Project Objectives

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Project Name	SmartFarmer - IoT Enabled Smart Farming Application
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Abstract:

IoT is the information and communication technology sector is being enhanced to facilitate the farmers, croppers and related users of intelligent services. Technological revolution integrates the development of smart devices and IoT services. To feed the ever growing global population, the agriculture industry needs to be extended. Internet of Things helps in smart farming solution to increase the agricultural production. Smart farming provides the enhanced facility for process automation and evaluation and waste reduction. As a result, all these factors increase the quality and quantity of the food products and decrease the production cost and smart farming system that is built for monitoring the crop field will help the farmers with the sensors and operate the irrigation system. The farmers can monitor the field conditions from anywhere. This paper outlines the promising solutions applied in the agriculture.Internet of Things is a dynamic global information network, supports several applications for users such as healthcare organizations, security, smart transports, traffic management, E-payment, smart farming etc. In agricultural industry, technological advancements lead the comfortable pathway for the farmers. quality, weather conditions, crop growth, and crop damage using wireless monitoring sensors with cloud based platform. Farm owners can utilize wireless IoT applications to collect data regarding the location, well-being, and health of their cattle. This information helps to prevent the spread of disease and also lowers labor costs.

By the end of this project, we will:

- Gain knowledge of Watson IoT Platform.
- Connecting IoT devices to the Watson IoT platform and exchanging the sensor data.
- Gain knowledge on MIT App Inventor.
- To create applications by dragging and dropping components into a design view and using a visual blocks language to program application behavior by using MIT App Inventor.
- Gain knowledge on NODE RED.
- Gain knowledge on about interconnecting physical assets to cloud platforms by using NODE RED.
- Gain knowledge on Fast2sms.
- Explore Python client libraries of Watson IoT Platform.
- Gain knowledge of web application development.

Project Flow:

- The different soil parameters temperature, soil moistures and then humidity are sensed using different sensors and obtained value is stored in the IBM cloud.
- Arduino UNO is used as a processing Unit that process the data obtained from the sensors and whether data from the weather API.
- NODE-RED is used as a programming tool to write the hardware, software, and APIs. The MQTT protocol is followed for the communication.
- All the collected data are provided to the user through a mobile application that was developed using the MIT app inventor. The user could plan through an app, weather to water the crop or not depending upon the sensor values. By using the app they can remotely operate to the motor switch.

To accomplish this, we must complete all the activities and tasks listed below:

- Create and configure IBM Cloud Service ○ Create IBM Watson IoT Platform and Device ○ Create Node-RED service
- Develop the Python Script ○ Develop the Python Script
- Develop a web Application using Node-RED Service
  - ○ Develop the Web application using Node-RED