SRM UNIVERSITY - AP
A Project Based on
'IOT' – INTERNET OF THINGS
'SMART HOME' [HOME AUTOMATION]

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NAME OF THE SUBJECT             :     IOT –
ECE_122
NAME OF THE PROJECT            :      HOME
AUTOMATION USING

CISCO PACKET TRACER
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ABSTRACT

The need of Safety can be achieved by making locks , Switches which can be Electrical or Mechanical with one or Multiple ways but for Operating a big area or a Home many Switches and Power Supplies are required.

Now a days every Device's Operation is based on Digital Technology.

Smart Home Domain is a new trendy way of Home Automation Which we can see in Images or in Movies as we can Implimite it in real life but it requires a lot of Technology and Money too.

People Who lives in Big Houses face problems to "on and off" switches and other gadgets frequently , For Old Citizens they cant move here and there for switch "on and off".

So, We can Implement The Smart Home which we can Control our Entire Home by a Smart Device like using 'Smart Phone' or a 'Voice Command'

The main Objective of this project is to give Safety and Easy way at every common places like Home and Garden areas, etc.

Thus, what we want is Digital Technology to Construct an Integrated and well Customized Safety System using our Smart Phones.

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INTRODUCTION

American Association of House Builders announced the first official version of Smart Home in 1984. After that, there was a rapid growth in this field.

The word Smart Home is not restricted to the dwelling.
But it has a broad meaning in this Technological Environment.

Smart Home has a Broad Sense of Intelligent Living or Smart living.
The usage of Computer Augmented Technology as Smart Communities, Smart cities, and Smart Factories elaborate the Smart Home concept beyond the Residing Home.

This Proposes the areas where the Scholars or Technicians place more attention for a useful evolution of Intelligent living Technologies.

The main goal of this is to provide an overall idea about the Technological Advancement carried out in the Smart Living Domain.

AIM / OF THE PROJECT

The main aim of the Project is to Build a Smart Home Automation Using Cisco Packet Tracer

Home Contains all Electronic items like " Fan's , Window's , AC , Kitchen Items , Door's , Water Draining Systems , Light's " , etc.
Which we can Operate all of them by a Single Click Through our Smart Phone's

ADVANTAGE'S OF THE PROJECT

- Automatically Controlled Remotely from anywhere with an Internet Connection using a mobile or other Networked device
- It is very Useful in Big House's and Old People can use this Technology to avoid there body pains
- Advanced security
- Easier to Lock and Unlock the Doors
- Saves Energy with Smart Energy Consumption
- Easy to Access for all people
  (A Single Click To Perform any Operation)

DIS-ADVANTAGE'S OF THE PROJECT

- Price is Too Higher
- Dependency on Internet
- Care full with Hackers and Data Privacy

DEVICE'S USED

- DLC 100 (HomeGateway)
- SMART PHONE-PT
- Door's – 4
- Window's – 2
- Fan's – 3
- AirConditioner – 1
- Furnace – 1
- Water Drain – 3
- Light's – 2
- Appliance – 1
- Humidifier – 1

Additional Device's

- Carbon Dioxide Detector
- Motion Detector
- Humidity Monitor
- Smoke Detector
- Temperature Monitor
- Water Level Monitor
- Wind Detector

S.NO	DEVICE'S USED IN CISCO PACKET TRACER	PRIZE ANALYSIS
1	SMART DOOR SYSTEM	14000 RS
2	LAMP LIGHT	1200 Rs
3	WINDOW	9000 Rs
4	Air Conditioner	50000 Rs
5	FAN	5000 Rs
6	FURNACE	15000 Rs
7	WATER DRAIN SYSTEM	10000 Rs
8	APPLIANCES	3000 Rs
9	HUMIDIFIER	5000 Rs
10	SMART PHONE	30000 Rs

PROJECT INFORMATION

AND   PROCEDURE

Open Cisco Packet Tracer (Latest Version 8.0)
After Opening we can build a Home Automation Project by these Simple
ways ;

- In Cisco Packet Tracer we can see some applications at down like" Network Devices, End Devices, Components and Connections " , Etc.
- For Building a Smart Home we should go to End Devices and we can see down " HOME , SMART CITY , INDUSTRIAL " , Etc.
- In those we can find our devices like " FAN , DOOR , AC , WINDOW, APPLIANCES " , Etc.
- Before going to this we should be connected to our Smart Phone in Cisco Packet Tracer.

DLC 100 [HomeGateway]

Named as → Home Gateway
Changed Picture (Optional)

IP ADDRESS   : 192.168.25.1

SMART PHONE - PT

Named as → PRUDHVI 1+3
Changed Picture (Optional)

Double Click on the SMARTPHONE-PT
goto→config→settings→We can Change the Device Name There
goto→config→Wireless 0→We should Change SSID to HomeGateway

Next; Desktop→Click on Web Browser
After Clicking on Web Browser we should enter URL

URL is our IP Address

URL → http://192.168.25.1//home.html

After Entering It we can see Username and Password

User name	:	admin
Password	:	admin

* After Entering our Username and Password just minimize that screen and come back to our Cisco Packet Tracer
* For Project (SMART HOME) I have drawn a Sketch of 3 – BedRoom Flat and inserted as Background Image
  This makes us to give a clear cut Easiness to do our Project
* Now, Based Upon the Sketch we can insert " Fans, Doors, Windows " , Etc. Accordingly to the Diagram (Background)
* We can Insert Fans in BedRooms and Hall.

SKETCH DIAGRAM [BACKGROUND]
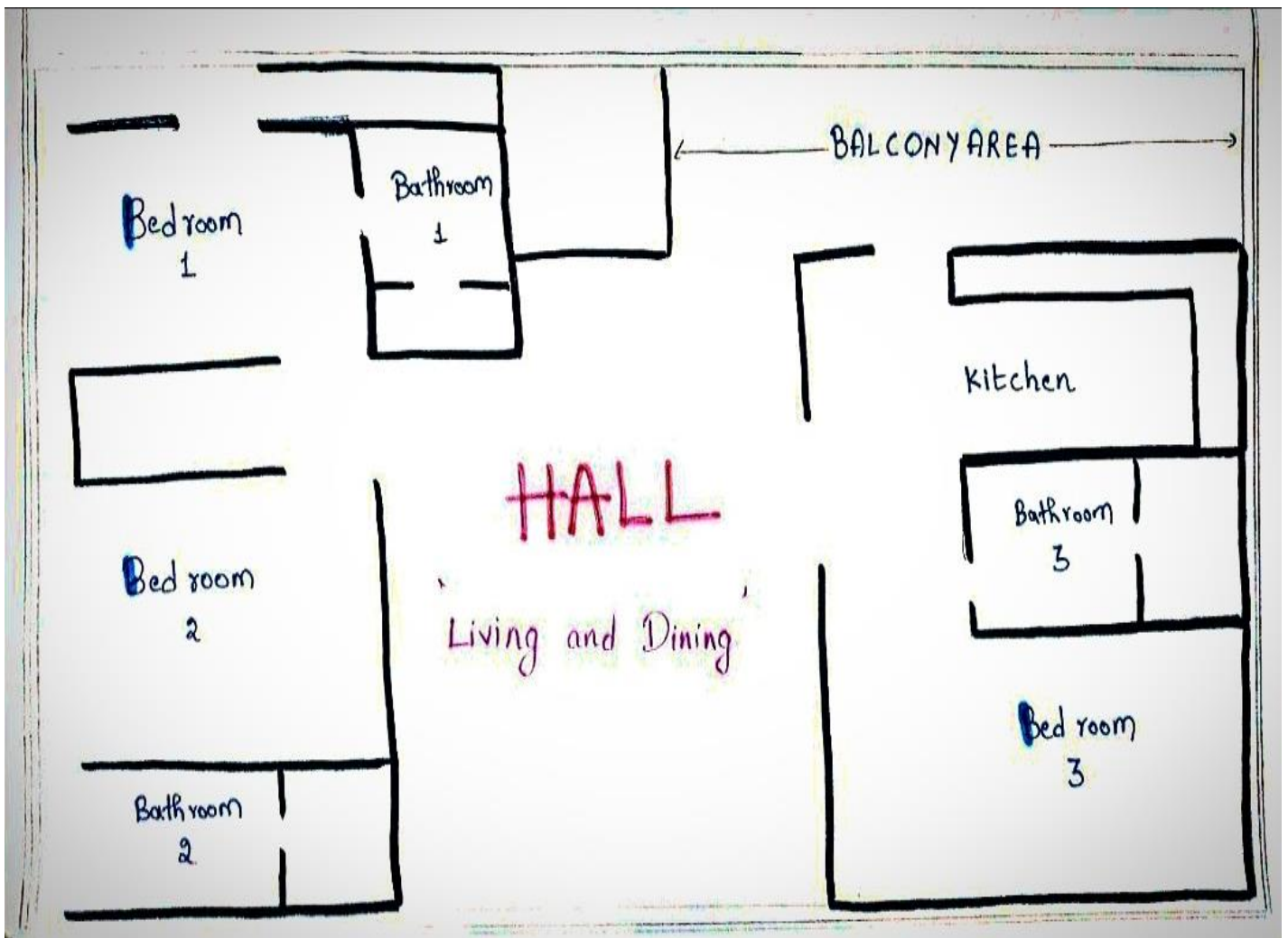
FAN

Total I Have Inserted '3' – Fans :

- FAN-1
- FAN-2
- FAN-3

FAN-1

Click on Fan-1, We can see its Specifications and also we can edit it.

goto→config→settings→IOT Server→Change it to HomeGateway
Advanced→I/O config→Network Adapter→Change it to PT-IOT-NW-IW

" REPEAT THE SAME WAY FOR FAN-2 AND FAN-3 ALSO "

WINDOW

I Have Inserted '2' Windows in BedRoom-1 and BedRoom-3
Named as Window-1 and Window-2 Respectively

WINDOW-1

Click on Window-1, We can see its Specifications and also we can edit it.

goto→config→settings→IOT Server→Change it to HomeGateway
Advanced→I/O config→Network Adapter→Change it to PT-IOT-NW-IW

" DO THE SAME WAY FOR Window-2 "

LIGHT

We Can Insert a Lamp Light in Cisco Packet Tracer
I have Inserted '2' Lights in BedRoom-2 and in BedRoom-3
Named as LAMP-1 and LAMP-2 Respectively

LAMP-1

Click on LAMP-1, We can see its Specifications and also we can edit it.

goto→config→settings→IOT Server→Change it to HomeGateway
Advanced→I/O config→Network Adapter→Change it to PT-IOT-NW-IW

" DO THE SAME WAY FOR LAMP-2 "

DOOR

I Have Inserted '4' Doors
Named as :

- DOOR-1 ,
- DOOR-2 ,
- DOOR-3 and
- DOOR-4

DOOR-1

Drag the Door Icon To the Point at Where you want to Place it at Home
Then; Click on DOOR-1, We can see its Specifications and also we can edit it.

goto→config→settings→IOT Server→Change it to HomeGateway
Advanced→I/O config→Network Adapter→Change it to PT-IOT-NW-IW

" REPEAT THE SAME PROCESS FOR DOOR-2 , DOOR-3 , DOOR-4 "

WATER DRAIN

* I Have Inserted '3' Water Drains
* 2 at BathRooms and 1 at Balcony
* Named as   :

- WaterDrain-1
- WaterDarin-2
- WaterDrain-3

WaterDrain-1

Click on WaterDrain -1, We can see its Specifications and also we can edit it.

goto→config→settings→IOT Server→Change it to HomeGateway
Advanced→I/O config→Network Adapter→Change it to PT-IOT-NW-IW

" DO THE SAME WAY FOR WaterDrain-2 , WaterDrain-3 "

KITCHEN

* In Kitchen Area , I have Inserted two item's :
    1. Appliances   and
    2. Humidifier
* Named as   :
    1. Appliances → Coffee Maker   and
    2. Humidifier → Humidifier Respectively
    3.
Drag the two Device's in to Kitchen Part and Place it where do you want to keep it ;
After Adding them, Click on any Device
We can see its Specifications and also we can edit them.

Now;
goto→config→settings→IOT Server→Change it to HomeGateway
Advanced→I/O config→Network Adapter→Change it to PT-IOT-NW-IW

" DO THE SAME WAY FOR BOTH DEVICE'S "

AIR CONDITIONER   AND   FURNACE

* I have Inserted Air Conditioner and Furnace Side By Side in the Hall
* Named them as   :

- Air conditioner → AC-1
- Furnace →   Furnace-1

[NOTE : We should keep AC and Furnace side by side because the Vents and Grilles let the Conditioned Air through to bring you Comfort in your Home , AC and Furnace Both Work Together]

Now you can SetUp them by clicking on them Where you had inserted.
After Clicking on them you can see the Specifications of AC if you click on AirConditioner and Specifications of Furnace if you click on Furnace.

Then;
     goto→config→settings→IOT Server→Change it to HomeGateway
     Advanced→I/O config→Network Adapter→Change it to PT-IOT-NW-IW

INSTALATION   AND

WORKING PRINCIPLE

As you were Aldready Connected to the Smart Phone Device with
DLC 100 [HomeGateway]
Just you have to do is Click on Smart Phone-PT you will see its view like

- Physical
- Config
- Desktop
- Programming
- Attributes

* In Physical you can change the Image of your Mobile (Optional)
* In Config you can change the Display name of your Mobile
* No need of any changes in Programming and Attributes
* Desktop is the main one where you must have all the accessibility of
  all the Devices

Now, Click on the Desktop there you see many options like ;

- IP Configuration
- Web Browser
- VPN
- Bluetooth
- IOT Monitor
- Cisco IP Communicator , Etc.

* Goto WEB Browser and Click on it
* There you can see a box which asks to enter URL
* Enter the URL [URL - http://192.168.25.1//home.html]
* After Entering URL it will ask you to Login to Home Gateway
  (which is for Security Purposes So others can't access your Devices)
* Username → admin and Password → admin
* Login with these Details
* After login Click on "Go"
* There you can see all your Devices with your Mentioned Names
* Click on the Device which you want to Control and you see the Control Buttons

FAN → Buttons → " OFF , LOW , HIGH "

Window → Buttons → A single Button " ON and OFF "

DOOR → Buttons → " LOCK and Un-Lock "

AC → Buttons → A single Button " ON and OFF "

Furnace → Buttons → A single Button " ON and OFF "

Water Drain → Buttons → A single Button " ON and OFF "

Light → Buttons → " OFF , DIM , ON "

Coffee Maker → Buttons → A single Button " ON and OFF "

Humidifier → Buttons → A single Button " ON and OFF "

Other Device's

We can also Add Up still more Devices like " Speakers , Music Player , Siren , Solar Panel , Web Cam , Etc.

I want to Build a small and Basic Smart Home with Sufficient Devices needed for a Home.
So, I didn't add up any Other Devices and Sensors

FUTURE IMPLEMENTATIONS

In Future we can add up these Sensors like :
- Carbon Dioxide Detector
- Carbon Monoxide Detector
- Humidity Monitor
- Humiture Monitor
- Motion Detector
- Smoke Detector
- Sound Frequency Detector
- Temperature Monitor
- Water Level Monitor
- Wind Detector

The sensor is an electronic device that measures physical attributes such as temperature, pressure, distance, speed, torque, acceleration, etc., from equipment, appliances, machines and any other systems.
So for Accessing some Devices like Doors and AC no need of any Buttons to Operate.

PRECAUTION'S

- Check the settings and be careful with your Devices
- Use strong and unique Passwords for Wi-Fi Networks and Device Accounts
- Be aware of Fire Accidents and Water Leakages
- Make sure you have a Proper Network to Operate
- Use a Virtual Private Network (VPN) to Connect your Smart Devices
- Do not Operate Devices with Wet Hand's
- Remove Personal Information from Smart Home Devices
- Maintain Security Precautions Properly to get rid of Hacking
- Make sure you Disable Un-Used Features

CONCLUSION'S

The Home Automation using Internet of Things [IOT] has been Experimentally Proven to work Satisfactorily by Connecting Simple Appliances to it and the Appliances were Successfully Controlled Remotely through Internet.

Thus, We had made a Simple Home Automation [SMART HOME] Project In Cisco Packet Tracer.