# Room Automation System – Project Report

## 1. Title

Room Automation System for Remote Monitoring Using Cisco Packet Tracer

## 2. Aim

To design and simulate a Room Automation System that automatically controls a Fan and a Room Lamp based on environmental conditions and motion detection, enabling remote monitoring and control.

## 3. Problem Statement

In modern homes, manual operation of electrical appliances such as fans and lamps can lead to energy wastage and inconvenience. There is a need for an automated solution that:
- Turns Fan ON/OFF based on temperature.
- Turns Lamp ON/OFF based on motion detection.
- Allows remote monitoring using an IoT-enabled device (Tablet).

## 4. Scope of the Solution

- Provides automated control of appliances using IoT rules.
- Enables remote monitoring and control through a tablet or IoT web interface.
- Demonstrates smart home automation principles.
- Can be expanded to include additional devices (AC, smart doors, alarms, etc.).

## 5. Components Required

Software:
- Cisco Packet Tracer 8.2.2 – For IoT simulation.
- Arduino IDE (optional) – For Arduino-based automation code.

Hardware (Simulated in Packet Tracer):
1. Home Gateway – IoT server for device registration and automation.
2. Tablet – Remote monitoring and control device.
3. Lamp – IoT actuator.
4. Fan – IoT actuator.
5. Motion Detector (Wireless) – To detect presence and control lamp.
6. Thermostat / Generic IoT Sensor (Wireless) – To simulate temperature and control fan.

## 6. System Design & Simulation

### 6.1 Device Placement

- Home Gateway connected to all IoT devices via wireless SSID “HomeG”.
- Tablet connected to the gateway for monitoring and control.
- Lamp and Fan as actuators in the room.
- Motion Detector for detecting human presence.
- Thermostat (or Generic IoT Sensor) to simulate temperature control for the fan.

### 6.2 Device Registration

1. Open Tablet → Desktop → Web Browser.
2. Enter Home Gateway IP: 192.168.25.1.
3. Login (admin/admin) and register all devices: Lamp, Fan, Motion Detector, Thermostat/Generic Sensor.

### 6.3 Automation Rules

1. Lamp Control:
   - IF Motion Detected → Lamp = ON
   - IF No Motion → Lamp = OFF
2. Fan Control:
   - IF Temperature ≥ Threshold (e.g., 5°C) → Fan = ON
   - IF Temperature < Threshold → Fan = OFF

### 6.4 Simulation Testing

- Adjust Thermostat → Fan reacts automatically.
- Trigger Motion Detector → Lamp turns ON/OFF automatically.

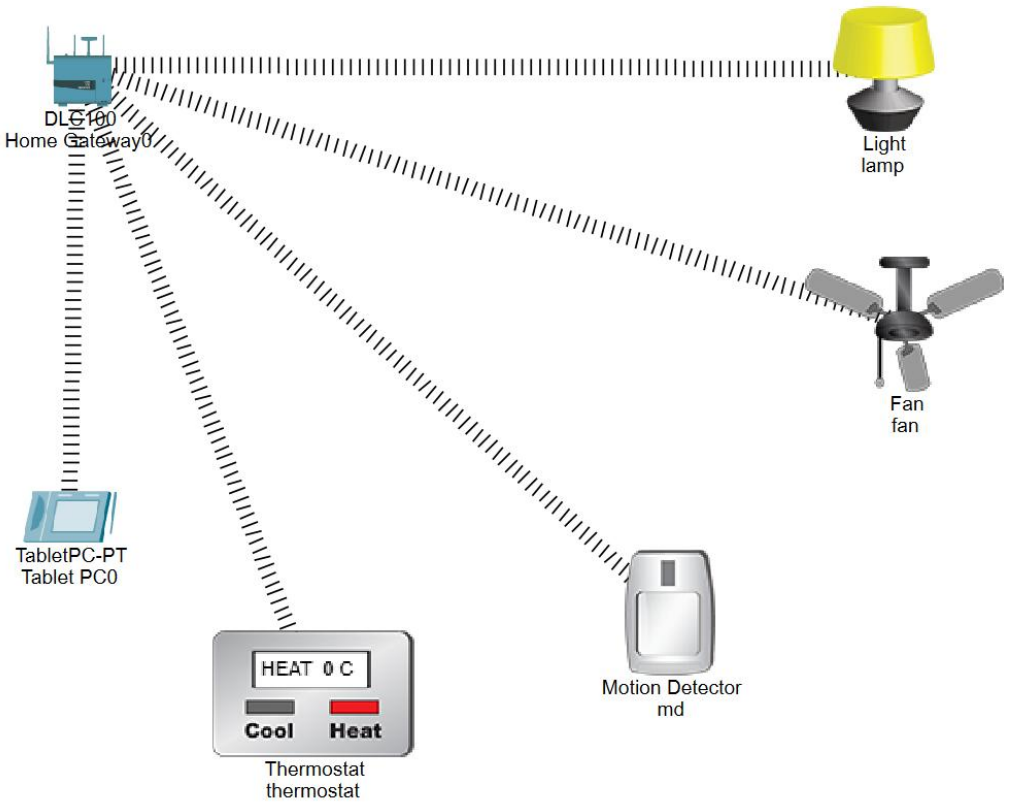
## 7. Results

- Lamp automatically switches ON/OFF based on motion detection.
- Fan automatically switches ON/OFF based on simulated temperature.
- System can be monitored and controlled remotely using the tablet.
- Demonstrates a functional IoT-based room automation system.

## 8. Conclusion

This project successfully implements a smart home automation system using Cisco Packet Tracer. It demonstrates rule-based IoT automation, energy efficiency, and remote monitoring. The system can be extended for additional smart devices and real-life home automation applications.

## 9.Screenshots:




| Actions | | Enabled | Name | Condition | Actions |
|---|---|---|---|---|---|
| Edit | Remove | Yes | fan on | thermostat Temperature >= 5.0 °C | Set fan Status to High |
| Edit | Remove | Yes | fan off | thermostat Temperature < 5.0 °C | Set fan Status to Off |
| Edit | Remove | Yes | light on | md On is true | Set lamp Status to On |
| Edit | Remove | Yes | light off | md On is false | Set lamp Status to Off |

Add