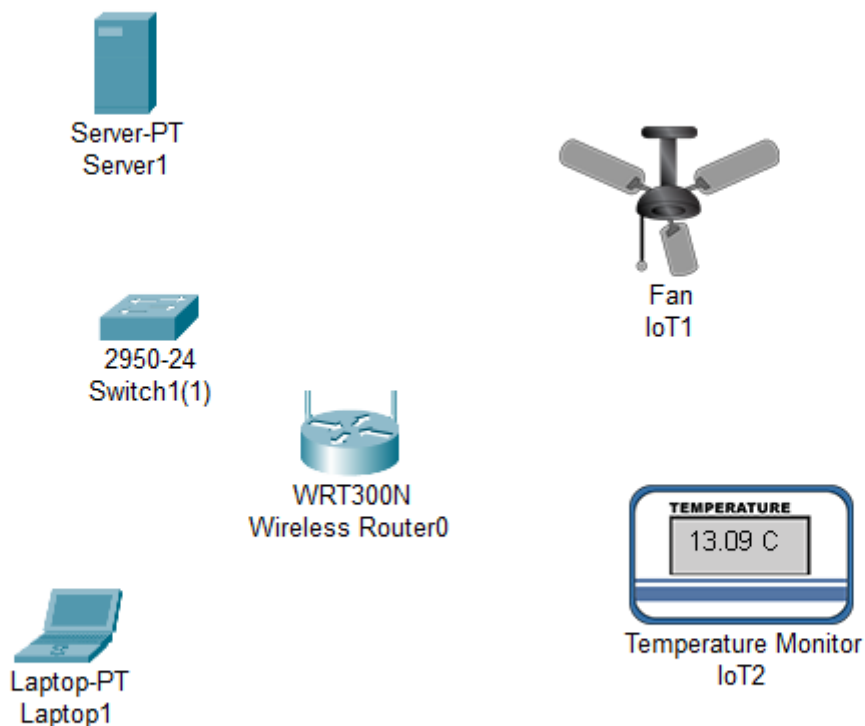
 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041

IoT Scenario: Here I have made an automatic speed controller for fan using temperature controller. Components used: Fan, temperature monitor device, wireless router, a laptop and a server for IoT registration.

Step 1: Take all the components from the panel



Step 2: Connect the router and switch with cross cable , and laptop and server to switch with straight copper cable.

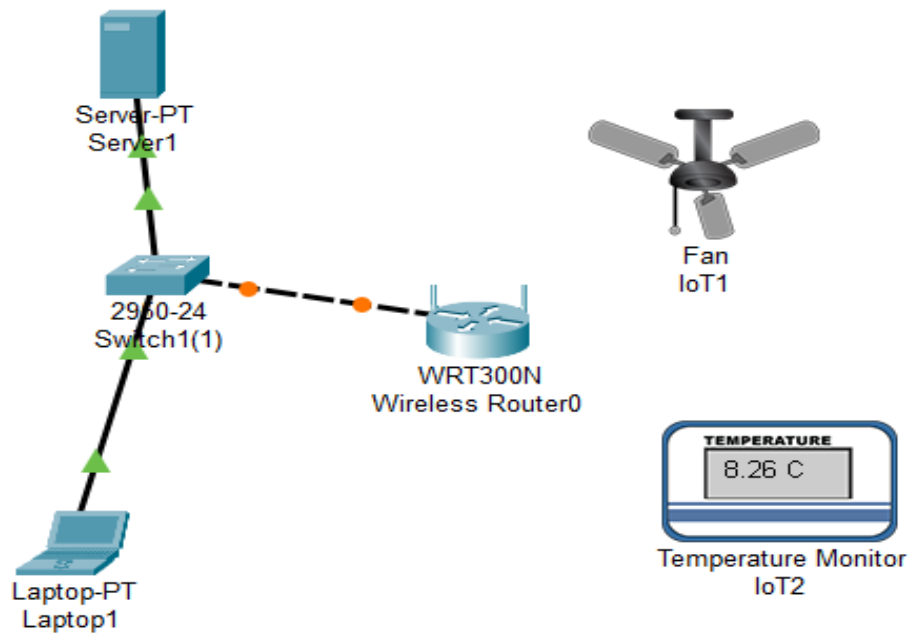
Subject: Computer Networks (01CT0503)


Aim: Design and simulate IoT scenario

Experiment No: 13

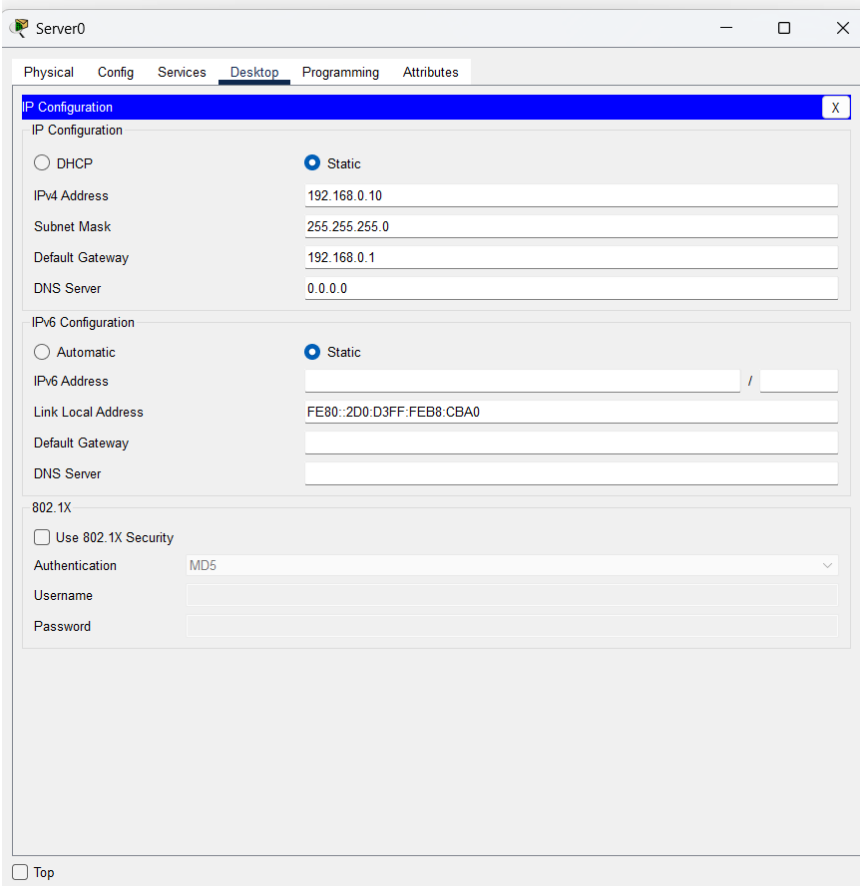
Date:

Enrolment No: 92301733041



 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041

Step 3: Give Ip add to server and laptop (used any static or DHCP)



Server0

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.0.10

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:D3FF:FE8B:CBA0

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top

(Server->desktop->ip config)

Step 4: Open server and goto services and open AAA(Authentication ,Authorization .Accounting) and make enter the details of router and make radius client, and make one secret key which will router use for authentication.

Client Name= anything (ex: home)

Ip= routers ip

Below that add devices which were used in IoT scenario

Ex: name : fan , pass is also fan



Marwadi University
Marwadi Chandarana Group

Marwadi University
Faculty of Engineering and Technology
Department of Information and Communication Technology

Subject: Computer Networks (01CT0503)

Aim: Design and simulate IoT scenario

Experiment No: 13

Date:

Enrolment No: 92301733041

Server0

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA**
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

AAA

Service ☒ On ☐ Off Radius Port 1645

Network Configuration

Client Name Client IP

Secret ServerType Radius

	Client Name	Client IP	Server Type	Key	
1	home	192.168.0.1	Radius	pass123	Add
					Save
					Remove


User Setup

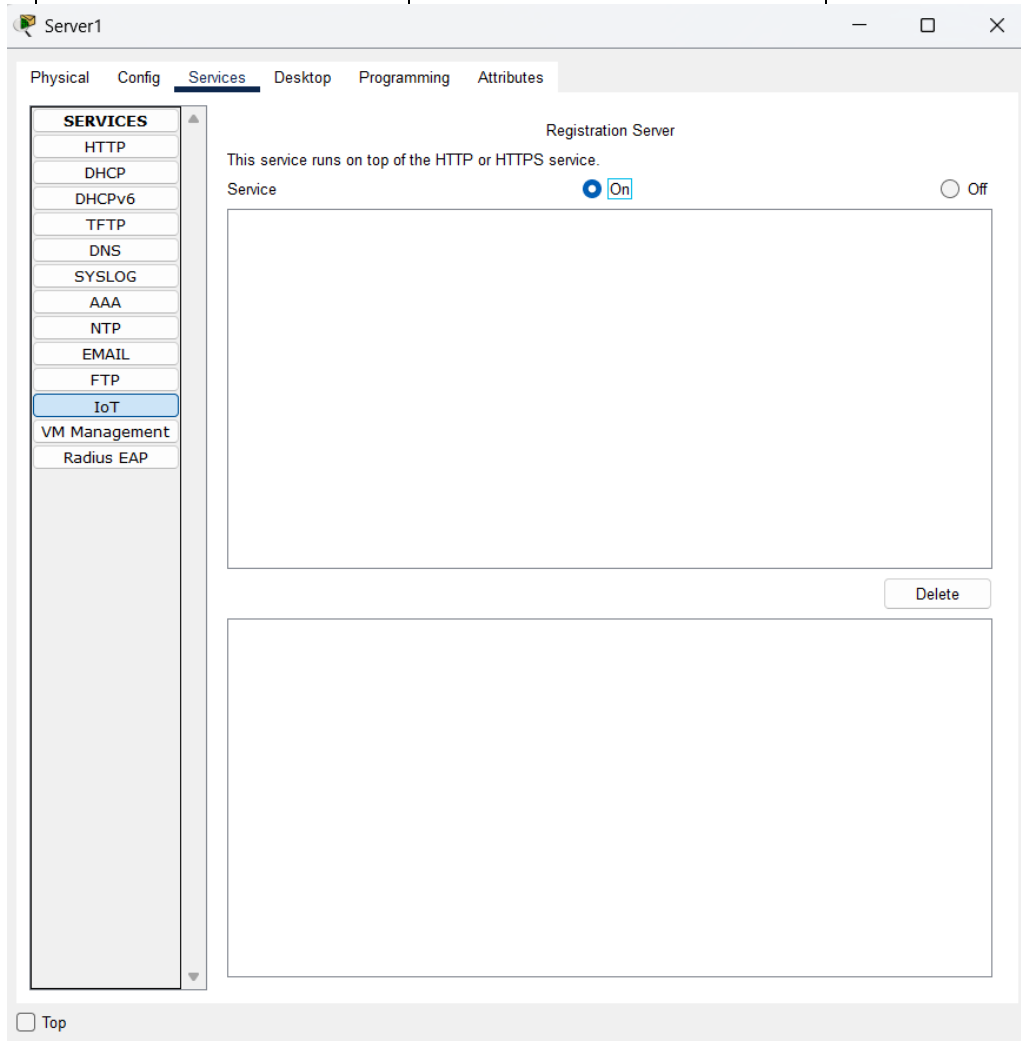
Username Password

	Username	Password	
1	fan	fan	Add
2	heat	heat	
3	temp	temp	Save
			Remove


☐ Top

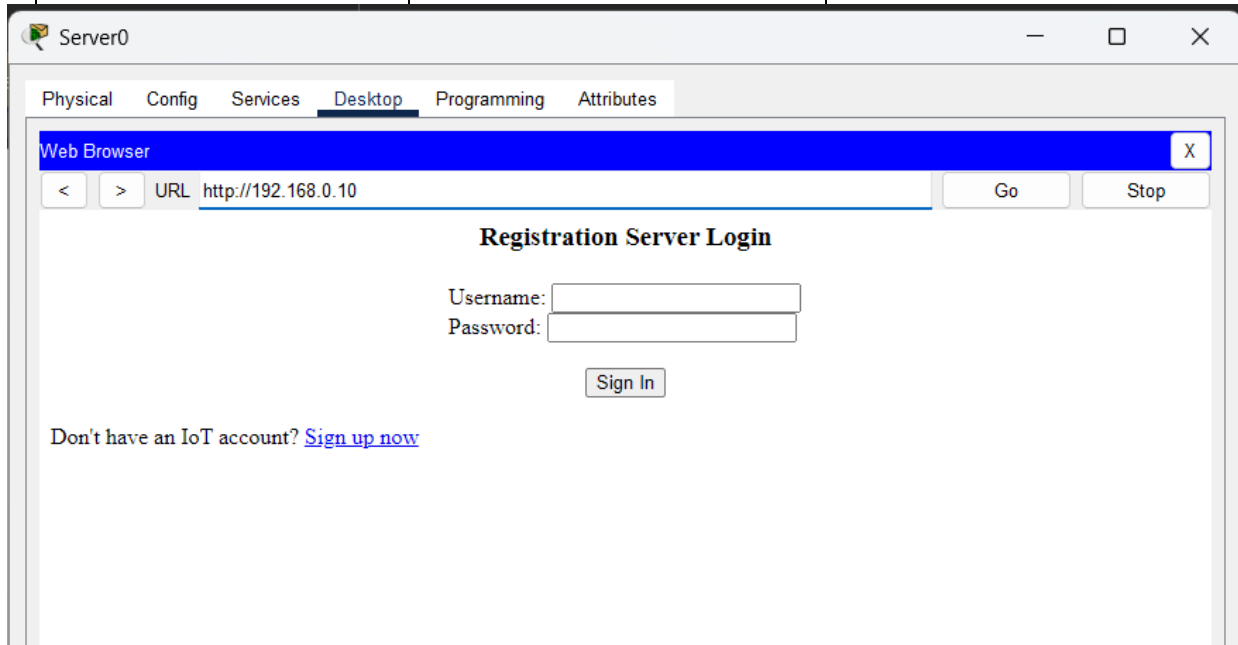
Step 5: Tap on IoT and enable it

 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041



Step 6: Goto server->desktop->web browser and enter server's Ip add to make IoT server from which we can see the status of IoT devices from remote places. Also manipulate it
One login page will open , click sign up now

 Marwadi University Marwadi Chandarana Group		Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041

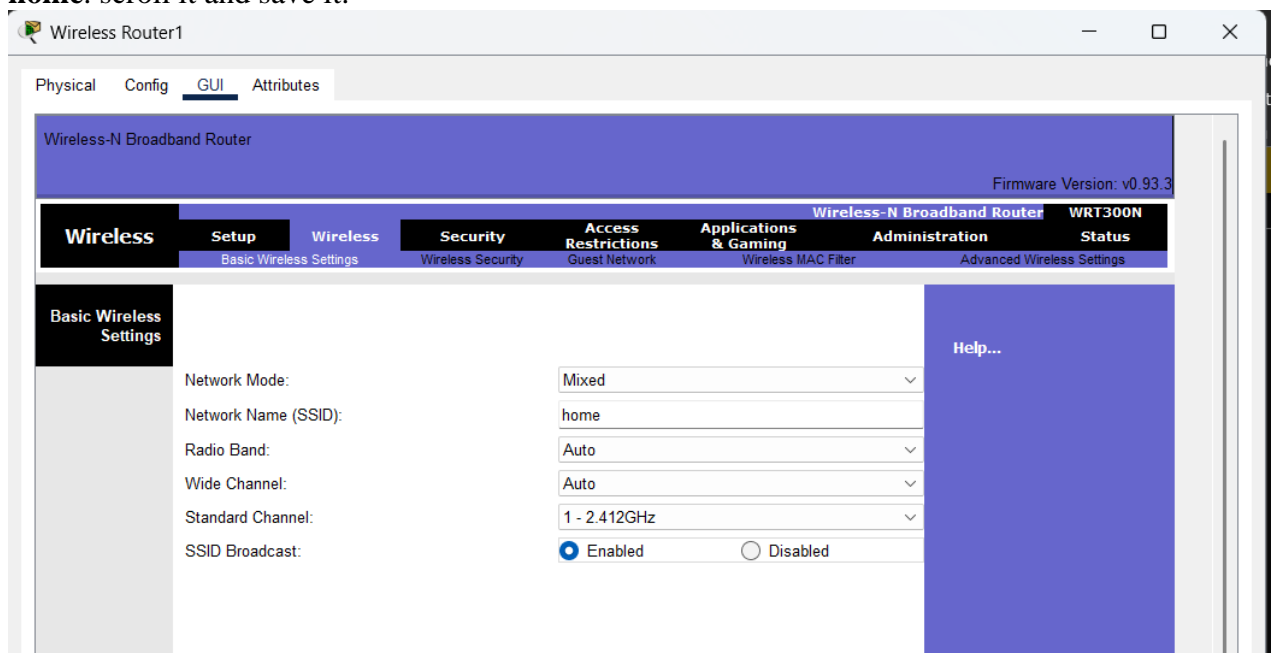


And create a user and pass.


Also U can verify your server in server->services-> IoT

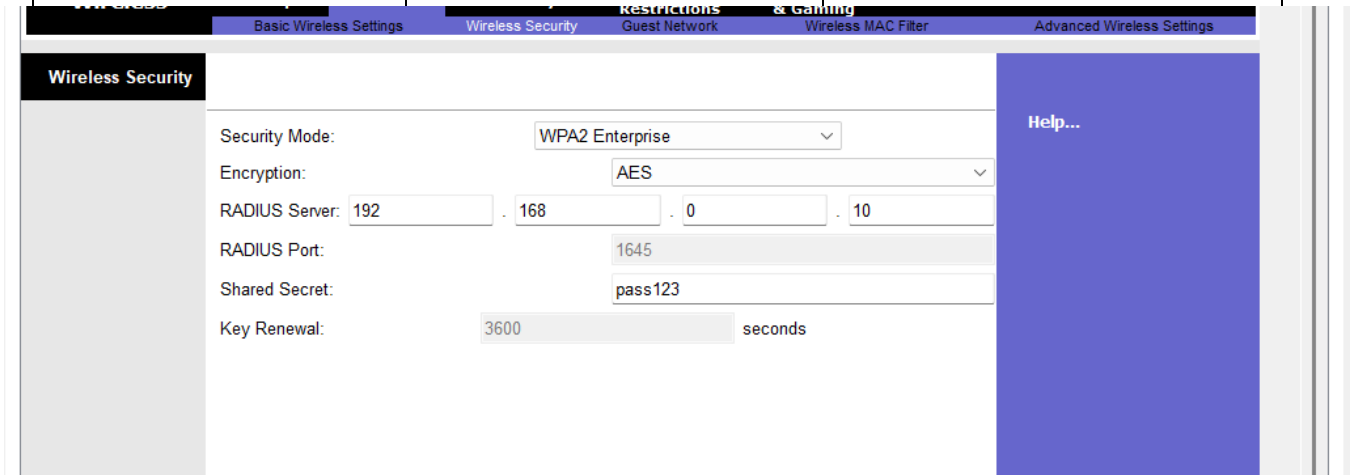
Step 7:

- I. Open **router->wireless** and set the **ssid** as client name saved earlier at **server side**, in my case it is **home**. scroll it and save it.



- II. And then in the same section goto **wireless security**, select **WPA2 Enterprise** in security mode,
- III. enter ip add of server in **radius server**, and **secret code** which was again set earlier in **server side** and scroll it and save it.

 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041



Wireless Security

Security Mode: WPA2 Enterprise

Encryption: AES

RADIUS Server: 192 . 168 . 0 . 10

RADIUS Port: 1645

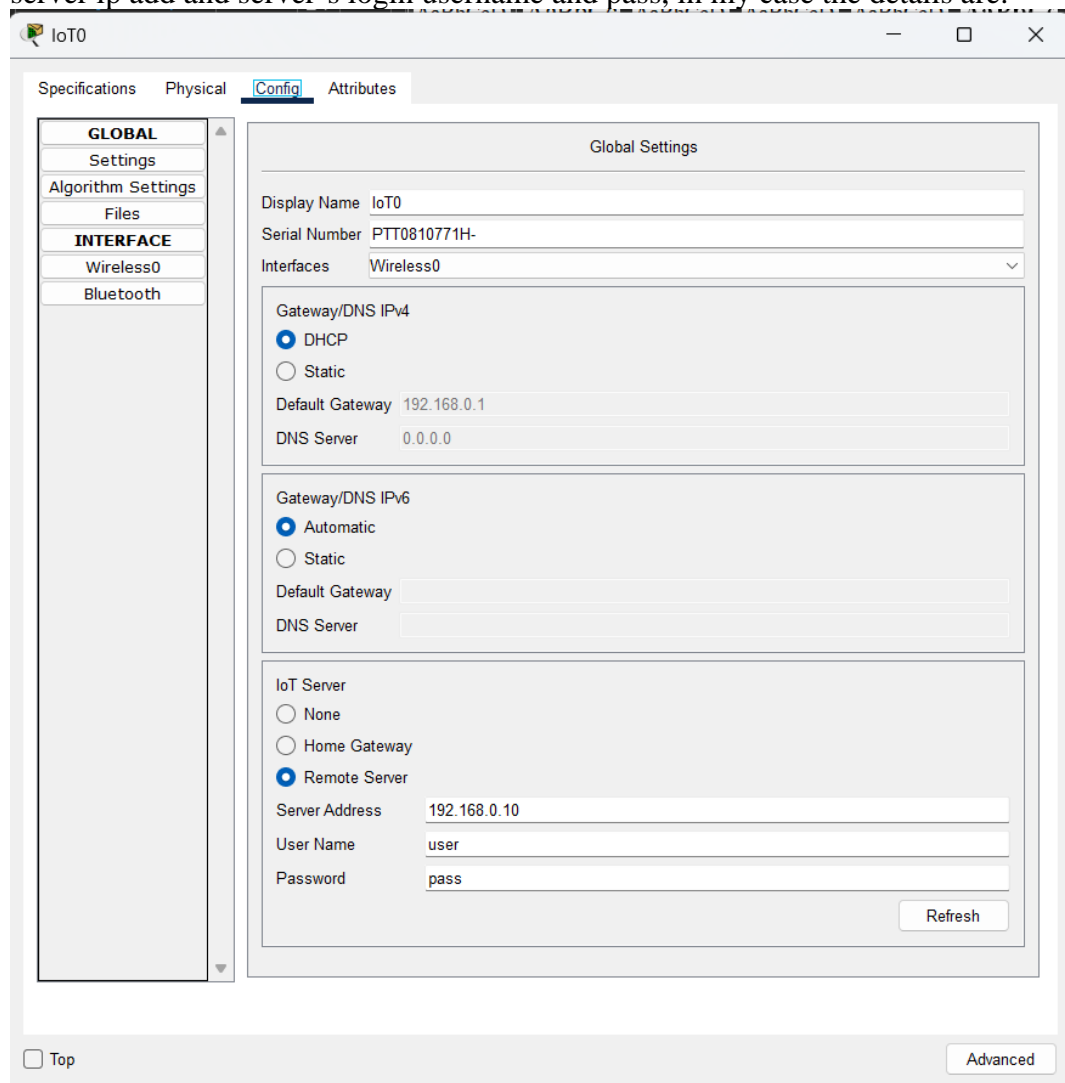
Shared Secret: pass123

Key Renewal: 3600 seconds

Help...

Step 8: Now after doing this all , configure the IoT components

- I. Open Fan->config , in that at bottom side tap remote server under IoT server , and fill the details , enter server ip add and server's login username and pass, in my case the details are:



IoT0

Specifications Physical **Config** Attributes

GLOBAL

Settings

Algorithm Settings

Files

INTERFACE

Wireless0

Bluetooth

Global Settings

Display Name IoT0

Serial Number PTT0810771H-

Interfaces Wireless0

Gateway/DNS IPv4

☒ DHCP

☐ Static

Default Gateway 192.168.0.1

DNS Server 0.0.0.0

Gateway/DNS IPv6

☒ Automatic

☐ Static

Default Gateway

DNS Server

IoT Server

☐ None

☐ Home Gateway

☒ Remote Server


Server Address 192.168.0.10

User Name user

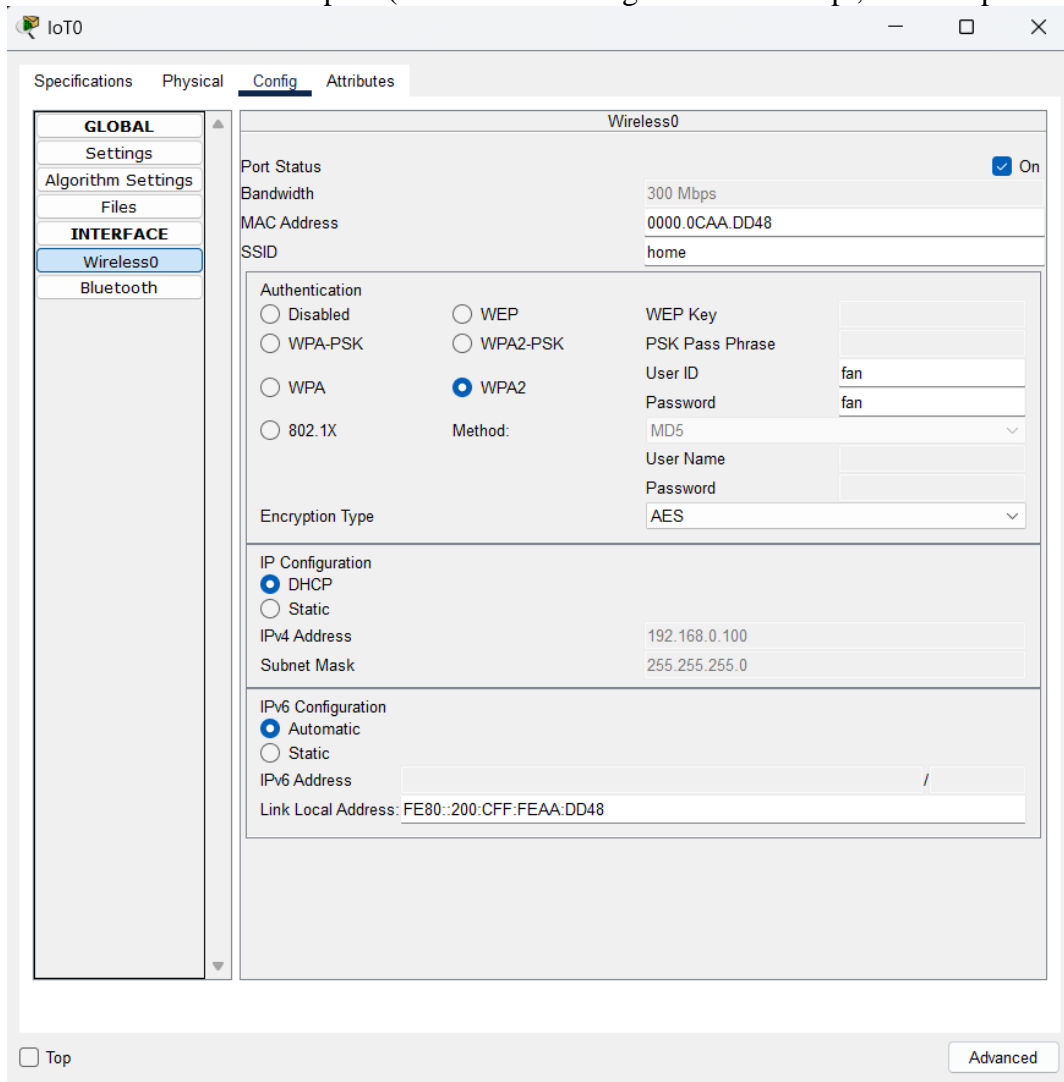
Password pass

Refresh

☐ Top Advanced

 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041

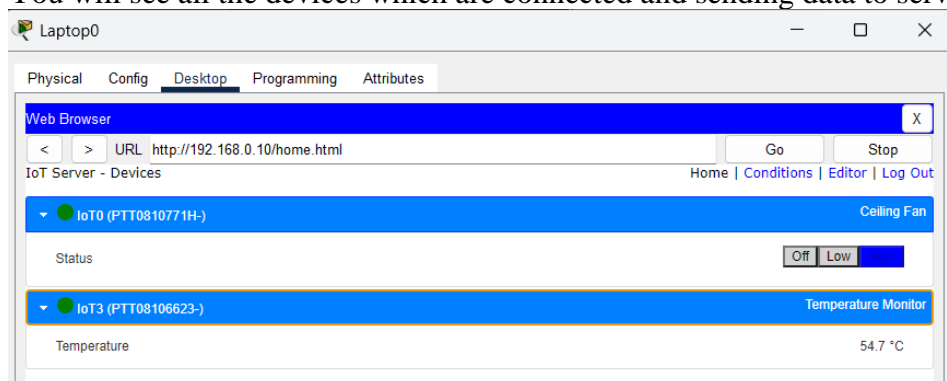
- II. In the same section goto wireless 0 and enter ssid as home , and tap WPA2 under authentication and enter user id and pass (that was set during the server setup , IoT components config under AAA section)




Step 9: Repeat this step 8 for all IoT devices and enter details accordingly.

Step 10:

- I. Open laptop -> desktop->web browser->search server ip add
- II. Login with server user and pass
- III. You will see all the devices which are connected and sending data to server



 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041

IV. Goto right side condition and set conditions accordingly (ex like if this happen then do this)

Laptop0

Physical Config **Desktop** Programming Attributes

Web Browser X

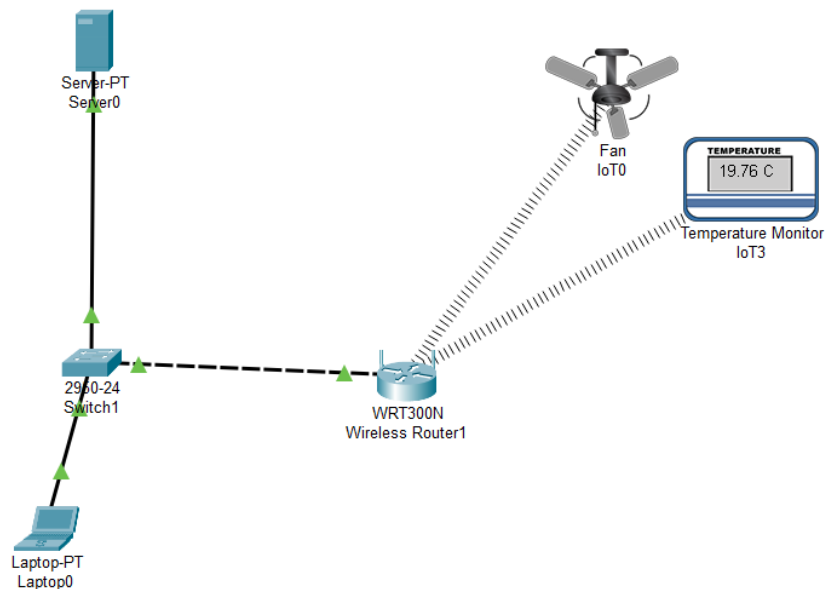
< > URL Go Stop


IoT Server - Device Conditions [Home](#) | [Conditions](#) | [Editor](#) | [Log Out](#)

Actions		Enabled	Name	Condition	Actions
<input type="button" value="Edit"/>	<input type="button" value="Remove"/>	Yes	fanspeed	IoT3 Temperature > 20.0 °C	Set IoT0 Status to High
<input type="button" value="Edit"/>	<input type="button" value="Remove"/>	Yes	fanlow	IoT3 Temperature <= 20.0 °C	Set IoT0 Status to Low

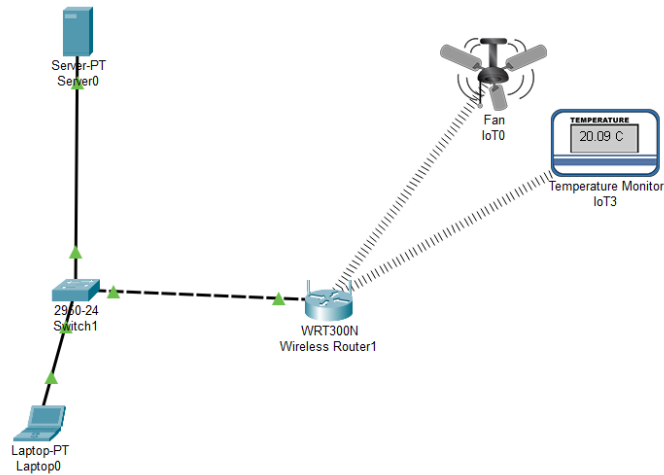
Step 11: verify the results

- I. When temp is <20 fan is slow (one circular line means fan is slow)



 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Design and simulate IoT scenario	
Experiment No: 13	Date:	Enrolment No: 92301733041

II. When temp >20 fan is fast (one circular line means fan is fast)



Conclusion: In this experiment I learnt how to make IoT based scenario, how to use AAA, server and in that how to make IoT registration, how to manipulate that and put conditions.