NAALAIYA THIRAN PROJECT - 2022
19ECI01-PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF RELIANT

A PROJECT REPORT

Submitted by

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CERTIFICATE

Certified that this report **"PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF-RELIANT"** is the Bonafide work of **SINDHIYA K (714519106008), KALAISELVI J (714519106004), SATHYA R (714519106007), and ARAVIND A (714519106002)** who carried out **19ECI01 Professional Readiness for Innovation, Employability and Entrepreneurship** project offered by IBM and Anna University, Chennai.

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CHAPTER 1

INTRODUCTION

This chapter gives an overview of the project and presents the need and objective of the project.

1.1 PROJECT OVERVIEW

In our day to day life, due to busy schedules and workload, people often forget to take their medicines on time. Especially old aged people who have illnesses and who are illiterate have problems while taking the medicine, and sometimes it's not possible for the family members to give them medicine at prescribed time. There might be chances of them taking wrong medicines because of poor eyesight. It is also possible that they might take an extra dosage of the same medicine, so this may lead to another medical condition which is not desirable. In order to stabilize their health condition they need to take the right medicines at the right time.

In recent years IOT plays an important role in making devices which are very helpful in our day to day life. So to solve the above issue by using IOT, we propose a medicine reminder system with the help of which the person is supposed to take the pill at the respective time. Hence the objective of this project is to design and develop a medicine reminder system with medicine details, dosage levels and specified timings.

1.2 PURPOSE

Most old people have multiple medicines to take to overcome their illnesses. However, they often forget to take their prescribed medicine on time, making it difficult for the caretakers to keep tabs on the patients and diagnose them in the

right manner. Such situations may sometimes escalate to life-threatening ones. Medication reminders serve as a good way to stay on track and uphold an appropriate schedule. Ensuring that you or your loved one is properly taking their medications can help avoid unnecessary risk and serious illness.

So, an app is built for the user (caretaker) which enables him to set the desired time and medicine. These details will be stored in the database. If the medicine time arrives, the web application will send the medicine name to the. Thedevice will receive the medicine name and notify the user with voice commands. The aim of this project is to design a medicine reminder system that prompts the user to take their medicines on time, thereby reducing the fatalities caused due to negligence.

1.1 PREPARATION

The preparation works carried out such as creation of IBM cloud account, installation of required software tools, creation and configuration of IBM cloud services and creation of Web application will be briefed here.

1.1.1 CREATION OF IBM CLOUD ACCOUNT

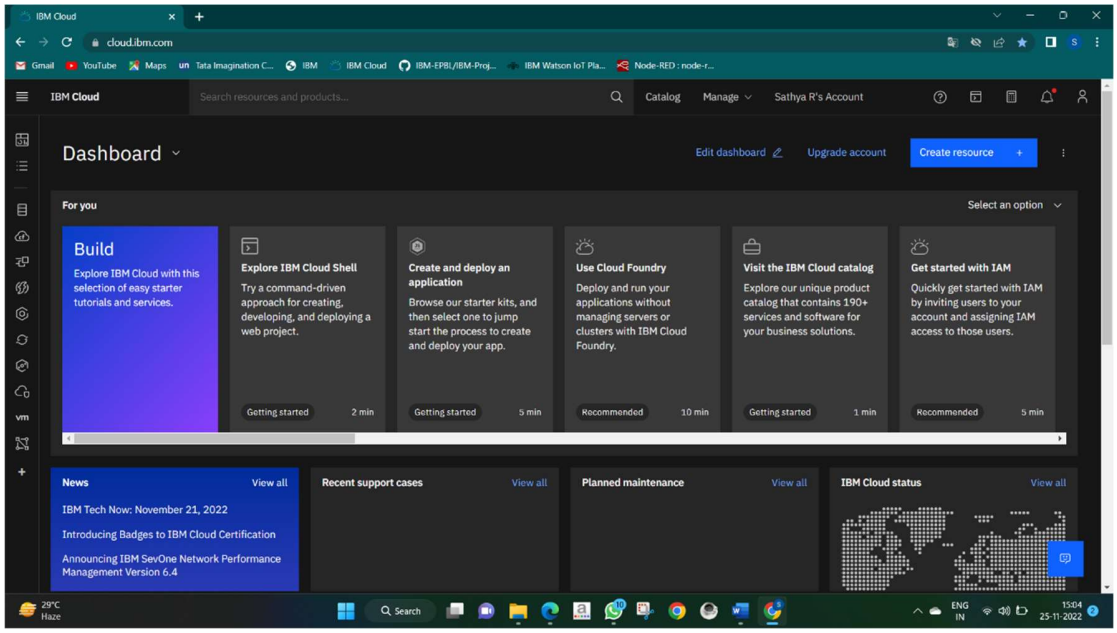


Figure 1.1 IBM Cloud Account

1.1.2 INSTALLATION OF SOFTWARE

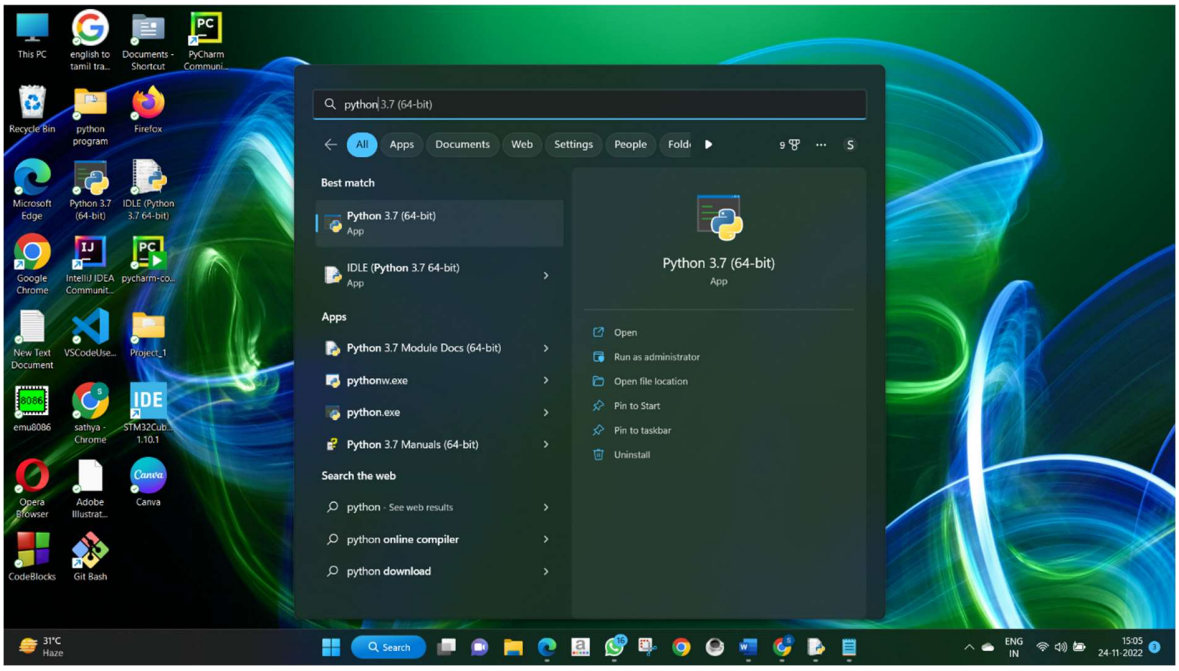


Figure 1.2 Software App

1.1.3 CREATION AND CONFIGURATION OF IBM CLOUD SERVICES

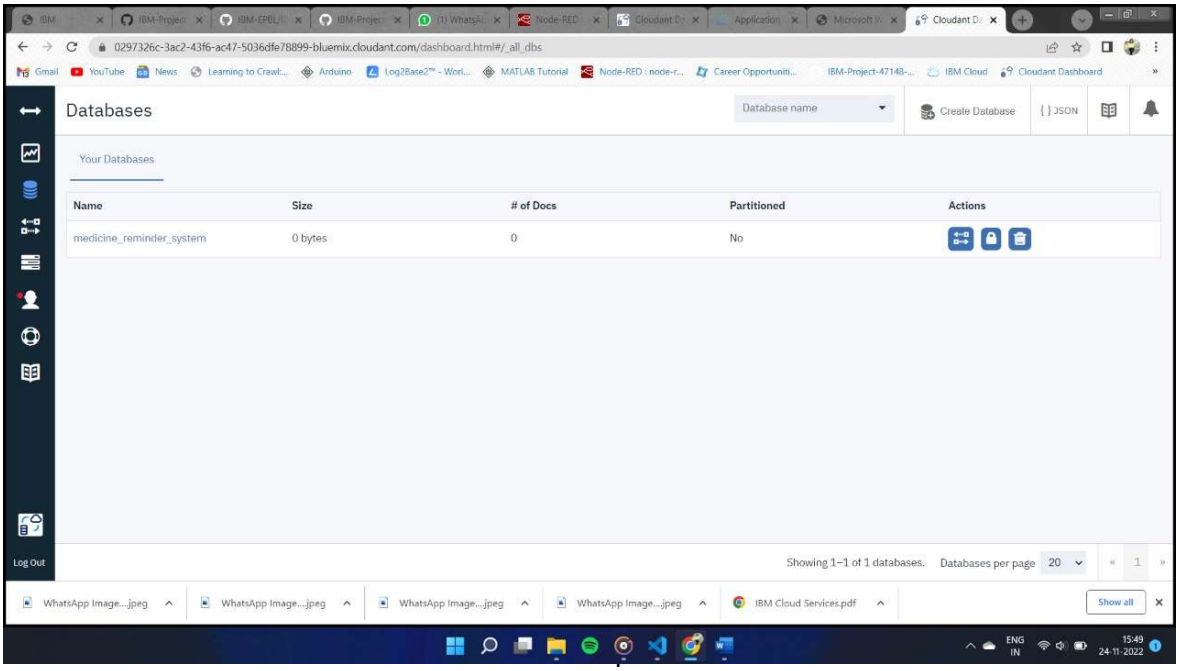


Figure 1.3 IBM Watson IoT Platform

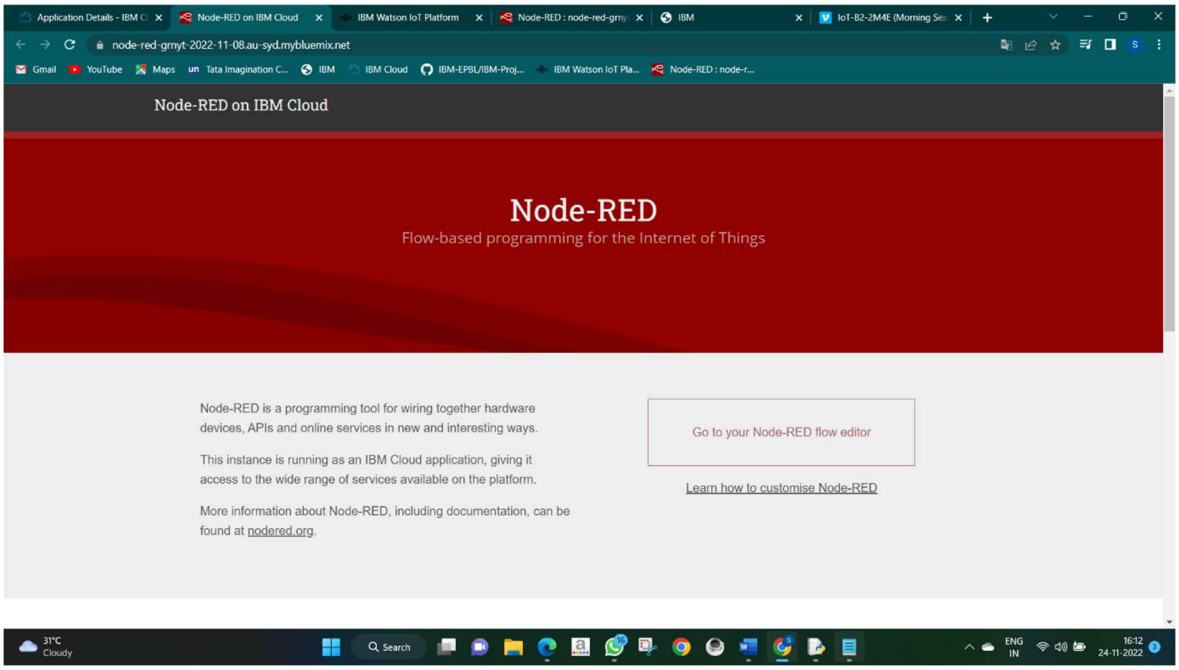


Figure 1.4 Node-Red Service

1.1.4 CREATION OF WEB APPLICATION

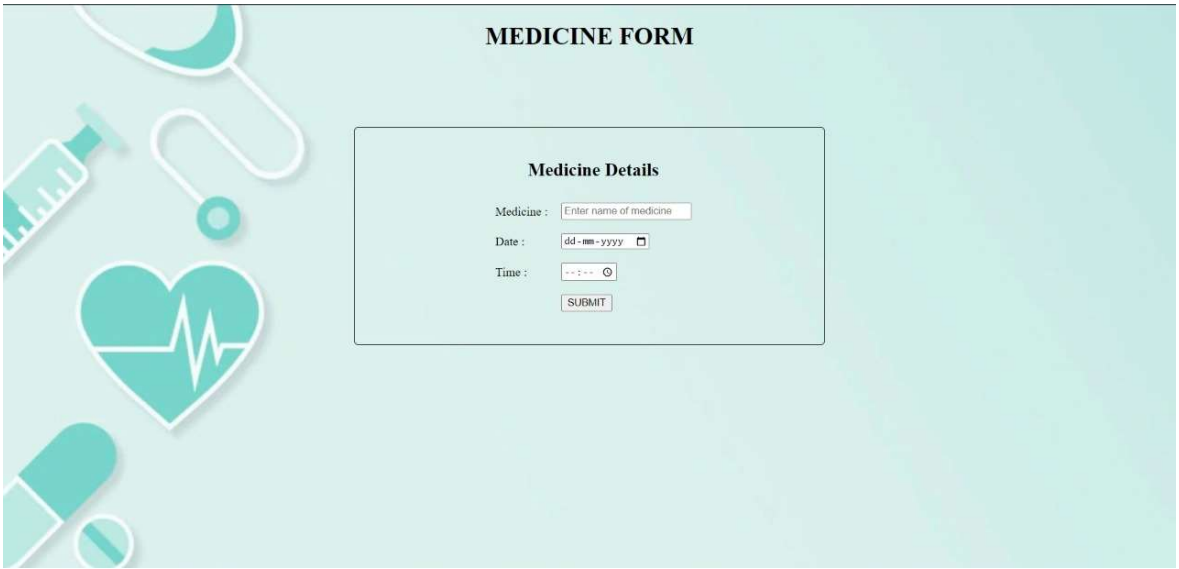


Figure 1.5 Web Application

CHAPTER 2

LITERATURE SURVEY

This phase gives an overview of research carried out related to the project work, preparation of empathy map, and collection of ideas to proceed with the project.

2.1 EXISTING PROBLEM

“Karantis360”- Karantis360 is an automated personal monitoring and alerting system, using intelligent, battery-free sensors, wirelessly linked to a discreet, mobile device which sends reports and alerts to carers and family members. It has been developed specifically to promote independent, home living for the elderly, infirm, those living with Alzheimer’s or dementia and to enable early release from hospital for other clients where monitoring is required. Using a non-intrusive system of sensors, machine learning and automatic data communication, Karantis360 flags exceptions to routines and habits, such as whether your client has got out of bed, is sitting in a chair, has boiled the kettle andso on. By analyzing activity data and comparing it to expected patterns, the system identifies when your client’s activity is out-of-the-ordinary and sends you an immediate alert, so you can respond quickly and effectively to any potential emergency.

Radha Gandhi, Rohan Dhanawade, Vivek Ambekar, Pranit Chaple, Geetha Chillarge, (2019), “Smart Pill Box", has implemented a model of smart pill box with alarm and android phone notification by combining the hardware part and software part. It consists of a three layer mobile application, server and pill box. The pill box consists of electrical and mechanical components such as servomotors, wire etc.

which contains module or programing for functioning of smart pill box. We give power supply to the microcontroller; the microcontroller then controls all the sensors and motors. Real Time Clock (RTC) module to provide the time and date information. We use a touch sensor to get feedback from the elder when he closes the lid of the box manually. Next, the output part consists of a LED to indicatefrom which compartment medicine must be taken, a servo motor is used to open and close the lid of the respective medicine compartment.

B.Ayshwarya, R.Velmurugan, (2021), "Intelligent and Safe Medication Box In Health IoT Platform for Medication Monitoring System with Timely Remainders", uses a microcontroller which collects the patient's information using the bio sensor namely temperature sensor and heart beat sensor. Power supply as DC is transmitted to a smoothing capacitor which modulates DC fluctuations from the rectifier then the same DC current without fluctuations is given to the regulators. The voltages available allow these regulators to be used in logic systems, instrumentation, Wi-Fi modules module, bio sensors (temperature and heartbeat sensor) and other solid- state electronic equipment. The proposed medication box consists of sensors for collecting and reporting the state of the patient through its related software control which continuously checks whether the medicine is taken on time or not. Usually supporting database hold the informationabout the capsules when they are initially loaded into the kit.

2.2 PROBLEM STATEMENT DEFINITION

An app is built for the user (caretaker) which enables him to set the desired time and medicine. These details will be stored in the database. If the medicine time arrives, the web application will send the medicine name to the. The device will receive the medicine name and notify the user with voice commands. The aim of

this project is to design a medicine reminder system that prompts the user totake their medicines on time, thereby reducing the fatalities caused due to negligence.

CHAPTER 3

IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

An empathy map is a collaborative visualization used to articulate what we know about a particular type of user. It externalizes knowledge about users in order to create a shared understanding of user needs, and aid in decision making. Figure 3.1 shows the empathy map of the project.

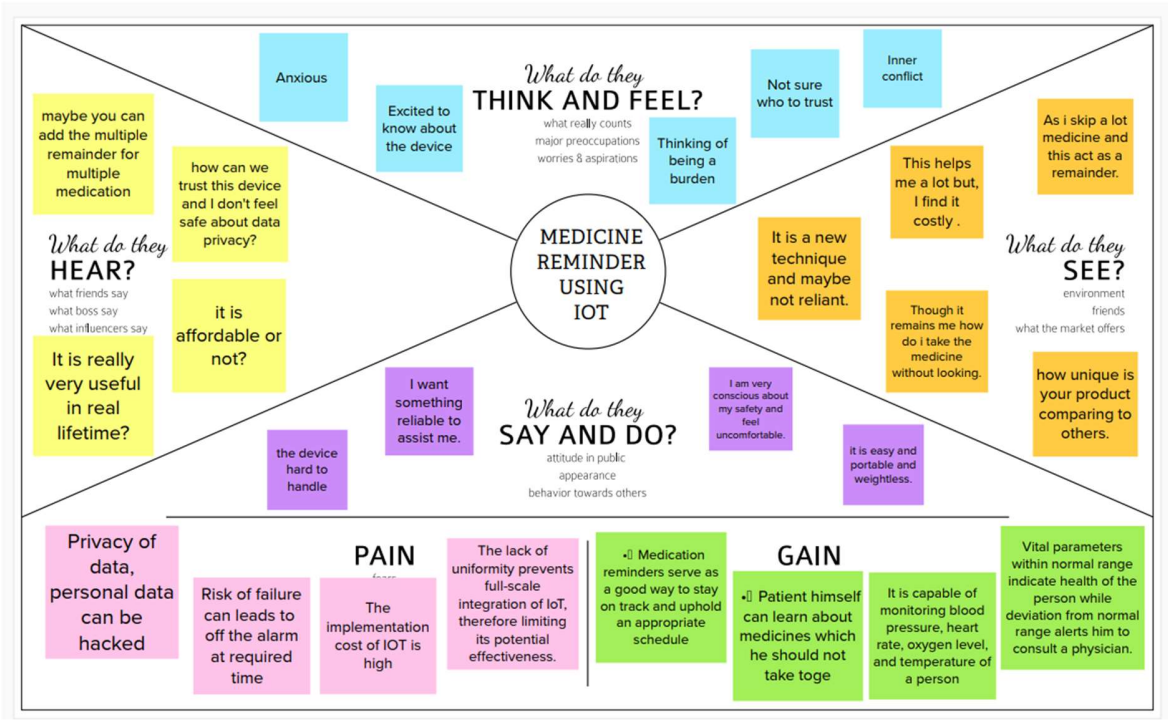


Figure 3.1 Empathy Map

3.2 IDEATION AND BRAINSTORMING

Brainstorming is a group problem-solving method that involves the spontaneous contribution of creative ideas and solutions. This technique requires intensive, freewheeling discussion in which every member of the group is encouraged to think aloud and suggest as many ideas as possible based on their diverse knowledge. We have collected ideas to proceed with the project which are mentioned in the figures (Figure 3.2) below.

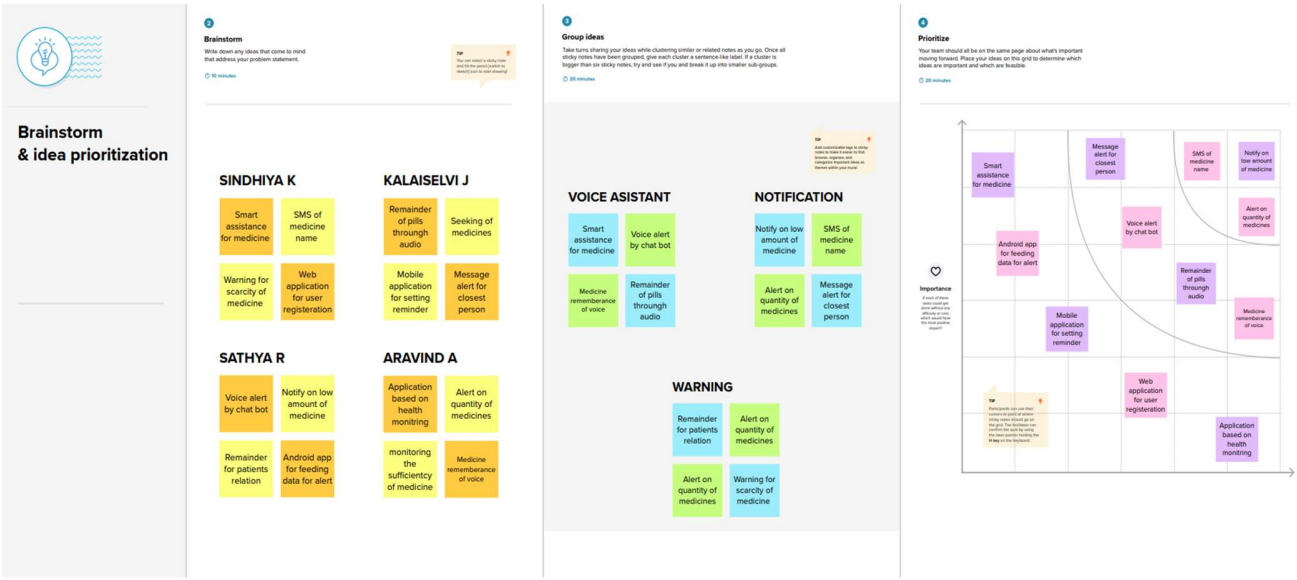
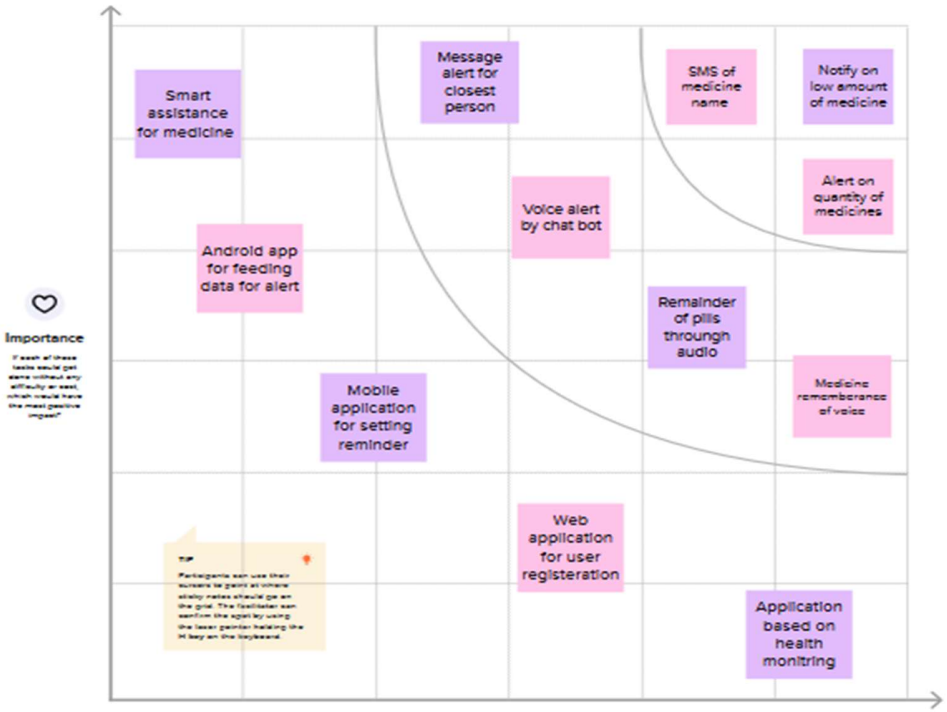


Figure 3.2 Brainstorming ideas

The final ideas decided are mentioned in the table 3.1 below.

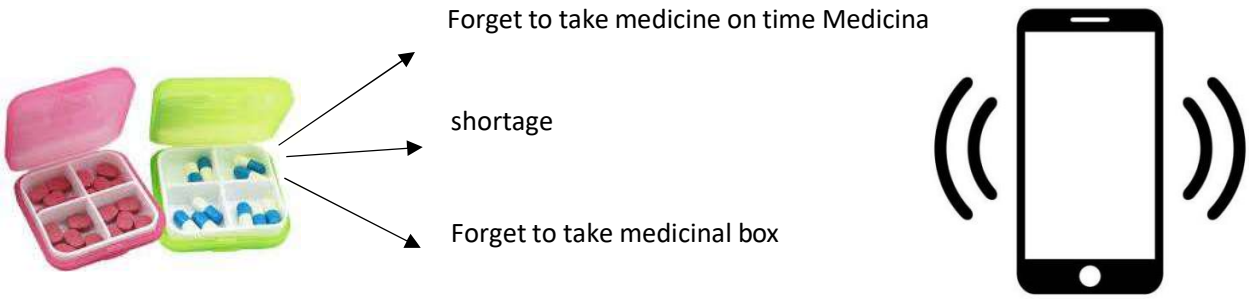
TABLE 3.2.1 BRAINSTORMED IDEAS



3.3 PROPOSED SOLUTION

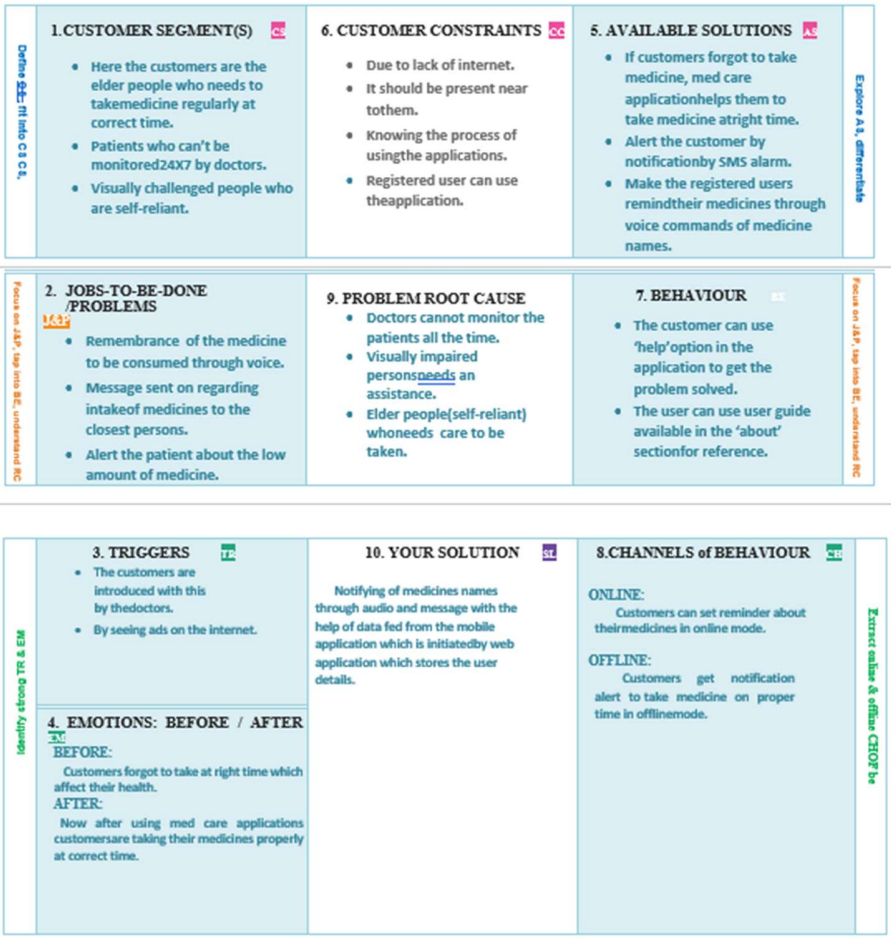
- In this modern society, many people will busy in their work schedule. Maintaining daily medication become very difficult for old people. In these days, vast number of technologies are emerging.
- In this project, we are using IOT and cloud technologies. IR sensor and Bluetooth module is used as a hardware which are used in medicinal box.
- Whenever we forget to take medicine on time and medicine shortage will be

intimated to the respective person's mobile phone through notification.



- Medicine timing with name is set to the mobile phone. If a person misses to open and take the medicine on time, notification will send to the person's mobile phone.
- The medicinal box is always connected to the mobile phone through Bluetooth. If the person forgets the box, notification will automatically send.
- The non-availability of the medicines will be checked through mobile phones alarm time.
- If there is any shortage of medicines in the medicinal box, notification will send. We are sending the notifications using IBM cloud.

3.4 PROBLEM SOLUTION FIT



CHAPTER 4
REQUIREMENT ANALYSIS

Requirements analysis is a very critical process that enables the success of a system or software project to be assessed. Requirements are generally split into two types: Functional and Non-functional requirements.

4.1 FUNCTIONAL REQUIREMENTS

Functional requirements define what a product must do, what its features and functions are. Nonfunctional requirements describe the general properties of a system. They are also known as quality attributes. Following table 4.1 represents the non-functional requirements of the proposed solution.

TABLE 4.1 FUNCTIONAL REQUIREMENTS

SOLUTION REQUIREMENTS(FUNCTIONAL & NON-FUNCTIONAL)FUNCTIONAL REQUIREMENTS:

Following are the functional requirements of the proposed solution.

Functional Requirements (Epic)	Sub Requirement (Story / Sub-Task)
1. **User Registration**	Registration through Form Registration through Gmail
2. **User Confirmation**	Confirmation via EmailConfirmation via OTP

3. **Access Cloud services**	Access the cloud service with correct credentials Store the details in the database Retrieve needed information for the user's operation
4. **IOT configuration**	Fine Tuning the IOT device based on preference Access the Cloud DB via device Manage the request and response effectively

NON-FUNCTIONAL REQUIREMENTS:

Following are the non-functional requirements of the proposed solution

Non-Functional Requirements	Description
1) **Usability**	App can be used by anyone who has operational knowledge about internet and computer.
2) **Security**	For security, TFA is enabled and biometrics are alsoadded for user safety
3) **Reliability**	Highly reliable since, It uses Trusted cloud services like IBM
4) **Performance**	Performance is better compared to other market products.
5) .**Availability**	Available on mobile app. Web version is getting ready fornext release
6) **Scalability**	Using Cloud services, makes the scalability higher the using traditional database

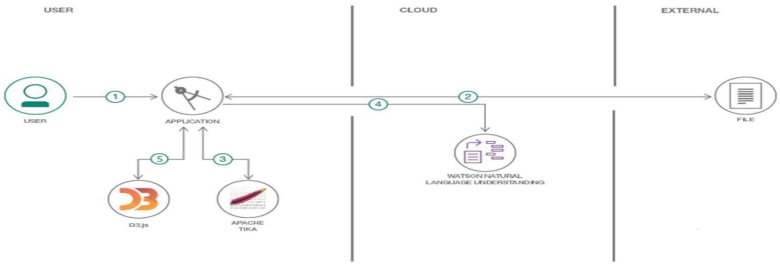
CHAPTER 5

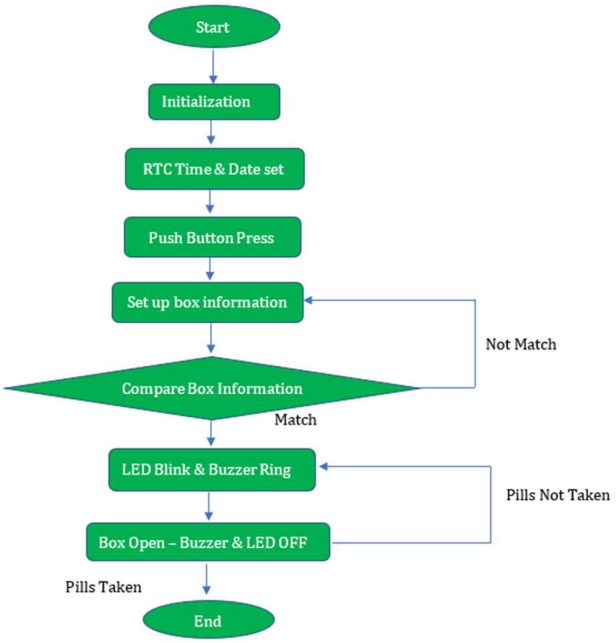
PROJECT DESIGN

5.1 DATA FLOW DIAGRAM

A data flow diagram shows the way information flows through a process or system. It includes data inputs and outputs, data stores, and the various sub processes the data moves through.

DFDs are built using standardized symbols and notation to describe various entities and their relationships. Figure 5.1 depicts the data flow diagram.

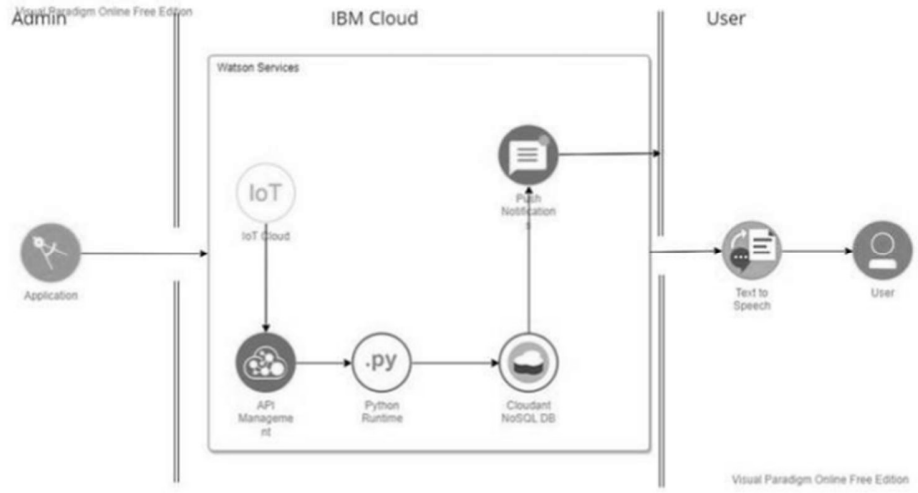




5.1 SOLUTION AND TECHNICAL ARCHITECTURE

Based on the complexity of the deployment, a solution architecture diagram may be a set of diagrams documenting various levels of the architecture. The diagram relates the information that you gather on the environment to both physical and logical choices for your architecture in an easily understood manner. The below figure 5.2 represents the solution architecture of the project.

Technical Architecture:



S. No	Component	Description	Technology
1.	User Interface	Mobile App	HTML, CSS,
			JavaScript
2.	Application Logic-1	Mobile App to enter the Medicine	Python
		Details weekly	
3.	Application Logic-2	Gets the medication data from database	IBM Watson IoT API Call data
4.	Application Logic-3	Converts the text to speech to pronunciation for the user	IBM Watson Assistant
5.	Database	Medication time and tablets name on daily and	MySQL
6.	Cloud Database	Call the data IBM Cloudant is used and user login credentials	IBM DB2, IBM Cloudant
7.	File Storage	App code and IoT credentials are stored and API keys	IBM Block Storage
8.	External API-1	To get the medicine box status Open or not	IBM box status API
9.	External API-2	To get the login credentials in IBM DB2	Username and Password API
10.	Machine Learning	To convert the text	Text to speech
	Model	into speech for voice	
		Command the tablet	
		details	
11.	Infrastructure (Server / Cloud)	To host the server and application	Cloud Foundry, Node Red

USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Senior citizen)	Caretaker	USN-1	As a user, I want to take Medicineson time and monitor my health	I want to Take Medicines On time	High	Sprint-1
Customer (Alzheimer patient)	Smart medicine box	USN-2	As a user, I want to take my tablets ontime by voice command	I want to take my tablets on time by voice command	High	Sprint-1
Customer (Mentally idled patient)	Caretaker	USN-3	As a user, my patient needs to take medicines on time and monitoring theactivity	My patient needs to take medicines on time	Medium	Sprint-2
Customer (Coma patient)	Caretaker	USN-4	As a user, my patient medication time and prescription should loadin database for upcoming week	My patient medication time and prescription should be in database list	Low	Sprint-4
Customer (Disabled people's)	Smart medicine box	USN-5	As a user, I need to take my medicine in nearby places with light notification	I need to take my medicine in nearby places with light notification	Medium	Sprint-3

CHAPTER 6

PROJECT PLANNING & SCHEDULING PHASE

This phase discusses the customer journey map, data flow, solution requirements and technological stack.

6.1 CUSTOMER JOURNEY MAP

A customer journey map is a visual picture of the customer or user journey. It helps us tell the story of our customers' experiences with your brand across social media, email, live chat, and any other channels they might use. Figure 6.1 displays the customer journey map.

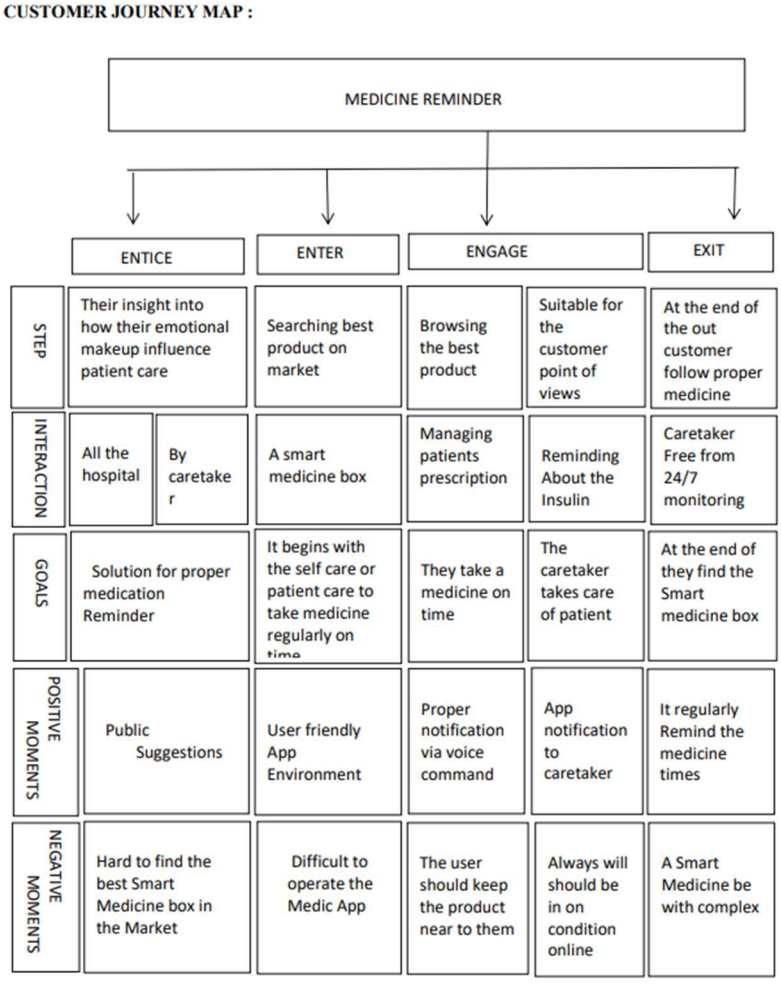


Figure 6.1 Customer Journey Map

6.1 SPRINT PLANNING AND ESTIMATION

A milestone is a specific point within a project's life cycle used to measure the progress toward the goal. Milestones in project management are used for a project's start or end date, external reviews or input, budget checks, submission of a major deliverable, etc. The following table 6.1 lists the milestone activity of the project.

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement	User Story / Task	Story points	Priority	Team Members
Sprint 1	Set Alarm	As users, we can set an alarm about the medicine to be taken via medicine reminder system.	10	High	Sindhiya K
Sprint 1		As users we can activate and deactivate the alarm according to our need.	10	High	Sathya R
Sprint 2	Notification	As user once we set the alarm we should get the notification that the alarm has been set.	10	High	Kalaiselvi
Sprint 2		As users we can also notify the system that the alarm has been set.	10	High	Aravind
Sprint 3	Medication Detail	As users, we may have several medications each day so we can separate the pills according to the corresponding day..	10	High	Sindhiya K
Sprint 3		As users, between setting an alarm and using a pillbox. They'll be able to stay on top of your medications and not miss the dose.	5	Low	Sindhiya, Sathya, Kalaiselvi
Sprint 3		As a user, I can store the name of the medicine with its description.	10	High	Sindhiya, Kalaiselvi
Sprint 4	GPS Tracking	As a user, they can also help large hospitals and clinics manage their inventory more effectively	5	Low	Sathya, Kalaiselvi, Aravind

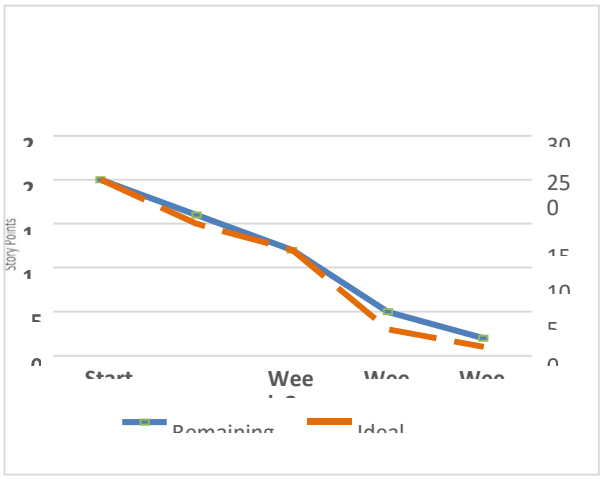
	Sensor	As users ,they used for keeping the record in medicine details the reminding the schedule of medicine. We have used the IoT enabled Arduino device for monitoring the System.	10	High	Sindhiya, Sathya,

Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint 1	20	8 days	29-10-2022	5-11-2022	20	4-11-2022
Sprint 2	10	8 days	7-11-2022	14-11-2022	10	13-11-2022
Sprint 3	20	8 days	16-11-2022	23-11-2022	20	23-11-2022
Sprint 4	10	8 days	23-11-2022	30-11-2022	10	30-11-2022

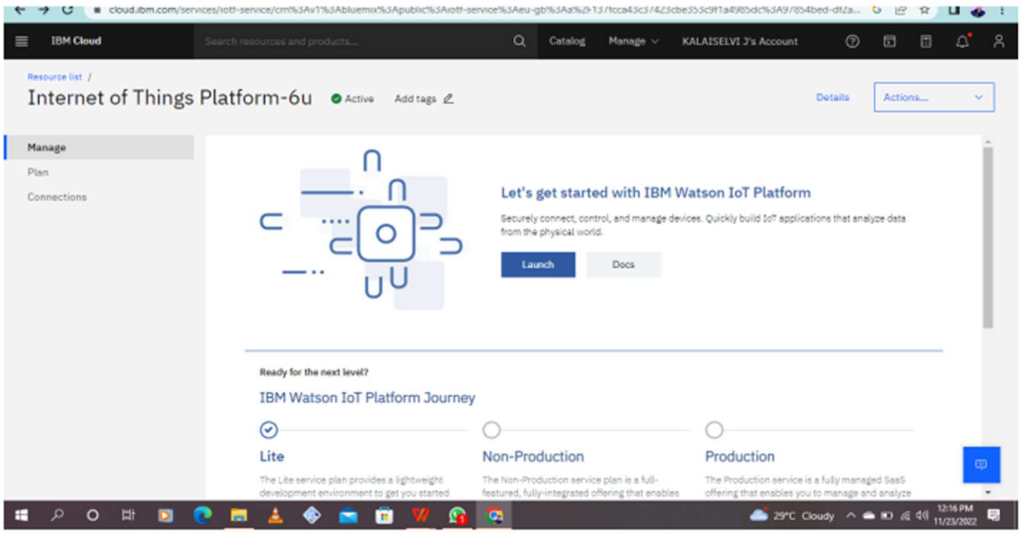
Velocity: . Let's calculate the team's average velocity (AV) per iteration unit (storypoints per day).

SPRINT 1: AV = Velocity / Sprint Duration
= 20 / 8 = 2.5
SPRINT 2: AV =10 / 8 = 1.25
SPRINT 3: AV =20 / 8 = 2.5
SPRINT 4: AV =10 / 8 = 1.25

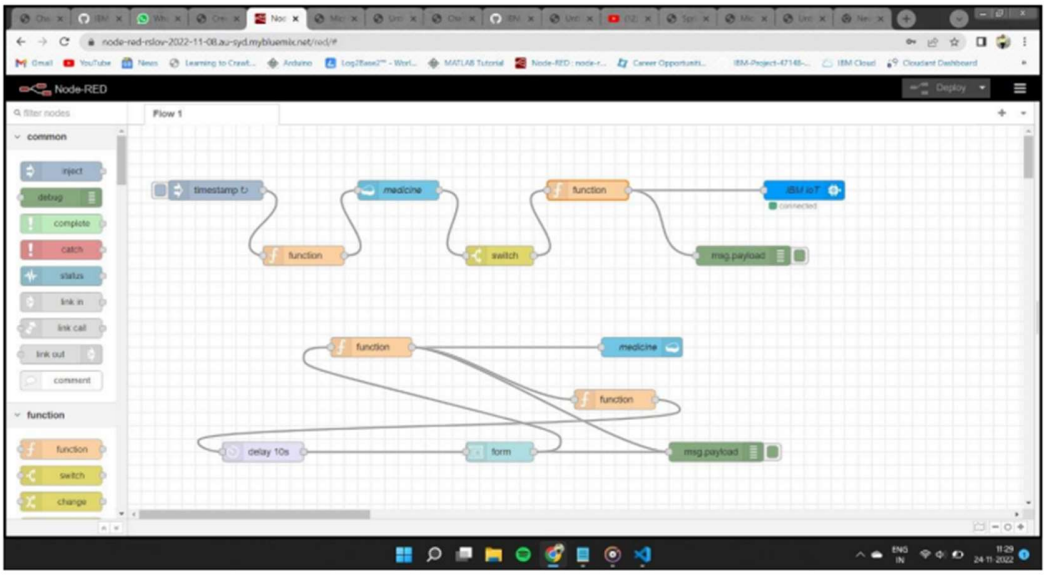


SPRINT-1

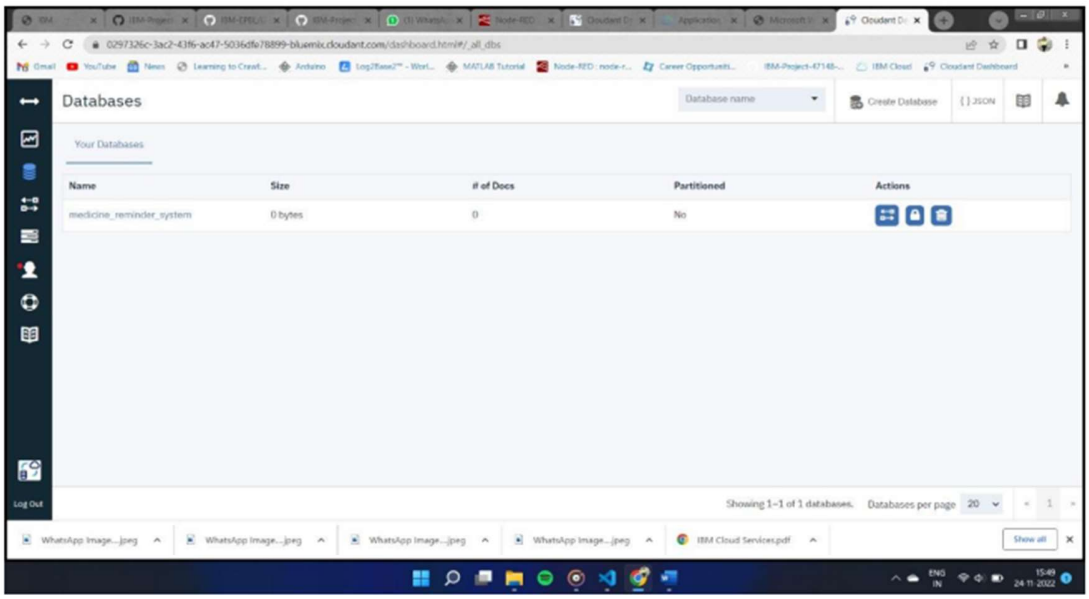
1. Creating IBM Watson IOT Platform and Device



2. Creating NODE-RED Service

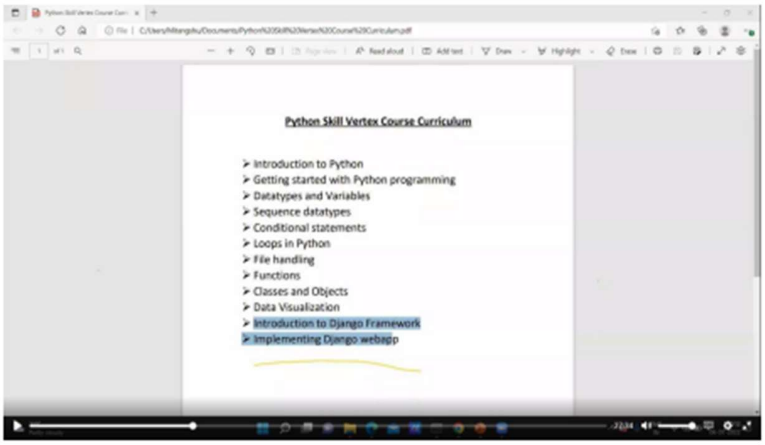


3. Creating a Database in Cloudent DB

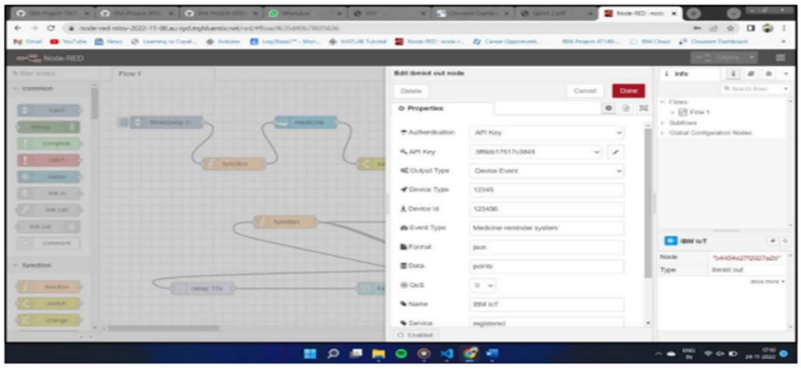


SPRINT-2

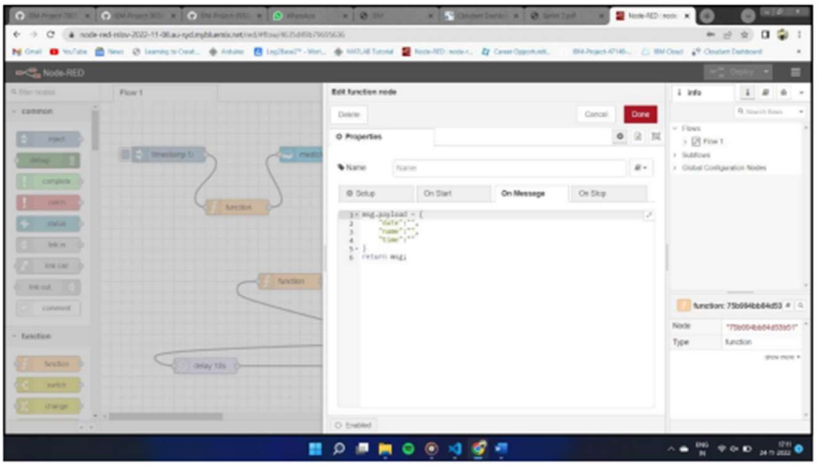
1. Create a Form using Node-red to get the Medicine Details :



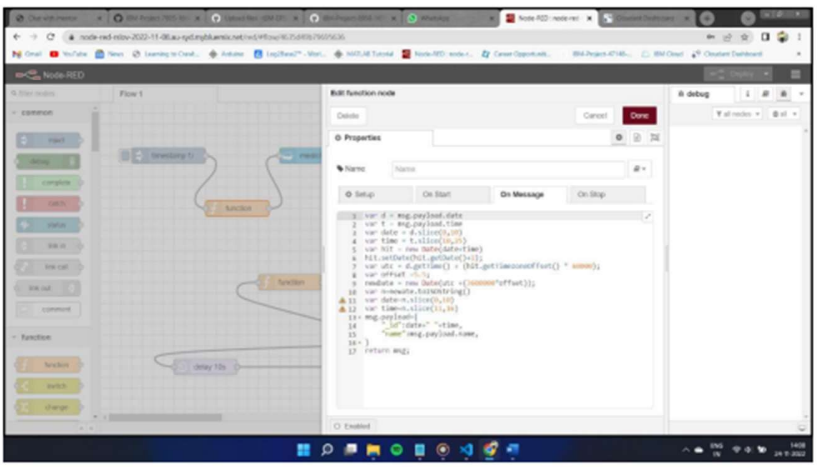
2. Adding IBM IoT Credentials to connect with virtual devices



3. Function to Store the Medicine datas in Json format

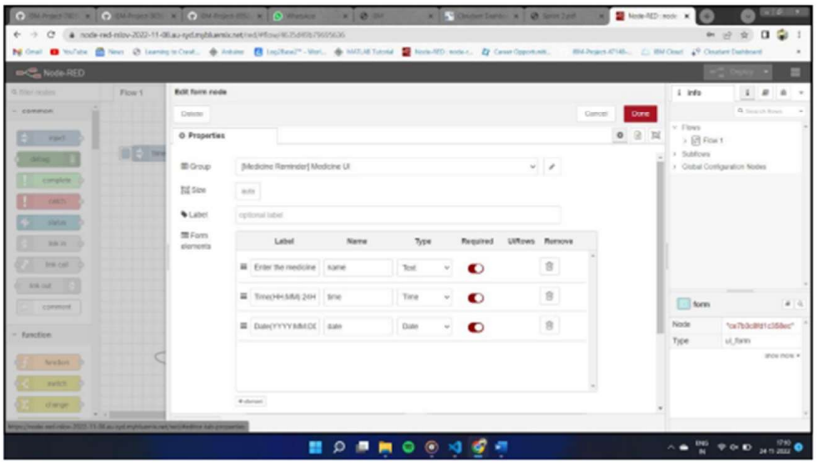


4. Compare the Present time with Stored time in cloudant



5. Form to Get the User Datas

6. After getting the datas from form, store it in cloudant Database



SPRINT-3

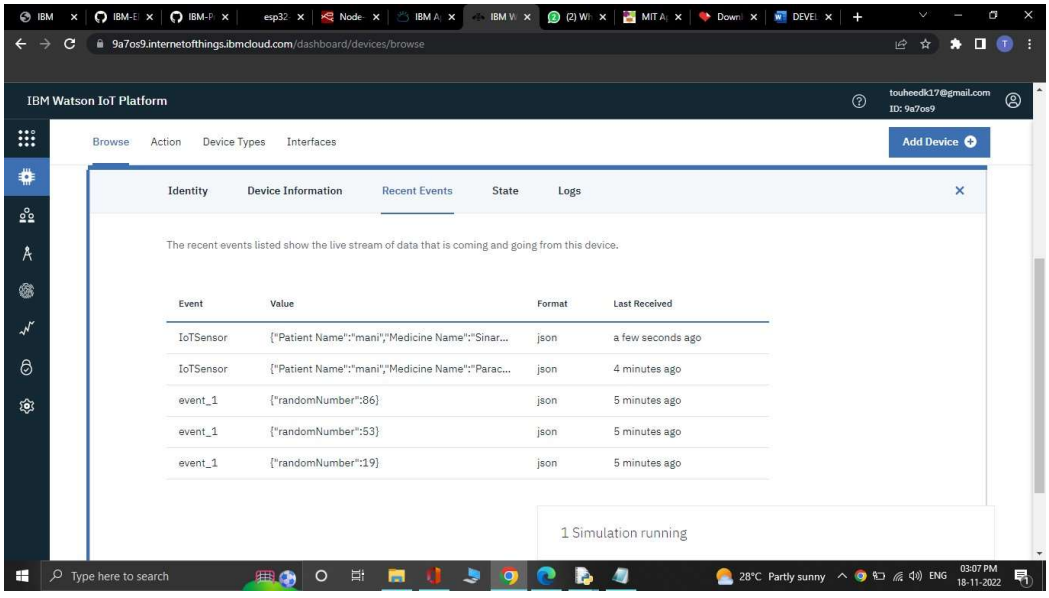
```
import json
import
wiotp.sdk.device
import time
import random

myConfig = {
   "identity": {
```

```
        "orgId":
        "mni3qc",
        "typeId":
        "medicine",
        "deviceId":
        "123456"
      },
      "auth": {
        "token": "paul@123"
      }
}
client = wiotp.sdk.device.DeviceClient(config=myConfig,
logHandlers=None)client.connect()

for i in range(0,20):
   tablet=["Paracetamol","Aspirine","Azithral","Asthalin","Sinarest"
   ] medicinetime=[12.00,1.00,2.00,3.00,5.00,18.00,20.00,7.00]
   name = "mani"
   medicine=random.choice(tablet)
   medicinetime=random.choice(medicineti
   me)
   mydata = {'Patient  Name': name, 'Medicine Name': medicine, 'Time':
   medicinetime}client.publishEvent("IoTSensor", "json", data=mydata, qos=0,
   onPublish=None) print("Data published to IBM IOT platform :", mydata)
   time.sleep(5)
client.disconne
ct()
```


Python 3.7.4 Shell
File Edit Shell Debug Options Window Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul 8 2019, 20:34:20) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:\Users\91637\Downloads\temp.py ==========
2022-11-16 15:50:06,267 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:mni3qc:medicine:123456
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Asthalin', 'Time': 5.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Azithral', 'Time': 12.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Sinarest', 'Time': 12.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Azithral', 'Time': 18.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Aspirine', 'Time': 1.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Aspirine', 'Time': 5.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Paracetamol', 'Time': 20.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Azithral', 'Time': 12.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Asthalin', 'Time': 12.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Sinarest', 'Time': 1.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Asthalin', 'Time': 5.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Aspirine', 'Time': 12.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Sinarest', 'Time': 1.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Sinarest', 'Time': 5.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Sinarest', 'Time': 20.0}
Data published to IBM IOT platform : {'Patient Name': 'mani', 'Medicine Name': 'Paracetamol', 'Time': 2.0}


9a7os9.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
touheedk17@gmail.com
ID: 9a7os9
Browse
Action
Device Types
Interfaces
Add Device
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
IoTSensor
{"Patient Name":"mani","Medicine Name":"Sinar...
json
a few seconds ago
IoTSensor
{"Patient Name":"mani","Medicine Name":"Parac...
json
4 minutes ago
event_1
{"randomNumber":86}
json
5 minutes ago
event_1
{"randomNumber":53}
json
5 minutes ago
event_1
{"randomNumber":19}
json
5 minutes ago
1 Simulation running
Type here to search
28°C Partly sunny
ENG
03:07 PM
18-11-2022

SPRINT-4

CODE:

```
#include <WiFi.h> //library for wifi #include
<PubSubClient.h> //library for MQtt#include
<LiquidCrystal_I2C.h>
#include "DHT.h"// Library for dht11
#define DHTPIN 15// what pin we're connected to
#define DHTTYPE DHT11// define type of sensor DHT
11#define LED 2
DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of
    dht connected void callback(char* subscribetopic, byte* payload, unsigned int
    payloadLength);


//-------credentials of IBM Accounts------

#define ORG "64yf7x"//IBM ORGANITION ID
#define DEVICE_TYPE "b11m3edevicetype"//Device type mentioned in ibm
watsonIOT Platform
#define DEVICE_ID "b11m3edeviceid"//Device ID mentioned in ibm watson IOT
Platform
#define TOKEN "-&EMtr7l-v-
Gz2G))e"//TokenString data3=""; int buzz=
13;
//-------- Customise the above values --------
    char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server
    Name char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type
    of event perform and format in which data to be send char subscribetopic[] =
    "iot-2/cmd/command/fmt/String";// cmd REPRESENT command type AND
    COMMAND ISTEST OF FORMAT STRING char authMethod[] = "use-
    token-auth";// authenticationmethod char token[] = TOKEN;
```

```
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client
idLiquidCrystal_I2C lcd(0x27,16,2);
//      ------------------------------------_

WiFiClient wifiClient; // creating the instance for wificlient PubSubClient
client(server, 1883, callback ,wifiClient); //calling the

predefined client id by passing parameter like server id,portand
wificredential

     void setup()// configureing the
    ESP32
{

    Serial.begin(115200);
    dht.begin();pinMode(buzz,
    OUTPUT);
    pinMode(LED,OUTPUT);

     delay(10);
     Serial.println();
     wificonnect();
     mqttconnect();

     }   void loop()// Recursive
     Function
{          if (!client.loop())
     {       mqttconnect();
        }
}

/*.....retrieving to
Cloud.....*/
void PublishData(float temp, float humid)
    { mqttconnect();//function call for connecting to ibm
}
void mqttconnect()
       {
      if (!client.connected())
    {
```

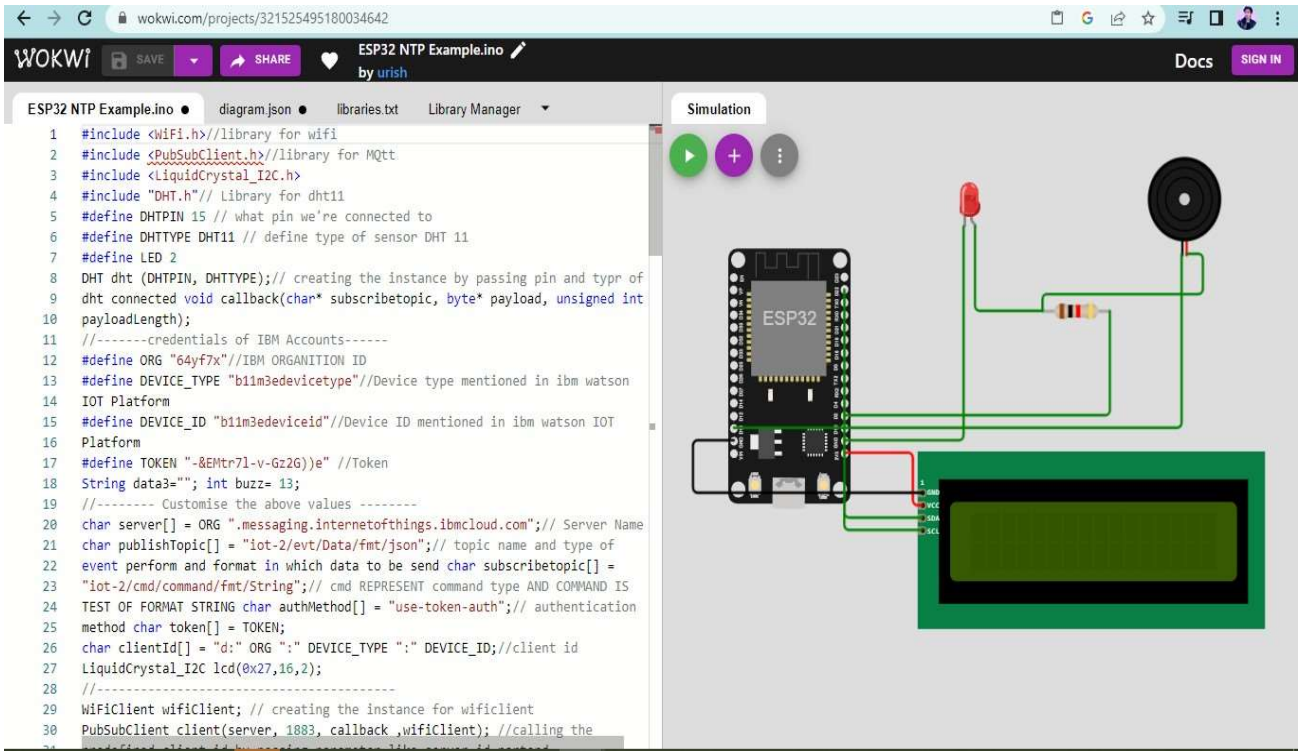
```
        Serial.print("Reconnecting client to ");
        Serial.println(server);
        while (!!!client.connect(clientId, authMethod, token)
        ) {
      Serial.print(".");
      delay(500);
}
initManagedDevice();
      Serial.println();
} }
       void wificonnect() //function defination for
    wificonnect
{

      Serial.println();
    Serial.print("Connecting to ");
     WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish
    the connection
while (WiFi.status() != WL_CONNECTED)
{delay(500);
      Serial.print(".");
}
       Serial.println(""); Serial.println("WiFi
       connected");Serial.println("IP address: ");
       Serial.println(WiFi.localIP());
}
     void
    initManagedDevice()
    {
     if (client.subscribe(subscribetopic)) {
     Serial.println((subscribetopic));
     Serial.println("subscribe to cmd OK");
}
else {
Serial.println("subscribe to cmd FAILED");
```

```
}
    }
    void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength)
    {
    Serial.print("callback invoked for topic: ");
    Serial.println(subscribetopic);
    for (int i = 0; i < payloadLength; i++) {
    //Serial.print((char)payload[i]);
    data3
    += (char)payload[i];
    }
    Serial.println("Medicine Name: "+
data3);if(data3 != "")
    {
    cd.init(); lcd.print(data3);
    digitalWrite(LED,HIGH);
    tone(buzz, 100, 1000);

     delay(2000);
    digitalWrite(LED,LOW);
    noTone(buzz);
    delay(1000);
    }
    else
    {
   digitalWrite(LED,LOW);
     }
    data3="";
    }
```

OUTPUT:


wokwi.com/projects/321525495180034642
WOKWI
SAVE
SHARE
ESP32 NTP Example.ino
by urish
Docs
SIGN IN
ESP32 NTP Example.ino
diagram.json
libraries.txt
Library Manager
Simulation
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#include <LiquidCrystal_I2C.h>
#include "DHT.h"// Library for dht11
#define DHTPIN 15 // what pin we're connected to
#define DHTTYPE DHT11 // define type of sensor DHT 11
#define LED 2
DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of
dht connected void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//-------credentials of IBM Accounts------
#define ORG "64yf7x"//IBM ORGANITION ID
#define DEVICE_TYPE "b11m3edevicetype"//Device type mentioned in ibm watson
IOT Platform
#define DEVICE_ID "b11m3edeviceid"//Device ID mentioned in ibm watson IOT
Platform
#define TOKEN "-&EMtr7l-v-Gz2G))e" //Token
String data3=""; int buzz= 13;
//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of
event perform and format in which data to be send char subscribetopic[] =
"iot-2/cmd/command/fmt/String";// cmd REPRESENT command type AND COMMAND IS
TEST OF FORMAT STRING char authMethod[] = "use-token-auth";// authentication
method char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
LiquidCrystal_I2C lcd(0x27,16,2);
//--
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the
ESP32

CHAPTER 10
ADVANTAGES AND DISADVANTAGES

ADVANTAGES

- The designed medical reminder system makes medical facilities more attractive.
- It minimizes losses by being able to arrange reminders and reminding the users exactly at the specified time intervals.
- The user can add all the medicine details at once. They don't need to direct to the medicine entry page after every medicine detail entry.
- Voice based reminders make it more comfortable and efficient for the users.
- The users get reminded of the medicines to be taken before and after 30 minutes of the specified time interval, which makes the system performance effective and attractive.
- In case, if any details are entered wrongly, they can delete the medicine data or if any detail is missed in the registration or medicine entry page, they will be notified that they have missed a field to enter.

DISADVANTAGES

- There is the chance where this proposed system will require certain skill sets in particular in order to understand and operate the equipment. In the case of equipment computer-based intelligence for running the devices, it is highly unlikely that a normal user will be able to possess this knowledge or even develop them.
- And also this system needs availability of internet continuously. Rural parts of most of the developing countries do not fulfill this requirement. Moreover, internet connection is slower.

CHAPTER 11
CONCLUSION

Many Medication Reminder Systems have been developed on different platforms. Many of these systems require special hardware devices to remind the patients about the medicine in-take timings. Purchasing new hardware devices becomes costly and more time and money consuming. So, in the given work an attempt has been made to implement a system which is economical, easily accessible and improves medication adherence. Medication non-adherence reducesthe effectiveness of a treatment and imposes a financial burden on health care systems.

In the proposed solution, patients will get the schedule of medicine in-take time with medicine description, dosage level and timely reminders through voice commands (Text to Speech Service). The scheduled reminder will arise for medicines in intervals of thirty minutes before and after and makes the user get alerted of his/her medicine intake.

CHAPTER 12
FUTURE SCOPE

The system could be furthermore improved in a number of ways. During the login process, an OTP could be sent to the email address entered by the user in order to enable more security and authentication. And, a weekly or a monthly report could be generated such that the users, doctors or the caretakers could know the status and the progress of the medicine intake. Based upon this further improvements could be made. Also, in future, this system could be focused on interaction between patients and doctors through video calling and secure prescription.

REFERENCES

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2. Sultan Ahmad, Mahamudul Hasan, Gouse Pasha Mohammed, Mohammad Shahabuddin, Tasnia Tabassum, Mustafa Wasif Allvi, 2020, "IoT Based Pill Reminder and Monitoring System", IJCSNS International Journal of Computer Science and Network Security, VOL.20, PP.No.7.
3. J. Kanhasinwattana, N. Yawila, T. Tithada and C. Kamyod, 2020, "Smart Pill Box System for Bipolar Disorder Patients," Joint International Conferenceon Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON), 2020, pp. 54-57.
4. Pranit Chaple, Vivek Ambekar, Rohan Dhanawade, Radha Gandhi, Geetha Chillarge, 2018, "Smart Pill Box", International Journal of Emerging Technologies and Innovative Research, Vol.5, Issue 12, pp.613-615, ISSN:2349-5162.
5. Diaa Salama Abdul Minaam, Mohamed Abd-ELfattah, 2018, "Improving healthcare using Smart Pill Box for Medicine Reminder and Monitoring System", Future Computing and Informatics Journal, Volume 3, Issue 443-456, ISSN 2314-7288.