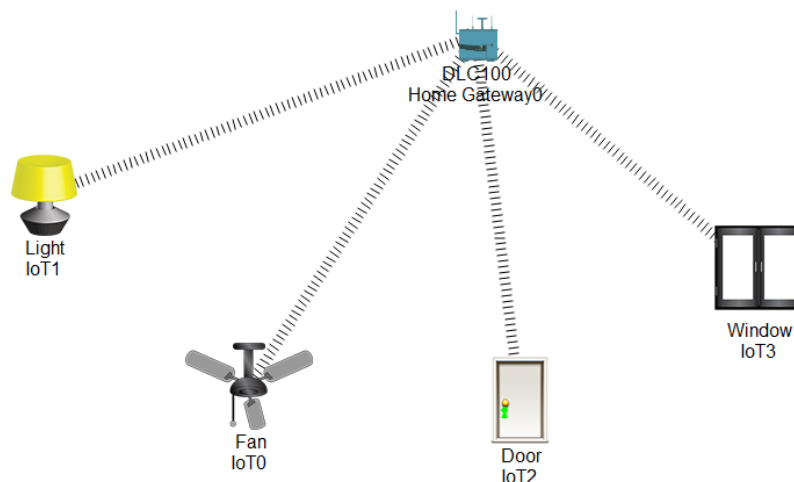
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Aim : Design and simulate IoT scenario.

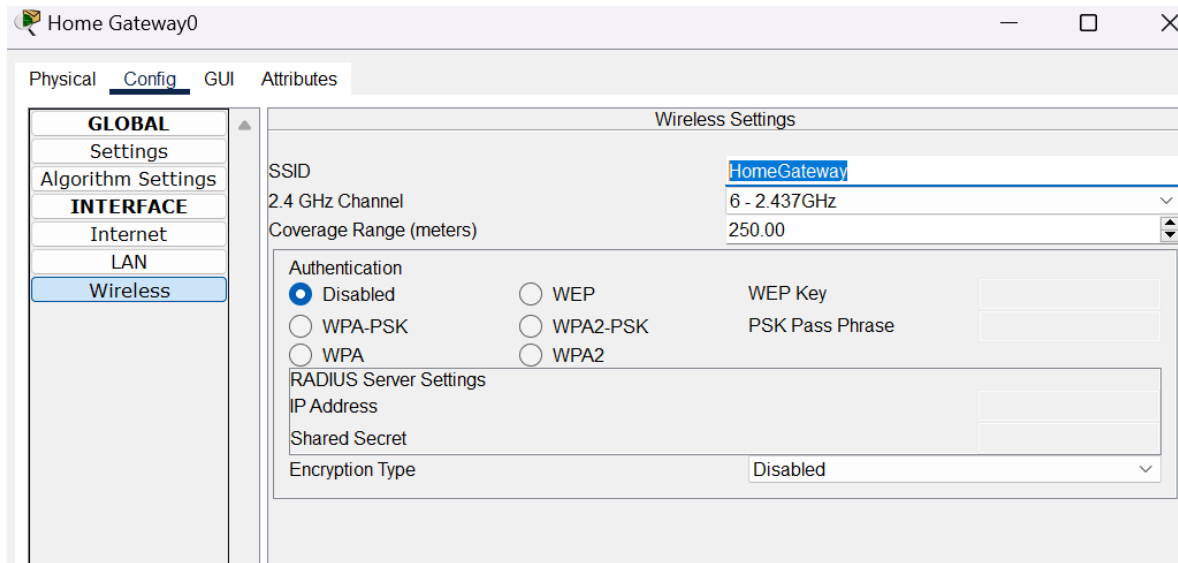
Step – 1 : I am working on a **Smart DAY/NIGHT IoT System Simulation** using Cisco Packet Tracer, incorporating a **Smart Lamp, Ceiling Fan, Smart Door, and Smart Windows**. To begin, I opened Cisco Packet Tracer and added a **Home Gateway** from the IoT Devices section, which acts as the central hub for the system. Then, I added the Smart Lamp, Ceiling Fan, Smart Door, and Smart Windows to the workspace, arranging them as shown in the figure. Each device was connected to the Home Gateway via Wi-Fi to establish seamless communication.



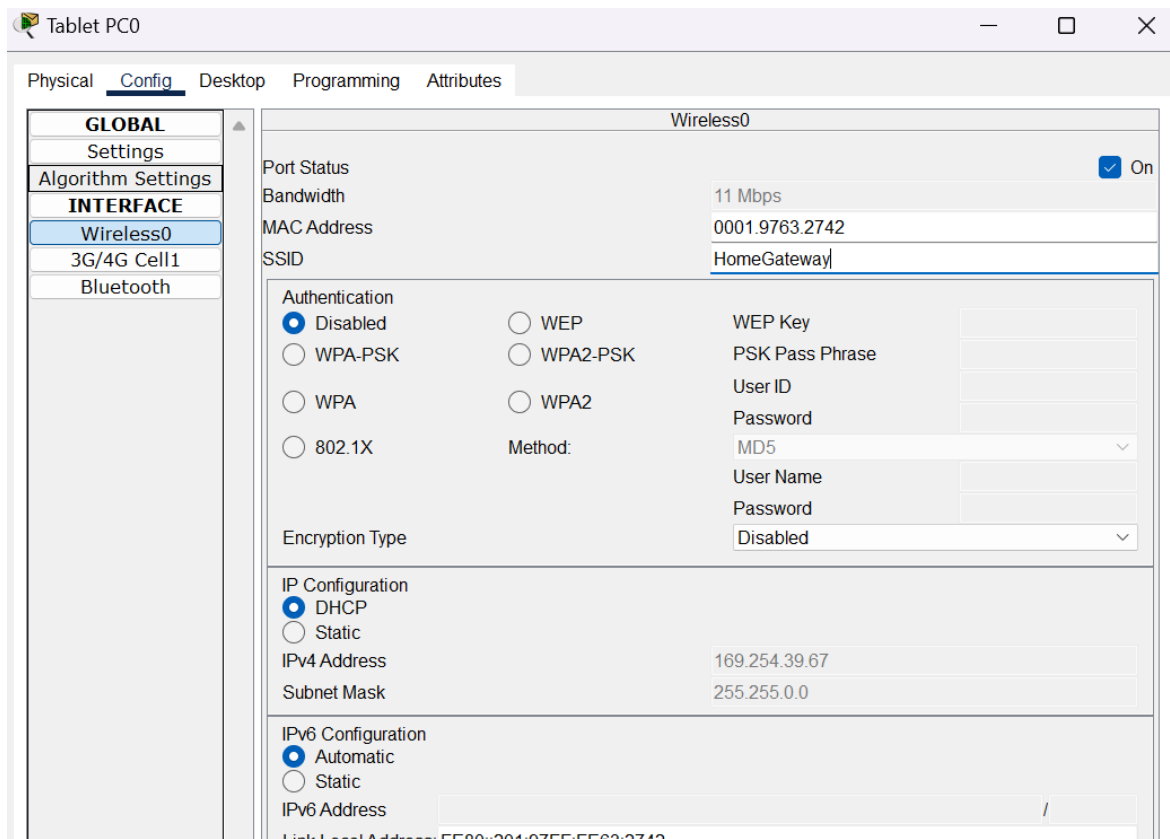
Step – 2 : Now, I am connecting a tablet to the Home Gateway to remotely control the smart devices. To do this, I selected a tablet from the available devices in Cisco Packet Tracer. Next, I clicked on the Home Gateway, which displayed its interface as shown in the figure.


I navigated to the **Config** tab of the Home Gateway, then selected the **Wireless** section. In this section, I located the **SSID Name**, labeled as "HomeGateway." I copied this Gateway name to use it for connecting the tablet to the Home Gateway's Wi-Fi network.

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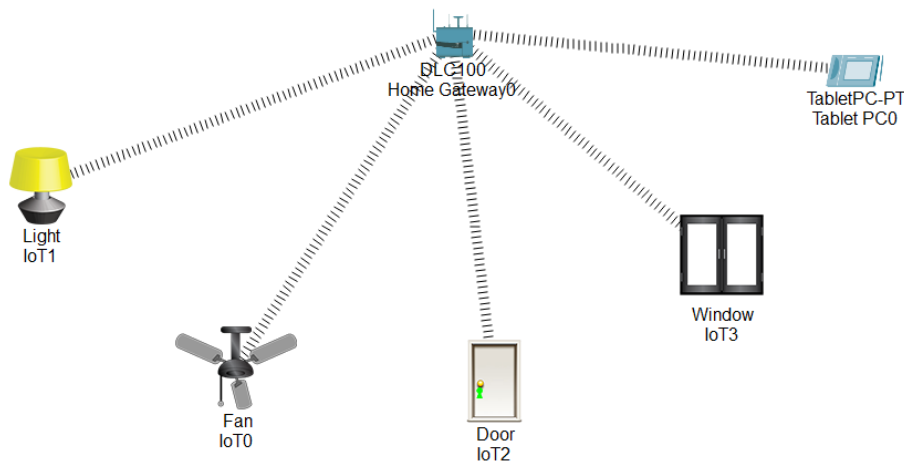


Step – 3 : Next, go to the tablet and click on it. A configuration box, similar to the one shown in the figure, will appear. Navigate to the **Config** tab, then select **Wireless0**. In this section, you will see the **SSID Name** set to the default value. Change the SSID Name to **Home Gateway** to connect the tablet to the Home Gateway's network.

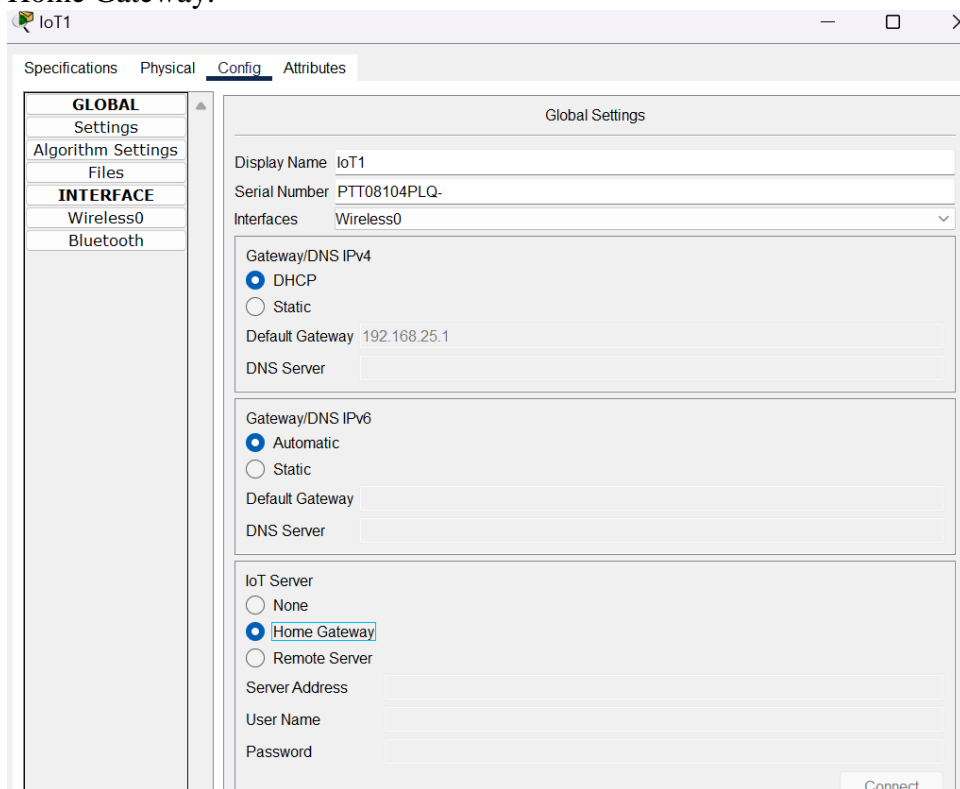


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Now, as shown in the image, the tablet is successfully connected to the Home Gateway.



Step – 4 : To connect all the devices to the Home Gateway, click on each device individually. This will open a dialog box similar to the one shown in the image. Navigate to the **Config** tab, then select the **IoT Server as HomeGateway**. Repeat this process for all the devices to ensure they are connected to the Home Gateway.





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IoT0

Specifications Physical **Config** Attributes

GLOBAL

- Settings
- Algorithm Settings
- Files

INTERFACE

- Wireless0
- Bluetooth

Global Settings

Display Name IoT0

Serial Number PTT0810EZHX-

Interfaces Wireless0

Gateway/DNS IPv4

☒ DHCP

☐ Static

Default Gateway 192.168.25.1

DNS Server

Gateway/DNS IPv6

☒ Automatic

☐ Static

Default Gateway

DNS Server

IoT Server

☐ None

☒ Home Gateway

☐ Remote Server

Server Address

User Name

IoT2

Specifications Physical **Config** Attributes

GLOBAL

- Settings
- Algorithm Settings
- Files

INTERFACE

- Wireless0
- Bluetooth

Global Settings

Display Name IoT2

Serial Number PTT08108W4O-

Interfaces Wireless0

Gateway/DNS IPv4

☒ DHCP

☐ Static

Default Gateway 192.168.25.1

DNS Server

Gateway/DNS IPv6

☒ Automatic

☐ Static

Default Gateway

DNS Server

IoT Server


☐ None

☒ Home Gateway

☐ Remote Server

Server Address

User Name

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WINDOW

Specifications

Physical

Config

Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Global Settings

Display Name

WINDOW

Serial Number

PTT08102SV5-

Interfaces

Wireless0

Gateway/DNS IPv4

☒ DHCP
 ☐ Static

Default Gateway

192.168.25.1

DNS Server

Gateway/DNS IPv6

☒ Automatic
 ☐ Static

Default Gateway


DNS Server

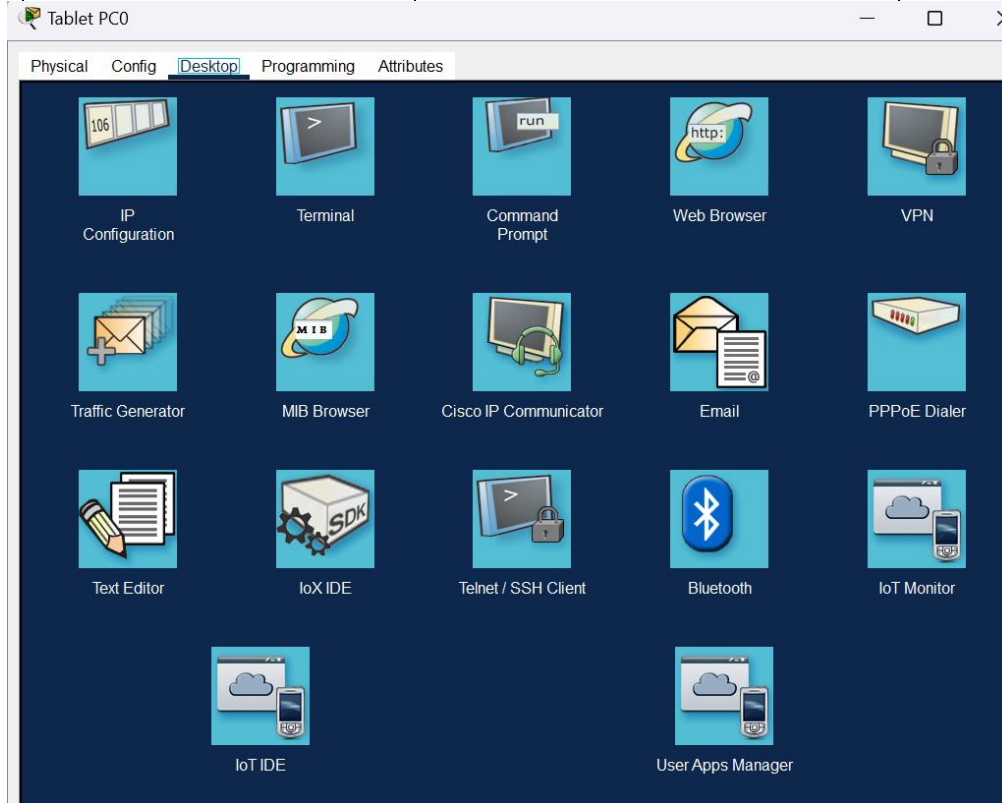
IoT Server

☐ None
 ☒ Home Gateway
 ☐ Remote Server

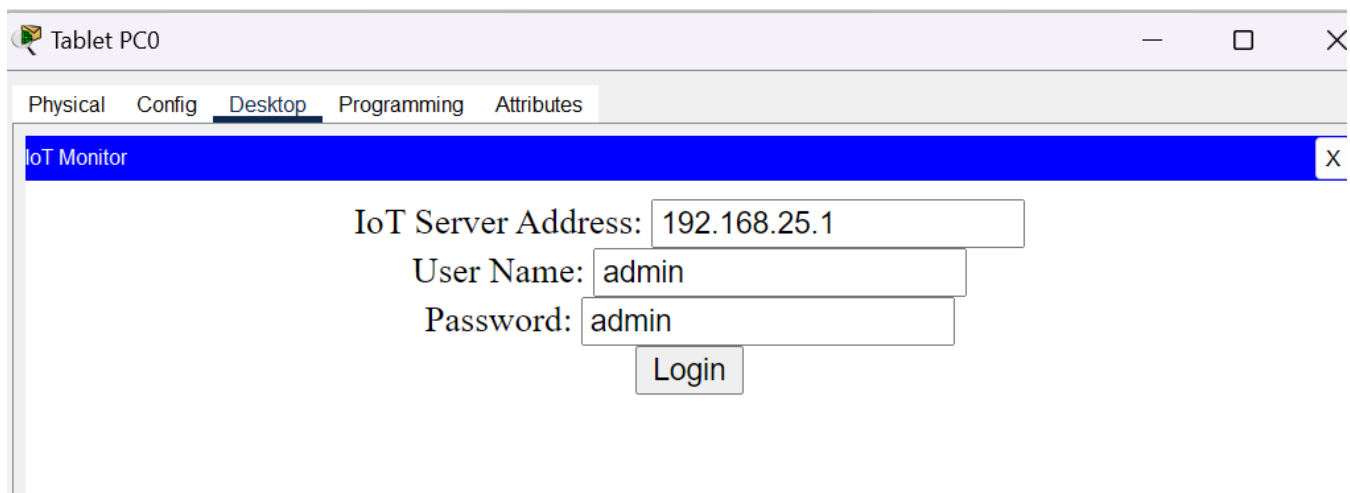
Server Address

Step – 5 : Now, we need to set conditions for day and night. This will be done using the tablet, as it serves as the smart remote for managing other devices. Click on the tablet and navigate to the **Desktop** tab. Here, you will see various options, as shown in the image. Select the **IoT Monitor** option to proceed with configuring the day/night conditions.


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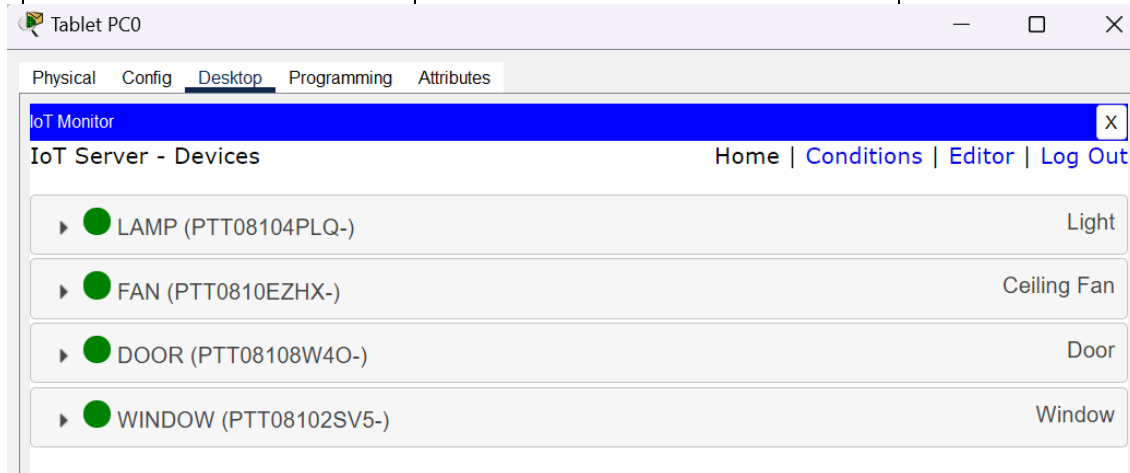


Step – 6 : By clicking on the **IoT Monitor**, you will see the IoT Server Address, Username, and Password fields. These are already set to default values, with the Username and password as **admin**. If you wish, you can change these credentials. Once ready, click on the **Login** button to proceed.

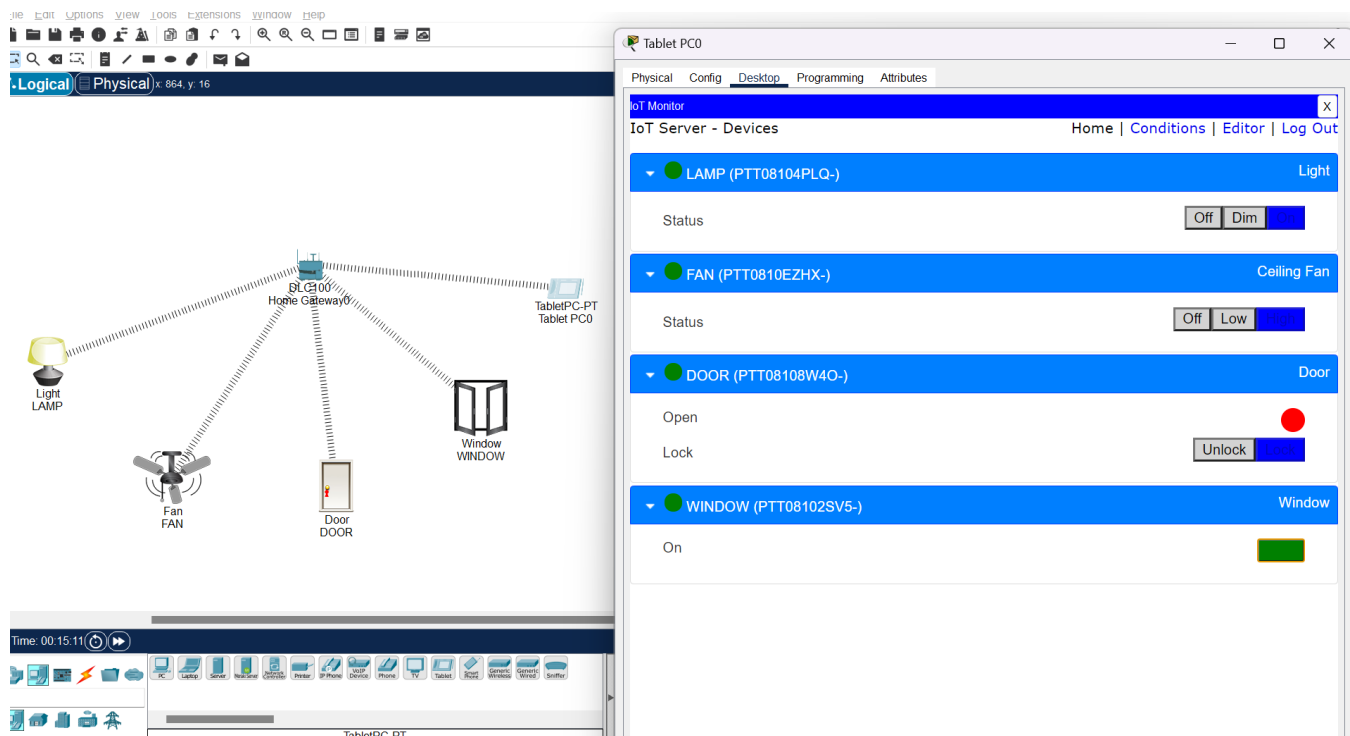


Step – 7 : After logging in, you will see a list of all the devices that you configured for the simulation. All the connected devices will be displayed, as shown in the figure.


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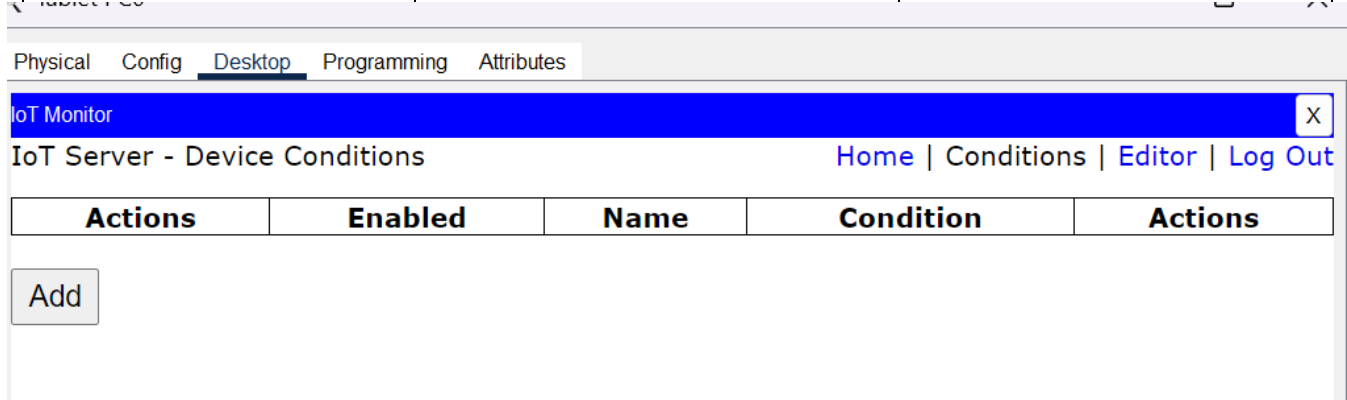


Step – 8 : By clicking on a particular device, you can view all the options available for controlling its functionality. For the **Lamp**, the options are **Off**, **Dim**, and **On**. For the **Fan**, the options include **Off**, **Low**, and **High**. The **Door** can be set to **Lock** or **Unlock**, and the **Window** can be toggled **On** or **Off**. When you select any of these options, the changes will be reflected in the circuit. For example, as shown in the image, I set the Lamp to **On**, the Fan to **High**, and the Window to **Open**, and these changes were successfully applied in the circuit.



Step – 9 : To set conditions for automatic handling of day and night, click on the **Conditions** option in the IoT Monitor. Here, you will see an **Add** button that allows you to create new conditions. Use this option to define the specific rules for day and night automation.

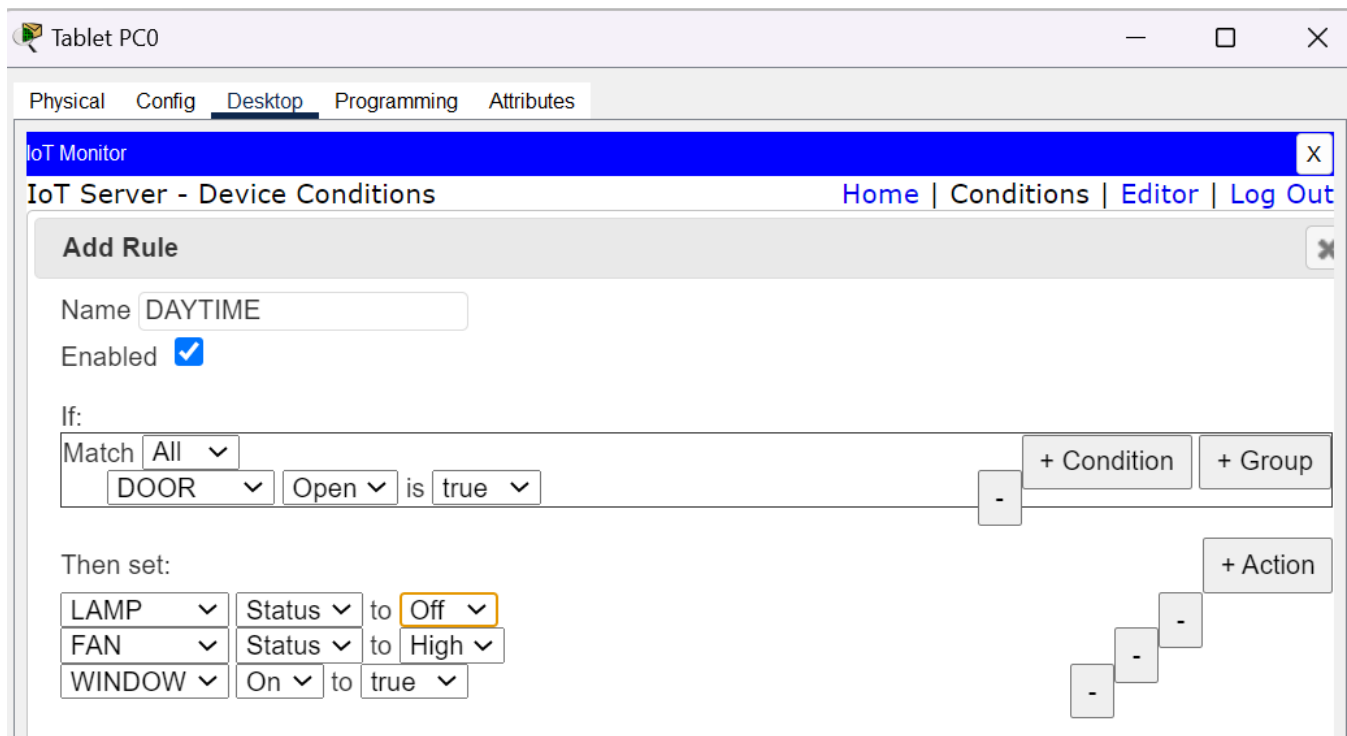
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Step – 10 : Now, as shown in the image, I have set the conditions for **Daytime**. The rule is named **DAYTIME**, and it is enabled. The condition specifies:

- **If:** The **Door** is **Open** and this condition is **True**.
- **Then Set:**
 - **Lamp** status to **Off**.
 - **Fan** status to **High**.
 - **Window** to **On** (open).

These settings ensure that during the daytime, the devices automatically adjust their states based on the specified condition.

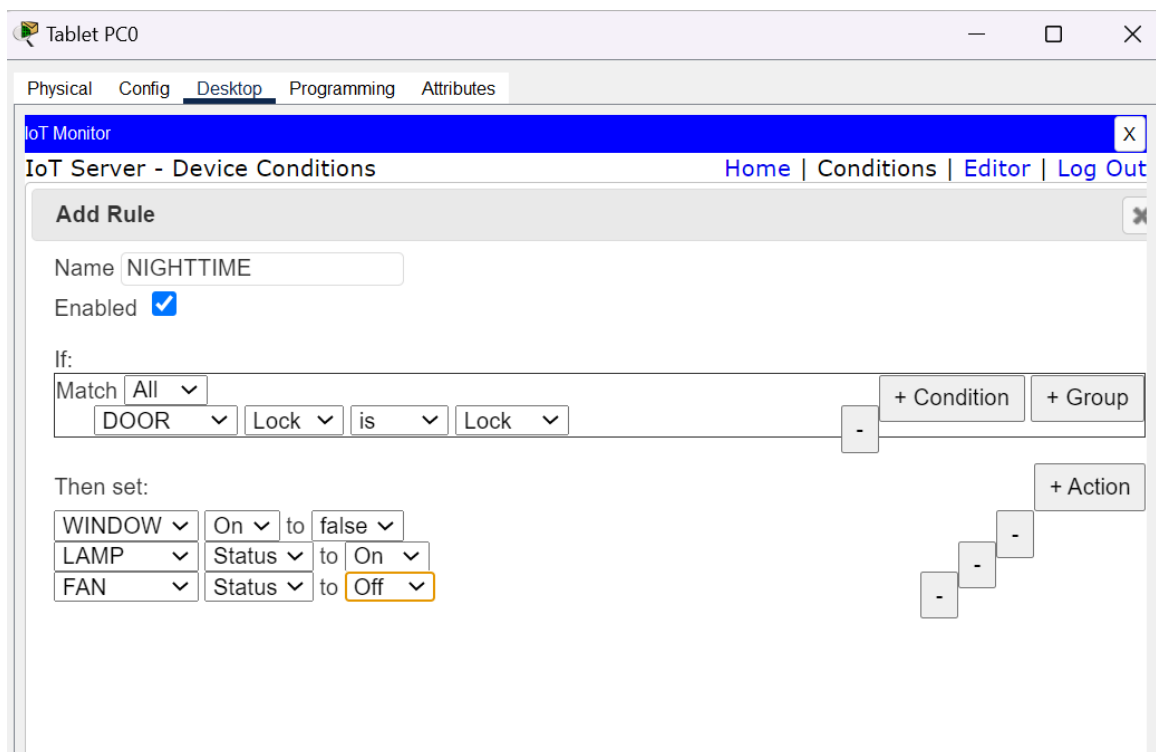


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Step – 11 : Now, as shown in the image, I have configured the **Nighttime** conditions. The rule is named **NIGHTTIME**, and it is enabled. The condition specifies:


- **If:** The **Door** is set to **Lock** and this condition is **True**.
- **Then Set:**
 - **Window** to **Off** (closed).
 - **Lamp** status to **On**.
 - **Fan** status to **Off**.

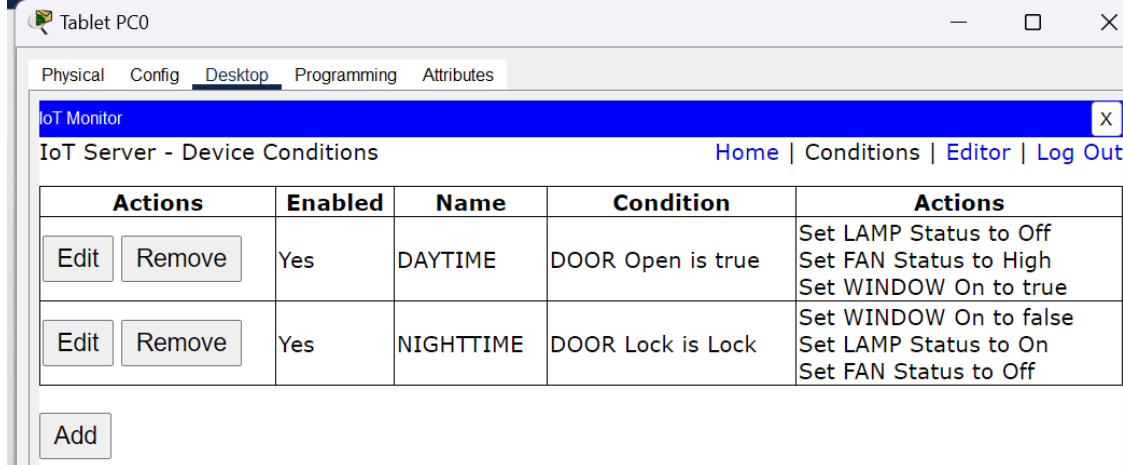
These settings ensure that during the nighttime, the devices automatically adjust their states according to the specified condition.



As shown in the image, I have successfully set up and enabled two conditions, **DAYTIME** and **NIGHTTIME**, for the smart devices.

These rules ensure the system automatically handles device states based on the time of day. The conditions and their respective actions are clearly displayed in the IoT Monitor.

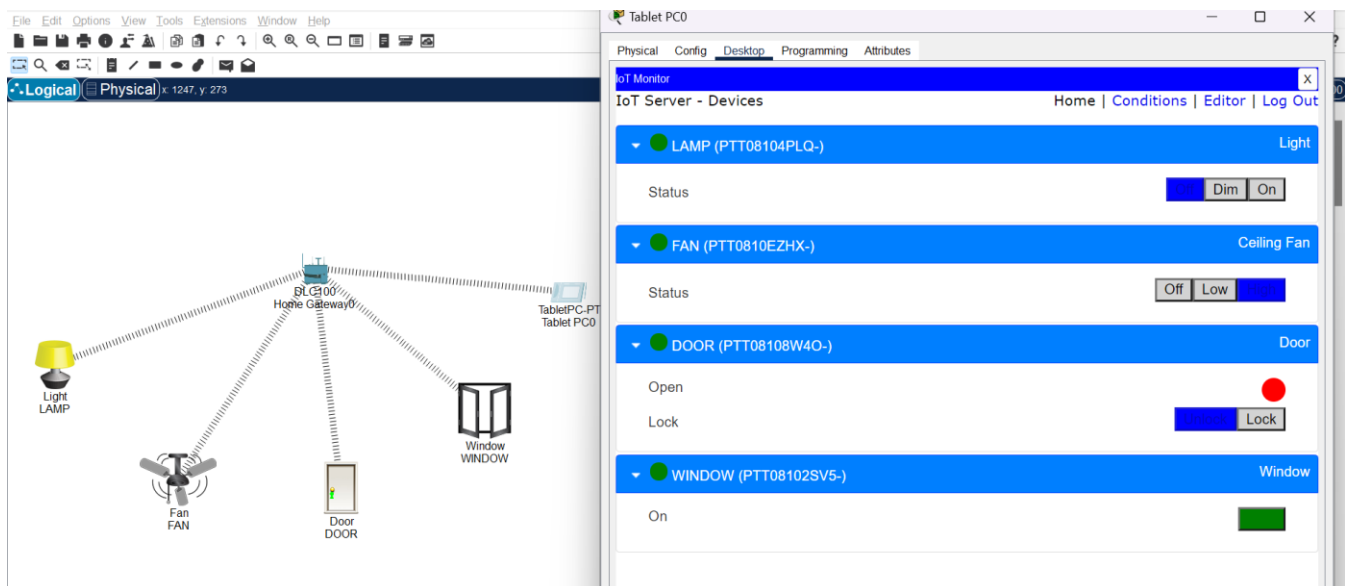
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Now, you can observe that when the **Door** is opened, it signifies **Daytime**, and the other devices automatically perform their tasks as per the set conditions. Specifically:


- The **Window** automatically opens.
- The **Lamp** turns off.
- The **Fan** switches to high speed.

These actions confirm that the system is functioning correctly according to the configured daytime conditions.



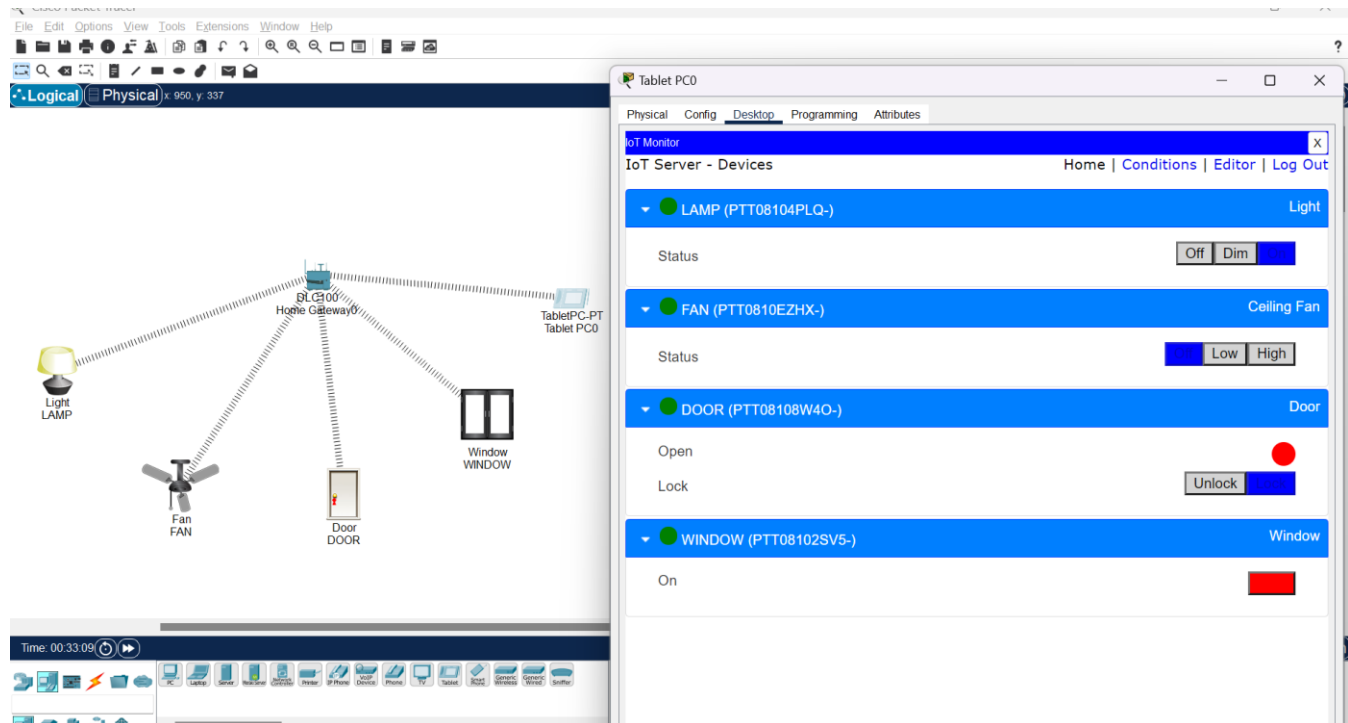
Now when the **door** is closed it signifies **nighttime**, it triggers the following actions:

- The **window** closes.
- The **lamp** turns on.

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- The **fan** switches to low speed or turns off.

These changes adapt the system to nighttime conditions.



Conclusion :

In conclusion, the Smart DAY/NIGHT IoT System Simulation in Cisco Packet Tracer demonstrates the automation and interconnectivity of smart devices. By setting conditions based on the state of the Door, the system automatically adjusts the Smart Lamp, Ceiling Fan, and Windows according to the time of day. When the Door is opened, it triggers Daytime settings, causing the Window to open, the Lamp to turn off, and the Fan to switch to high speed. Similarly, when the Door is closed, Nighttime conditions are activated, ensuring the devices adjust accordingly. This simulation effectively shows how IoT can automate and manage tasks in a smart home environment.