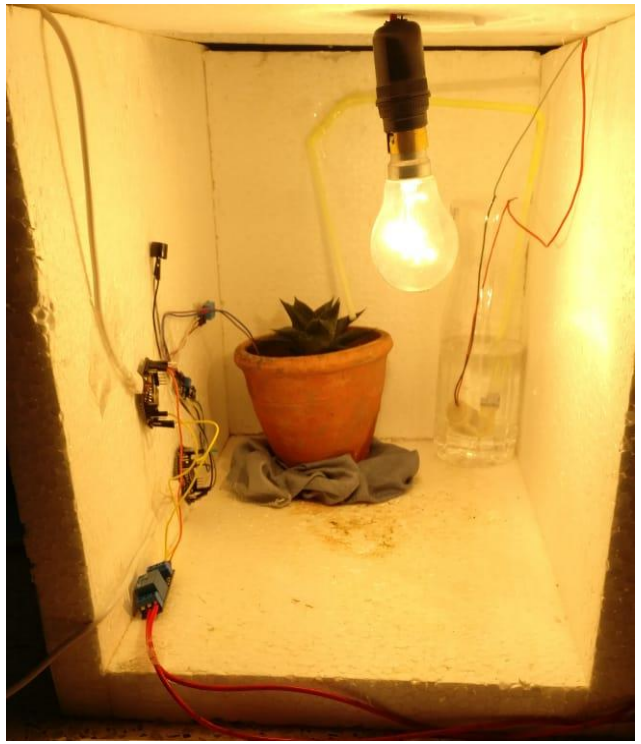

PLANT INCUBATOR

SMART GROWTH ENVIRONMENT

Submitted to

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What is a Plant Incubator?

Plant growth chamber is a device that monitors and controls the physical parameters required for healthy growth of plants like:

- **temperature**
- **humidity**
- **moisture**

Fig 1- Plant Incubator

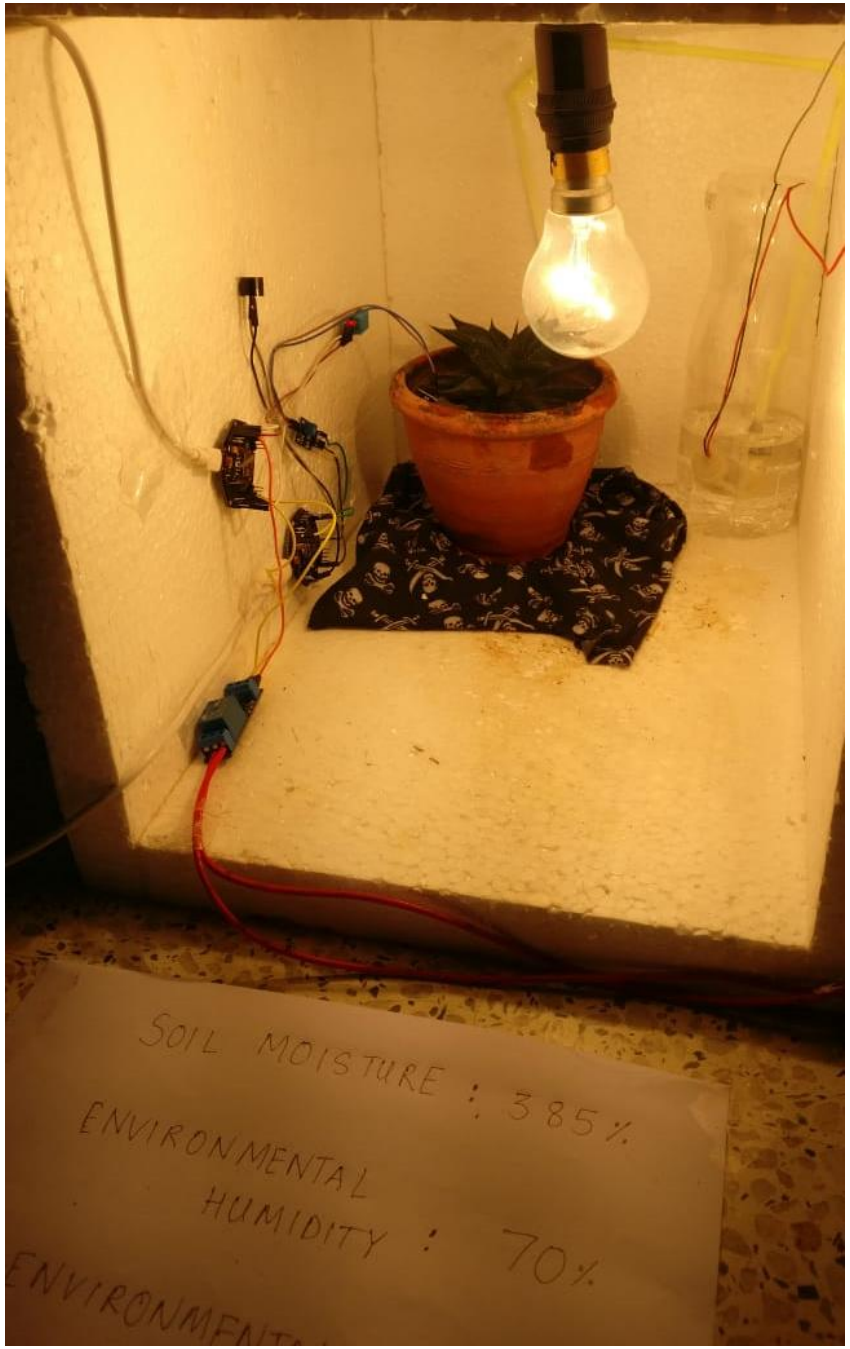
Fig 2- Large Incubator

Vision

The idea behind this project is to cater to the need of the people who are willing to grow some plants that are of ***high medicinal value*** or ***are expensive*** or ***grow in rare*** environmental conditions.

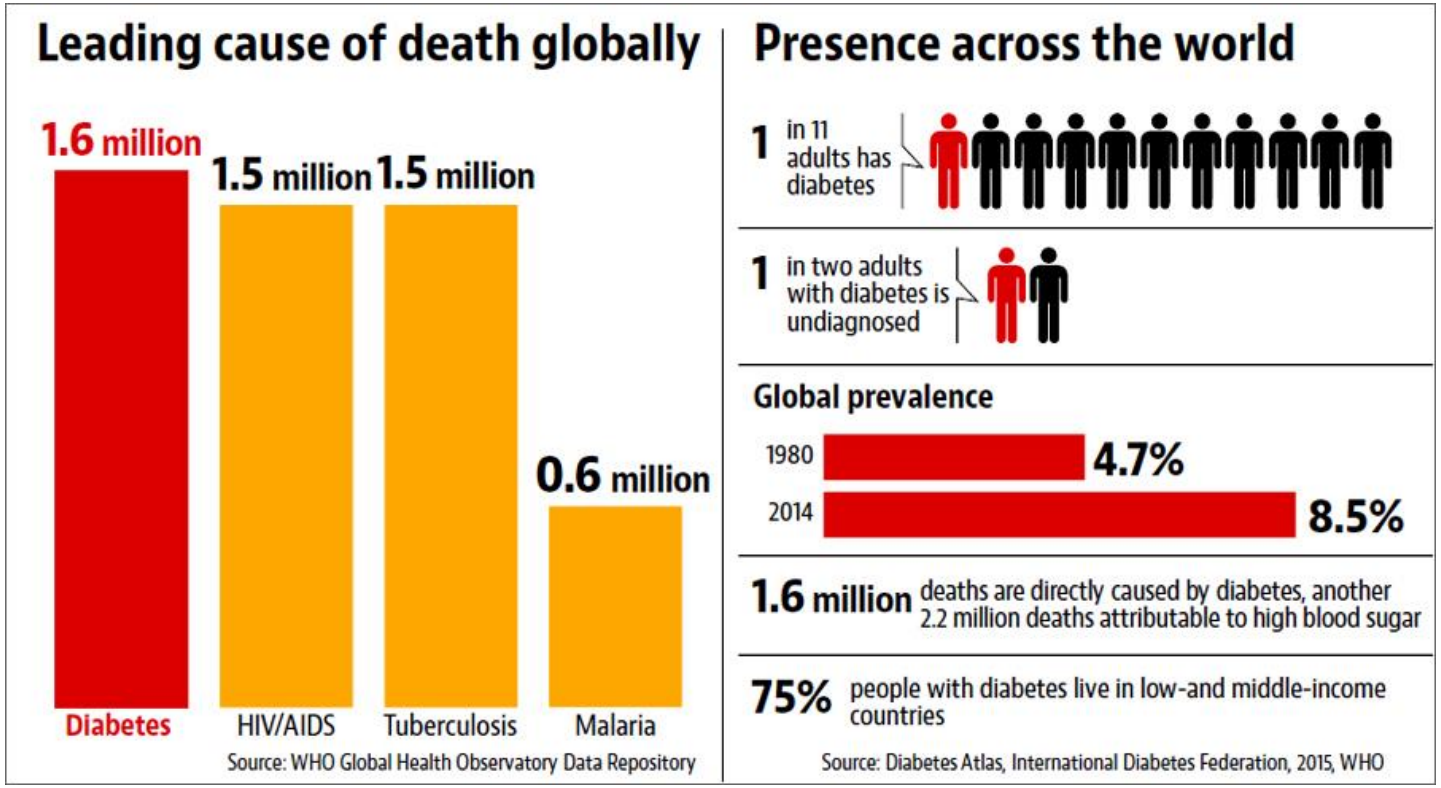
The ***Plant Incubator*** is supposed to provide an aid to those in need. As using this all you have to do is feed the required values for the environmental setup and then forget everything and enjoy!

It is like a ***PLUG & PLAY*** journey!



An ornamental plant grown in this incubator.

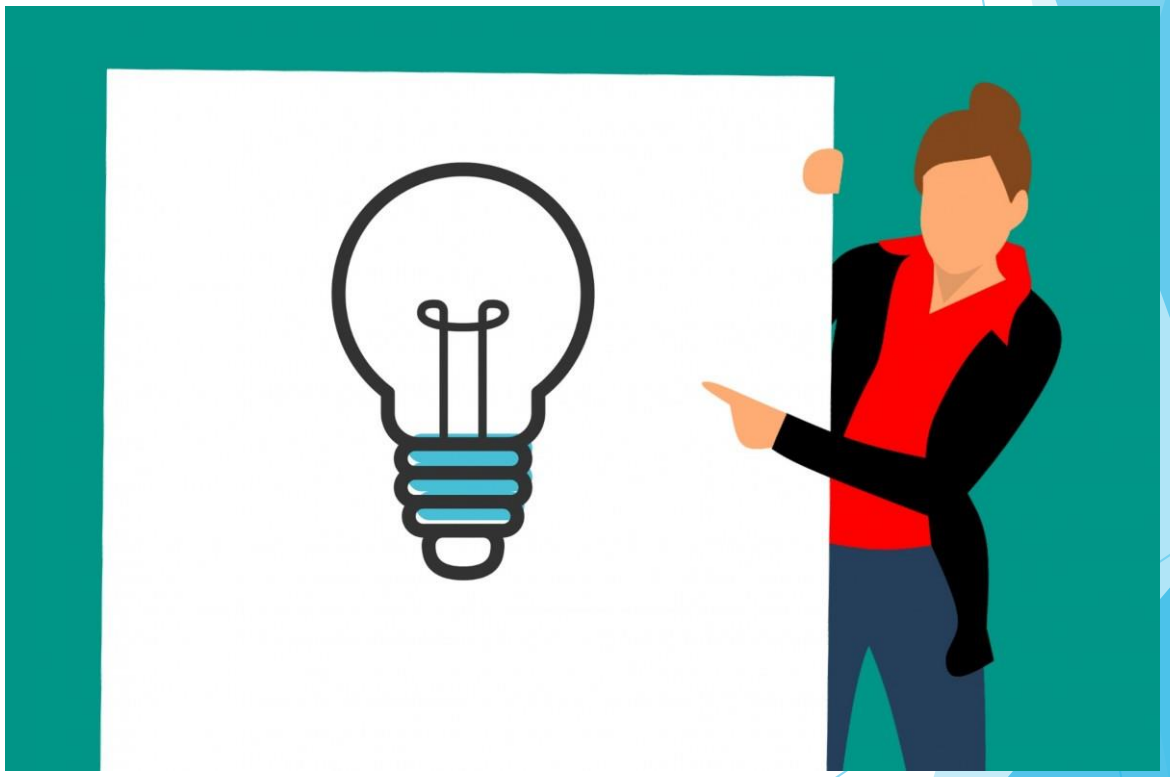
Problem Statement



Problem Statement

Is there a plant whose consumption can prevent Diabetes?

So that you can be one of those 10 out of 11 people who don't develop diabetes.



“The Experiment”

Plant Used: GILOY

Conditions for growth of GILOY

Observations:

Soil Moisture Requirement: 385%

Environmental Humidity Requirement: 70%

Environmental Temperature Requirement: 30°Celcius

Components & Circuitry

Hardware:

Element	Specification	Quantity
Microcontroller	Octabrix	2 pcs
Relay	5V, 1 channel	2 pcs
Water Pump & Buzzer	DC, 3-6V	1pc
Bulb	60W	1pc
Bulb Holder		1 pc
Temperature & Humidity Sensor	DHT11	1pc
Soil Moisture Sensor	DC, 5V	1pc
USB 2.0 Cable		2pcs
Power Supply (uninterrupted)	Laptop/Power Bank	1pc

Components & Circuitry

Software:

Element	Usage
Blynk App	Connects your smart thing with your mobile through cloud
Arduino IDE	Write and upload code for your microcontroller board
MD5 Hash Generator Website	Protect your IoT network with passwords generated by MD5 hashing
Plantix	Take photos of your plant and know whether it is diseased or in good health

Working

Soil Conditions:

The idea behind this project is to cater to the need of the people who are willing to grow some plants that are of ***high medicinal value*** or ***are expensive*** or ***grow in rare*** environmental conditions.

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Measurement of Soil Moisture

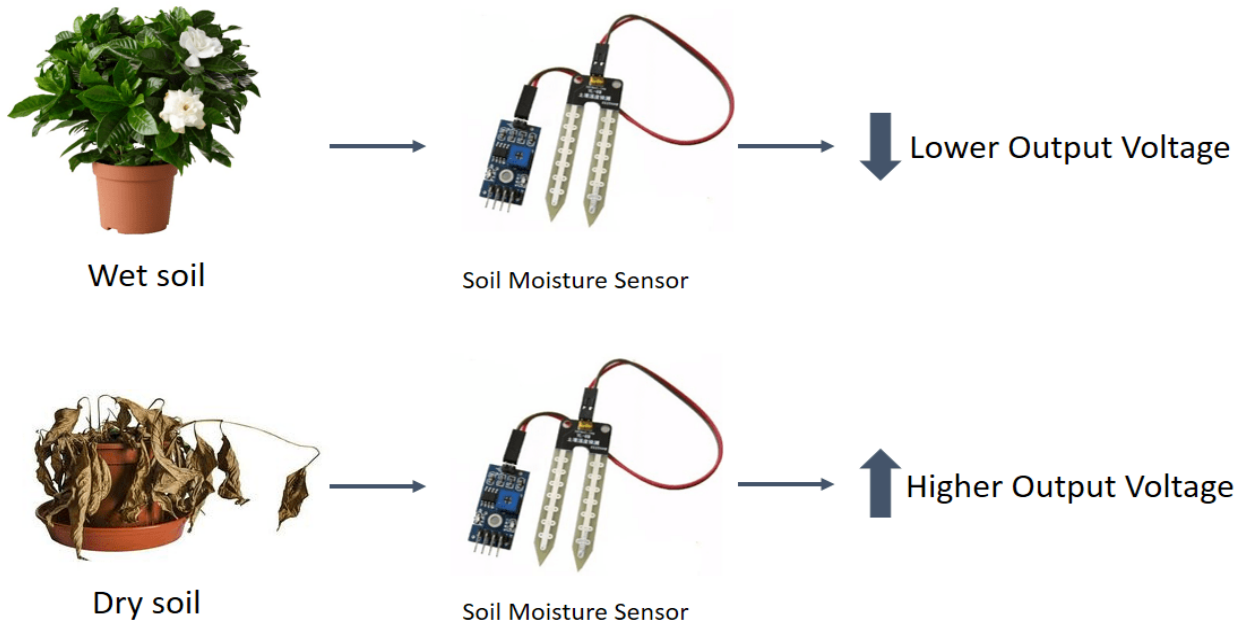


Fig 5 – Working of Soil Moisture Sensor

When the soil moisture conditions drop below 385%

Pump adds water until the ideal soil moisture values are met.

Measurement of Environment Humidity and Temperature

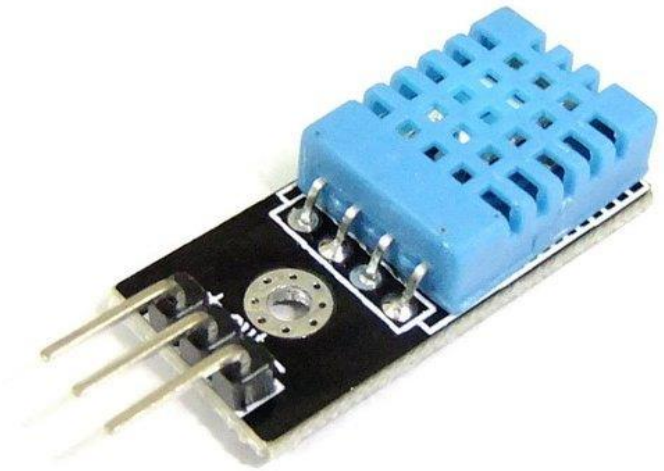


Fig 7- Temperature and Humidity sensor DHT11

When the temperature conditions drop below 30°C

Bulb glows until the ideal temperature conditions are met.

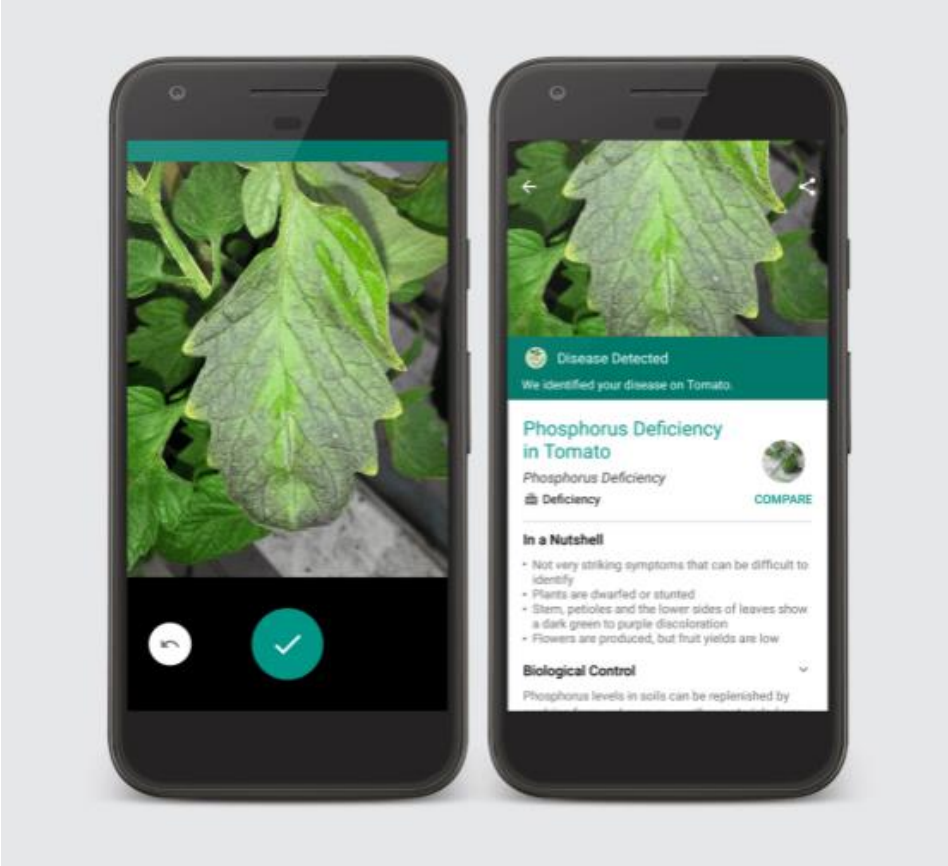
Other components

Cooling fan provides expelling of heat and maintaining the temperature.

Mist maker maintains humidity of the atmosphere.

Implementation of Multidisciplinary Innovations

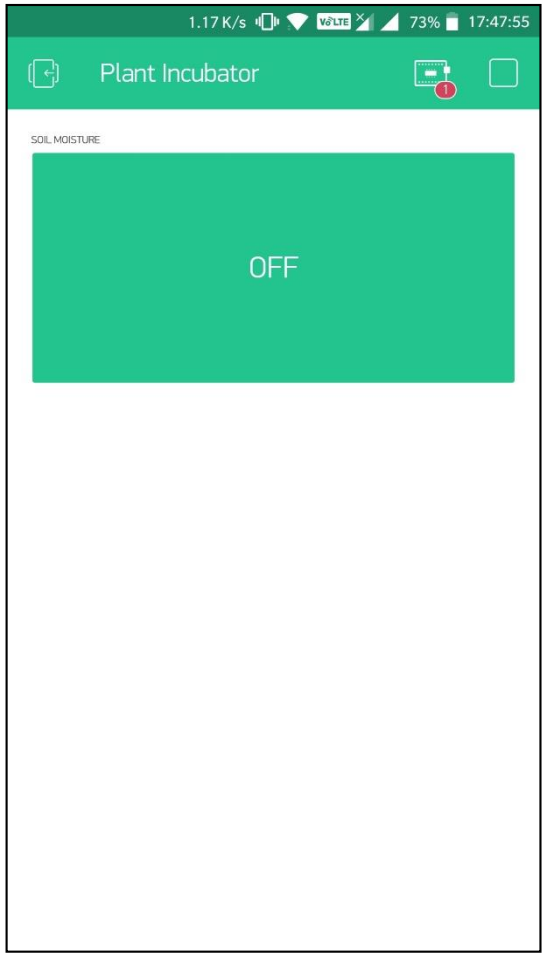
Machine Learning and Artificial Intelligence through “Plantix App”

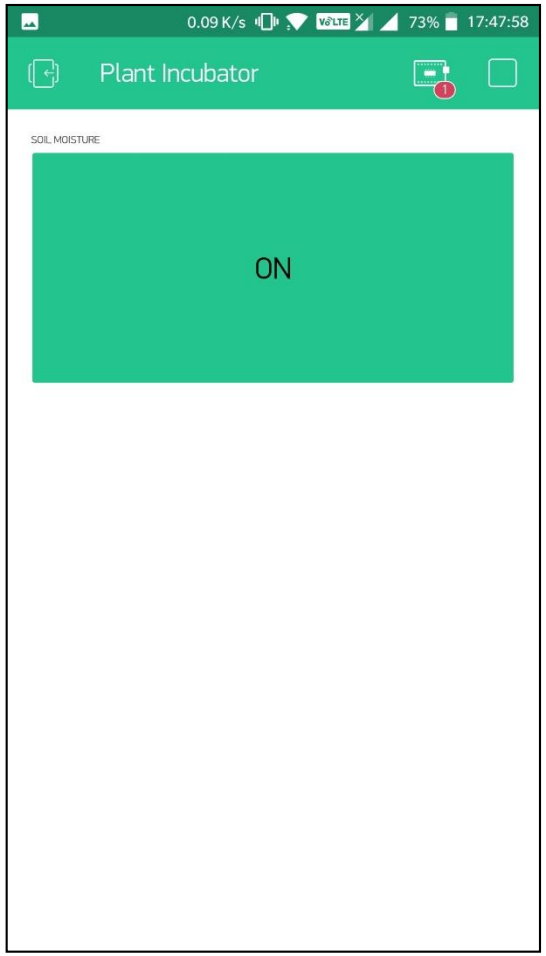


Plantix uses the latest artificial intelligence technology to deliver outstanding image recognition. It gives you instant feedback on a problem when you take a picture of it and provides detailed descriptions of biological and chemical control methods for hundreds of diseases.

Implementation of Multidisciplinary Innovations

Internet of Things

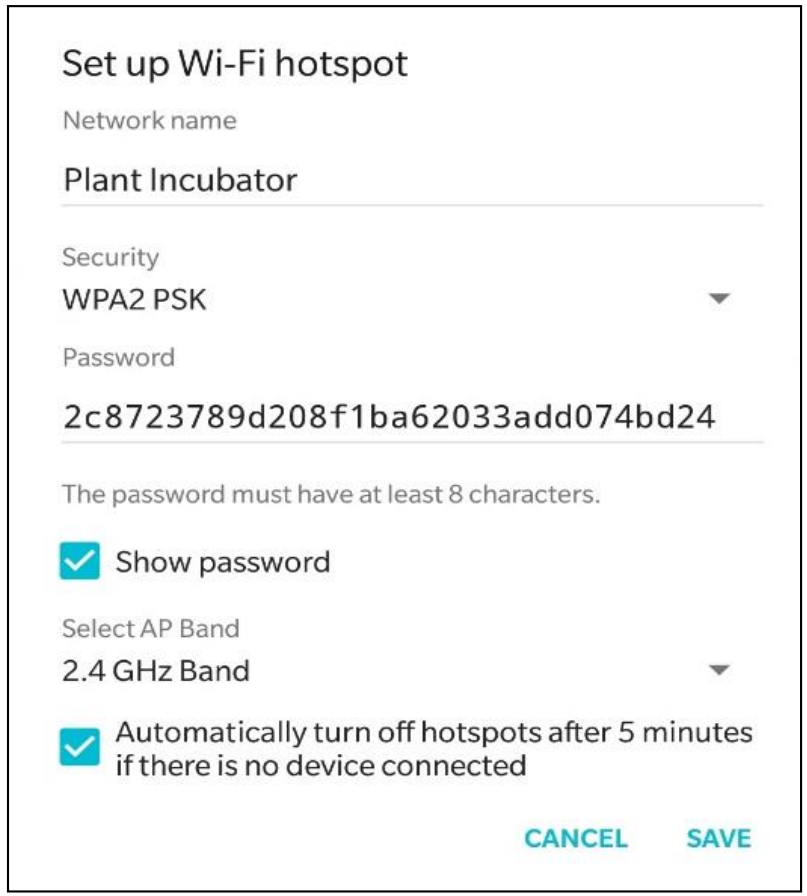




Use our Blynk Cloud or deploy your own Blynk Server in a minute and have full privacy and control in your hands. You can even share your project with friends and other makers by simply sending them the link. Control Arduino, ESP8266, ESP32, NodeMCU, Particle Photon, Raspberry Pi and other microcomputers with the smartphone over the Internet. Bluetooth and BLE supported too.

Implementation of Multidisciplinary Innovations

Cyber Security



MD5 Hashing

The MD5 algorithm is a widely used hash function producing a 128-bit hash value. Although MD5 was initially designed to be used as a cryptographic hash function, it has been found to suffer from extensive vulnerabilities. It can still be used as a checksum to verify data integrity, but only against unintentional corruption.

Prototype of Plant Incubator

Prototype of Plant Incubator

Is it sustainable?

This incubator has been developed keeping the 17 goals of sustainable development in mind

THANK YOU! ☺