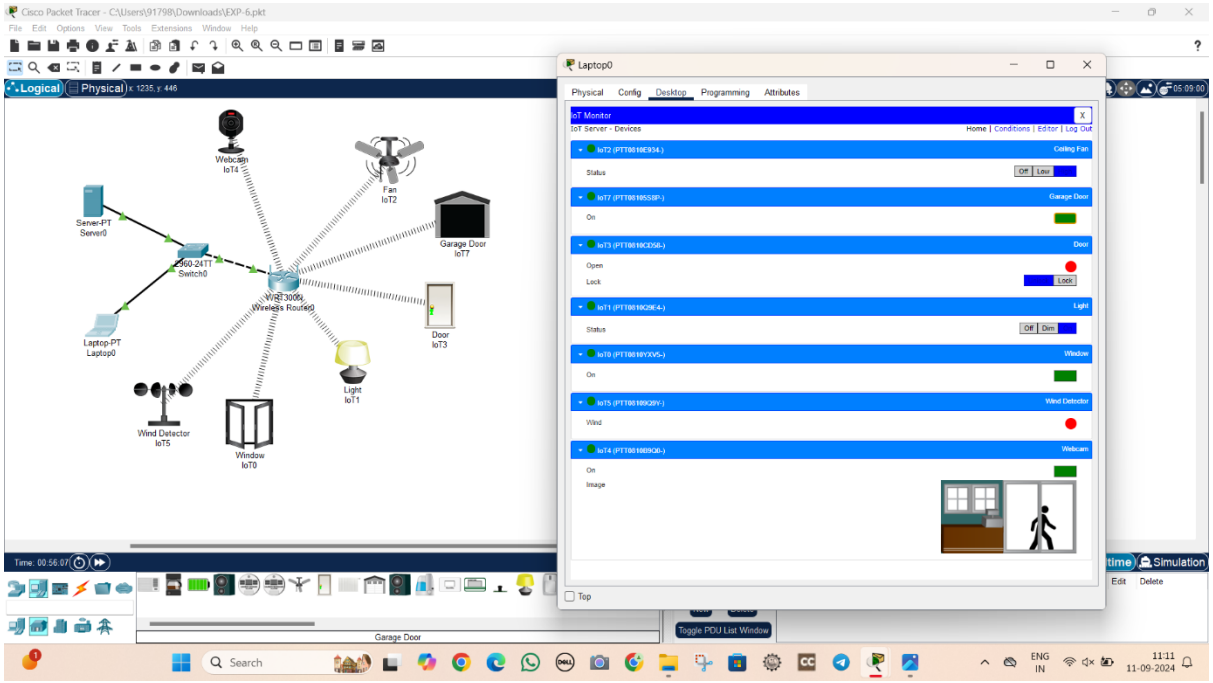
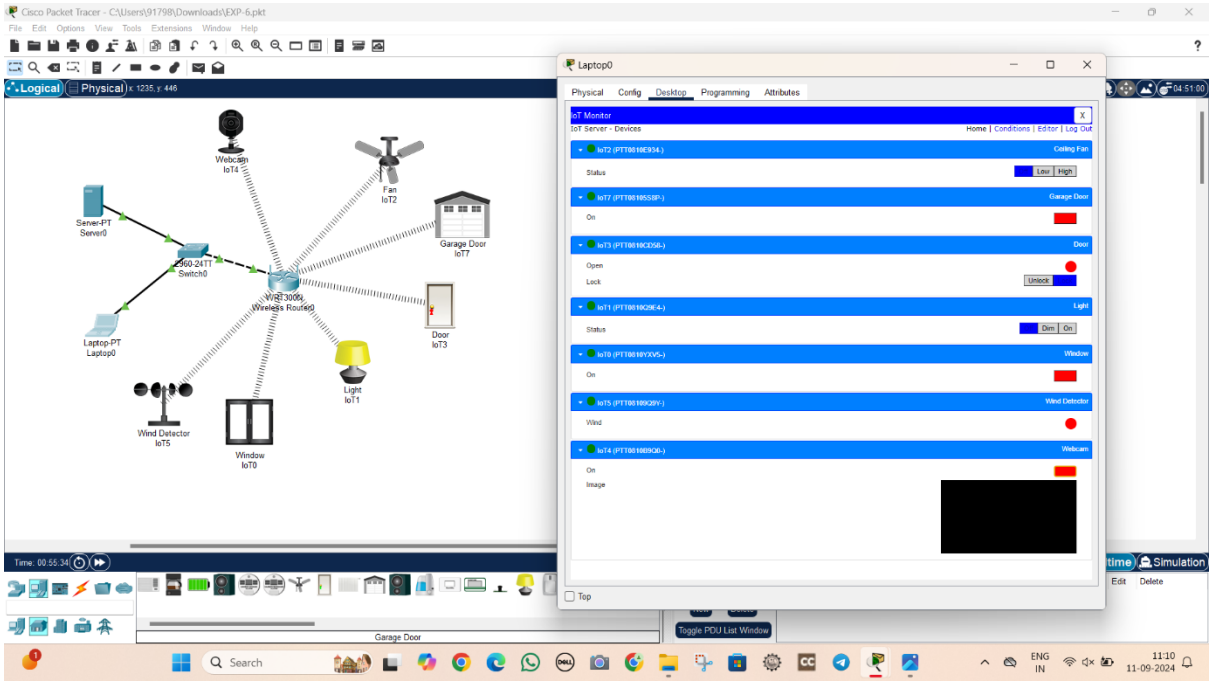
EXP 6:Implementation of Smart home using Cisco packet tracer and verify the configuration

On position:



Off position:



Before we dive into the configuration, let's understand the key components and concepts involved in a smart home setup:

- **IoT Devices:** These are devices that can connect to the internet and be controlled remotely. Examples include smart bulbs, thermostats, security cameras, and door locks.
- **Home Automation Hub:** This central device acts as a bridge between your IoT devices and your home network. It receives commands from your smartphone or other control devices and sends them to the appropriate IoT devices.
- **Network Infrastructure:** This includes your router, switches, and any other network devices necessary to connect your home automation hub and IoT devices to the internet.

Cisco Packet Tracer Setup

1. **Create a New Simulation:** Open Cisco Packet Tracer and start a new simulation.
2. **Add Devices:** Drag and drop the following devices onto your simulation canvas:
    - **Router:** This will be your home network's gateway to the internet.
    - **Switch:** This will connect your home automation hub and IoT devices to the router.
    - **Home Automation Hub:** This can be represented by a generic server or firewall device.
    - **IoT Devices:** Use generic end devices to represent your smart devices.

Configuration Steps

1. **Configure the Router:**
    - Assign an IP address to the router's interface connected to the switch.
    - Configure basic routing protocols (e.g., RIP, OSPF) if necessary for a larger network.
    - Enable DHCP to automatically assign IP addresses to connected devices.
2. **Configure the Switch:**
    - Assign a VLAN to the interface connected to the home automation hub and IoT devices.
    - Create a VLAN interface on the switch and assign it an IP address.
3. **Configure the Home Automation Hub:**
    - Assign an IP address to the home automation hub's interface connected to the switch.
    - Configure the hub to communicate with your IoT devices using appropriate protocols (e.g., MQTT, Z-Wave, Zigbee).
4. **Configure IoT Devices:**

- Assign static IP addresses to the IoT devices or allow them to obtain IP addresses from the DHCP server.
- Configure the devices to connect to the home automation hub and follow its instructions.

Verification

To verify your configuration, perform the following steps:

1. **Ping Devices:** Ping the home automation hub and IoT devices from the router's interface to ensure network connectivity.
2. **Test Device Control:** Use a smartphone app or web interface to send commands to the home automation hub and verify that the IoT devices respond as expected.
3. **Monitor Network Traffic:** Use Packet Tracer's analysis tools to monitor network traffic and ensure that communication between the devices is occurring correctly.