



PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF-RELIANT



NALAIYA THIRAN PROJECT BASED LEARNING

On

PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

A PROJECT REPORT

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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, a 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 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:

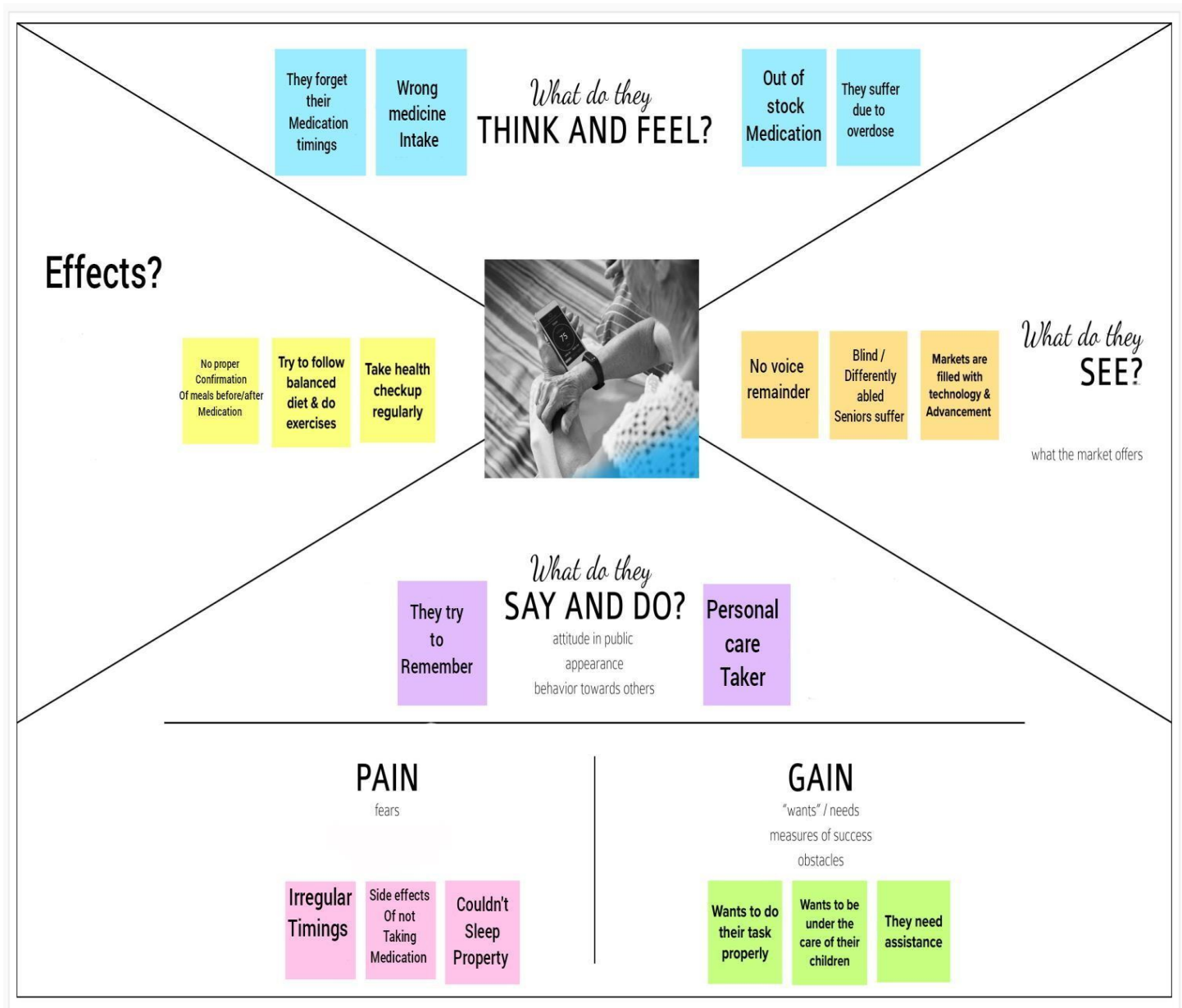
Slagle, J.M., Gordon, J.S., Harris, C.E., Davison, C.L., Culpepper, D.K., Scott P. and Johnson, K.B. Zao, J.K., Wang, M.Y., Peihuan, T. and Liu, J.W.S, Prasad, B., S.T.-B. Hamida, E. Ben Hamida, B. Ahmed, and A. AbuDayya.

2.3. PROBLEM STATEMENT DEFINITION:

Senior citizens forget to take medication due to their underlying medical condition called "Dementia".

3. IDEATION PROPOSED SOLUTION:

3.1. EMPATHY MAP CANVAS:



3.2. IDEATION AND BRAINSTORMING

LINKESHVARAN R

Perform
regular
medical
check

Medical
Remainder

Realtime
alert

Voice
remainder

KARTHICK BALAK

Smart
reminder
for seniors

Great senior
care

Higher
subjective
well being

Preventive
care visits

MONISH K

Voice to
take correct
medicine

Prevent
wrong
medication

prevent
unavailability
of medicine

alert when
the stock
is over

KARTHIKEYAN S

Prevent
errors

Medical
checkup
schedule
reminder

Stored in
cloud

Easy access
to senior
medical
records

3.3. PROPOSED SOLUTION:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Sometimes elderly people forget to take their medicine at correct time. They also forget which medicine they should take at that particular time and the stock gets over without their notice.
2.	Idea / Solution description	To remind the users to take medicines on time and alert the user when stocks nearing the completion based on Android Operating system, when notification and automatic alarm ringing system.
3.	Novelty / Uniqueness	Dosage and when the medicine gets over and restocking dates are stored and all the information will be saved in the database. The time field shows the time of dosage and on that time the alarm will get rung. The user can add the description of the medicine, including name, purpose and other related description.
4.	Social Impact / Customer Satisfaction	The proposed application satisfies need of the elderly who forgets to take their medication and eliminates the risk of taking the wrong medication. The users will get the schedule of medicine in-take time with medicine description, starting and ending date of medicine, notification through message or email, automatic alarm ringing system and navigation system.
5.	Business Model (Revenue Model)	There are a lot of medication reminder systems been created on several platforms. Many To remind the patients of the timings for taking their medications, these systems call for particular hardware devices. The patients will get the schedule of medicine in-take time with medicine description, starting and ending date of medicine, notification through message or email, automatic alarm ringing system and navigation system. The scheduled reminder will not suggest any kind of

3.4. PROBLEM SOLUTION FIT:

Define CS, fit into CL	1. CUSTOMER SEGMENT(S) CS Seniors who forget to take their medicines/drugs at the time.	6. CUSTOMER LIMITATIONS <small>EG. BUDGET, DEVICES</small> CL Efficient/valuable cost for their intake in medicines by reminding their medicines.	5. AVAILABLE SOLUTIONS <small>PLUSSES & MINUSES</small> AS By this applications they can be relaxed by taking their medicines/drugs at correct time and correct medicine.	Explore AS, differentiate
	2. PROBLEMS / PAINS <small>↳ ITS FREQUENCY</small> PR Elders who are suffering to identify their daily medicines, due to their carelessness. Patients who are risk to remember their medicines/drugs.	9. PROBLEM ROOT / CAUSE RC When the Elders/Patients forgot to take their medicine/drugs at the time that causes severe damage in their internal organs and their body.	7. BEHAVIOR <small>↳ ITS INTENSITY</small> BE Before ages there are peoples who are appointed to remind them by taking medicines at the time. By forgetting their medicines they risk their life in danger.	
Focus on PR, tap into BE, understand RC	3. TRIGGERS TO ACT TR This may leads to a wrong/other intake medicine/drugs that may cause several diseases.	10. YOUR SOLUTION SL To develop an application that reminds their medicine at the time.	8. CHANNELS of BEHAVIOR CH Promoting through social media. With the help of social media entrepreneurs/influencer.	Focus on PR, tap into BE, understand RC
	4. EMOTIONS <small>BEFORE / AFTER</small> EM Before: They risk their life by taking different medicines/drugs. After: increase their confidence by reminding their medicines.		<small>OFFLINE</small> Through newspaper advertisements.	
Identify strong TR & EM				Extract online & offline CH of BE

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 Registration through Gmail
FR-2	User Confirmation	<u>For Hospital Administration:</u> Confirm through the authorised card or identity of the hospital <u>For Individual:</u> Confirmation via Email 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

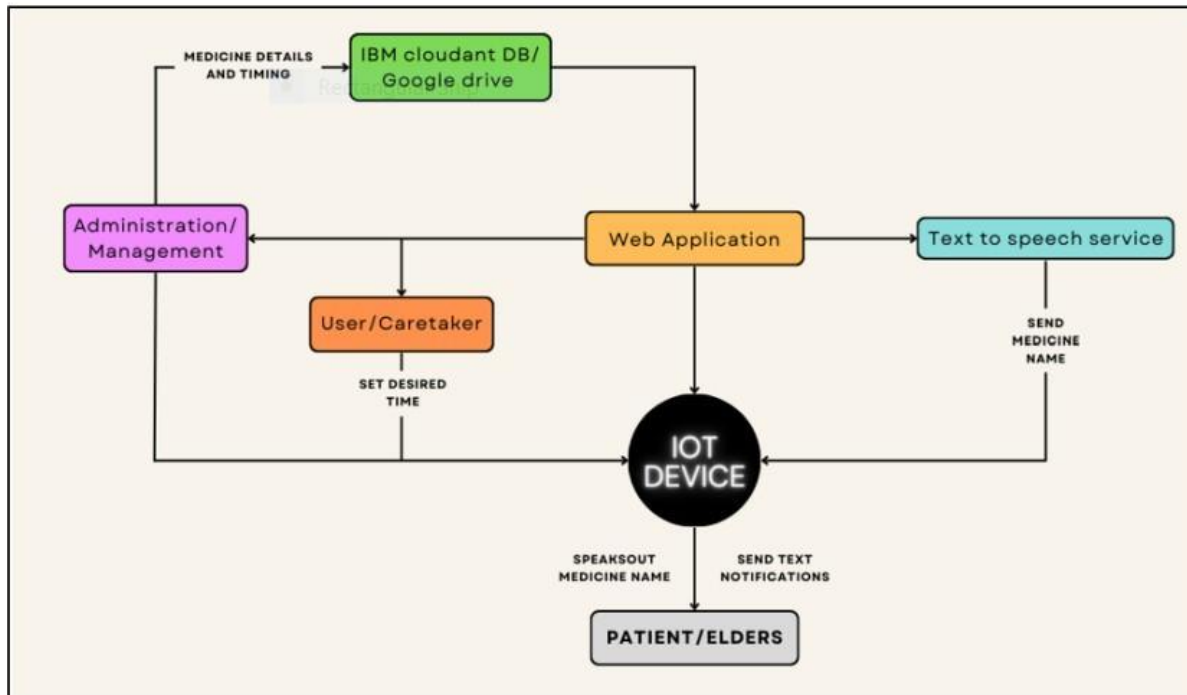
4.2 NON-FUNCTIONAL REQUIREMENTS:

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

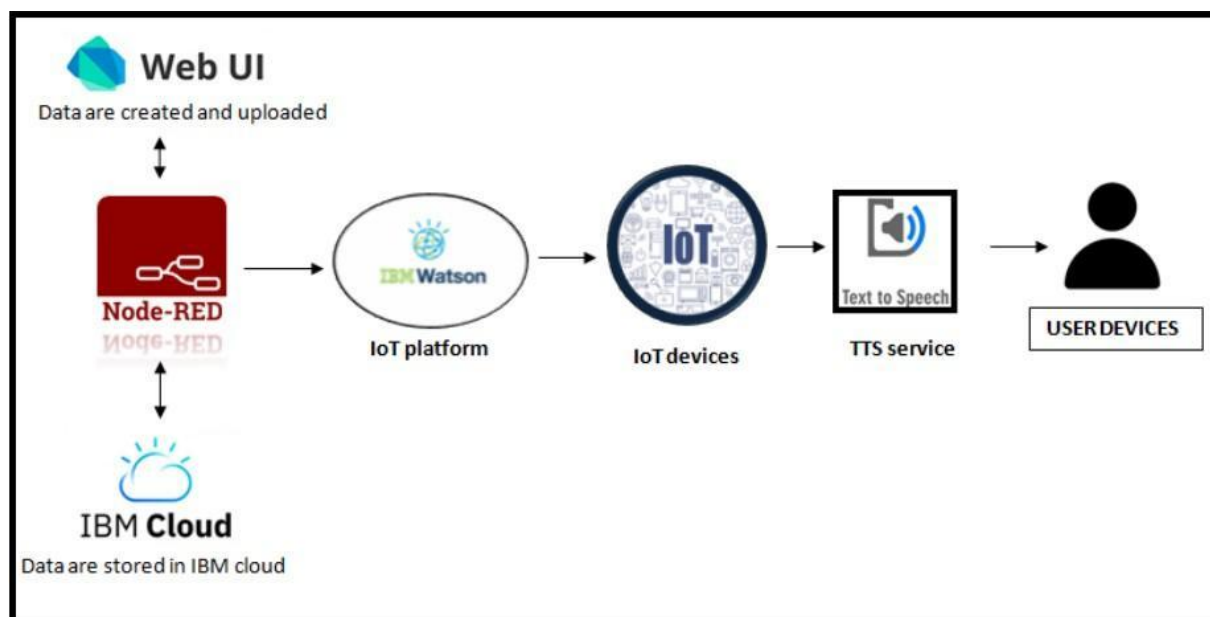
5. PROJECT DESIGN:

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	Karthick Bala K Karthikeyan S Linkeshvaran R Monish K
Sprint-1		US-2	Configure the IBM Cloud services which are being used in completing this project.	4	Medium	Karthick Bala K Karthikeyan S Linkeshvaran R Monish 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	Karthick Bala K Karthikeyan S Linkeshvaran R Monish 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	Karthick Bala K Karthikeyan S Linkeshvaran R Monish 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	Karthick Bala K Karthikeyan S Linkeshvaran R Monish K
Sprint-2		US-2	Create a Node-RED service.	10	High	Karthick Bala K Karthikeyan S Linkeshvaran R Monish K
Sprint-3		US-1	Develop a APPLICATION that reminds elders to take their medicines.	7	High	Karthick Bala K Karthikeyan S Linkeshvaran R Monish K
Sprint-3		US-2	After that upload the information to the device that reminds them to take their medicine	5	Medium	Karthick Bala K Karthikeyan S Linkeshvaran R Monish K

Sprint-3		US-3	Publish Data to The IBM Cloud	8	High	Karthick Bala K Karthikeyan S Linkeshvaran R Monish K
Sprint-4		US-1	Create Web UI in Node- Red	10	High	Karthick Bala K Karthikeyan S Linkeshvaran R Monish 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	Karthick Bala K Karthikeyan S Linkeshvaran R Monish K

6.2. SPRINT DELIVERY SHCHEDULE:

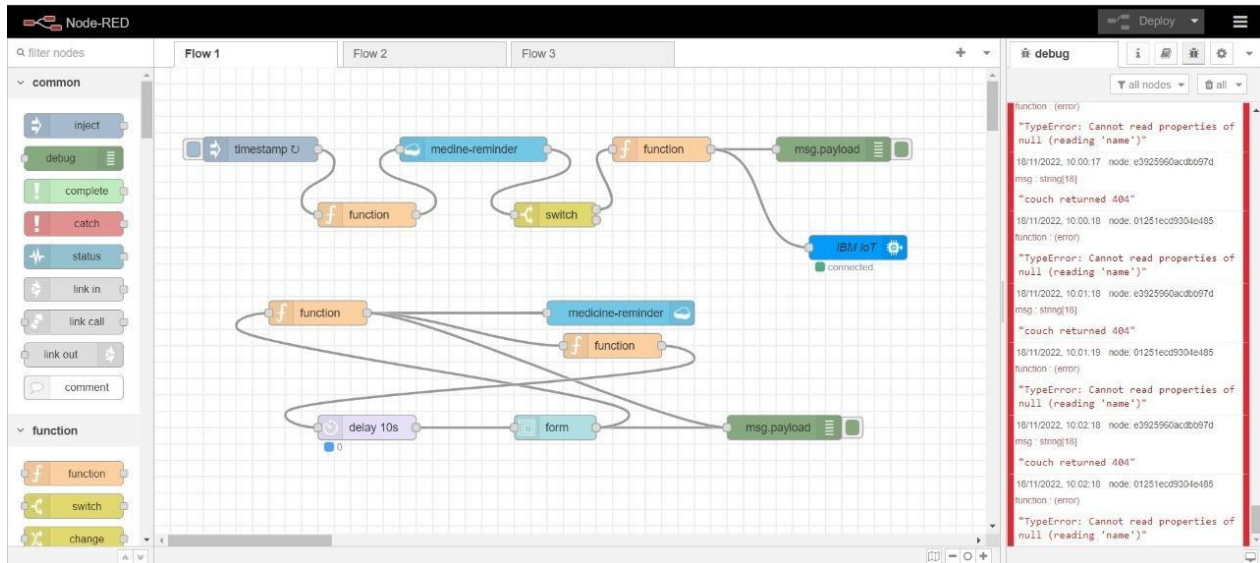
Tasks	Sprint Delivery 1	Sprint Delivery 2	Sprint Delivery 3	Sprint Delivery 4
Task 1 - create cloud account	Due 24-10-2022			
Task 2 - Develop app interface	Due 29-10-2022			
Task 3 - Test the working of the app		Due 31-10-2022		
Task 4 - Complete Node Red Design of the project		Due 05-11-2022		
Task 5 - Link the design to IBM IoT Watson Platform			Due 12-11-2022	
Task 6 - Run and test the complete project				Due 19-11-2022

6.3. REPORTS FROM JIRA:

[REPORT FROM JIRA REGARDING SPRINT DELIVERY](#)

7.CODING AND SOLUTIONING:

7.1.FEATURE 1(NODE RED OUTPUT)



node-red-mq/v-2022-11-15.eu-gb.mybluemix.net/red/#flow/58c0598a885e00b3

Edit form node

Delete Cancel Done

Properties

Group: [Medicine] Medicine Reminder

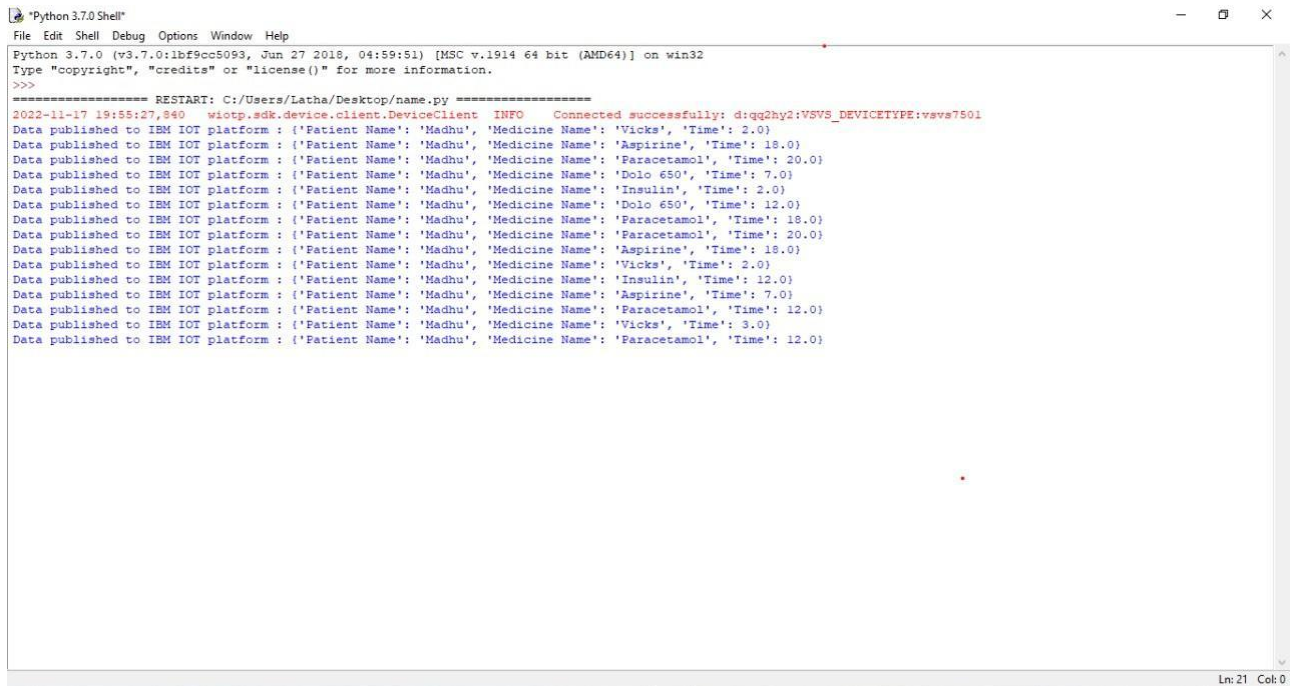
Size: auto

Label: optional label

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

Enabled

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}
```

8. TESTING:

i. Test Cases link:

[TEST CASE](#)

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:

Reminder systems are a complex intervention, because of the potential number of interacting components within the interventions, the requirement for tailoring of the intervention to the health service and the number of difficulties and behavioural changes from those receiving and delivering the reminder.

Therefore, in addition to following the general recommendations provided above, health service managers will need to tailor their reminder systems to meet the needs of the service and the patient population that it serves. This review provides a range of findings that will inform health service managers' decision- making processes. To this end, we are producing a practice guide to help health service managers consider specific issues that may be relevant to the design of reminder systems for their health service.

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](#)