Report: Room Automation System

Aim

To create a simple, automated system using Cisco Packet Tracer that remotely controls a fan and a lamp to save energy.

Problem Statement

The goal is to stop wasting energy by automatically turning off lights and fans when they're not needed. We'll build a system that can sense the room's conditions and turn devices on or off by itself.

Scope of the Solution

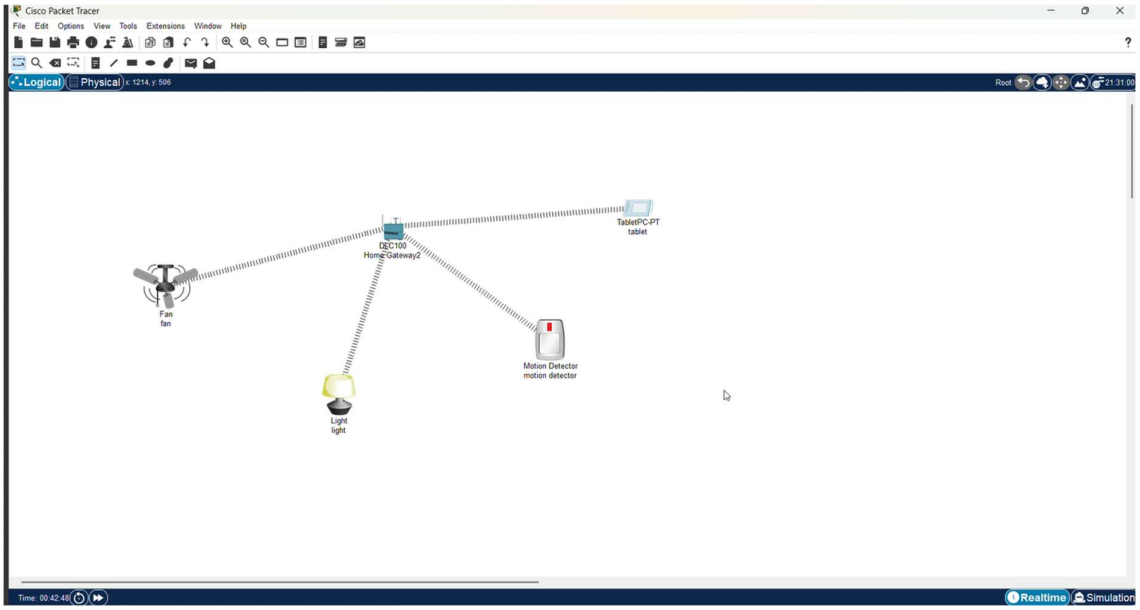
The system will:

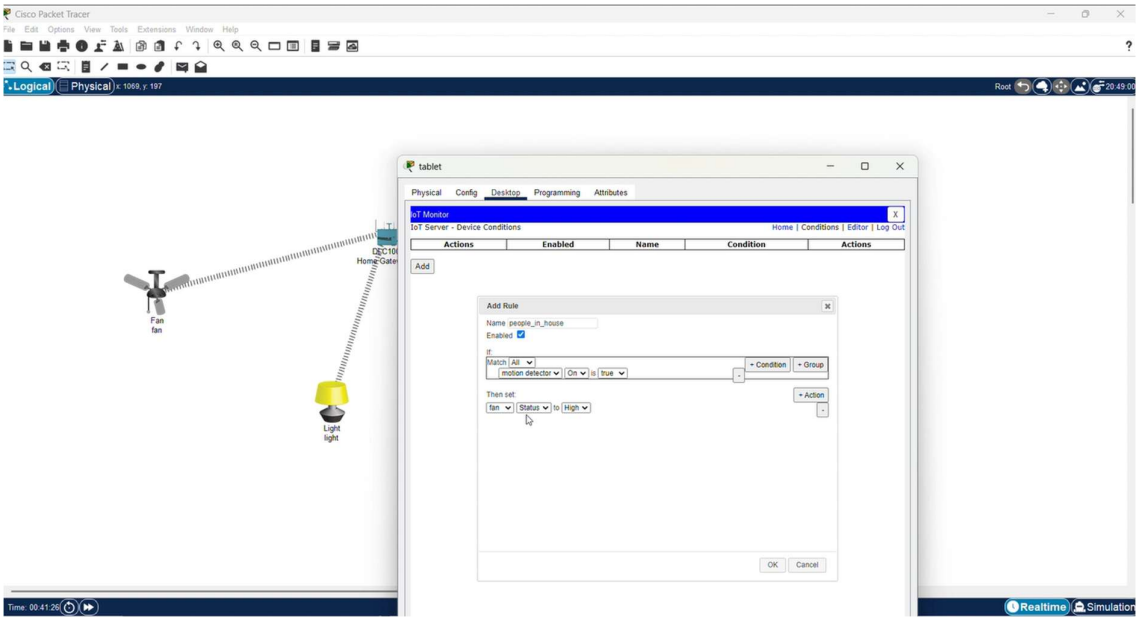
- **Be designed and built using Cisco Packet Tracer.**
- **Use a motion detector to control a fan and a lamp.**
- **Allow us to check the status of the devices and turn them on or off remotely from a computer.**

Required Components

- **Software:**
    - **Cisco Packet Tracer: The main tool for building the system.**
- **Simulated Hardware:**
    - **Light Sensor: Detects how bright the room is.**
    - **Smart Fan: The device to be controlled.**
    - **Smart Lamp: The device to be controlled.**
    - **Home Gateway: Connects all the smart devices to the internet.**
    - **IoT Server: Stores the rules and lets us see what's happening.**

Simulated Circuit





A Home Gateway will act as Wi-Fi router.

- **Connect the sensors and smart devices (fan and lamp) to a Generic MCU.**
- **All these devices will connect wirelessly to the Home Gateway.**
- **The IoT Server will be connected to the same network.**
- **We'll set up rules on the server so the lamp and fan turns on using motion detector.**

Conclusion:

The system not only achieves the primary goal of automating device control to promote energy efficiency but also provides a platform for remote monitoring, giving users greater control and insight into their environment. The simulation proves that such an IoT-based solution is feasible and scalable for real-world applications in smart homes and buildings.