**IOT (internet of things) july20**

**Project**

**On**

**Cold Storage Monitoring**

**Using**

**IOT (internet of things)**

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**Table of Contents**

**THEORITICAL ANALYSIS** block diagram

Hardware / Software designing

**EXPERIMENTAL INVESTIGATIONS**

**FLOWCHART**

**RESULT**

**ADVANTAGES & DISADVANTAGES**

**APPLICATIONS**

**CONCLUSION**

**FUTURE SCOPE**

**APPENDIX**

A. Source code

**Theoretical Analysis**

Block Diagram:

|  |
| --- |
| Setup Environment |

Install python idle

Create anIBMAccount

Create Node-red Application

Create IBM Watson IOT platform

Create MIT App inventor account to bulid theMobile App

Setup Hardware and develop the code

Create a Code Snippet for DHTLL sensor to measure the Temperature and Humidity

s

Create a Code Snippet for IR and LDR Sensor

Create a Code Snippet to turn the motor On and Off

Code Snippet for publishing Data using MQTT Communication

Configuring IOT platform and node-red

Create a Node-red flow to send and receive data from the device

Create HTTP Requests to communicate with the mobile app

Building A Mobile App

Design your UI to display the sensor values and to control the Motors

## receive the Dataform the Cloud

## Configure the Application to send the Motor Button status to the Cloud

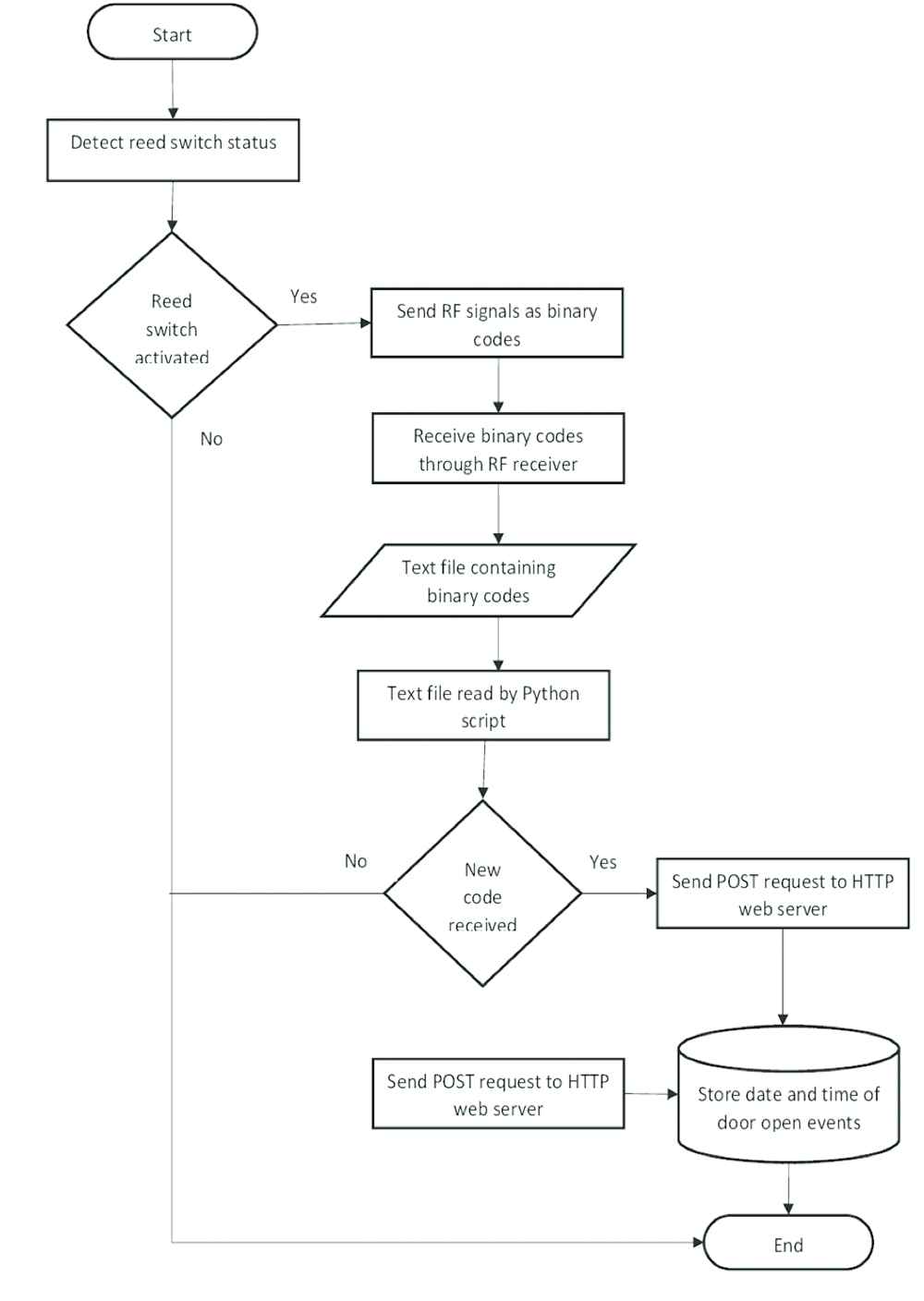
Hardware / Software designing :

Python Idle,IBM Cloud,MIT app inventor,Node red,Cloud DB

**Experimental Investigation:**

The Internet of things(IoT) aims at connecting different objects, things using internet. The rapid development of the Internet of Things motivate use to apply for the food preservation domain such as maintain the quality of fruits and vegetable. In this project a system has been proposed to analyze the ambient conditions under which the food item is being stored. The proposed solution senses the temperature, moisture, light parameters of surrounding environment as these parameters affect nutritional values of food items. In this project we have designed and implemented Raspberry Pi which works as a sensor node for the fruit and vegetable storage house as well as central base station is connected to cloud where MySQL open source database server to support data storage functionalities. The sensor values are stored in the cloud and sent to the base station by connecting to database using its IP address. Then a data fusion model is experimented which takes multiple sensed data as input and produces single fused information or action to be taken as the output. Thus aggregated several input as temperature, humidity and averages it to produce single consolidated output based on which the future decisions could be made. Finally this project is integrating the android mobile application which is used to facilitate user interaction and connect through IoT based system that is station/gateway and the internet. Keyword Internet of Things, goods safety, Sensing environments, Automation, Remotely monitoring LESS

**Flowchart:**



**Result:**

* We have analyzed continuous monitoring of temperature, humidity and light intensity and Switching ON the motor fan in case of bad condition of temperature by using mobile app,Storing the sensor data in the database
* Alerts will be sent to the admin if the sensor parameters exceeds the threshold values.
* Very less latency in communication from device to cloud with MQTT

**Advantages and Disadvantages:**

Advantages:

A cold storage room can keep fruits and vegetables at the correct temperature while controlling the moisture level to help extend the life of the fresh produce longer until it can be used.

Disadvantages:

a) limited amount of genetic diversity conserved

b) high maintenance costs

c) Not suitable for long term conservation

**Applications:**

a)distribution/logistic center

b)frozen produce

c)processing room

**conclusion:**

IoT based temperature and humidity detecting device provides an efficient and definitive system for monitoring agricultural parameters. The system also provides a corrective movement or decision-making system. IoT based monitoring of area is a handiest, but it also allows the consumers to research the correct modifications within the surroundings and for taking possible action. It is inexpensive and consumes much less electricity. The Gross Domestic Product (GDP) per capitals in agriculture can be multiplied and helps to add our need parameters

**Future Scope:**

This set up can also control the DC fan, motor, and water levels for supporting farmers. Then the measured values of humidity and temperature values from the Arduino MCU are uploaded to the cloud. Then the collected data are transferred to the farmers live through the GSM to their cell phones. Based on the water level measuring system, the collected data are sending to the farmer‟s cell phone continuously. They can switch on or off their motor based on the collected data from the water level measuring system. It is beneficial for the farmers to control the motors as well as can watch their plants from their house. Moreover, also it will help the plants from the overwatering. This system is beneficial for water scarcity problems. IoT based system can be extended for controlling extraordinary electronic and electric devices from remote locations. Moreover, the system also can be extended for finding the moisture of soil and the farm monitoring for animals growth.

Data repositories:

ibmcloud.in

Algorithms:

Thesmartbridgeteachable.com

**Appendix:**

A Source Code :

import time

import sys

import ibmiotf.application

import ibmiotf.device

import random

#Provide your IBM Watson Device Credentials

organization = "qnhrju"

deviceType = "raspberrypi"

deviceId = "123456"

authMethod = "token"

authToken = "12345678"

# Initialize GPIO

def myCommandCallback(cmd):

print("Command received: %s" % cmd.data)

try:

deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod, "auth-token": authToken}

deviceCli = ibmiotf.device.Client(deviceOptions)

#..............................................

except Exception as e:

print("Caught exception connecting device: %s" % str(e))

sys.exit()

# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type "greeting" 10 times

deviceCli.connect()

while True:

hum=random.randint(10,40)

#print(hum)

temp =random.randint(30,80)

light=random.randint(10,50)

#Send Temperature & Humidity to IBM Watson

data = { 'Temperature' : temp, 'Humidity': hum,'lightintensity' : light }

#print (data)

def myOnPublishCallback():

print ("Published Temperature = %s C" % temp, "Humidity = %s %%" % hum,"lightintensity= %s C" % light,"to IBM Watson")

success = deviceCli.publishEvent("DHT11", "json", data, qos=0, on\_publish=myOnPublishCallback)

if not success:

print("Not connected to IoTF")

time.sleep(2)

deviceCli.commandCallback = myCommandCallback

# Disconnect the device and application from the cloud

deviceCli.disconnect()