**FINAL REPORT**

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

**2104-CHENNAI INSTITUTE OF TECHNOLOGY**

**TEAM ID: PNT2022TMID24841**

**TEAM LEADER: SNEHA.V-210419106108**

**TEAM MEMBERS: HARINI SHREE.S-210419106038**

**MONISHREE.V-210419106065**

**SIVA POORANI.M-210419106105**

**1. INTRODUCTION**

**1.1 Project Overview:**

Untimed medicine administration can always show adverse effects on health of elders. Nowadays, many medical errors are due to the fact that people in charge of the patient or elder’s medication have to deal with sorting the huge amount of pills each day. The proposed system is designed to help these patients to take the required medicine in the right proportion at the right time. The basic ideology is integrating the principle of Alarm clock with Light based slot sensing on a normal medication application. This application consists on the conception, design and creation of a prototype intended to solve this deficiency in the medical area as it has the ability of sorting out the pills by itself. Our medication box is programmable that enables medical caretakers or clients to determine the medicine amount and timing to take pills, and the service times for every day. In the system, medical caretakers or clients can set data for distinct pills. At the point when the pill time has been set, the application will remind clients or patients to take pills utilizing sound and light.

**1.2 Purpose:**

The main purpose of this system will be to solve the problems like Alzheimer and Missed dose by designing and creating the tool which will enable to track every medicine to ingest in an easy and simple way requiring no training or complex learning from their side in order to the operate the application. The Application will be designed to prevent errors in retirement homes where many pills have to be given daily to each one of the patients, each patient owning a application will not only drastically reduce the chances of errors occurring but also well optimize and speed up work for the caretakers/nurses by allowing the app to take care of pill management for them and freeing the time slot usually dedicated to that. This device is intended to log the pill name, number of pills and hours at which each pill is actually taken versus the time it should have been taken.

**2. LITERATURE SURVEY:**

**2.1 Existing Problem:**

According to the census 2021, India has 138 million older people constituting 16.9% of overall population. The largest consumers of health care dollars, resources, and medications. Yet, over 55% of them do not properly take their medications. Studies indicate up to 30% of all hospital readmissions are due to medication non-adherence.

World Health Organization says that, over 80% of the people above the age of 60 years are prescribed medicines that are to be administered 2 - 4 times a day. With the increase in Cardio vascular diseases and Diabetes among the peer group regular medicine administration has become a necessity. But among this another 40-60% is having the issues related to forgetting the taking of medicines at right time. The current common techniques used for the reminder includes the normal alarm. But this does not check for overdose and wrong dosage among the patients. It only uses a clock, which on passage of a set time generates an alarm. The advantages of the slot based sensing is that individual moment sensing is possible for detecting over dosage problems and incorrect dosage issues. The survey for various modes of sensing the slots has been performed both analytically and practically and comparisons between the modes have been performed.

**2.2 REFERRENCE:**

1. Khooei, Ngo Manhe, SaaghunaSaaghuna, KharanMittra, and ChristterǺhllund. "IReHMo: For intelligent regions, a successful IoT-based remote patient monitoring system." In 2015 17th International Conference on E-health Networking, Application & Services (HealthCom), pp. 563-568. IEEE, 2015.

2. Seebbak, Faaouzzi, and FaaridBenhammadi. "For elderly IoT-based smart healthcare, the majority-consensus fusion method." Annals of Telecommunications 72, no. 3-4 (2017): 157-171.

3. Patel Samir, et al. Mobilizing your medications: an automated medication reminder application for mobile phones and hypertension medication adherence in a high-risk urban population. J Diabetes Sci Technol 2013.

4. List C, Authors OF, Moga D, Stroia N, Petreus D, Moga R, etal. Work embedded platform for web-based monitoring and control of a smart home; 2015.

5. Rosati RJ. Evaluation of remote monitoring in home health care. In: 2009 international conference on eHealth, telemedicine, and social medicine.

**2.3 PROBLEM STATEMENT DEFINITION:**

As pills have taken such an important role in everyday life there has been the past years an increase in the number of medical neglect cases related to incorrect medication given to patients, such as the case of the nurse who gave a patient a paralytic instead of an antacid that was prescribed by the doctor, causing the patient's death. After seeing so many of these cases it is evidently crucial that the correct pill is taken by the correct person at the correct time, otherwise taking an incorrect one or not taking one at all may expose the patient to several dangerous situations, ranging from mild health issues up to death. Other cases of wrong pills being ingested by patients are caused by patients themselves, especially at an old age. As people grow old the human body tends to malfunction and the number of pills the average person has to take when certain age is reached greatly increases. Usually they are a wide range of different pills an elderly has to take at different times. Keeping track of taking the right pill at the right moment each day can become a challenging experience for the elderly, as it is not as easy as it could be for a younger person. This fact is easily explained when we understand that many of the abilities such as sight, memory or logical capabilities tend to decrease in a proportional way to age once human beings have entered old age, making it difficult for them to remember which pill to take at the correct time, remembering to take them or confusing one pill with another as the person may not be able to distinguish one from another thanks to their decreased sight as well as the similarity in the pills forms and colors. This problem will most surely be a cause for concern for the people surrounding the pill-taker, as not taking a pill at the correct time can cause severe problems (such as organ rejection in a patient with organ transplant or heart attack in patients suffering from grave heart conditions). On the other hand several problems related to the high amount of pills nowadays are prescribed to patients are found in hospitals or in retirement homes. In these places on of the main jobs is to give out to its patient the correct pills. Managing, sorting and giving out the pills to each one of the patients can sometimes have a high chance of error, with a patient or resident receiving one or more incorrect pills.

Finally there are situation where taking an incorrect amount of pills is a matter of the patient's inexperience and/or ignorance. No matter the cause, it has been proven that there is a significant risk of people ending up swallowing the incorrect medication or dose.

**3. IDEATION AND PROPOSED SOLUTION:**

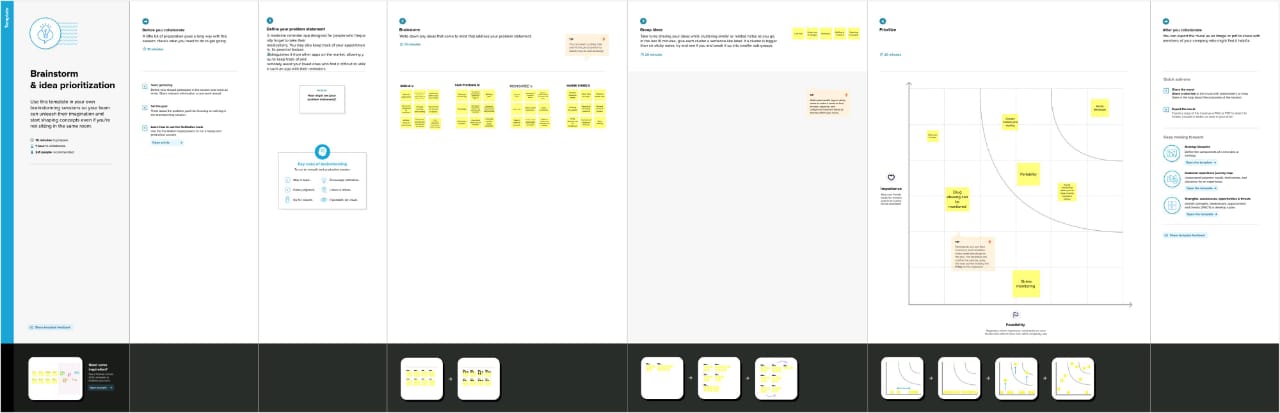
**3.3 EMPATHY MAP CANVAS:**

****

**FOR CLEAR IMAGE:**

<https://app.mural.co/invitation/mural/ibmsmartinternz5295/1661406197307?sender=u363e58460f0982c9e7811084&key=e5081bc5-70ec-4191-a8f0-5d95b4fae16f>

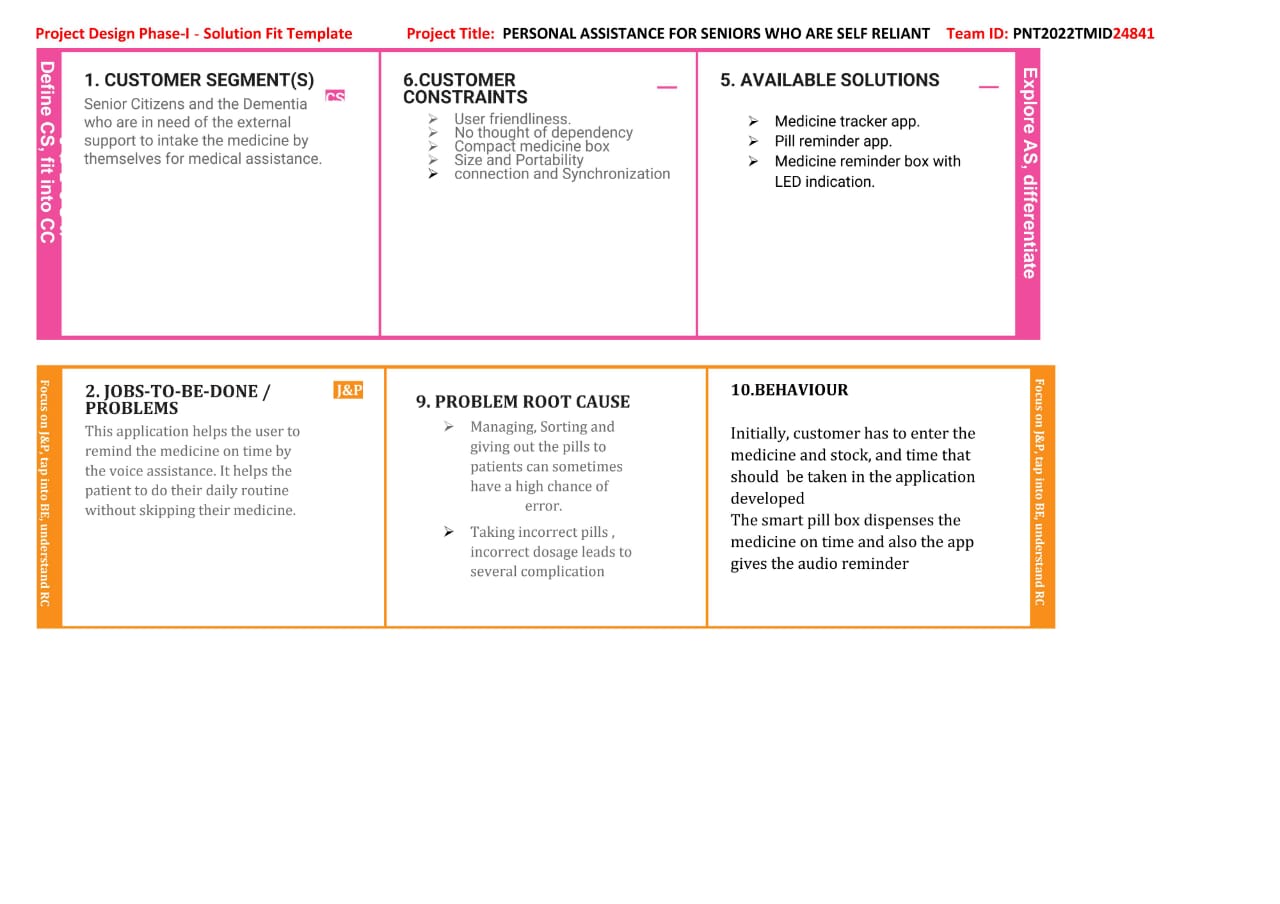
**3.2 IDEATION AND BRAINSTROMING:**

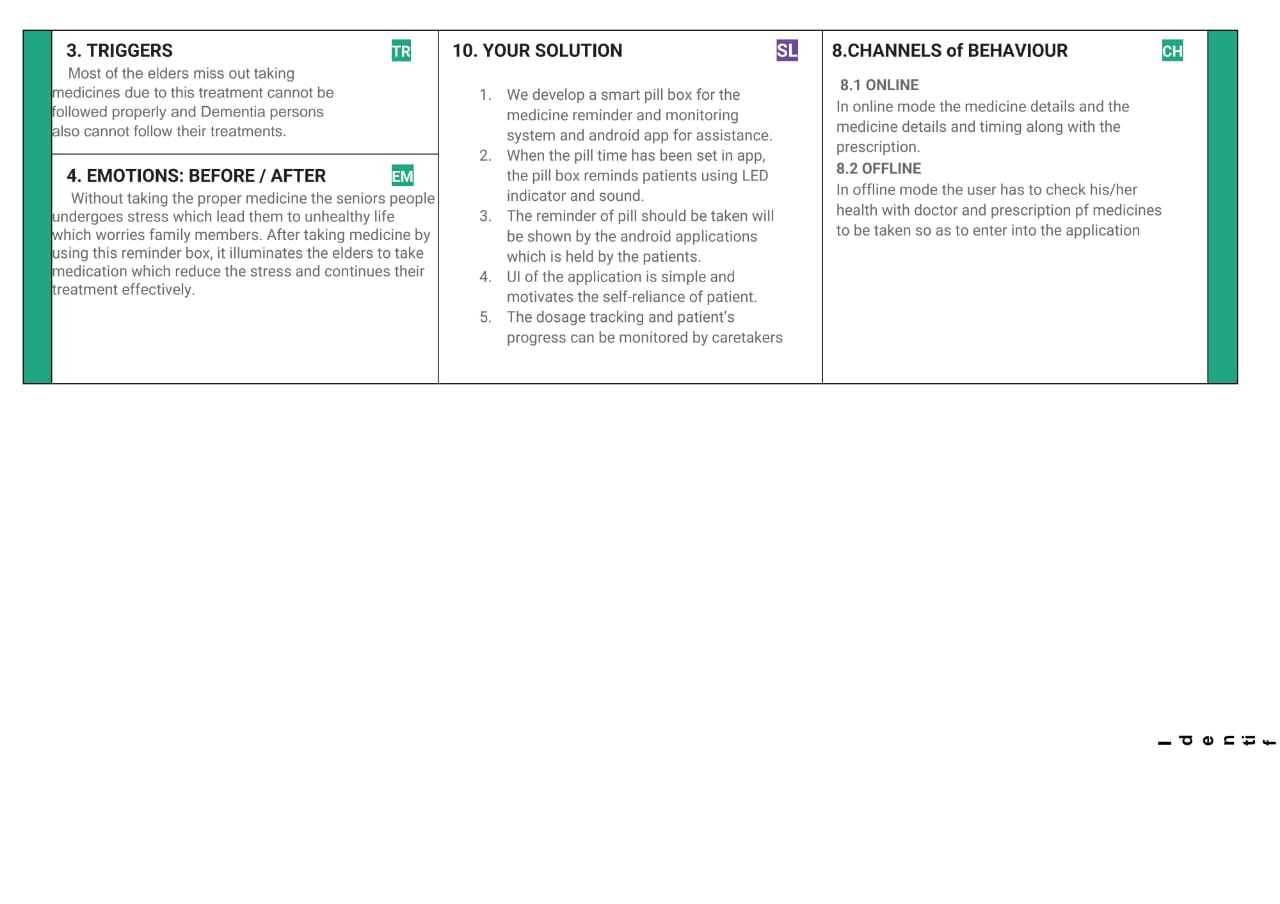
****

**3.3 PROPOSED SOLUTION:**

|  |  |  |
| --- | --- | --- |
| **S.NO** | **PARAMETER** | **DESCRIPTION** |
| **1.** | **PROBLEM SOLUTION** | **In modern society, busy life has made people forget many things in day to day life. The elderly people and the people victims of chronicle diseases who need to take the medicines timely without missing are suffering from dementia, which is forgetting things in their daily routine. Considering this situation study has been done in this. Paper reviewing the technologies of home health care which are currently used for improving this situation by reminding the scheduled of medicine, remote monitoring and update new medicine data of patients, which can be done by prescriber through web** |
| **2.** | **IDEA/SOLUTION** | **The application of Smart Medicine Reminder is very wide and can be used by patients at home, doctors at hospitals, and at many other places. When it comes to reminding, there can be many ways to remind it:**  **Show it on a display**  **Send notification on email or Phone**  **Using mobile apps**  **Buzz alarm**  **Using Bluetooth/ Wi-Fi**  **Get a call**  **Remind for next medicine time while reminding current time**  **We can combine ways depending upon the need. To keep things simple here we made a simple Medicine Reminder using Arduino which reminds us to take medicines 1 or 2 or 3 times a day.** |
| **3.** | **UNIQUENESS** | **It is very user friendly application where the person who are not educated also can use this. And can monitor them whether they intake their medicine at any place and any time.** |
| **4.** | **CUSTOMER SATISFACTION** | **It is more useful for the caretakers as well as patient and doctors. They can monitor the drug level, prescription,the medicine intake and refilling the drugs.They would be crucial to the rest of the design process.** |
| **5.** | **BUISENESS MODEL** | **The purpose of a business is to organize some sort of economic production . Businesses can be for profit entities or non-profit organizations fuifilling a charitable mission or furthering a social cause.Businesses range in scale and scope from proprietorships to large, international corporations.** |
| **6.** | **SCALABILITY OF SOLLUTION** | **where the user can set the appropriate time for their medicine and they learn about the specifications of the medicine what they are intake . It keeps track of the medicine and send the reminder to the caretakers for refilling and keeps on tracking.** |

**3.4 PROBLEM SOLUTION FIT:**

****

****

**4. REQUIREMENT PHASE:**

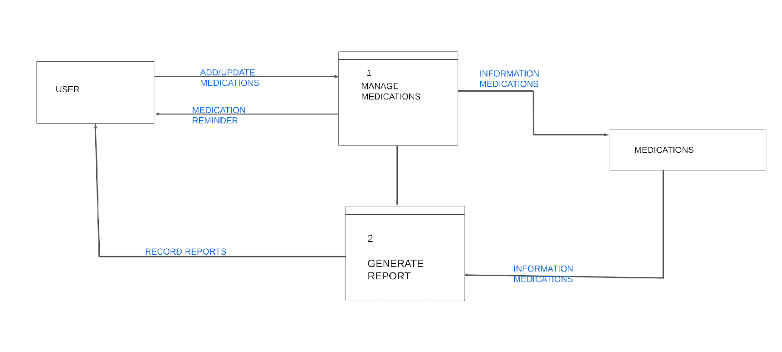
**4.1 FUNCTIONAL REQUIREMENT:**

|  |  |  |
| --- | --- | --- |
| **FR NO:** | **FUNCTIONAL REQUIREMENTS(EPIC)** | **SUB REQUIREMENT(STORY/SUB-TASK)** |
| **FR 1** | **REGISTRATION** | **REGISTRATION VIA LINK**  **REGISTRATION VIA FORM** |
| **FR 2** | **CONFIRMATION** | **CONFIRAMTION VIA GMAIL**  **CONFIRMATION THROUGH SMS TO THEIR MOBILES** |
| **FR 3** | **ACCESS CLOUD SERVICES** | **ACCESS THE CLOUD THROUGH THE DATABSE WHICH HAVE BEEN REGISTERED TO GET BACK THE INFORMATION FOR THE USER’S TREATMENT** |
| **FR 4** | **IOT CONFIRGUATION** | **IOT CAN BE OPERATED BY THE CLOUD THROUGH DATABASE AND MANAGE THE RESPONSE .** |

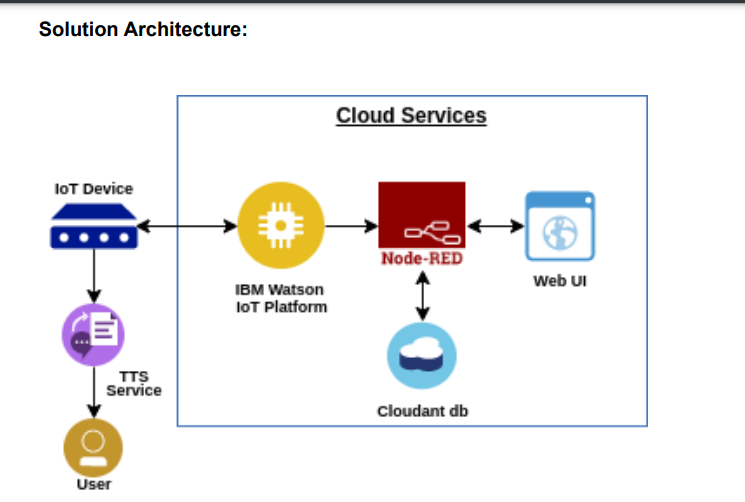
**4.2 NON-FUNCTIONAL REQUIREMENTS:**

|  |  |  |
| --- | --- | --- |
| **NFR NO** | **NON FUNCTIONAL REQUIREMENT** | **DESCRIPTION** |
| **NFR 1** | **USABILITY** | **THIS CAN BE VERY USER FRIENDLY IT CAN BE USED BY EVERYONE WHO HAVE BASIC KOWLEDGE ABOUT INTERNET** |
| **NFR2** | **SECURITY** | **THIS COULD BE MORE SECURABLE AND OTHER THAN THE CARE TAKER NO ONE HAS THE ACCESS TO OPERATE THE APPLICATION AND IT CAN BE DONE BY FINGERPRINT ACCESS AND PASSWORD.** |
| **NFR 3** | **RELIABILITY** | **RELIABILITY IS HIGH IT USES THE PROMISABLE CLOUD SERVICES** |
| **NFR 4** | **PERFORMANCE** | **IT PERFORMS IN BEST MANNER**  **COMPARABLELY** |
| **NFR 5** | **AVAILABILITY** | **IT IS AVAILABLE IN ANYWHERE AND ANYTIME ,IT CAN BE USED IN ANDRIODS AND WEB.** |
| **NFR 6** | **SCALABILITY** | **USING CLOUD SCALABILITY IS HIGHER THAN THE OTHER TRADITIONAL DATAS** |

**5. PROJECT DESIGN:**

**5.1 DATA FLOW DIAGRAMS:**

**5.2 SOLUTIONS & TECHNICAL ARCHITECTURE:**

****

**5.3 USER STORIES:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **User Type** | **Functional**  **Requirement** | **User Story Number** | **User Story / Task** | **Acceptance**  **criteria** | **Priority** | **Release** |
| Senior citizen | caretaker | USN-1 | I should not miss out medicine I should take it on time and monitor my health | I need to take medicine on time by getting reminder | High | Sprint 1 |
| Caretaker | Monitor patients progress | USN-2 | I should track my patients progress | My patient should not miss out medicines | HIgh | Sprint 2 |
| Coma  patient | Caretaker | USN-3 | I should upload my patients prescription and medication in the database | Upoad my  patients prescription in database | Mediu m | Sprint1 |
| Senior citizen with alzhimer | Medicine remiinder | USN-4 | I should track my dosage and reminder with audio notification | I should monitor patients health | Mediu m | Sprint2 |
| Senior ctizen | Smart medicine box | USN-5 | I should get reminder with led notifications | Medicine box should notify with led indicator | Low | Sprint1 |

**6. PROJECT PLANNING & SCHEDULING:**

**6.1 SPRINT PLANNING AND ESTIMATION:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sprint** | **Functional**  **Requiremen t**  **(Epic)** | **User**  **Story**  **Numb**  **er** | **User Story / Task** | **Story points** | **Priority** | **Team**  **Members** |
| Sprint 1 | Set Alarm | USN-1 | As a user, i can set an alarm to alert a medicine using medicine remainder  system | 10 | High | SNEHA |
| Sprint 1 |  | USN-2 | As a user, I can able to Activate and Deactivate the alarm anytime . | 10 | High | SIVAPOORANI |
| Sprint 2 | Notification | USN-3 | As a user once I can set the alarm then I gets the notification when the use is there | 10 | High | HARINISHREE |
| Sprint 2 |  | USN-4 | As a user, If I requires this system then a notification will be sent into his device. | 10 | High | MONISHREE |
| Sprint 3 | Medication  Detail | USN-5 | As a user, I have multiple medications eachday, I can put each pill in the box for the corresponding day. | 10 | High | SNEHA  SIVAPOORANI  HARINISHREE  MONISHREE |
| Sprint 3 |  | USN-6 | As a user,between setting an alarm and using a pillbox, I’ll be able to stay on top of your medicationds and not miss a dose | 5 | Low | SNEHA  SIVAPOORANI  HARINISHREE  MONISHREE |
| Sprint 3 |  | USN-7 | AS a user , I can store the name of the medicine with its  description | 10 | High | SNEHA  SIVAPOORANI  HARINISHREE  MONISHREE |
| Sprint 4 | GPS Tracking | USN-8 | As a user, they can also help large hospitals and clinics  Manage their inventory more  effectively | 5 | Low | SNEHA  SIVAPOORANI  HARINISHREE  MONISHREE |
|  | Sensor | UNS-9 | As a user ,they used for keeping the record in medicine the schedule of medicine the schedule of medicine .We have used the IOT enabled a enabled Arduino device for monitoring the system. | 10 | High | SNEHA  SIVAPOORANI  HARINISHREE  MONISHREE |

**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 (story points per day).

**AV = Velocity / Sprint Duration**

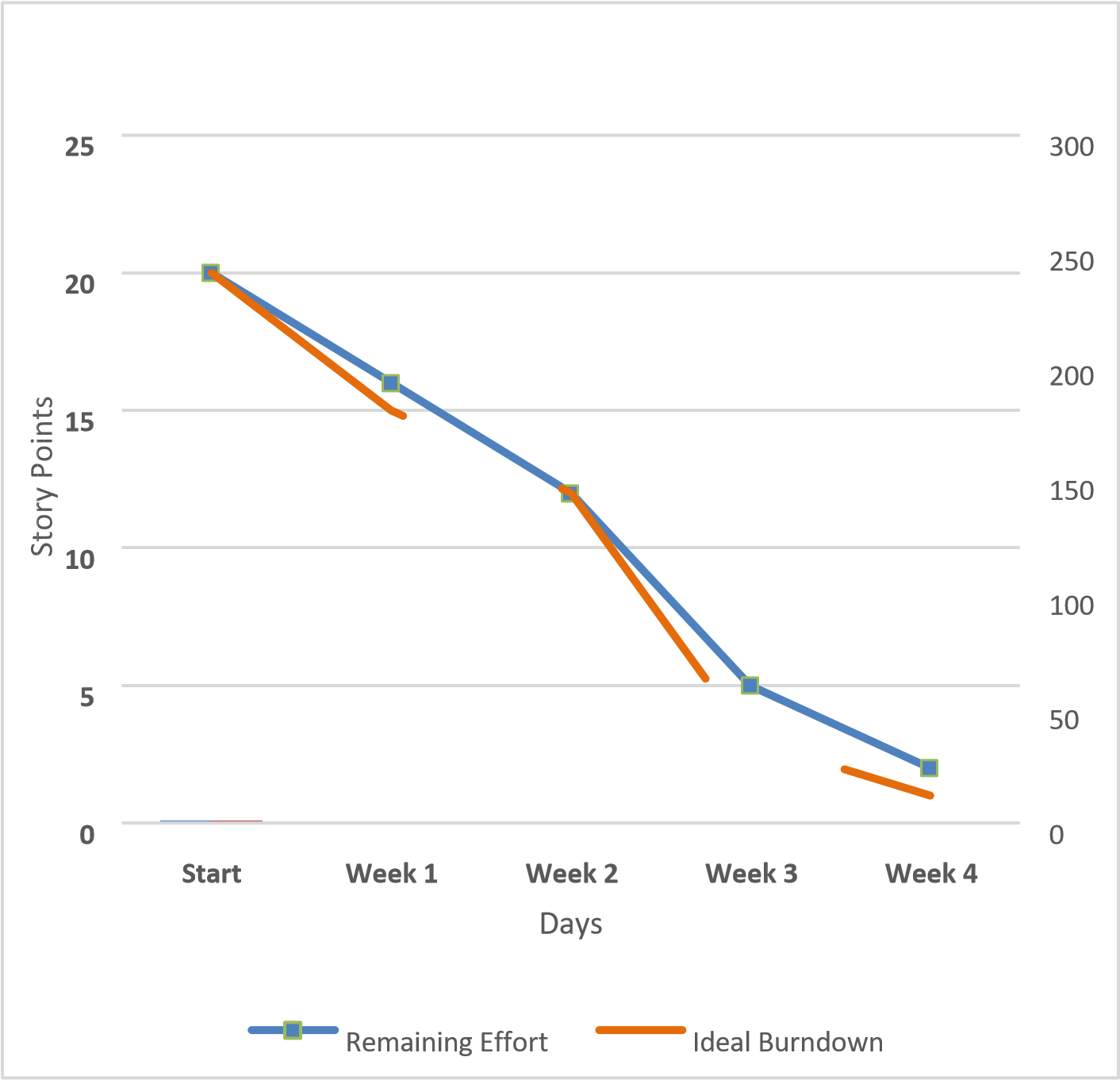
**= 20 / 8**

**= 2.5**

**AV =10 / 8**

**=1.25**

**Burndown Chart :**

****

**6.2 SPRINT DELIVERY AND SCHEDULE:**

|  |  |  |
| --- | --- | --- |
| TITLE | DESCRIPTION | DATE |
| LITERATURE SURVEY  &INFORMATION GATERING | INFORMATIONS ARE COLLECTED  BY REFERING TECHNICAL  PAPERS RESEARCH PUBLICTIONS WHICH DESCRIBES LITERATURE SURVEY. | 10 OCTOBER 2022 |
| PREPARE EMPATHY MAP | TO DESCRIBE THE USERS  PROBLEM AND GAIN PREPARE  RHE EMPATHY MAP CANVAS ON  PROBLEM STATEMENT | 11 OCTOBER 2022 |
| IDEATION | ESTABLISHING BRAINSTORM  SESSIONS AND DEVELOPE THE  TOP IDEAS BASIS ON  IMPORATANCE OF SCALABILITY. | 13 OCTOBER 2022 |
| PROPOSED SOLUTION | BY DEVLOPING THE PROPOSED  SOLUTION WHICH ENHANCE THE IDEAS,UNIQUENESS,CUSTOMERS STATISIFICATION ON SOLUTION. | 14 OCTOBER 2022 |
| PROBLEM SOLUTION FIT | IT IS USED TO DESCRIBE THE EXISTENCE OF PROBLEM. | 17 OCTOBER 2022 |
| SOLUTION ARCHITECTURE | DESCRIBING PROCESS OF  DEVELOPING SOLUTION BASED ON PREDEFINED PROCESS. | 18 OCTOBER 2022 |
| CUSTOMER JURNEY | BY PREPARING THE CUSTOMER  JURNEY WE CAN FIND OPINION OF THE CUSTOMERS AND COULD BE A HEALTHY INTERACTION. | 20 OCTOBER 2022 |
| FUNCTIONAL REQUIREMENT | PREPARE THE FUNCTIONAL REQUIREMENTS FILE WHICH  SPECIFIES THE REQUIREMENTS. | 21 OCTOBER 2022 |
| DATA FLOW DIAGRAMS | IT SHOULD BE DRAWN IN BASE OF PROBLEM STATEMENT | 22 OCTOBER 2022 |
| TECHNOLOGY ARCHITECTURE | TECHNOLOGY ARCHITECTURE DIAGRAM DISCRIBES THE WORKING. | 24 OCTOBER 2022 |
| PREPARE MILESTONE & | PREPARE THE MILESTONE AND | 24 OCTOBER 2022 |
| ACTIVITY LIST. | ACTIVITY LIST OF THE PROJECT |  |
| PROJECT DEVELOPMENT-  DELIVERY OF SPRINT-1,2,3&4 | DEVELOP AND SUBMIT THE  DEVELOPED CODE BY  IMPLEMENTING AND TESTING IT | IN PROGRESS |

**7. CODING AND SOLUTIONING**

**7.1 FEATURE 1**

#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(0x27,32,2);

//-----------------------------------------

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 = 13; i < payloadLength-2; i++) {

//Serial.print((char)payload[i]);

data3 += (char)payload[i];

}

Serial.println("Medicine Name: "+ data3);

if(data3 != "")

{

lcd.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="";

}

**7.2 FEATURE 2**

import time

from ibm\_watson import TextToSpeechV1

from ibm\_cloud\_sdk\_core.authenticators import IAMAuthenticator

import ibmiotf.device

import pygame

pygame.init() # initiate pygame

config={

    "org":"ular9x",             # Device Organization

    "type" :"MedicineRem",              # Device Type

    "id":"dev01",                # Device ID

    "auth-method":"token",      # Device Authentication Method

    "auth-token":"ZTt\_CrO0t4zB9sBkmX"    # Device Authentication Token

}

url="https://api.eu-gb.text-to-speech.watson.cloud.ibm.com/instances/21d5e31f-5b34-4265-8bb9-d9e34553064d"  # TextToSpeech URL Link

api="Jg0dO0bOuWJA9OMEyfpWBXR4r5allxW6S\_yaUvy-VFfh"                                                          # TextToSpeech API Key

client= ibmiotf.device.Client (config) # Save the device Config in a Varible called client

client.connect()                       # Connect with the device

# Load TextToSpeech API Key and URL

auth=IAMAuthenticator(api)

tts=TextToSpeechV1(authenticator=auth)

tts.set\_service\_url(url)

# callback

def myCommandCallback (cmd):

    a=cmd.data

    c=1

    instruction="Please Take following Medicine. "

    if len(a["command"])==0:

        pass

    else:

        for i in a["command"]:

            instruction+=str(c)+". "

            instruction+=i

            instruction+=". "

            c+=1

        print("Instruction : ",instruction)

        with open("./speech.wav","wb") as audio\_file:

            res=tts.synthesize(instruction,accept="audio/mp3",voice='en-US\_AllisonExpressive').get\_result()

            audio\_file.write(res.content)

        play("speech.wav")

def play(a):

    p=pygame.mixer.Sound(a)

    pygame.mixer.Sound.play(p)

    time.sleep(20)

    pygame.mixer.Sound.play(p)

    time.sleep(20)

    pygame.mixer.Sound.play(p)

    time.sleep(20)

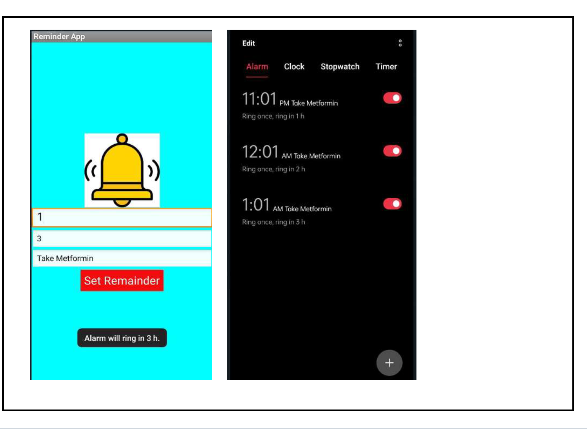
while True:

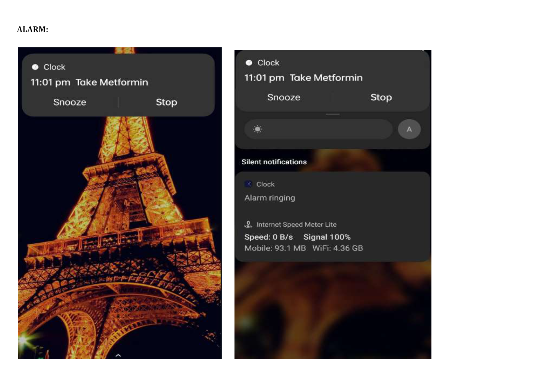
    client.commandCallback = myCommandCallback

client.disconnect()

**8. RESULTS**

**8.1 PERFORMANCE METRICS**

****

****

**9. ADVANTAGES AND DISADVANTAGES**

**ADVANTAGES**

* The users will get the notifications through SMS also. It will provide the information about the medicine timings.
* The scheduled appointment with the doctor with the contact details including visiting time, venue and availability at different hospitals in case the appointment is missed at the scheduled place.
* The new appointment will be set accordingly.
* The system focuses on improving the rate of attendance at healthcare appointments.
* The personal phone notifications and reminders are a strong supporting tool in improving medication adherence strategies.
* We have also implemented a navigation system which will allow users to locate the nearest registered hospitals according to their current location. The location based searching of the doctors as well as disease wise searching has been focussed which makes the application more suitable, more user friendly with great features and satisfactory results.

**DISADVANTAGES**

* Competition is high when it comes to your pill reminder app, so it's important that you spend a good amount of time analyzing the market and understanding where the demand lies.
* With any Saas business, data loss and security issues may arise throughout your process of building your product. It's critical that you understand exactly what you're responsible for and how to avoid potential issues down the road.
* With a medicine reminder app, you are typically self-employed and responsible for finding your own insurance, which can be quite costly and time-consuming.
* Often times, as a pill reminder app, you typically work alone and do not have much face-to-face interaction with other team members.

**10. CONCLUSION**

This application illuminates the elders to take medication. It productively controls the season of senior citizens to take medication. It additionally diminishes the proportion that patient misses and defers taking medication. The remote user interface joins with the RoboRemo software programming so that the parental figures can help the patient. Which adds more functionality by applying more usability through networking locally or using the internet if it is available. The outline design is too appropriate for the medication bundles. Later on, we trust that the vitality sparing and compact can be considered. In this way, missing and deferring taking solution can be totally eliminated.

**11. FUTURE SCOPE**

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 reduces the effectiveness of a treatment and imposes a financial burden on health care systems. 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 medicine which is not prescribed by the doctor that will assure the safety of the patient and also will avoid wrong dosages. The patients can also search doctors disease wise(depending upon the specialization of the doctor), which provides easy searching facility to the users and saves the time. Doctors can view all the fixed appointments along with date and time, which he fixed and through this he can make new appointment schedules. We plan to focus on improving the overall performance of the system. Also, interaction between patients and doctors through video calling and secure prescription will be focused upon. Some more ways to achieve medication adherence will be focused.

**12. APPENDIX**

**GITHUB AND PROJECT DEMO LINK:**

<https://drive.google.com/file/d/199nCxGjZTPeRpp7oLKJUQ5Fd9VN2dAvO/view?usp=drivesdk>