

Practical – 8

Aim of the Practical :-

Explain What is IoT, What is IoT Devices, Why Use IoT.

Consider that you have two different houses with multiple IoT devices. The two houses are in different subnets and have different IoT servers. Demonstrate the following:

- (1) IoT devices of one house can be controlled from the Laptop/PC of another house.
- (2) Explain the purpose of each component used in this practical (server, wireless router, and switch)

Ans:

IoT :

The Internet of Things (IoT) refers to the interconnected network of physical devices embedded with sensors, software, and other technologies that enable them to collect and exchange data over the internet.

IoT devices are physical objects that connect to the internet to collect, share, or act on data. These devices include a wide range of equipment, such as:

- **Smart thermostats**
- **Smart lights**
- **Connected appliances**
- **Security cameras**
- **Smart doors and windows**

Each device usually has embedded sensors, microcontrollers, and network capabilities to communicate with other systems.

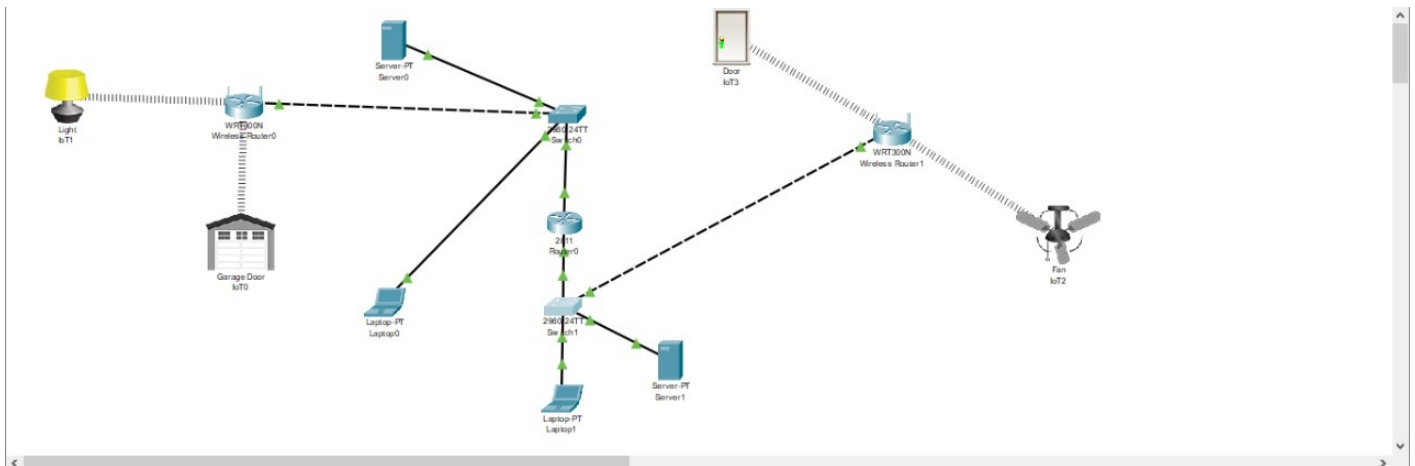
Why Use IoT:

The primary reasons to use IoT include:

- **Automation:** Enables automatic control of devices without human intervention.
- **Efficiency:** Improves operational efficiency by allowing real-time data collection and responses.
- **Convenience:** Provides remote control of home and business systems, making life more convenient.
- **Data Insights:** Offers valuable insights through data analysis, helping in informed decision-making.
- **Cost Savings:** Reduces costs by optimizing resource usage, such as energy in smart homes.

Ans (1):

Network Diagram of 2 house



Registration of IoT Devices on Server 0 of home

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	Door	Door	Add
2	Fan	Fan	
3	GDoor	GDoor	Save
4	Light	Light	
5	Window	Window	Remove

Registration of IoT Devices on Server 1 of home 2

Server1

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

Network Configuration

Client Name Client IP

Secret ServerType

Radius

	Client Name	Client IP	Server Type	Key	
1	Home2	192.168.1.1	Radius	pass	<div>Add</div>
					<div>Save</div>
					<div>Remove</div>

User Setup

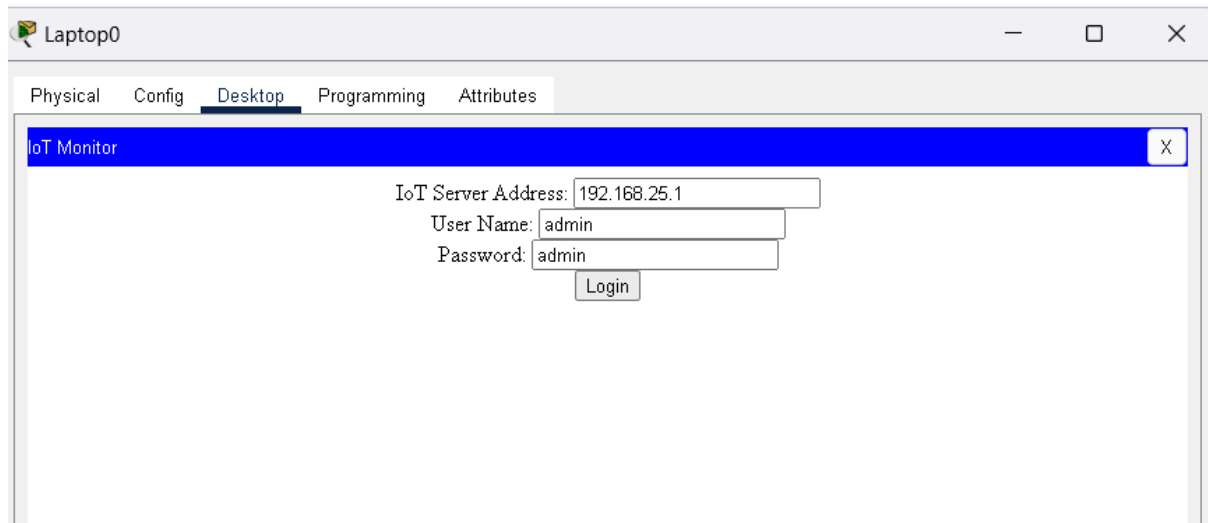
Username Password

	Username	Password	
1	Fan2	Fan2	<div>Add</div>
2	Light2	Light2	
			<div>Save</div>
			<div>Remove</div>

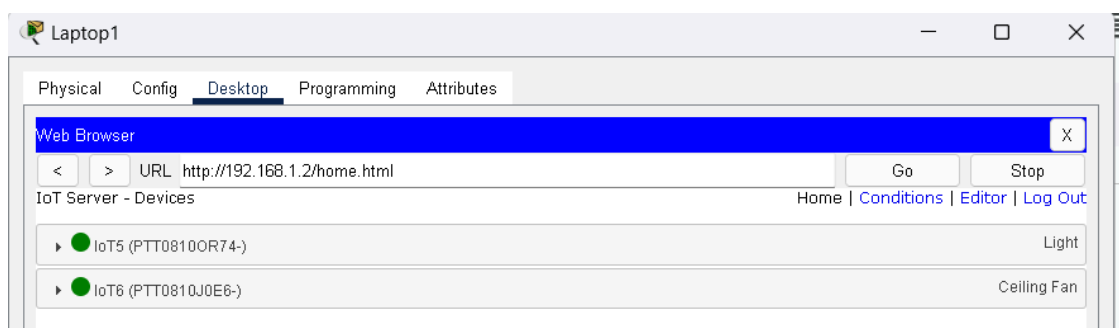
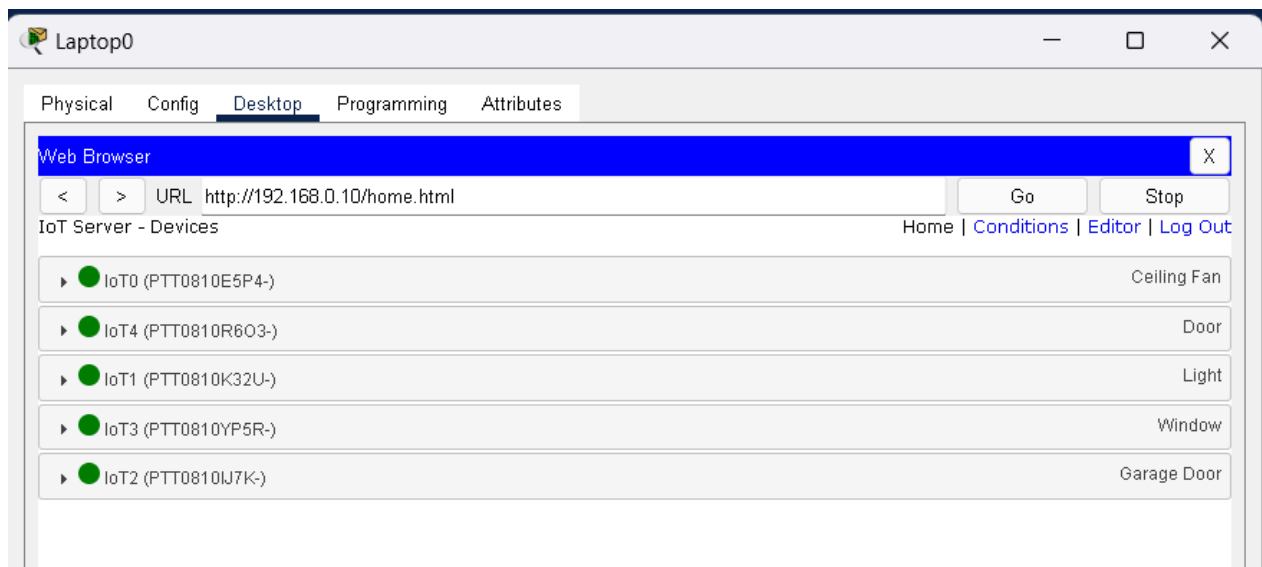
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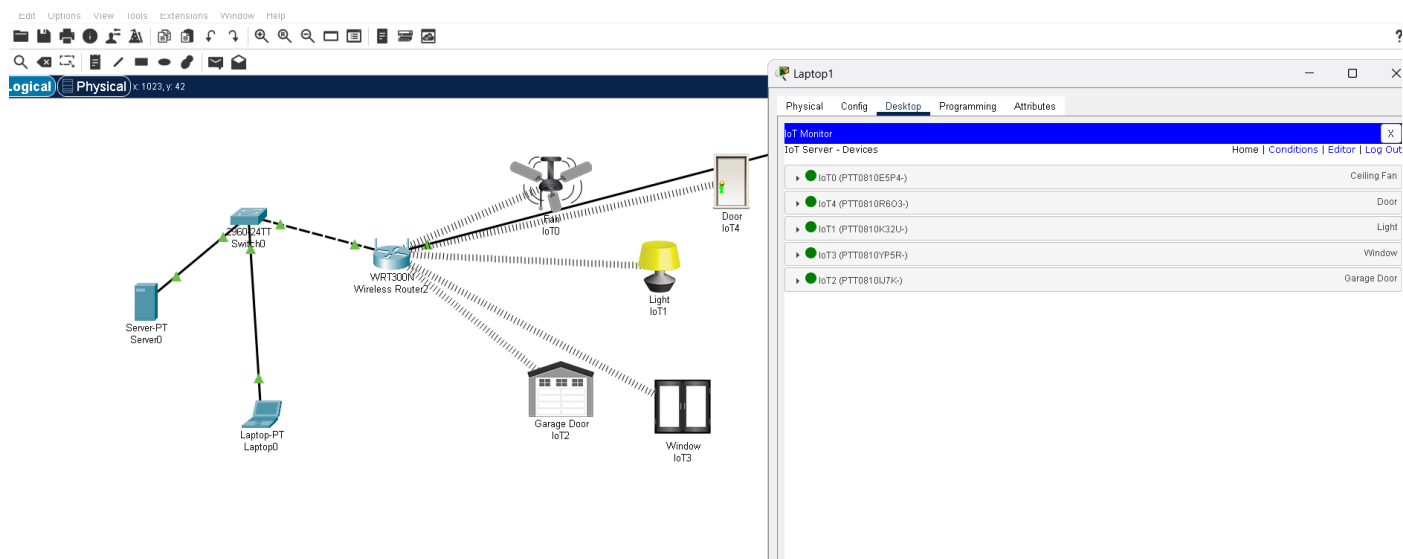
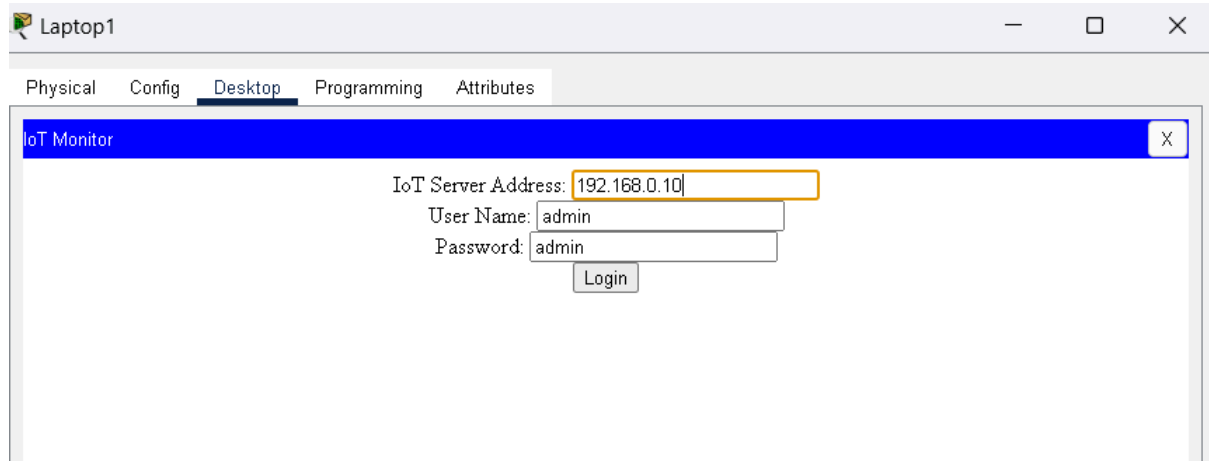
Creating admin and login by admin in both the Laptops



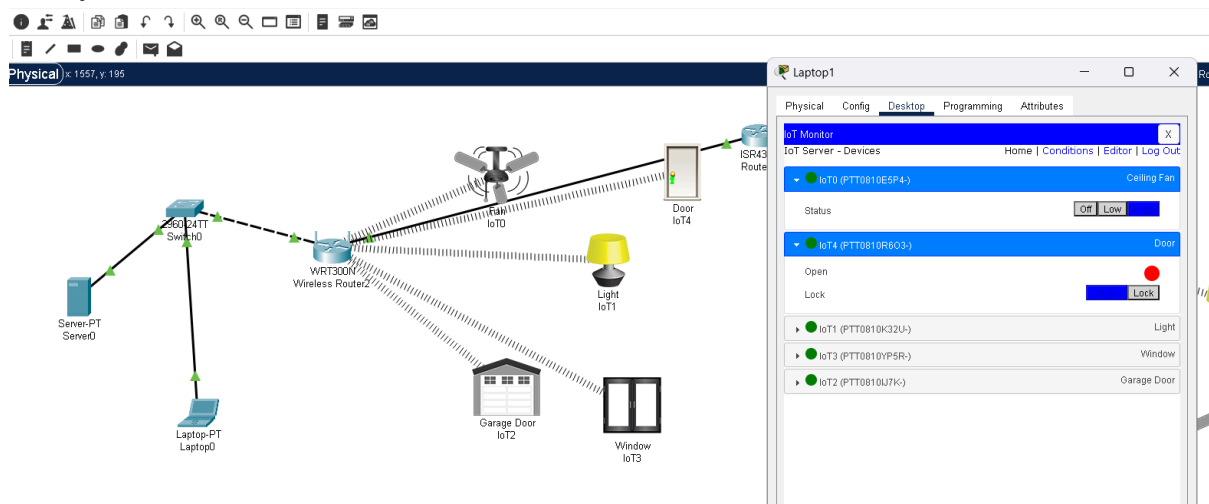
In IOT server address we will put the address of server



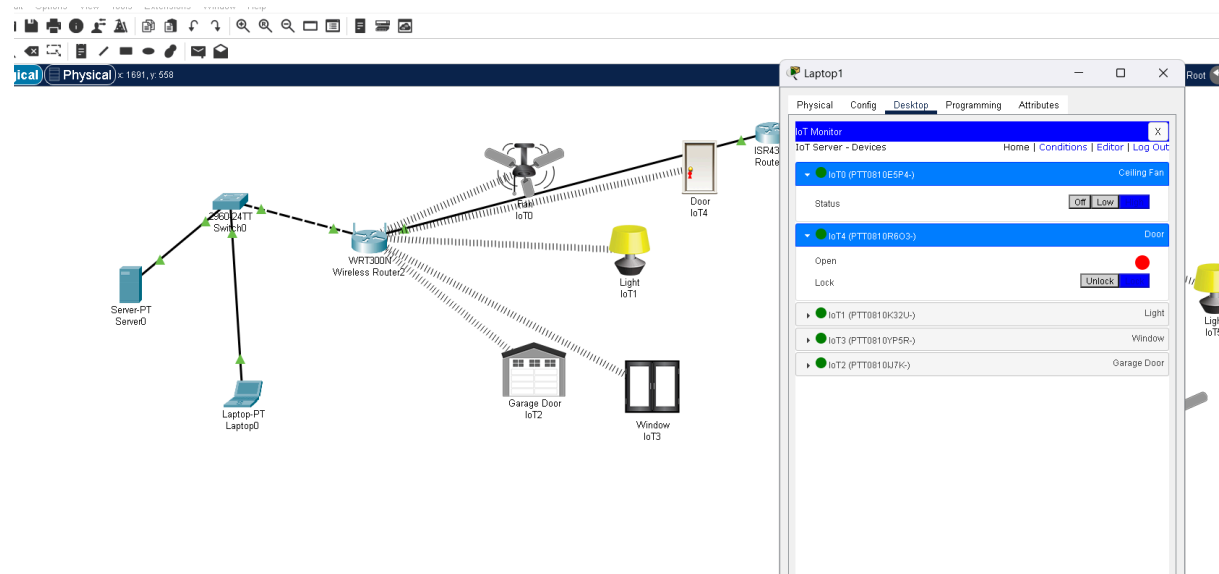
Accessing Home IoT devices from Laptop 1



Initially door is unlock



Now the door is lock



Ans: (2)

IoT Server:

- **Purpose:** Manages and controls the IoT devices in the home. It acts as the central hub that receives commands and relays them to the appropriate device.
- **Function:** Hosts the control interface, processes data from IoT devices, and can be accessed remotely for device management.

Wireless Router:

- **Purpose:** Connects the IoT devices to the network and provides Wi-Fi connectivity to the house.
- **Function:** Manages traffic within the local network and routes data to/from the internet or other subnets.

Switch:

- **Purpose:** Expands the number of devices that can be connected to the network.
- **Function:** Connects multiple devices in the local area network (LAN) and ensures data packets are sent only to the intended recipient.