# Project Report

## SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

**(Under SECTION 3 of the UGC Act, 1956)**

**DELHI-NCR CAMPUS, MODINAGAR, GHAZIABAD-201204**

**Submitted by**


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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

# SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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## Department of Electronics & Communication Engineering

# CERTIFICATE

Certified that the mini-project work entitled **"PROJECT REPORT"** is a bonafide work carried out by

**Anshit Kumar Srivastava**

**Panchadara Lalitaa Samanwitaa**

The report has been approved as it satisfies the academic requirements in respect of mini-project work prescribed for the course.

| | |
|---|---|
| ..... | ..... |
| **Dr. Rohit Sharma** | **Dr. Rupali Singh** |
| Project Coordinator | HOD ECE |

# Smart Home Automation using IoT

**Aim-** Smart home automation using IoT

**Software used –** CISCO Packet Tracer

## Abstract-

The integrated smart home automated control system is designed to provide to use the home automation system that can be fully operated based on an Android or IOs application. The system is portable and designed to be simple to set up, operate, and maintain. A typical wireless smart home automation system enables wireless centralized control of household equipment. Each gadget contains sensors and is Wi-Fi-connected, allowing you to manage them from your smartphone or tablet whether you're at home or thousands of miles away. A Smart home automation system will monitor and control all aspects of the home applications such as Lighting lamp, Ceiling fan, AC, Window, Home Speaker and Appliances.

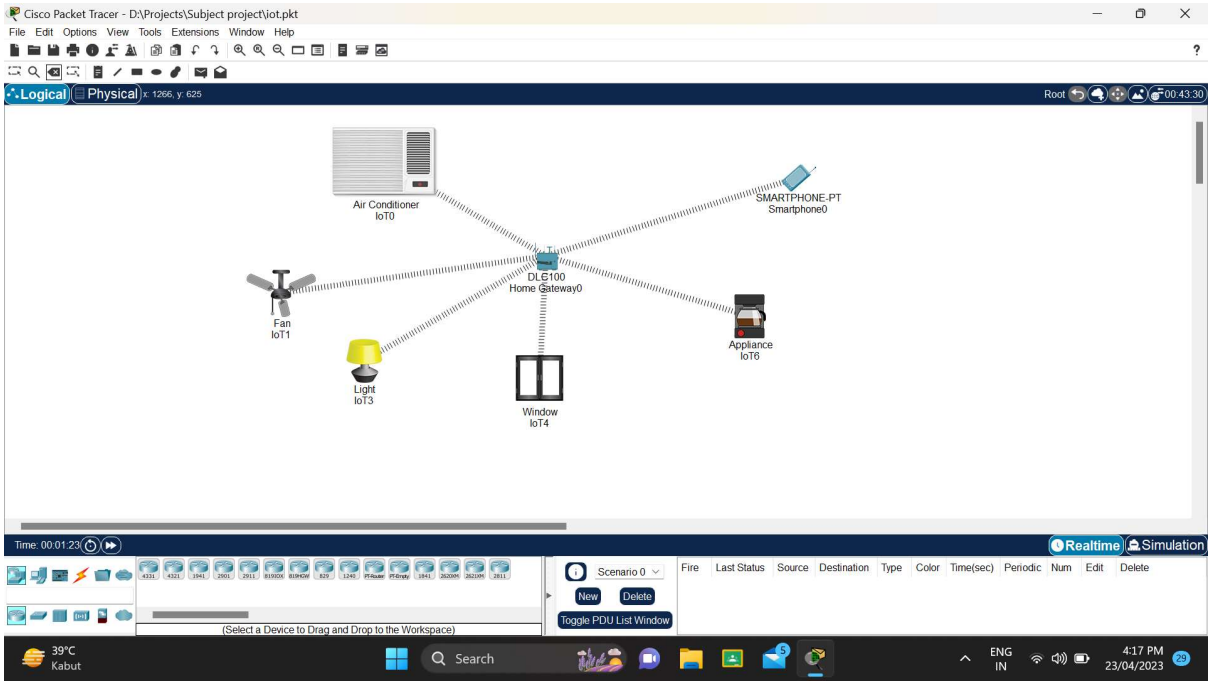
## Theory-

Smart home technology: also often referred to as home automation or domotics (from the Latin "domus" meaning home), provides homeowners security, comfort, convenience and energy efficiency by allowing them to control smart devices, often by a smart home app on their smartphone or other networked device. A part of the internet of things (IoT), smart home systems and devices often operate together, sharing consumer usage data among themselves and automating actions based on the homeowners' preferences.

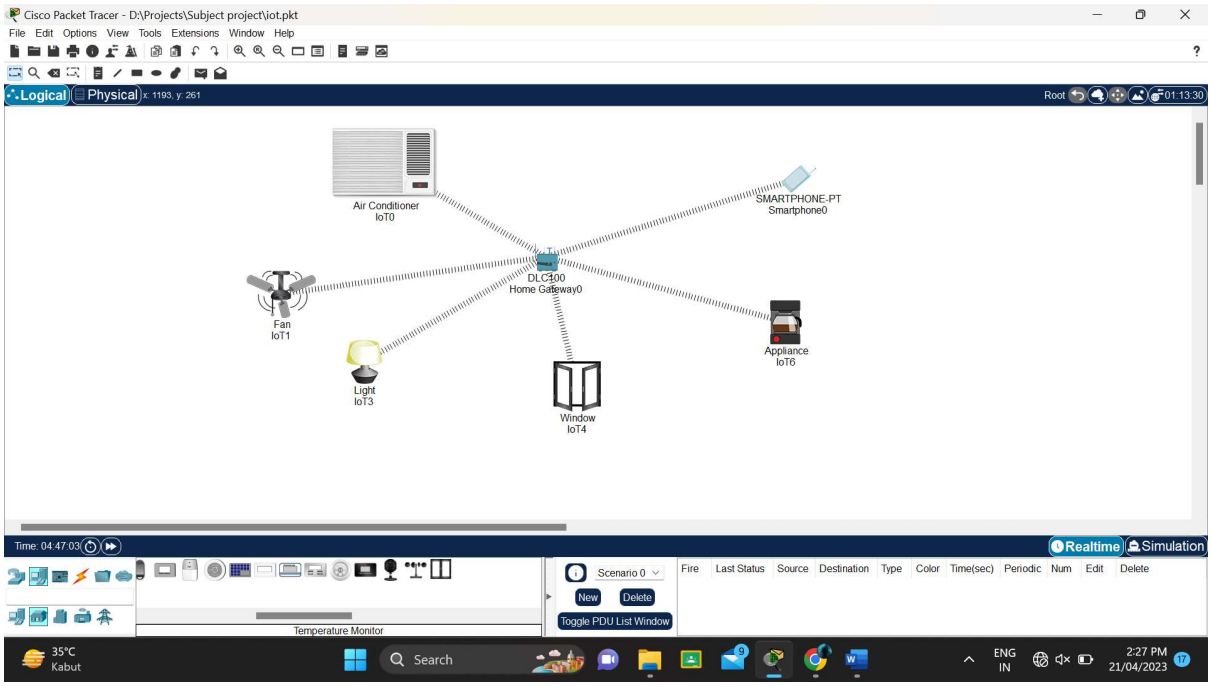
The autonomous management of your house's technological gadgets is known as home automation. Due to their Internet connectivity, these gadgets can be managed from a distance. With home automation, gadgets may be controlled automatically without the need for an app or voice assistant. Home Automation is a wireless home appliance control system accessed by a remote device such as mobile phone (Android or IOs) to allow a home owner to control, monitor and coordinate home appliances, without changing the home infrastructure. Building automation for a home as a smart home or smart house, is known as Smart home automation. Smart Home automation is a network of hardware, communication, and electronic interfaces that work together to connect ordinary things to the Internet.

## Observation-

- OFF Condition




- ON Condition



# Appendix

## ➢ Air Conditioner (AC)

Air Conditioner
IoT0

Features:

- Registration Server Compatible
- Cools the temperature of a typical office space at -10C per hour.
- Reduces the humidity by 2% per hour.

Usage:

- Connect D0 to the Thermostat's D2 slot.

Direct Control:

- N/A

Local Control:

- DigitalWrite HIGH on D0 for ON, LOW for OFF.

Remote Control:

- Connect device to Registration Server using Config Tab

Data Specifications:

- Message Format: [state]
  state: 0 = AC off, 1 = AC on
- Input: D0 HIGH or LOW.

Example:
It's also possible to attach this device to a Switch to turn it on and off manually.

## ➢ Ceiling Fan


Features:

- Registration Server Compatible
- Off
- Low Speed
- High Speed

Usage:

- Connect to the Fan with custom cable from MCU/SBC/Thing
- In the script, write the data to the Fan with customWrite function to turn Fan off, set low speed/high speed

Direct Control:

- ALT-click to interact

Local Control:

- Connect device to MCU/Thing/SBC. Use the "customWrite" API per Data Specifications

Remote Control:

- Connect device to Registration Server using Config Tab

Data Specifications:

Message Format: [state]
state: 0 = off, 1 = low speed, 2 = high speed

Example:
Connect SBC to a Fan with custom cable, connect from pin 0 on SBC to pin 0 on the Fan, in the SBC, add the code customWrite(0, "1") to set the Fan at low speed

## ➢ Light

A lamp that can be turned on or off.


Features:

- Registration Server Compatible
- Off
- Dim
- On
- Emits light to the environment

Usage:

- N/A

Direct Control:

- ALT-click to interact

Local Control:

- Connect device to MCU/SBC/Thing. Use the "customWrite" API per Data Specifications

Remote Control:

- Connect device to Registration Server using Config Tab

Data Specifications:
Message Format: [state]
state: 0 = off, 1 = dim, 2 = on

Example:

- Connect an MCU to Light. Cycle through 0, 1, and 2 to change Light state.

## ➢ Window

A window that can open or close


Features:

- Registration Server Compatible
- Ability to vent Carbon Dioxide and Carbon Monoxide

Usage:

- Window works with Environment object. It reads CARBON_DIOXIDE and CARBON_MONOXIDE variables set in the Environment object and change these variables when users activate window opening/closing

Direct Control:

- ALT-click to open and close

Local Control:

- Connect device to MCU/SBC/Thing. Use the "customWrite" API per Data Specifications

Remote Control:

- Connect device to Registration Server using Config Tab

Data Specifications:
Message Format: [state]
state: 0 = closed, 1 = open

## ➢ Appliance

Instrument / Device uses at home


Features:

- Registration Server Compatible
- On
- Off

Usage:

- Connect Appliance to SBC or button and send a customWrite to turn on/off the Appliance

Direct Control:

- ALT-click to interact

Local Control:

- Connect device to MCU/SBC/Thing. Use the "customWrite" API per Data Specifications

Remote Control:

- Connect device to Registration Server using Config Tab

Data Specifications:

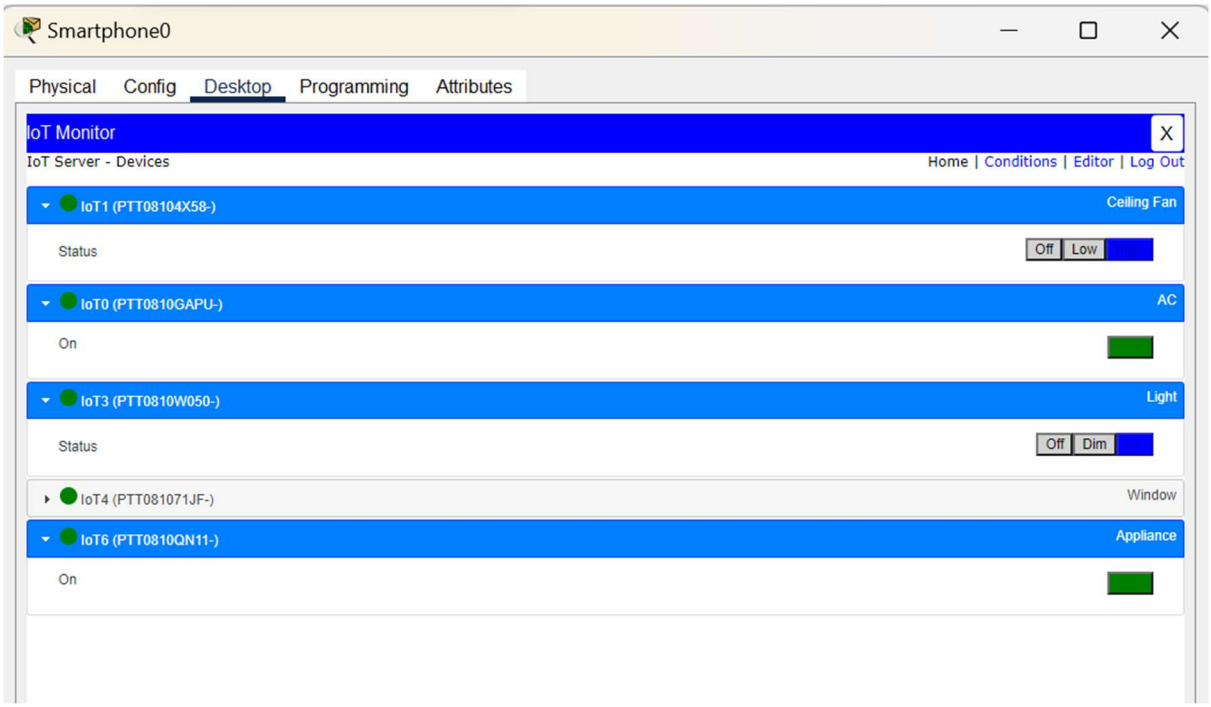
INPUT SLOT 0:

0 = Off
1 = On

Example:
Connect a button to Appliance, then send data: customWrite(0, "1"); // turns on device

## ➢ Smart Phone

A smartphone is a portable computer device that combines mobile telephone functions and computing functions into one unit.

## Results-

Realtime Simulation

| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|
| | Successful | Smart… | Home Gat… | ICMP | | 0.000 | N | 0 | (edit) | (delete) |
| | Successful | IoT6 | Home Gat… | ICMP | | 0.000 | N | 1 | (edit) | (delete) |
| | Successful | IoT4 | Home Gat… | ICMP | | 0.000 | N | 2 | (edit) | (delete) |

Realtime Simulation

| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit | Delete |
|---|---|---|---|---|---|---|---|---|---|---|
| | Successful | IoT3 | Home Gat… | ICMP | | 0.000 | N | 3 | (edit) | (delete) |
| | Successful | IoT1 | Home Gat… | ICMP | | 0.000 | N | 4 | (edit) | (delete) |
| | Successful | IoT0 | Home Gat… | ICMP | | 0.000 | N | 5 | (edit) | (delete) |