A Project Report on

Smart Agriculture System Based On IoT

Carried out as part of the interhip during

Summer 2020

At

The Smart Bridge

Information Technology and Services
Hyderabad,Telangana

Submitted by

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Contents

1 INTRODUCTION

In Agriculture, data is very important for the success of a specific crop in a given geographical climate. Such information is particularly of interest to the farmer, Agriculture consultants, and Agriculture companies. Agriculture depends on data for information such as realtime weather forecasting, temperature, humidity, soil moisture, success rate of fertilizers, the impact of natural calamities on soil and more. Exchange of such information between farmers and consultants, however, are limited. Hence, there is a necessity for Smart Agriculture.

1.1 Ovrerview

IoT based Smart Farming improves the entire Agriculture system by monitoring the field in real-time. With the help of sensors and interconnectivity, the Internet of Things in Agriculture has not only saved the time of the farmers but has also reduced the extravagant use of resources such as Water and Electricity. It keeps various factors like humidity, temperature, soil etc. under check and gives a crystal clear real-time observation.

1.2 Purpose

Smart agriculture involves integration of advanced technologies into already persisting agricultural practices with a view to boost production quality and efficiency for farming products. It helps in automated farming with the collection of data for further analysis to provide the operator with accurate information for better decision making to gain high quality output of the product.

2 LITERATURE SURVEY

In the scenario of increasing temperatures and decreasing soil moisture, there is a need for such a device that gives updates to the farmers regarding temperature, humidity and soil moisture to the farmer. After exploring a lot of options the best one found was to use IBM cloud and Open Weather API along with node-red to develop an application that shows temperature , humidity and soil moisture along with motor on and options to help the farmer have a look at the farm from anywhere.

2.1 Existing system

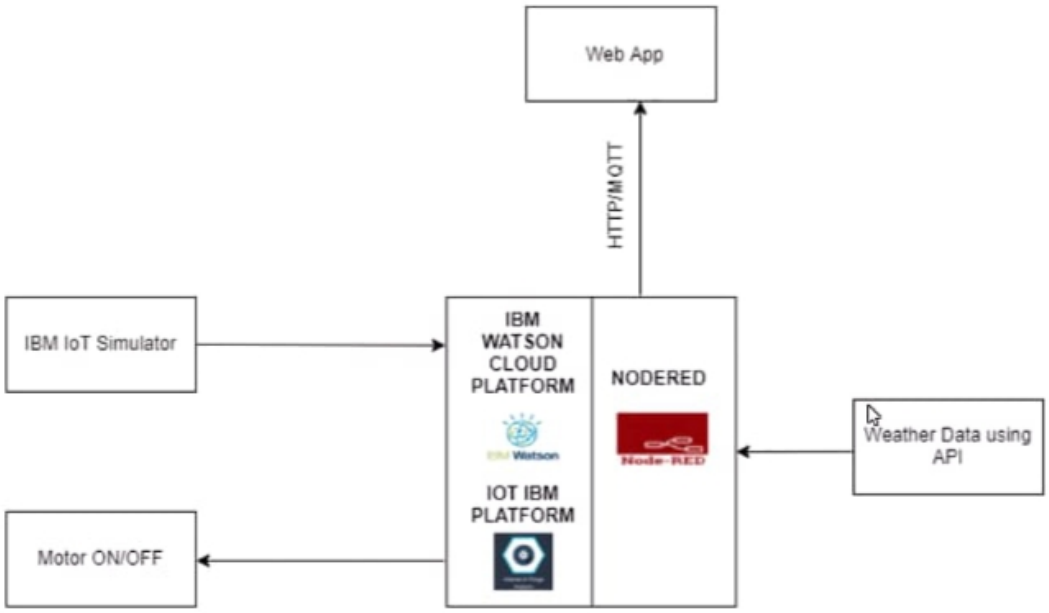
Farmer himself had to go the farm to water plants with the help of motor and check the weather conditions and soil moisture of the plants which is a very hectic and tiresome work.

2.2 Proposed solution

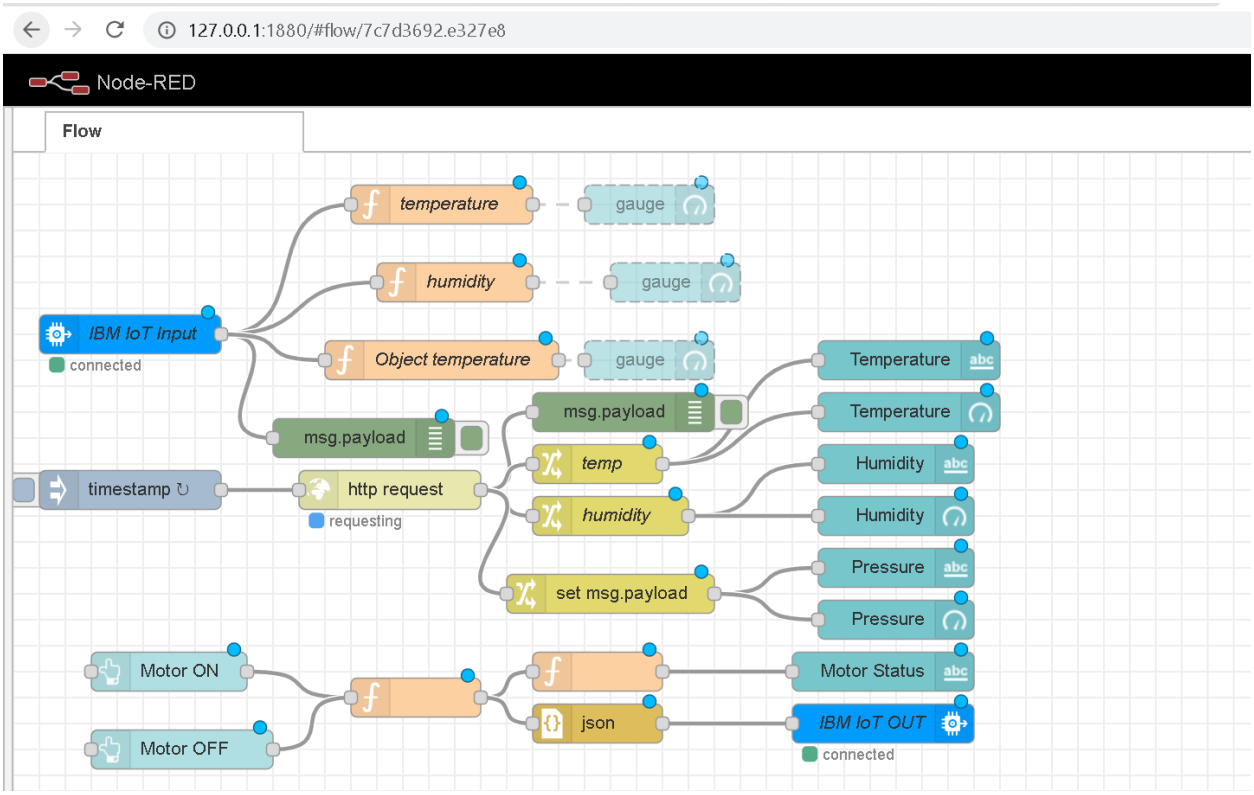
Build an app using which a farmer monitor the temperature, humidity and soil moisture parameters along with weather forecasting details. The app should should be able to water the crops by controlling the motors from anywhere.

3 THEORETICAL ANALYSIS

3.1 Block Diagram

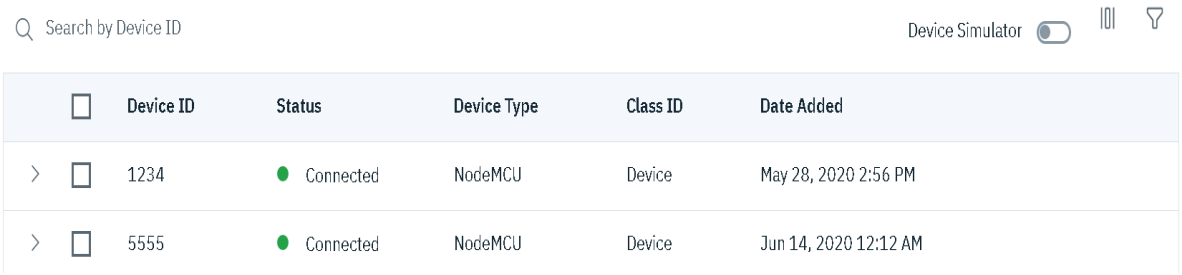


3.2 Flow Design

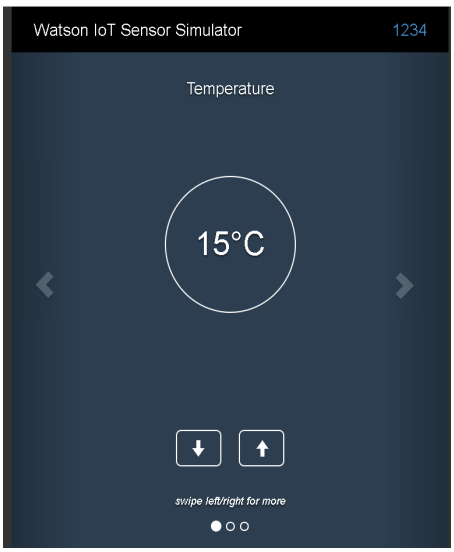


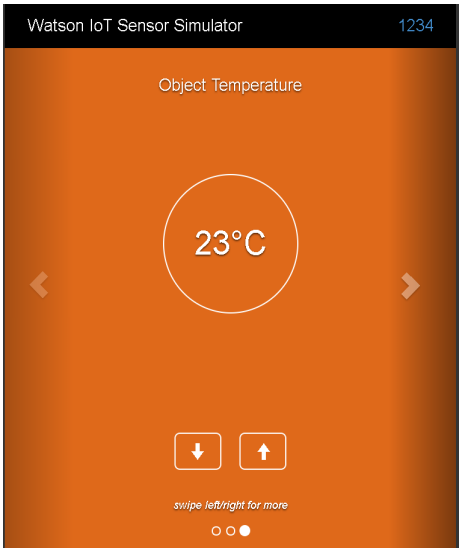
4 EXPERIMENTAL INVESTIGATIONS

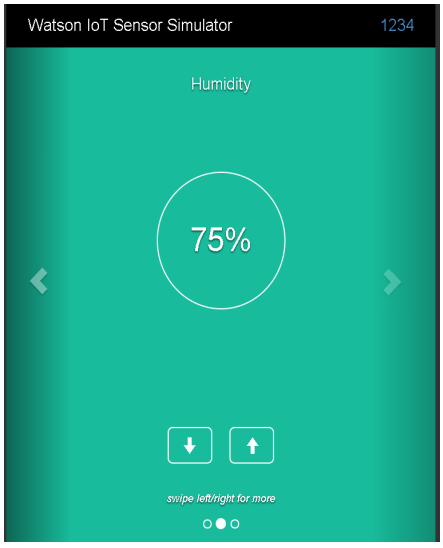
Device Creation



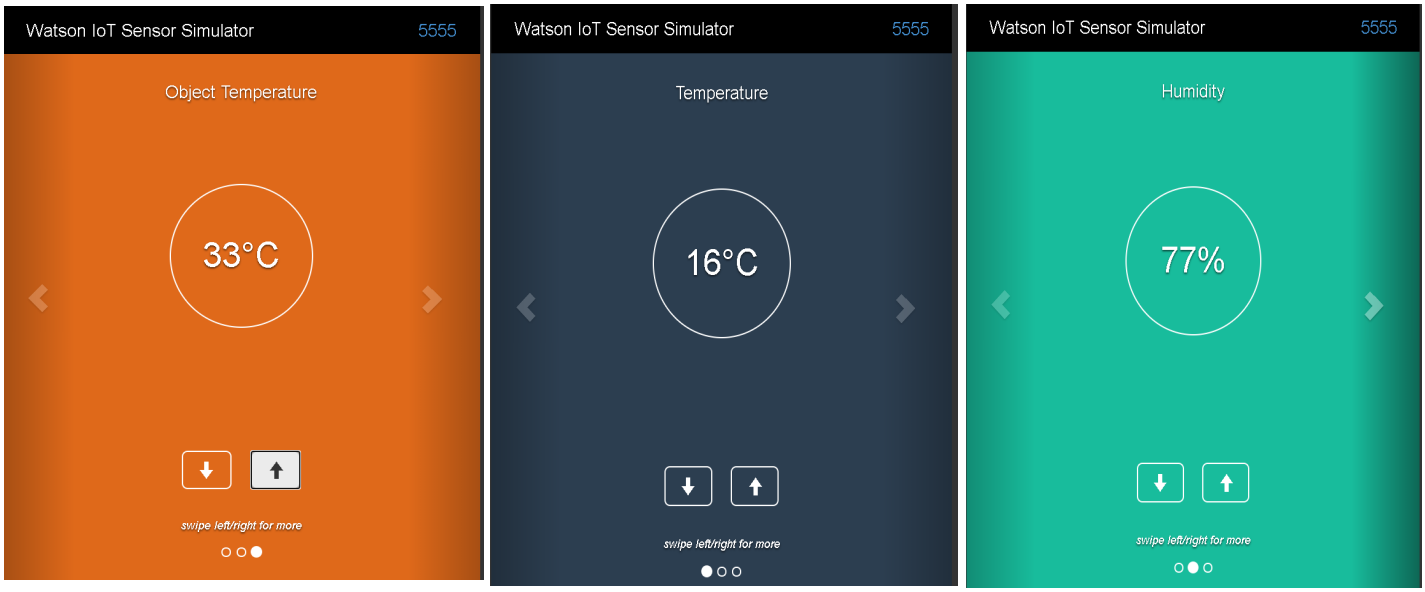
IOT Device 1 simulator



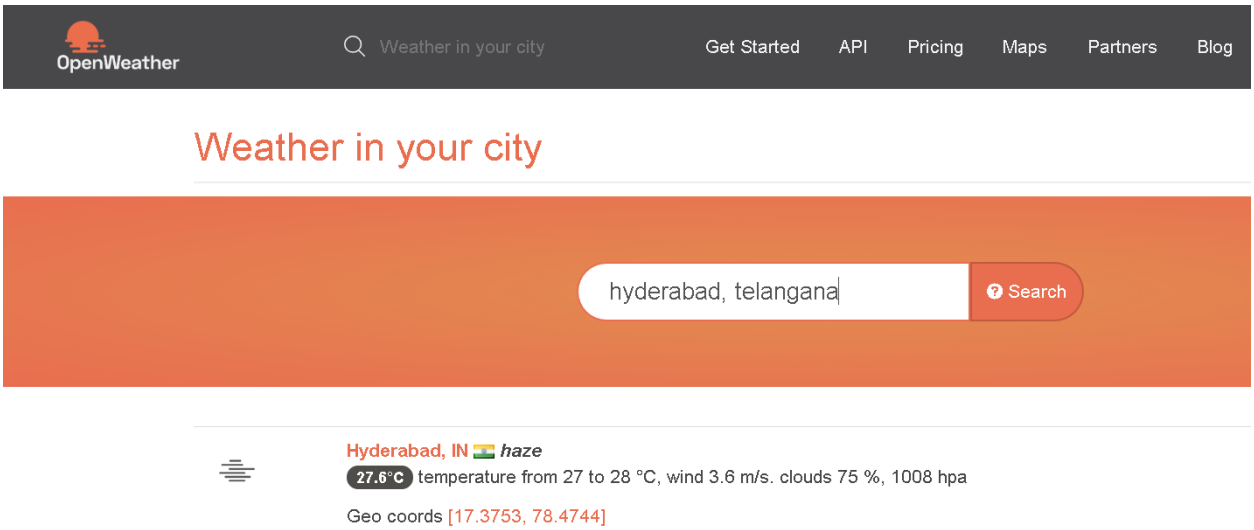




IOT Device 2 simulator



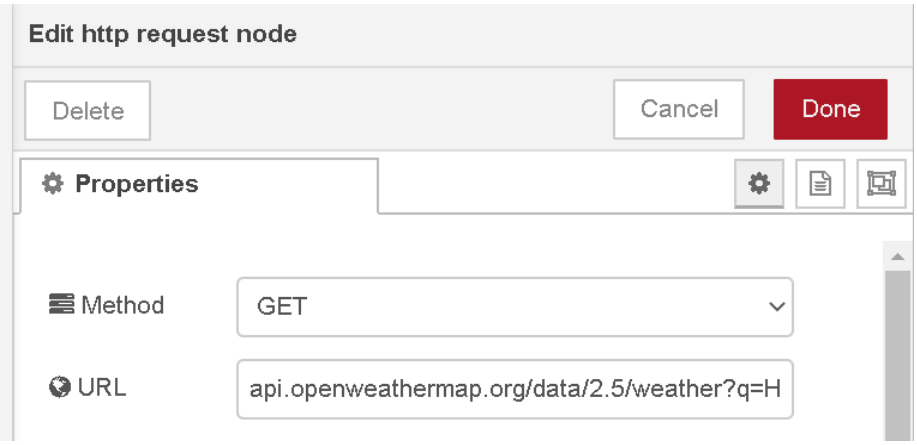
Open Weather API



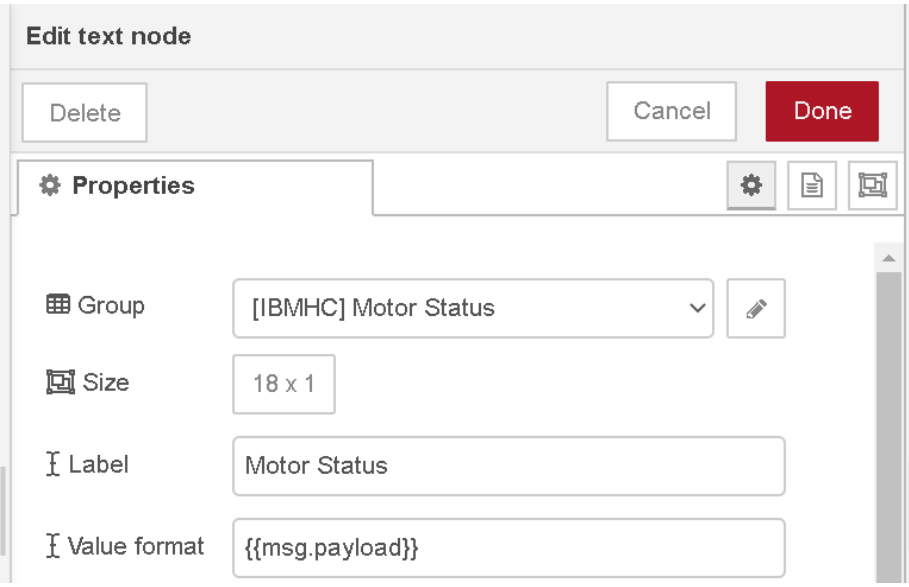
JSON data fetched from API

{"coord":{"lon":78.47,"lat":17.38},"weather":[{"id":721,"main":"Haze","description":"haze","icon":"50d"}],"base":"stations","main":
{"temp":301.74,"feels_like":304.39,"temp_min":301.15,"temp_max":302.15,"pressure":1007,"humidity":74},"visibility":5000,"wind":{"speed":4.1,"deg":240},"clouds":
{"all":75},"dt":1592117827,"sys":{"type":1,"id":9214,"country":"IN","sunrise":1592093502,"sunset":1592140876},"timezone":19800,"id":1269843,"name":"Hyderabad","cod":200}

Node Red HTTP Request



Node Red Motor Status



Node Red UI Dashboard