



# **ANNA UNIVERSITY REGIONAL CAMPUS MADURAI**

## **IBM PROJECT**

### **PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF RELIANT**

**EXECUTED BY:**



**Batch : B1-1M3E**

**Team id : PNT2022TMID47501**

**Team leader : VIVINA ANGELINE A**

**Team members : SABARI MUKTHEESWARAN A  
VAISHNAVI R  
SATHISHKUMAR K**

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## **1. INTRODUCTION:**

### **1.1.PROJECT OVERVIEW:**

This project helps for the patient to take medicine at correct time.sometimes elderly people forget to take their medicine at the correct time,they also forget which medicine he/she should take at the particular time and it is difficult for doctors/caretakers to monitor the patients around the clock.to avoid these kind of problems.medicine reminder system is developed.

### **1.2.PURPOSE:**

The main purpose of this system is to remind the medicine name to the patient at the correct a time by sending voice command through iot device/mobile phone.

## **2. LITERATURE SURVEY:**

### **2.1.EXISTING PROBLEM:**

Patients who are suffering to identify their daily medicines due to their carelessness which causes health issues in their body and damage internal organs .by forgetting their medicines they risk their life in danger.

### **2.2.REFERENCES:**

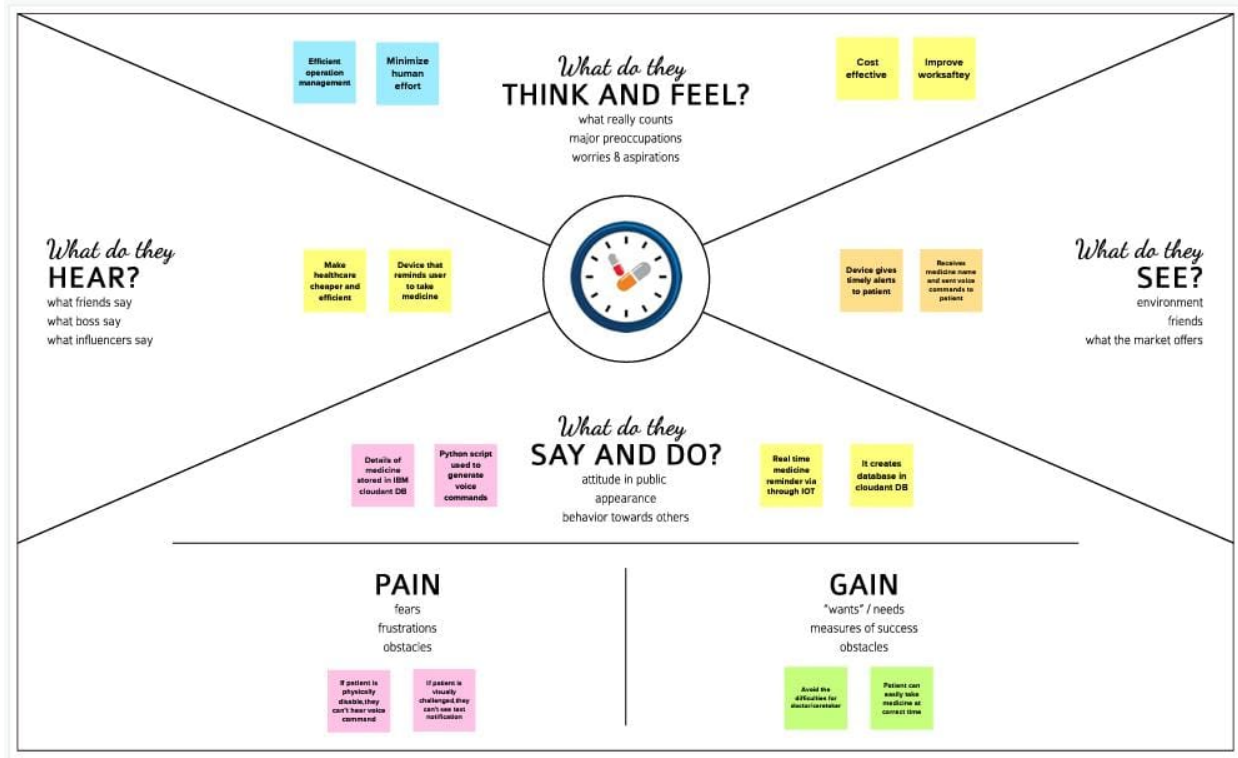
Andreas Handojo, Tioe Julio Adrian Sutiono, Anita Nathania  
Purbowo, Metin Berke Yelaldi, Veliyullah Öztürk, Anıl Gün, Berke Küçüksağır, Alim Kerem Erdoğan, Uğur Yayan, Rifat Edizkan, Sawsan M. Mahmoud, Hesham A. Alabbasi, Tawfiq E. Abdulabbas, Rainer Lutze, Klemens Waldhör

### **2.3.PROBLEM STATEMENT DEFINITION:**

When elders forgot to take their medicine that causes health issues.we can overcome this problem by help of this medicine reminder system by sending medicine name to their mobile phone through voice command.

### 3.IDEATION&PROPOSED SOLUTON:

#### 3.1.EMPATHY MAP CONVAS:



### 3.2. IDEATION AND BRAINSORMING

#### VIVINA ANGELINE A

It should also contain audio via reminder.(for blind people)

To keep track of their medication regimens or appointments

It should be operated in offline mode also

Application should alert to refill the medicine

#### SABARI MUKTHEESWARAN A

It should be implemented in smart watch or other wearable devices

It should also remind to take water, to rest, to walk, etc.

In abnormal health situation smart watch should auto-dial Emergency contact

Reminding of medicine before or after food

#### SATHISHKUMAR K

Easiest way to keep reminder on Android phone is to use google assistant

The application should include digital calendar

For instance, let's say you have to take medication in the morning

Set medication reminders once and it should be up to date

#### VAISHNAVI R

Medicine name ,Strength ,dose should be displayed

Medicine should have QR codes which should have medicine information

"Mood-aware" IoT devices should be implemented

It should remind the time to take medicine. Customer requirements should full filled

### 3.3. PROPOSED SOLUTION:

| S. No. | Parameter                                | Description   |
|--------|--|---|
| 1.     | Problem Statement (Problem to be solved) | 1. To remind seniors medicine on time.  |
| 2.     | Idea / Solution description              | 1. By reminder application  |
| 3.     | Novelty / Uniqueness                     | 1. Senior will get the reminder not only through the SMS but also by voice command.   |
| 4.     | Social Impact / Customer Satisfaction    | 1. Seniors can take the medicine on time  |
| 5.     | Business Model (Revenue Model)           | 1. It is cost effective.<br>2. The model you choose depends on your target audience , business goals , and the resources you already possess                  |
| 6.     | Scalability of the Solution              | 1. As the device is integrated with IBM cloud software , we can update the user experience without reinstalling a device by updating their medicine schedule. |

### 3.4.PROBLEM SOLUTION FIT:

|   |   |   |   |                                   |
|---|---|---|---|-----------------------------------|
| Define CS, fit into CL                  | <b>1. CUSTOMER SEGMENT(S)</b> <b>CS</b><br><br>The industrialists who use gases for their manufacturing.  | <b>6. CUSTOMER LIMITATIONS</b> <small>EG. BUDGET, DEVICES</small> <b>CL</b><br><br>Efficient/valuable cost for their intake in medicines by reminding their medicines.                      | <b>5. AVAILABLE SOLUTIONS</b> <small>PLUSSES &amp; MINUSES</small> <b>AS</b><br><br>By this applications they can be relaxed by taking their medicines/drugs at correct time and correct medicine.  | Explore AS, differentiate         |
|   | <b>2. PROBLEMS / PAINS</b> <small>+ ITS FREQUENCY</small> <b>PR</b> <ul style="list-style-type: none"><li>Elders who are suffering to identify their daily medicines, due to their carelessness.</li><li>Patients who are risk to remember their medicines/drugs.</li></ul> | <b>9. PROBLEM ROOT / CAUSE</b> <b>RC</b><br><br>When the Elders/Patients forgot to take their medicine/drugs at the time that causes severe damage in their internal organs and their body. | <b>7. BEHAVIOR</b> <small>+ ITS INTENSITY</small> <b>BE</b> <ul style="list-style-type: none"><li>Before ages there are peoples who are appointed to remind them by taking medicines at the time.</li><li>By forgetting their medicines they risk their life in danger.</li></ul> |                                   |
| Focus on PR, tap into BE, understand RC | <b>3. TRIGGERS TO ACT</b> <b>TR</b><br><br>This may leads to a wrong/other intake medicine/drugs that may cause several diseases.   | <b>10. YOUR SOLUTION</b> <b>SL</b><br><br>To develop an application that reminds their medicine at the time.  | <b>8. CHANNELS of BEHAVIOR</b> <b>CH</b><br><br>Promoting through social media. With the help of social media entrepreneurs/influencer.   | Extract online & offline CH of BE |
|   | <b>4. EMOTIONS</b> <small>BEFORE / AFTER</small> <b>EM</b><br><br><b>Before:</b> They risk their life by taking different medicines/drugs.<br><b>After:</b> increase their confidence by reminding their medicines.   |   | <b>OFFLINE</b><br><br>Through newspaper advertisements.   |                                   |
| Identify strong TR & EM                 |   |   |   |                                   |



## 4.REQUIREMENT ANALYSIS:

### 4.1 FUNCTIONAL REQUIREMENTS:

| FR No. | Functional Requirement (Epic)          | Sub Requirement (Story / Sub-Task)   |
|--------|--|--|
| FR-1   | Patient/User Registration              | Registration through Form<br>Registration through Gmail  |
| FR-2   | User Confirmation                      | <b><u>For Hospital Administration:</u></b><br>Confirm through the authorised card or identity of the hospital<br><b><u>For Individual:</u></b><br>Confirmation via Email<br>Confirmation via OTP |
| FR-3   | Patient/User Medical Detail Submission | Enter the Prescription/Medicine details in the Cloud Services (IBM Cloud, Drive)   |
| FR-4   | Set Patient/User Desired Time          | Enter the desired time in the application for which it gives reminder through text/speech  |

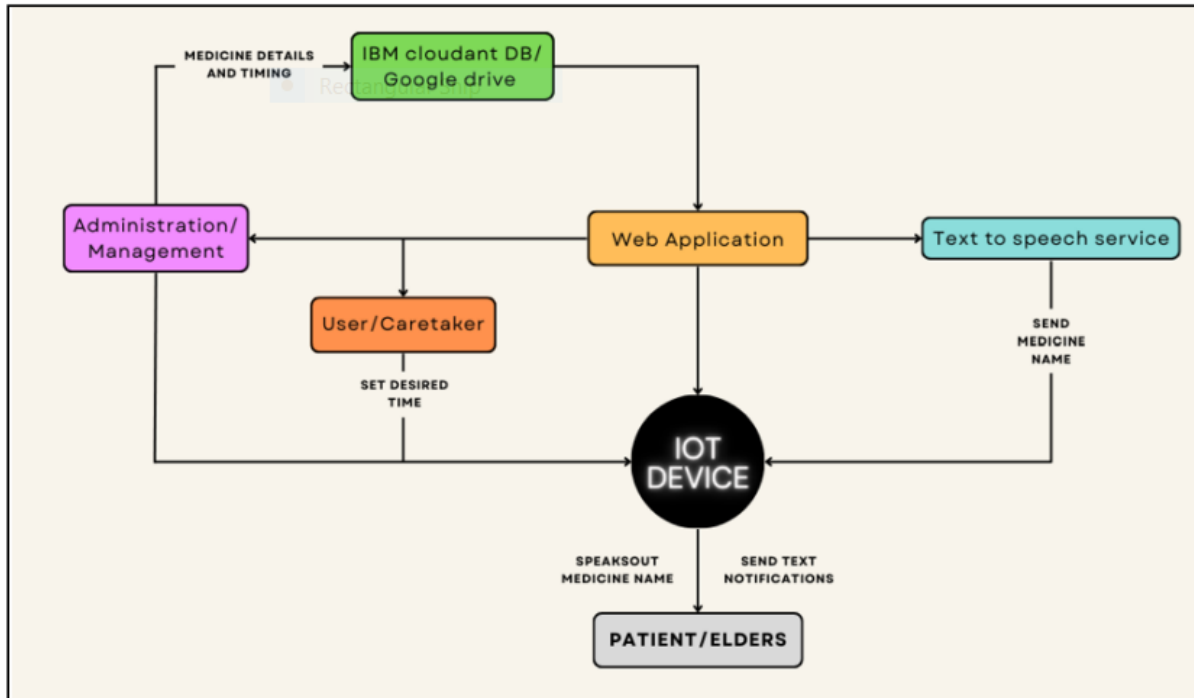
### 4.2 NON-FUNCTIONAL REQUIREMENTS:

| FR No. | Non-Functional Requirement | Description   |
|--------|----------------------------|---|
| NFR-1  | <b>Usability</b>           | This Application/Device will be useful for literates/illiterates  |
| NFR-2  | <b>Security</b>            | Data entered will be secured through data synchronization and it is secured by giving username and password |
| NFR-3  | <b>Reliability</b>         | More reliable when compared with other Apps/Devices   |
| NFR-4  | <b>Performance</b>         | Performance will be better and useful to the users compared to other products                               |
| NFR-5  | <b>Availability</b>        | Available on mobile app. Web version is getting ready for next release. Prototype is on-progress            |
| NFR-6  | <b>Scalability</b>         | Once the data is uploaded, it won't be erased until the next data is uploaded                               |

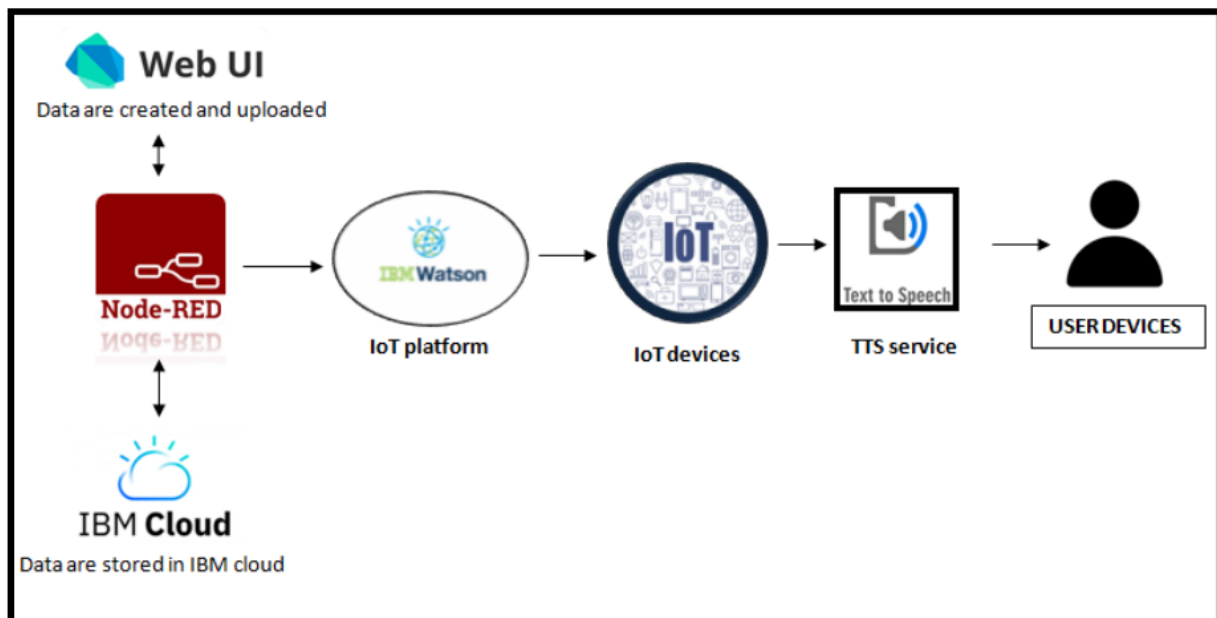
## 5.PROJECT DESIGN:

### 5.1.DATA FLOW DIAGRAM:

Data flow diagram:



### 5.2.SOLUTION AND TECHNICAL ARCHITECTURE:



## 6.PROJECT PLANNING AND SHEDULING:

### 6.1 SPRINT PLANNING AND ESTIMATION:

| Sprint   | Functional Requirement (Epic) | User Story Number | User Story / Task   | Story Points | Priority | Team Members  |
|----------|-------------------------------|-------------------|---|--------------|----------|---|
| Sprint-1 |                               | US-1              | Create the IBM Cloud services which are being used in this project.   | 6            | High     | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |
| Sprint-1 |                               | US-2              | Configure the IBM Cloud services which are being used in completing this project.   | 4            | Medium   | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |
| Sprint-1 |                               | US-3              | IBM Watson IoT platform acts as the mediator to connect the web application to IoT devices, so create the IBM Watson IoT platform.  | 5            | Medium   | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |
| Sprint-1 |                               | US-4              | In order to connect the IoT device to the IBM cloud, create a device in the IBM Watson IoT platform and get the device credentials. | 5            | High     | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |
| Sprint-2 |                               | US-1              | Configure the connection security and create API keys that are used in the Node-RED service for accessing the IBM IoT Platform.     | 10           | High     | Vaishnavi R,<br>Sabari Muktheeswaran A  |
| Sprint-2 |                               | US-2              | Create a Node-RED service.  | 10           | High     | Vaishnavi R,<br>Sabari Muktheeswaran A  |
| Sprint-3 |                               | US-1              | Develop a APPLICATION that reminds elders to take their medicines.  | 7            | High     | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |
| Sprint-3 |                               | US-2              | After that upload the information to the device that reminds them to take their medicine  | 5            | Medium   | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |

|          |  |      |   |    |      |   |
|----------|--|------|---|----|------|---|
| Sprint-3 |  | US-3 | Publish Data to The IBM Cloud   | 8  | High | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |
| Sprint-4 |  | US-1 | Create Web UI in Node- Red  | 10 | High | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |
| Sprint-4 |  | US-2 | Configure the Node-RED flow to receive data from the IBM IoT platform and also use Cloudant DB nodes to store the received sensor data in the cloudant DB | 10 | High | Vivina Angeline A,<br>Sabari Muktheeswaran A,<br>Vaishnavi R,<br>Sathishkumar K |

## 6.2.SPRINT DELIVERY SHCEDULE:

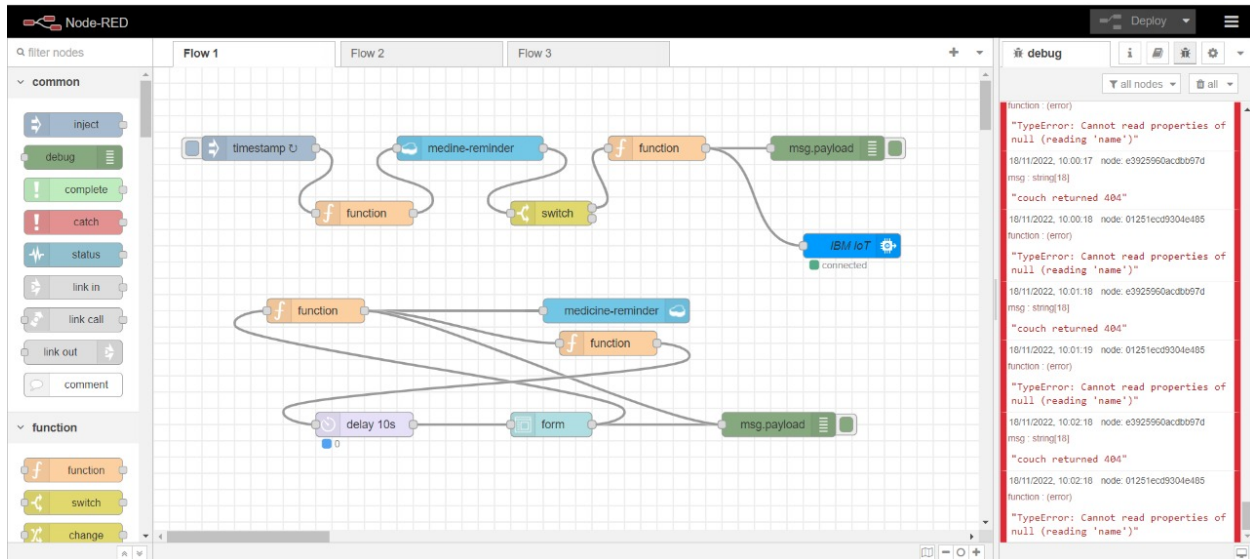
| Sprint   | Total Story Points | Duration | Sprint Start Date | Sprint End Date (Planned) | Story Points Completed (as on Planned End Date) | Sprint Release Date (Actual) |
|----------|--------------------|----------|-------------------|---------------------------|---|------------------------------|
| Sprint-1 | 20                 | 6 Days   | 24 Oct 2022       | 29 Oct 2022               | 20  | 29 Oct 2022                  |
| Sprint-2 | 20                 | 6 Days   | 31 Oct 2022       | 05 Nov 2022               | 20  | 05 Nov 2022                  |
| Sprint-3 | 20                 | 6 Days   | 07 Nov 2022       | 12 Nov 2022               | 20  | 12 Nov 2022                  |
| Sprint-4 | 20                 | 6 Days   | 14 Nov 2022       | 19 Nov 2022               | 20  | 19 Nov 2022                  |

## 6.3.REPORTS FROM JIRA:

### [REPORT FROM JIRA REGARDING SPRINT DELIVERY](#)

## 7.CODING AND SOLUTIONING:

### 7.1.FEATURE 1(NODE RED OUTPUT)



The screenshot shows the Node-RED web interface with the 'Edit form node' dialog open. The dialog has a 'Delete' button, 'Cancel', and 'Done' buttons. The 'Properties' section shows the group name '[Medicine ] Medicine Reminder', size 'auto', and an optional label. The 'Form elements' section contains a table with three rows of form elements.

| Label              | Name | Type | Required                            | UIRows | Remove |
|--------------------|------|------|-------------------------------------|--------|--------|
| Enter the Medicine | name | Text | <input checked="" type="checkbox"/> |        |        |
| Time(HH-MM)24Hr    | time | Time | <input checked="" type="checkbox"/> |        |        |
| Date(DD-MM-YYYY)   | date | Date | <input checked="" type="checkbox"/> |        |        |

At the bottom of the dialog, there is a checkbox labeled 'Enabled'.

The 'debug' console on the right shows the same error messages as the first screenshot: 'TypeError: Cannot read properties of null (reading 'name')' and 'couch returned 404'.

## 7.2.FEATURE 2(PYTHON CODE OUTPUT):

```
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/Latha/Desktop/name.py =====
2022-11-17 19:55:27,840 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:qq2hy2:VSVS_DEVICETYPE:vsvs7501
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Vicks', 'Time': 2.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Aspirine', 'Time': 18.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Paracetamol', 'Time': 20.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Dolo 650', 'Time': 7.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Insulin', 'Time': 2.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Dolo 650', 'Time': 12.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Paracetamol', 'Time': 18.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Paracetamol', 'Time': 20.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Aspirine', 'Time': 18.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Vicks', 'Time': 2.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Insulin', 'Time': 12.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Aspirine', 'Time': 7.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Paracetamol', 'Time': 12.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Vicks', 'Time': 3.0)
Data published to IBM IOT platform : ('Patient Name': 'Madhu', 'Medicine Name': 'Paracetamol', 'Time': 12.0)
Ln: 21 Col: 0
```

## 8. TESTING:

### i. Test Cases link:

[TEST CASES](#)

### ii. User Acceptance Testing link :

[USER ACCEPTANCE TESTING](#)

## 9. RESULT:

### i. Performance Metrics link :

[PERFORMANCE METRICS](#)

## **10.ADVANTAGES AND DISADVANTAGES:**

### **ADVANTAGES:**

- Patient can easily take medicine at correct time
- It increase patient satisfaction
- avoid the difficulties for doctors/caretaker
- Help in decreasing medication dispensing errors
- Easy to use
- Time saving for users

### **DISADVANTAGES:**

- If seniors/patients who are physically disabled (like deaf) ,they can't hear the voice command
- If seniors/patients who are visually challenged (like cataracts)and illiterate, they can't read the medicine/drugs name properly

## **11. CONCLUSION:**

Patients/elders faces difficulties while taking medicine at correct time.it is also difficult for doctors/caretakers to monitor the patient.To avoid these problems,medicine reminder system is developed.an app is built for the patient which enables him to set the time.Users can configure the medicine name, and time through a web application. All the medicine details will be stored in the IBM Cloudant DB.The web application will send the medicine name to the IoT device at the desired time.After getting the medicine name the device will speak out the medicine name using IBM text to speech Service to intimate the user to take the medicine.

## **12. FUTURE SCOPE:**

Patients/elders can individually take their medicine without the help of others. it is very useful for patients whose age is between 50-80. there is no need to depend on others for taking medicine. main acceptance of this medicine reminder system is, notification will be sent through the voice command not by alarm. so patient can easily identify their medicine name. It is very helpful for the patients who are suffering from metabolic disorder, cardiogenic shock, heart attack, pneumonia, diabetics, cancer etc..

## **13. APPENDIX:**

**SOURCE CODE:**

[SOURCE CODE LINK](#)

**GITHUB AND PROJECT DEMO LINK:**

[GITHUB LINK](#)

**PROJECT DEMO LINK:**

[PROJECT DEMO LINK](#)