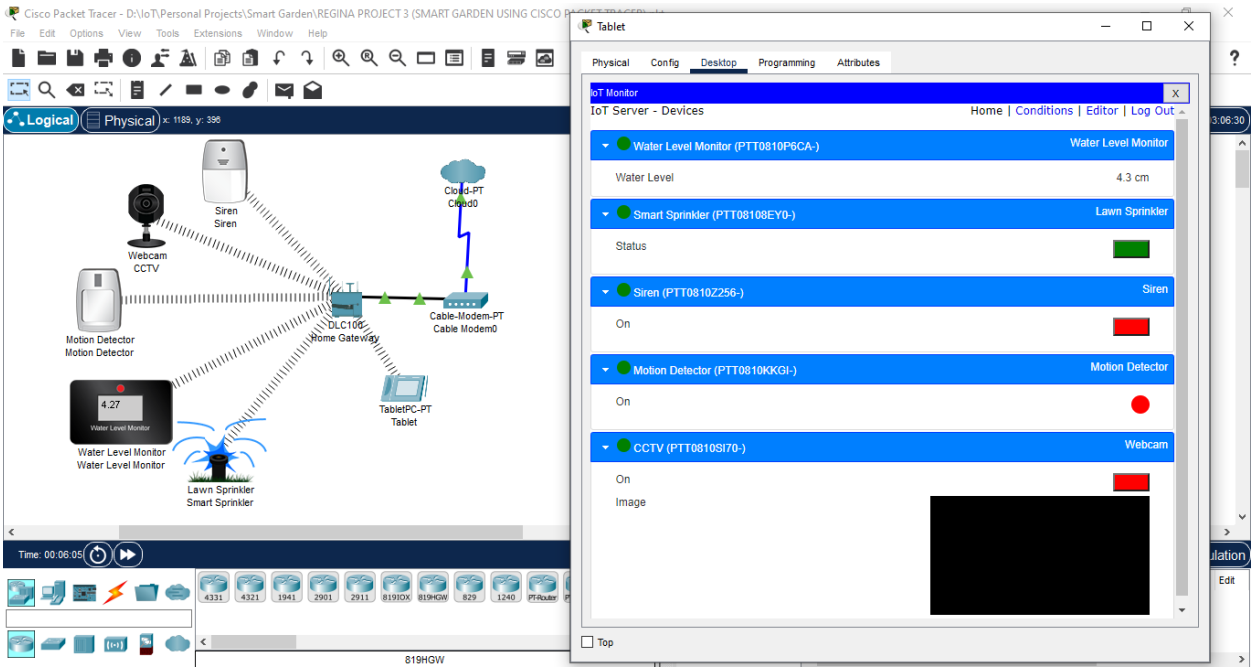
7. Setting Condition
   (a) Click conditions. Click Add to add conditions.
   (b) In this project 4 conditions are set.
   (c) Condition 1: If water level Is less than 5 cm, the sprinkler will automatically turn ON.
   (d) Condition 2: If water level is more than 5 cm, the sprinkler will automatically turn OFF.
   (e) Condition 3: If motion detector detects motion, Siren and CCTV will turn ON.
   (f) Condition 4: If there is no movement, Siren and CCTV will be OFF.



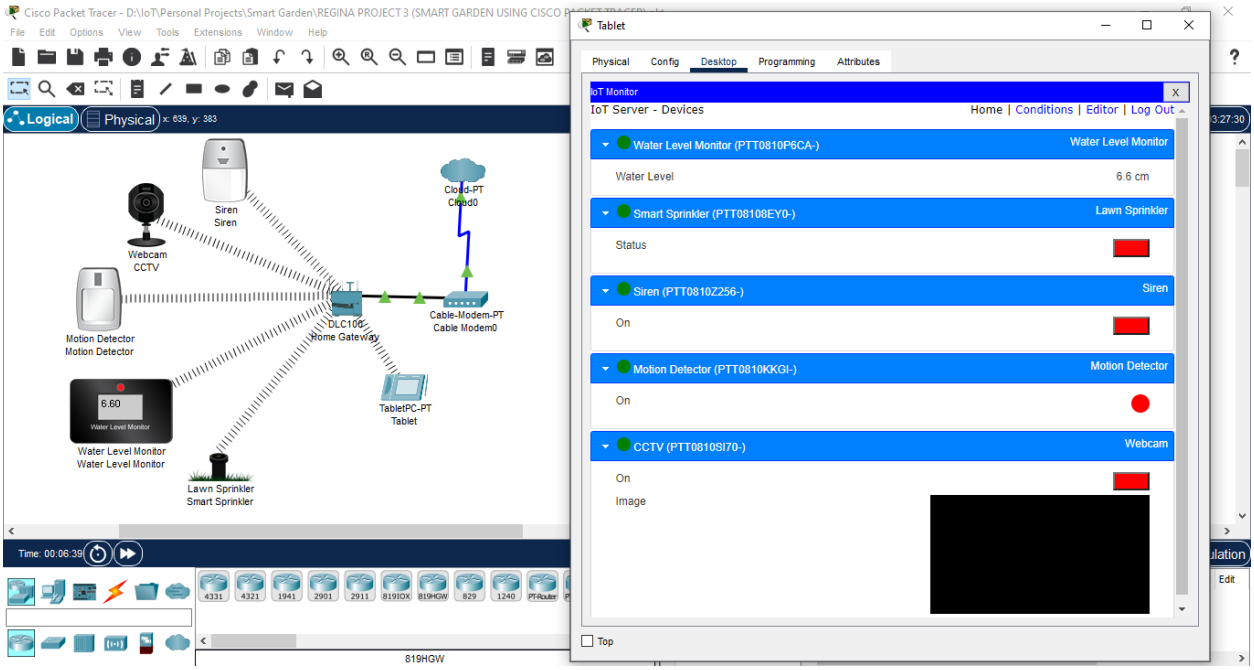
Actions	Enabled	Name	Condition	Actions
Edit Remove	Yes	Water Level	Water Level Monitor Water Level < 5.0 cm	Set Smart Sprinkler Status to true
Edit Remove	Yes	Sprinkler OFF	Water Level Monitor Water Level > 5.0 cm	Set Smart Sprinkler Status to false
Edit Remove	Yes	Motion Detected	Motion Detector On is true	Set Siren On to true Set CCTV On to true
Edit Remove	Yes	No Movement	Motion Detector On is false	Set Siren On to false Set CCTV On to false

OUTPUT

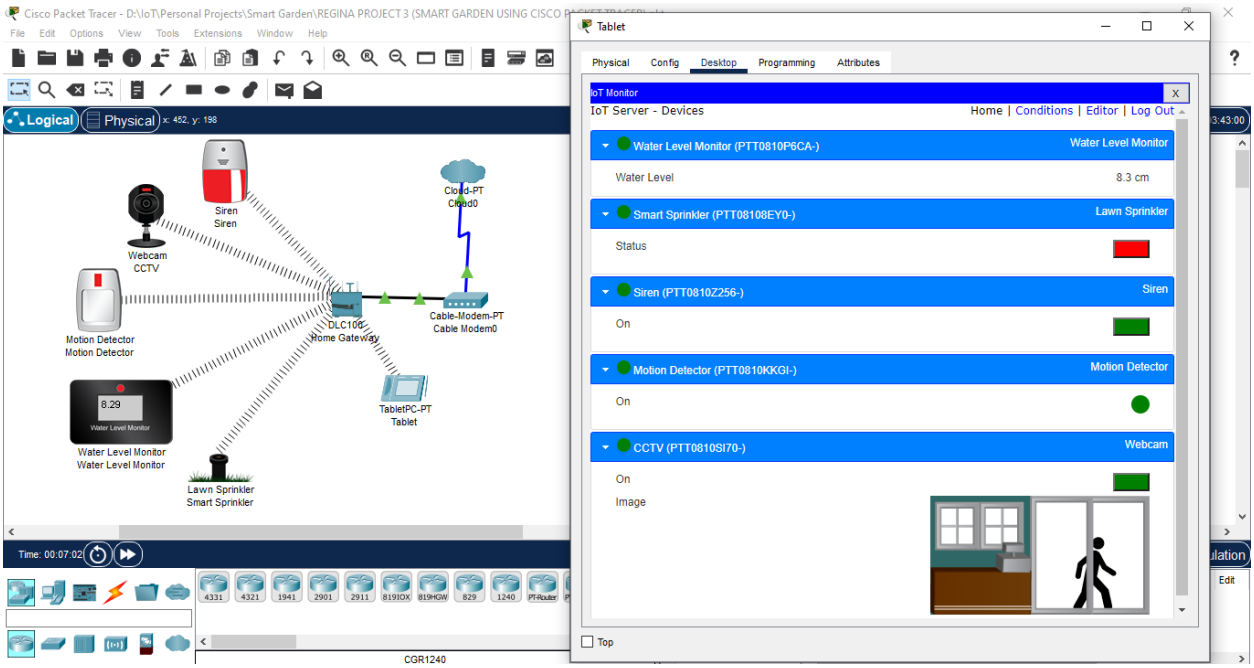
1) Sprinkler is ON, since water level is less than 5 cm. The sprinkler button turned to green.



2) Sprinkler is OFF, since water level is more than 5 cm. The sprinkler button turned to red.



3) By pressing ALT+MOUSE, motion is created. The motion detector detects it. Thus, Siren and CCTV automatically turns ON. These 3 buttons are turned to green indicating they are ON.



RESULT

1) Sprinkler was ON when water level was below the set limit and Turned OFF when it is above set limit.

2) When motion was detected, alarm was on and CCTV automatically records the surrounding.

APPLICATION

1) Smart Greenhouse

2) Smart Garden

3) Smart Crops Field