Room Automation System using Cisco Packet Tracer

Aim

To design and simulate a room automation system in Cisco Packet Tracer that automatically manages the **fan** and **room lamp** based on sensor inputs, enabling efficient remote monitoring and energy saving.

Problem Statement

Traditional room electrical systems require manual control of appliances such as fans and lamps, which often leads to energy wastage and inconvenience. The problem is to develop an automated system that can:

- Monitor environmental conditions (temperature, light) in real-time.
- Automatically control the fan and room lamp based on these conditions.
- Provide remote monitoring and control via IoT-enabled devices in Cisco Packet Tracer.

Scope of the Solution

- **Automation:** Fan and lamp operate automatically based on sensor data (temperature and light).
- **Remote Monitoring:** Appliances can also be monitored and controlled through an IoT-enabled interface in Cisco Packet Tracer.
- **Energy Efficiency:** Reduces wastage of electricity by ensuring devices work only when required.
- **Scalability:** Additional devices (AC, curtains, alarms) can be integrated into the system in the future.

Required Components

Software / IDE

- **Cisco Packet Tracer (v7.3 or above)** – for IoT simulation and automation.

Hardware Components (Virtual in Cisco Packet Tracer)

1. **IoT Server / Home Gateway** – to connect and control devices remotely.
2. **Fan (IoT-enabled)** – to be controlled automatically based on temperature.
3. **Lamp (IoT-enabled)** – to be controlled automatically based on light intensity.

4. **Temperature Sensor** – detects room temperature and sends data to IoT server.
5. **Light Sensor** – detects light intensity for lamp control.
6. **Smartphone / Laptop (IoT device)** – for remote monitoring and manual override.
7. **Switch / Router (if required)** – to connect IoT devices to the network.

Simulated Circuit :