

# **SMART GARDEN DESIGN**

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## **PROJECT REPORT**

**DEPARTMENT OF NETWORKING AND COMMUNICATIONS**

**FACULTY OF ENGINEERING & TECHNOLOGY**

### **MINI PROJECT**

**SUBJECT CODE: 18CSS202J**

**SUBJECT TITLE: COMPUTER COMMUNICATIONS**

**SMART GARDEN DESIGN**

**BY**

**TEAM MEMBERS**

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## **BONAFIDE**

This is to certify that **18CSS202J – COMPUTER COMMUNICATIONS LABORATORY project report** titled “**SMART GARDEN DESIGN**” is the bonafide work of **BALARAM REDDY (RA2111032010012), VAISHNAVI KUMARI (RA2111032010017)** who undertook the task of completing the project within the allotted time.

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## **ABSTRACT**

The Smart Garden System is a networked garden automation system that utilizes various sensors and devices to monitor and control the environment and plant growth. The system is designed to optimize plant growth, conserve water, and automate the garden's irrigation process.

The system comprises several components, including a water sensor that monitors the soil moisture level and sends a signal to the microcontroller to activate the sprinkler system when the moisture level falls below a specified threshold. The motion sensor detects any movement within the garden area and sends a signal to the sprinkler to switch to turn it off.

Additionally, the system has a gate that can be remotely controlled to restrict access to the garden, ensuring security and privacy. The user can remotely open and close the gate using their devices, providing convenient access to the garden with or without the need for physical intervention.

Overall, the Smart Garden System with Water Sensor, Sprinkler, Motion Sensor, and Gate offers a reliable, efficient, and convenient way to manage and maintain a garden. The system's scalability and flexibility make it suitable for small-scale and large-scale garden applications.

## **OBJECTIVE**

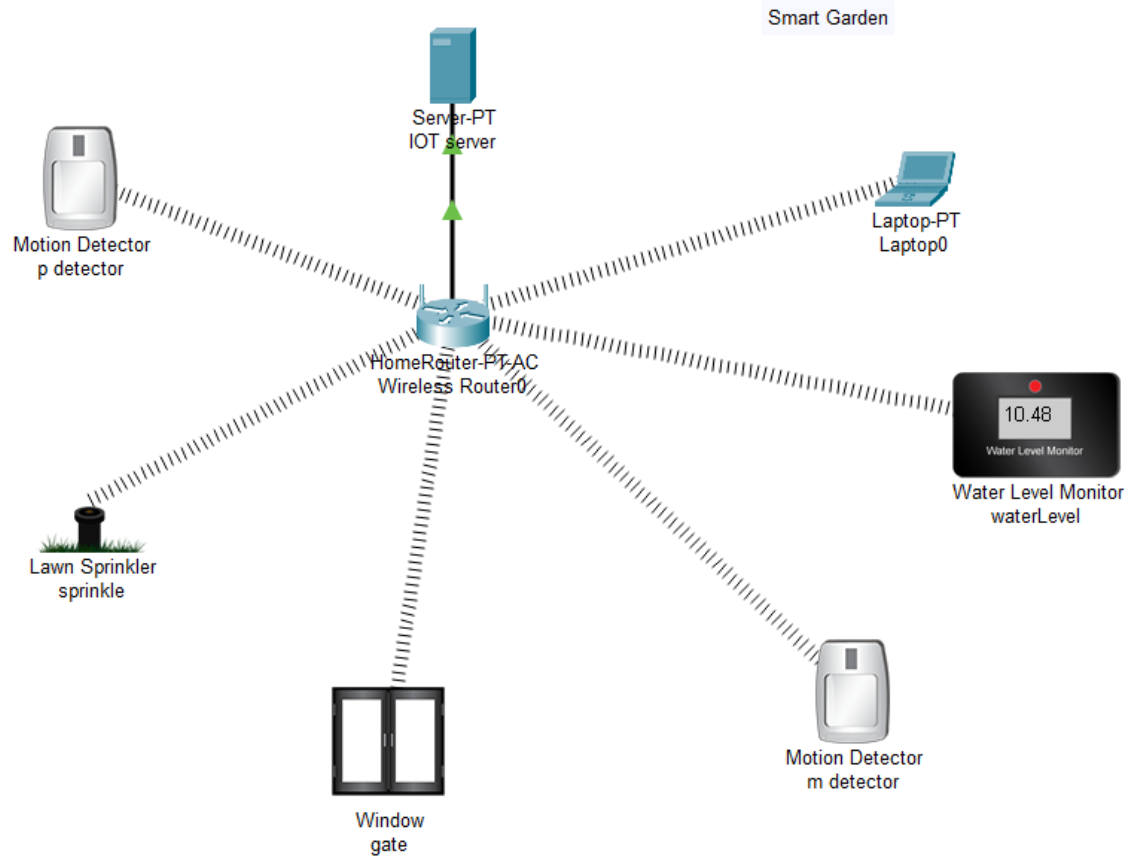
The objective of a smart garden system is to improve the efficiency and sustainability of gardening practices. It achieves this by combining automation, data analysis, and customization to create a system that can monitor and respond to environmental factors in real-time. The system aims to provide precise and efficient watering in better plant growth and resource management. Additionally, the smart garden system aims to promote sustainable and environmentally friendly gardening practices by conserving water. Overall, the objective of the smart garden system is to revolutionize the way we garden and promote a more sustainable and efficient approach to growing plants. Hence, the primary goal of this simulation is to ensure that the networked devices and sensors communicate effectively and efficiently with each other to achieve the desired results, such as optimal plant growth, resource conservation, and automated irrigation.

## INTRODUCTION

In recent years, the Internet of Things (IoT) has revolutionized many industries, including agriculture and gardening. A smart garden system with components such as a water level monitor, sprinkler, gate, and sensor is an example of an IoT-based project that can automate and optimize various functions related to garden maintenance, security, and environmental sustainability. The system uses sensors and smart algorithms to monitor and control the environmental conditions of the garden, such as soil moisture, temperature and humidity. The water level monitor can detect when the soil is dry and trigger the sprinkler system to water the plants only when necessary, preventing overwatering and waste of water. The gate can be controlled remotely, allowing the user to restrict access to the garden and enhance security. The sensor can provide real-time data on various environmental parameters, allowing the user to adjust the system settings accordingly. The system is designed to be accessed and controlled remotely through an application making it easier and more convenient for the user to manage the garden. Overall, a smart garden system is an excellent example of how IoT technology can be used to create a more efficient, sustainable, and enjoyable gardening experience for the user while promoting environmental consciousness and enhancing the security and productivity of the garden.

## MODULES

### Smart Garden Design



**Software used:** Cisco Packet Tracer

#### Components Required:

Device	Required Number
Sprinkler	1
Water Level Monitor	1
Garden gate	1
Motion Detector	2
Laptop	1
Wireless Router	1
Iot Server	1

## Procedure:

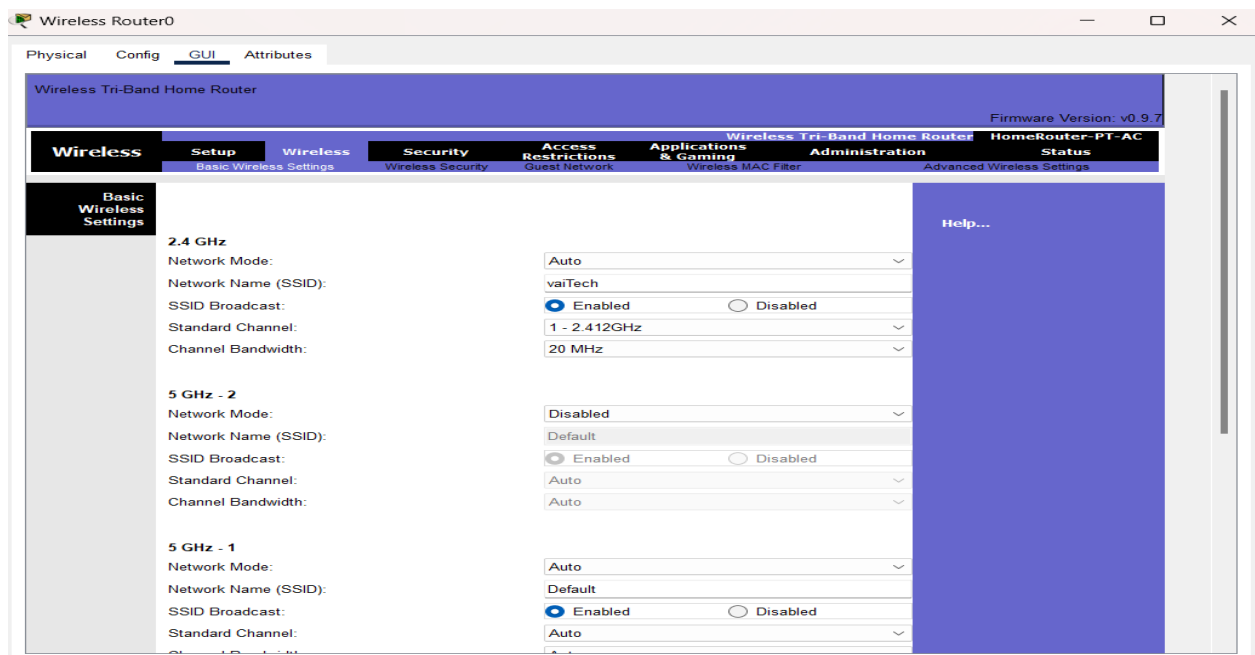
**Step 1:** Drag the components mentioned in the console area and make the appropriate connections.

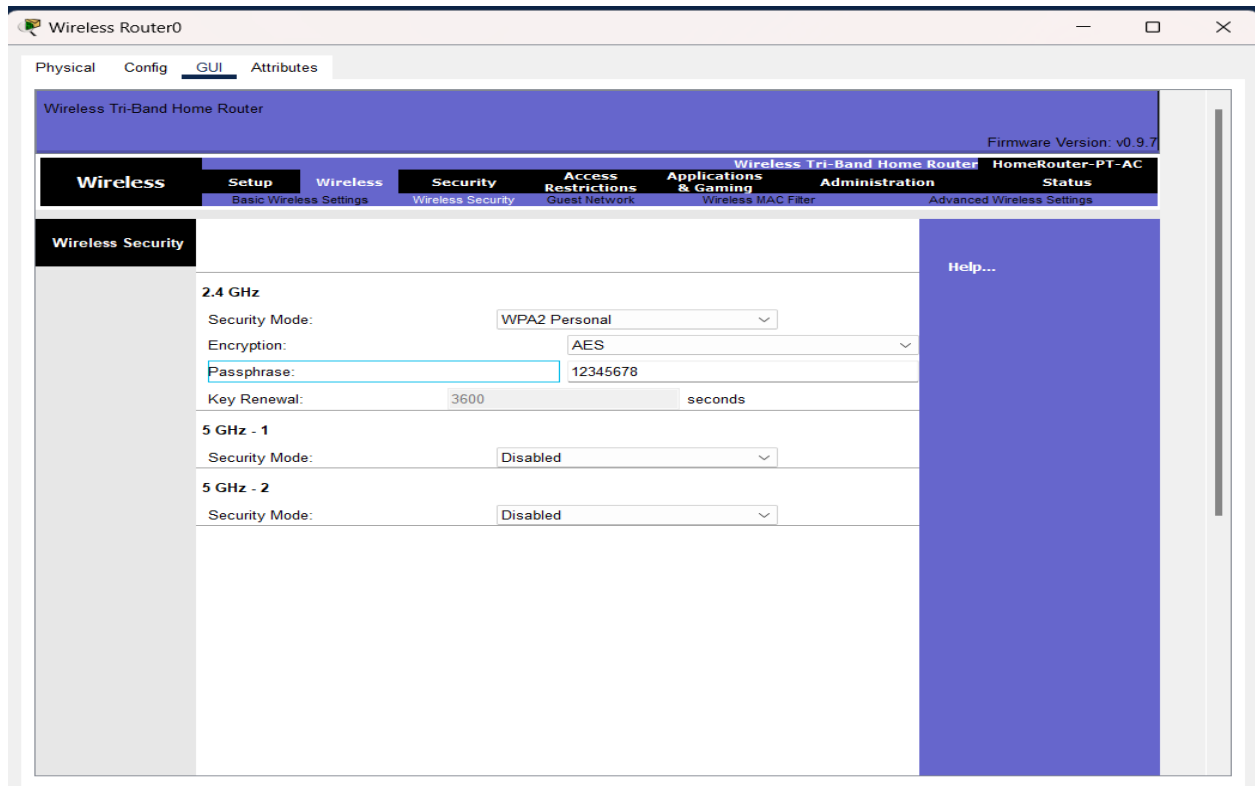
**Step 2:** Establish logical connectivity between the devices according to the following table:

Device Name	Interface	IP address	Subnet Mask	Default Gateway
IoT server	FastEthernet0	192.168.1.10	255.255.255.0	192.168.1.1
Wireless Router	FastEthernet0	192.168.1.1	255.255.255.0	0.0.0.0
Laptop	Wireless0	192.168.1.101	255.255.255.0	192.168.1.1

## Step 3:

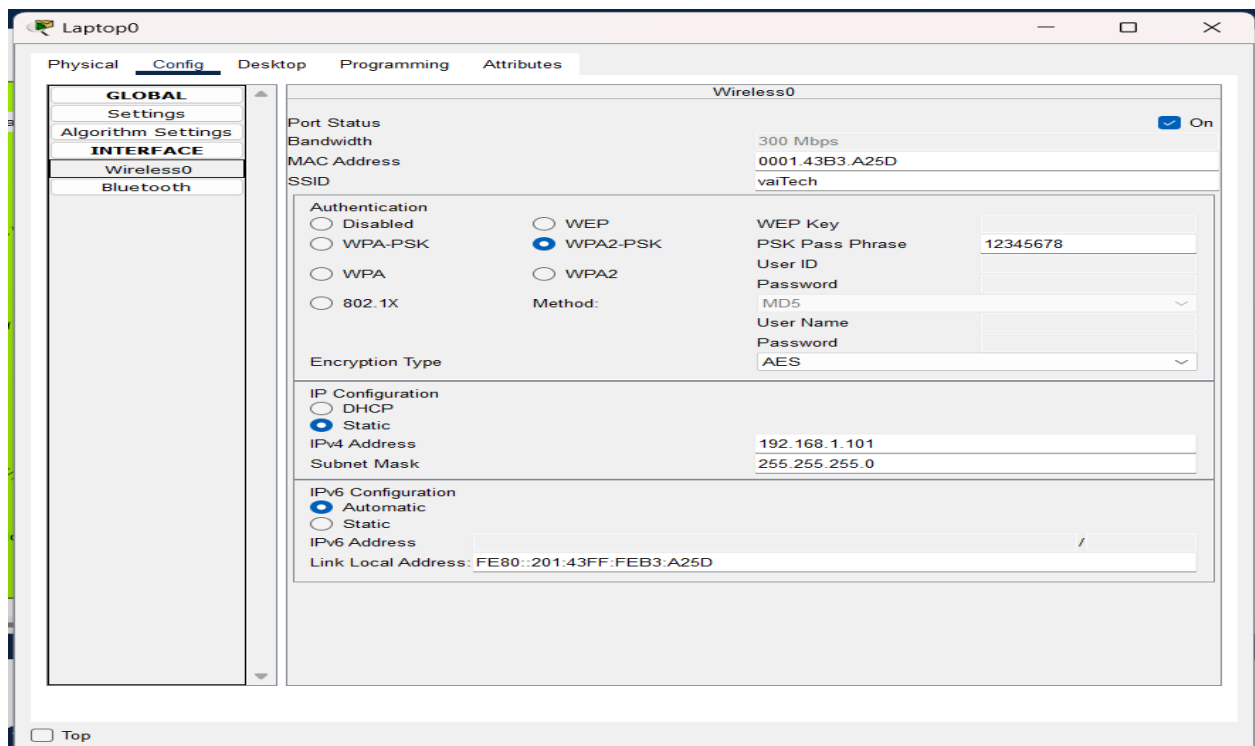
- Click on “Wireless router”, go to the “GUI” tab, click on “Wireless”, and in “2.4 GHz” enter the network name. Click on “Wireless Security” change the mode to “WPA2 Personal” and set the Passphrase.





#### Step 4:

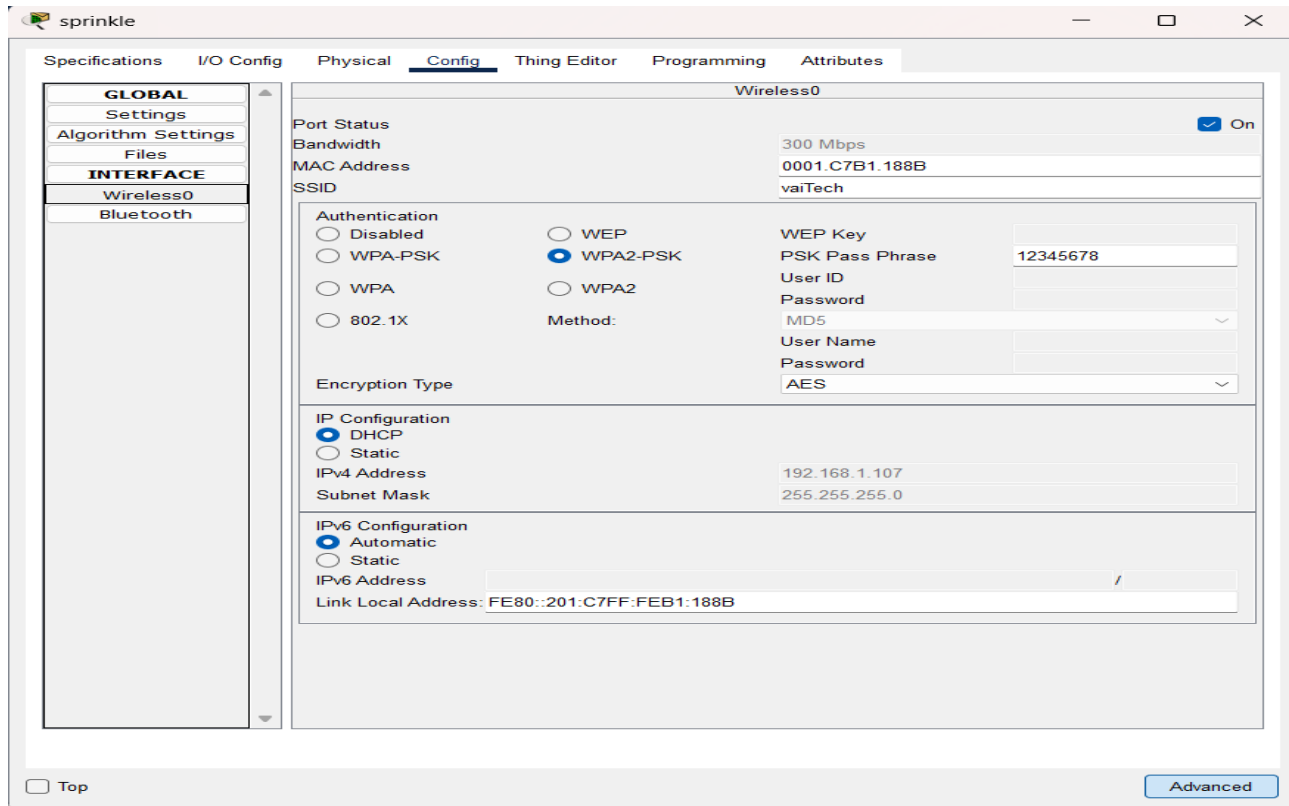
- Go to "Laptop", change to the NIC adapter and configure the wireless0 as shown.





### Step 5:

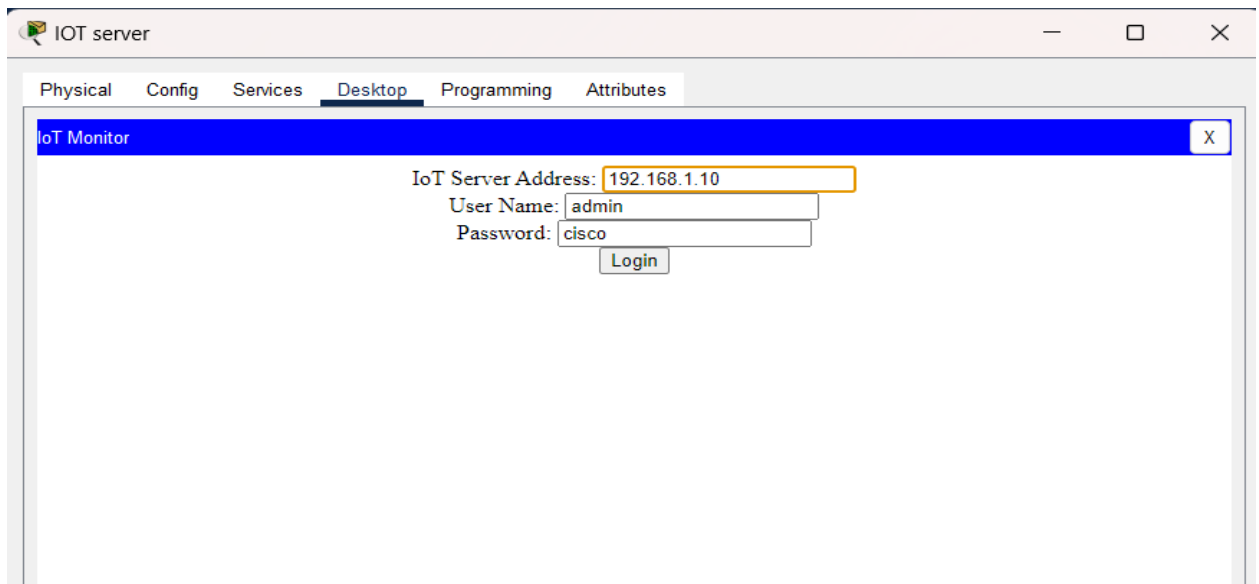
- Go to “sprinkle”, click on “advanced”, configure the wireless0 settings as shown.



- Go to “waterLevel”, click on “advanced”, and configure the wireless0 settings same as the previous step.
- Go to “m detector” and “p detector”, click on “advanced”, and configure the wireless0 settings same as the previous step.
- Go to “gate”, click on “advanced”, and configure the wireless0 settings same as the previous step.

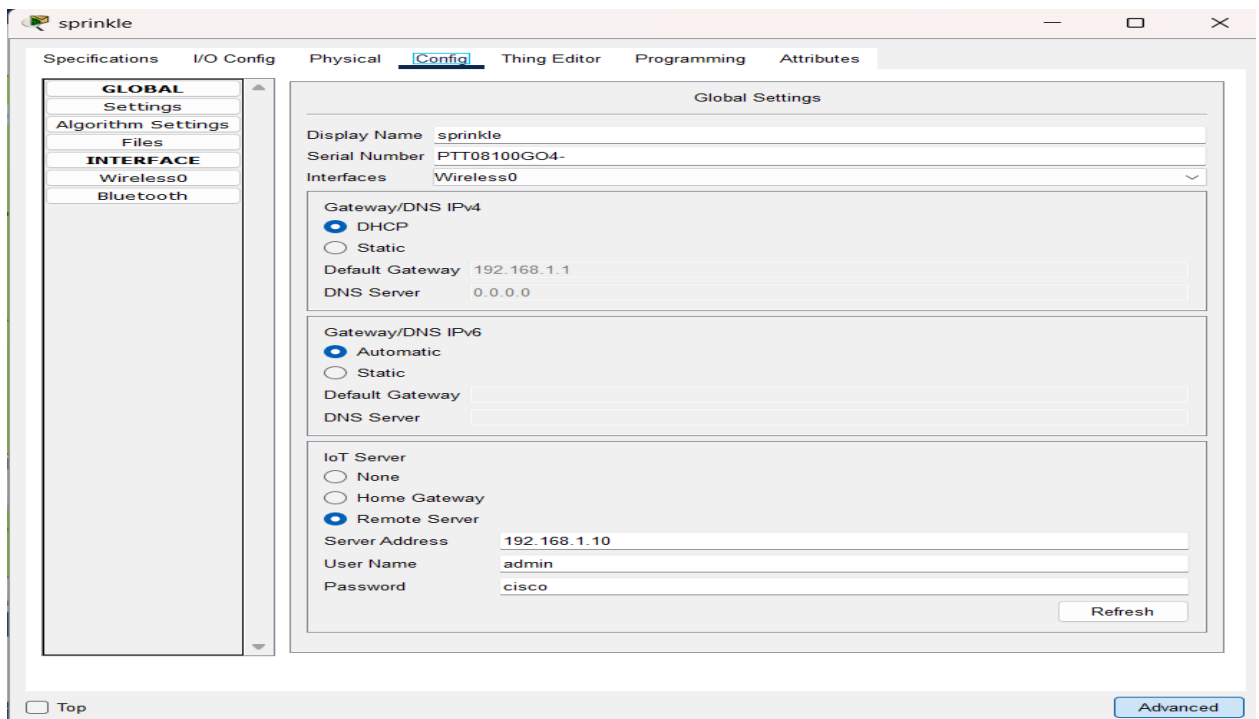
### Step 6:

- Click on “IoT server”, go to the “Services” tab, click on “IoT server”, and Switch on the registration server.
- Go to “IOT monitor”, set the username and password with the server address 192.168.1.10



### Step 7:

- Go to “sprinkle”, click on “advanced”, and configure the “Global settings” settings as shown.

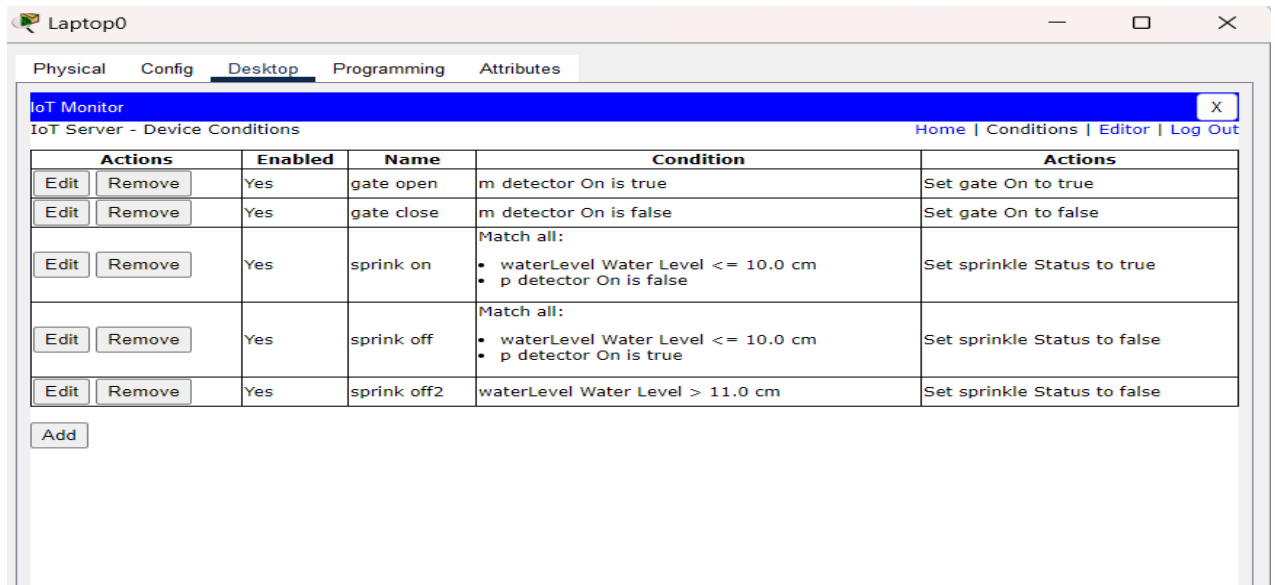


- Go to “waterLevel”, click on “advanced”, and configure the “Global settings” as we did in the previous step.

- Go to “m detector” and “p detector”, click on “advanced” , and configure the “Global settings” as we did in the previous step.
- Go to “gate” , click on “advanced” , and configure the “Global settings” as we did in the previous step.

### Step 8:

- Go to “Laptop”, create conditions for the devices in “iot monitor”.

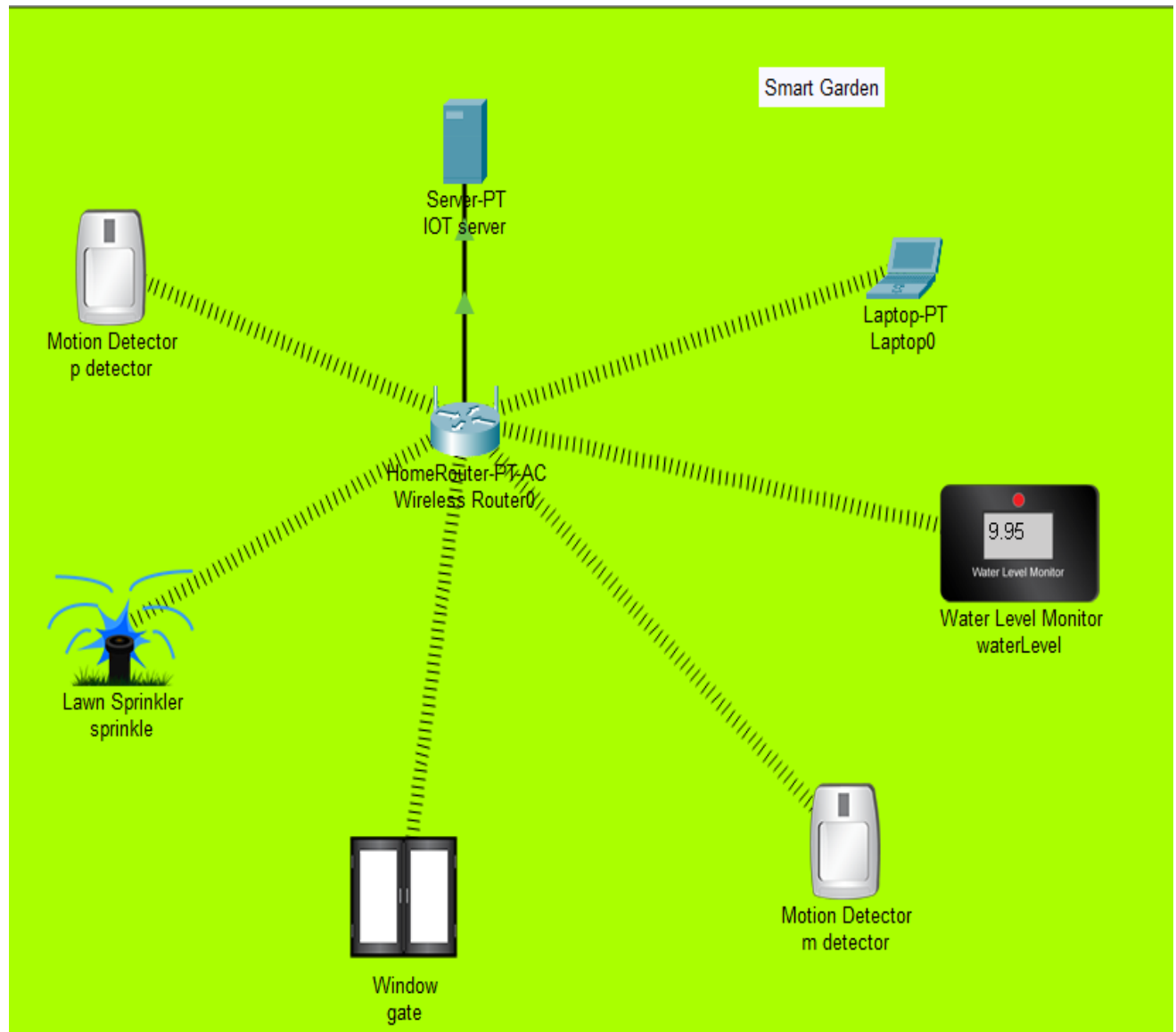


The screenshot shows a web application window titled "Laptop0" with tabs for Physical, Config, Desktop, Programming, and Attributes. The "Desktop" tab is active, displaying the "IoT Monitor" interface. The interface includes a header bar with "IoT Monitor" and a close button, and a sub-header "IoT Server - Device Conditions" with navigation links: Home | Conditions | Editor | Log Out.

Actions		Enabled	Name	Condition	Actions
Edit	Remove	Yes	gate open	m detector On is true	Set gate On to true
Edit	Remove	Yes	gate close	m detector On is false	Set gate On to false
Edit	Remove	Yes	sprink on	Match all: • waterLevel Water Level <= 10.0 cm • p detector On is false	Set sprinkle Status to true
Edit	Remove	Yes	sprink off	Match all: • waterLevel Water Level <= 10.0 cm • p detector On is true	Set sprinkle Status to false
Edit	Remove	Yes	sprink off2	waterLevel Water Level > 11.0 cm	Set sprinkle Status to false

Below the table is an "Add" button.

## IMPLEMENTATION



## **INFERENCE**

In conclusion, the Smart Garden System project is an innovative technology that combines automation, data analysis, and customization to improve gardening practices. The use of components such as sprinklers, water level monitors, sensors, and gates enables the system to monitor and respond to environmental factors in real-time, resulting in efficient use of resources and better plant growth. The system promotes sustainable and environmentally friendly gardening practices by reducing waste and conserving water. Additionally, the application provides gardeners in deciding and preventing overwatering or underwatering. The project has the potential to revolutionize the way we garden, and as technology continues to advance, we can expect even more exciting developments in this area.

## REFERENCE

1. [https://www.ijcseonline.org/pdf\\_paper\\_view.php?paper\\_id=5299&3-IJCSE-08461.pdf](https://www.ijcseonline.org/pdf_paper_view.php?paper_id=5299&3-IJCSE-08461.pdf)
2. <https://www.youtube.com/watch?v=DdeXrsMFng4>
3. <https://www.scirp.org/journal/paperinformation.aspx?paperid=121716>