Team ID:PNT2022TMID34792

Personal Assistance for Seniors Who Are Self-Reliant

1. Introduction

1.1. Project Overview:

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 IBM Cloudantt DB. If the medicine time arrives the web application will send the medicine name to the IoT Device through the IBM IoT platform. The device will receive the medicine name and notify the user with voice commands.

1.2. Purpose:

Sometimes elderly people forget to take their medicine at the correct time. They also forget which medicine He / She should take at that particular time. And it is difficult for doctors/caretakers to monitor the patients around the clock. To avoid this problem, this medicine reminder system is developed.

2. Literature survey:

Advanced information technology, joined to the increasing use of continuous medical devices for monitoring and treatment, have made possible the definition of a new telemedical diabetes care scenario based on a hand-held Personal Assistant(PA). This paper describes the architecture, functionality and implementation of the PA, which communicates different medical devices in a personal wireless network. The PA is a mobile system for patients with diabetes connected to a telemedical center. The software design follows a modular approach to make the integration of medical devices or new functionalities independent from the rest of its components. Physicians can remotely control medical devices from the telemedicine server through the integration of the Common Object Request Broker Architecture (CORBA) and mobile GPRS communications. Data about PA modules' usage and patients' behavior evaluation come from a pervasive tracing system implemented into the PA .The PA architecture has been technically validated with commercially available medical devices during a clinical experiment for ambulatory monitoring and expert feedback through telemedicine. The clinical experiment has allowed defining patients' patterns of usage and preferred scenarios and it has proved thePersonal Assistant's feasibility. The patients showed high acceptability and interest in the system as recorded in the usability and utility questionnaires. Future work will be devoted to the validation of the system with automatic control strategies from the telemedical center as well as with closed-loop control algorithms.

2.1. Existing problem:

Elderly people let slip the medications at the correct time and the existing solution for this problem is setting reminders or using pill boxes, calendars, Personal Assistance. Though the solutions give reminders, the voice commands or assistance given by this system is more efficient.

2.2. Problem statement definition:

Skipping medicines can be serious for some medical health conditions; Sometimes elderly people forget to take their medicine at the correct time . They also forget which medicine one should take at that particular time. And it is difficult for doctors/caretakers to monitor The patients around the clock.

3.Ideation phase & Proposed solution

3.1 Empathy map

3.2 Ideation & Brainstorming

Step 1 Brainstorm, idea listing and grouping

Shanu Jose
- **Smart assistance for medicine**
- **SMS of medicine name**
- **Warning for scarcity of medicine**
- **Web application for user registeration**

Jenifer R
- Remainder of pills through audio
- Seeking of medicines
- Mobile application for setting remainder
- Message alert for closest person

Maria leo mesha M
- Voice alert by chat bot
- Notify on low amount of medicine
- Remainder for patients relation
- Android app for feeding data for alert

Avinash P
- Application based on health monitring
- Alert on quantity of medicines
- Monitoring the sufficiency of medicine
- Medicine rememberance of voice

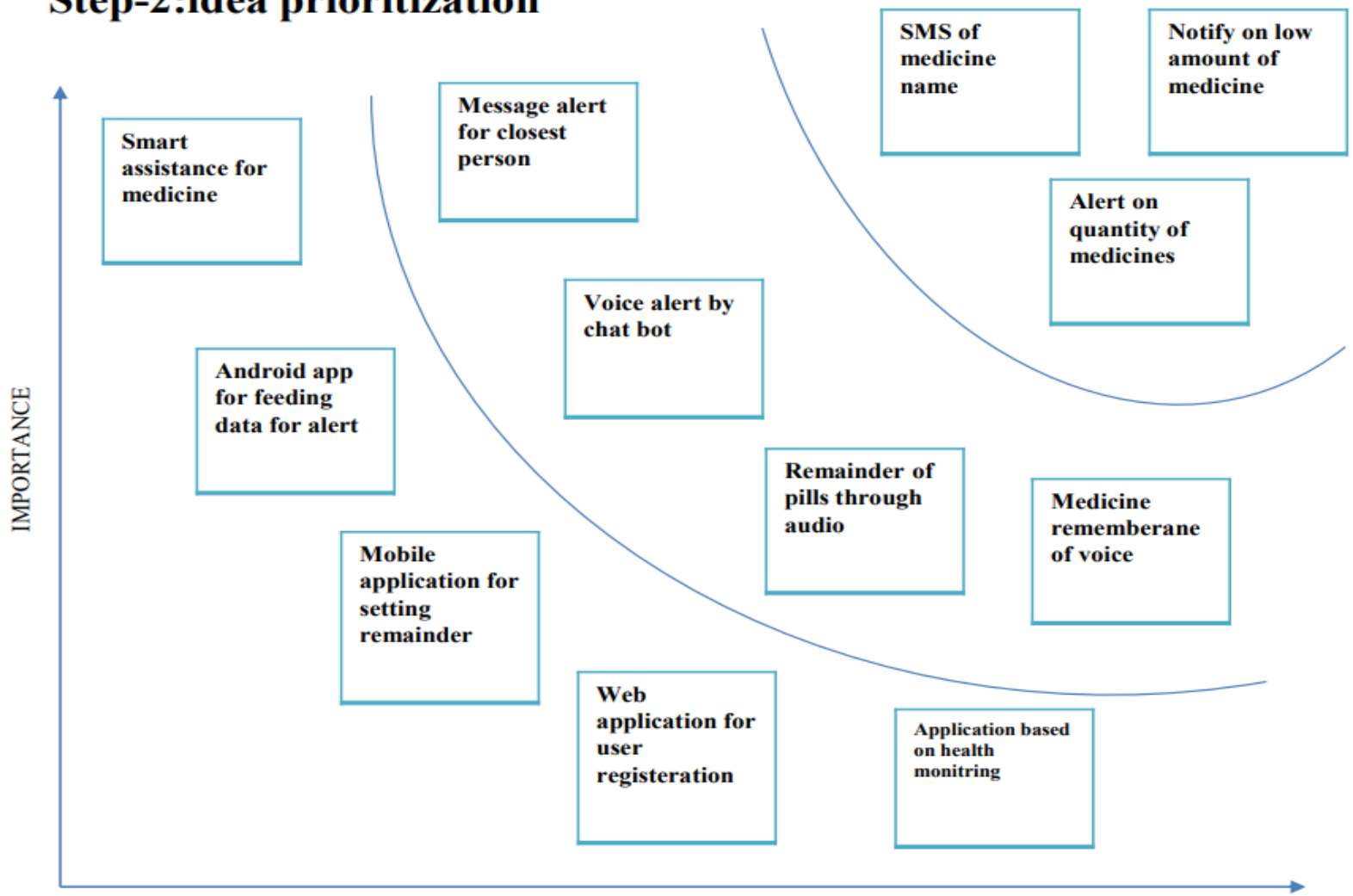
Benoj CM
- Lightup when its time
- Assistant mild vibrate rememberence
- Monitoring the sufficiency of medicine
- Seeking of medicines

Voice assistant
- **Smart assistance for medicine**
- **Voice alert by chat bot**
- **Medicine rememberance of voice**
- **Remainder of pills through audio**

Notification
- **Notify on low amount of medicine**
- **SMS of medicine name**
- **Alert on quantity of medicines**
- **Message alert for closest person**

Warning
- **Remainder for patients relation**
- **Alert on quantity of medicines**
- **Warning for scarcity of medicine**
- **Lightup when its time**

Step-2:idea prioritization



3.3 Proposed Solution

S.No	Parameter	Description
1.	Problem Statement	Sometimes elderly people forget to take their medicine at the correct time. They also forget which medicine should be taken at that particular time. And it is difficult for doctors/caretakers to monitor the patients around the clock.
2.	Idea/Solution Description	▪ An IoT based medicine reminder system is developed. Which is an app built for the user (caretaker) which enables him/her to set the desired time and medicine ▪ These details will be stored in the IBM Cloudant DB. As medicine time arrive the web application will send the

		medicine name to the Internet of things Device through the IBM IoT platform. ▪ The device will receive the medicine name and notify the user with voice commands
3.	Novelty/Uniqueness	It’s a user friendly app that reminds to take their medications and get them refilled when necessary.
4.	Social Impact/Customer Satisfaction	I constructed these proto personas, or names, based on the research findings from the user interview. They would be crucial to the rest of the design process. All design decisions may be assessed and re-evaluated using these personas, keeping the user and their perspective in mind

5.	Business Model(Revenue Model)	Through this devices We gain revenue from selling the medicine reminder system to hospitals, medical health center and even in old age homes and also gain profit by having partnership with pharmaceutical companies
6.	Scalability of the Solution	As the model is integrated with cloud software, we can update the user experience without reinstalling a model and the person can keep a remainder up to the year.

3.4 Problem Solution Fit

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

Citizens who are in need of external support to take care of themselves for medical assistance .

6. CUSTOMER CONSTRAINTS CC

Accurate measuring for the time. Limited usage for only pill and capsules drug dosage. Control of energy saving devices.

5. AVAILABLE SOLUTIONS AS

The solution of this sophistication is supplemented by the development of an advanced technology supported pill dispenser called the GSM based automatic call dispenser .

Explore AS, differentiat

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

This Applicationhelps the patient to remind medicinethrough voice assistance . It helps the user to do their daily routine without seeking help from other people

9. PROBLEM ROOT CAUSE RC

Side-effects affecting thinking anxiety. Examples include zolpidem and lorazepam (brand names Ambien and Ativan , respectively).These drugs can increase fall risk, or can provoke confusion.Geriatricians commonly recommending stopping or reducing the dosage of these drugs. For more information about four types of medication that affect memory.

7. BEHAVIOUR BE

The patient need to update the information about their medication,life routines to the application

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM				
	3. TRIGGERS TR People simply forget , skip or stop taking their medications ... which leads to non adherence . Trigger helps people to integrate healthy behavior by using technology in a very simple way	**10. YOUR SOLUTION** SL Building a reliable technology that can address all the customer needs while being reliable and secure ensuring efficient functioning.	**8. CHANNELS of BEHAVIOUR** CH The data stored in the Application can be access with the help of internet	Identify strong TR & EM
	4. EMOTIONS: BEFORE / AFTER EM Despite effective treatments , depression may often un recognize and untreated . 2,3 many persons in the community with depression see a general physician . so primary care setting is pivotal when considering how to optimize the treatment for depression and others forms of emotional distress in the community			

4.Requirement analysis

4.1 Functional Requirements:

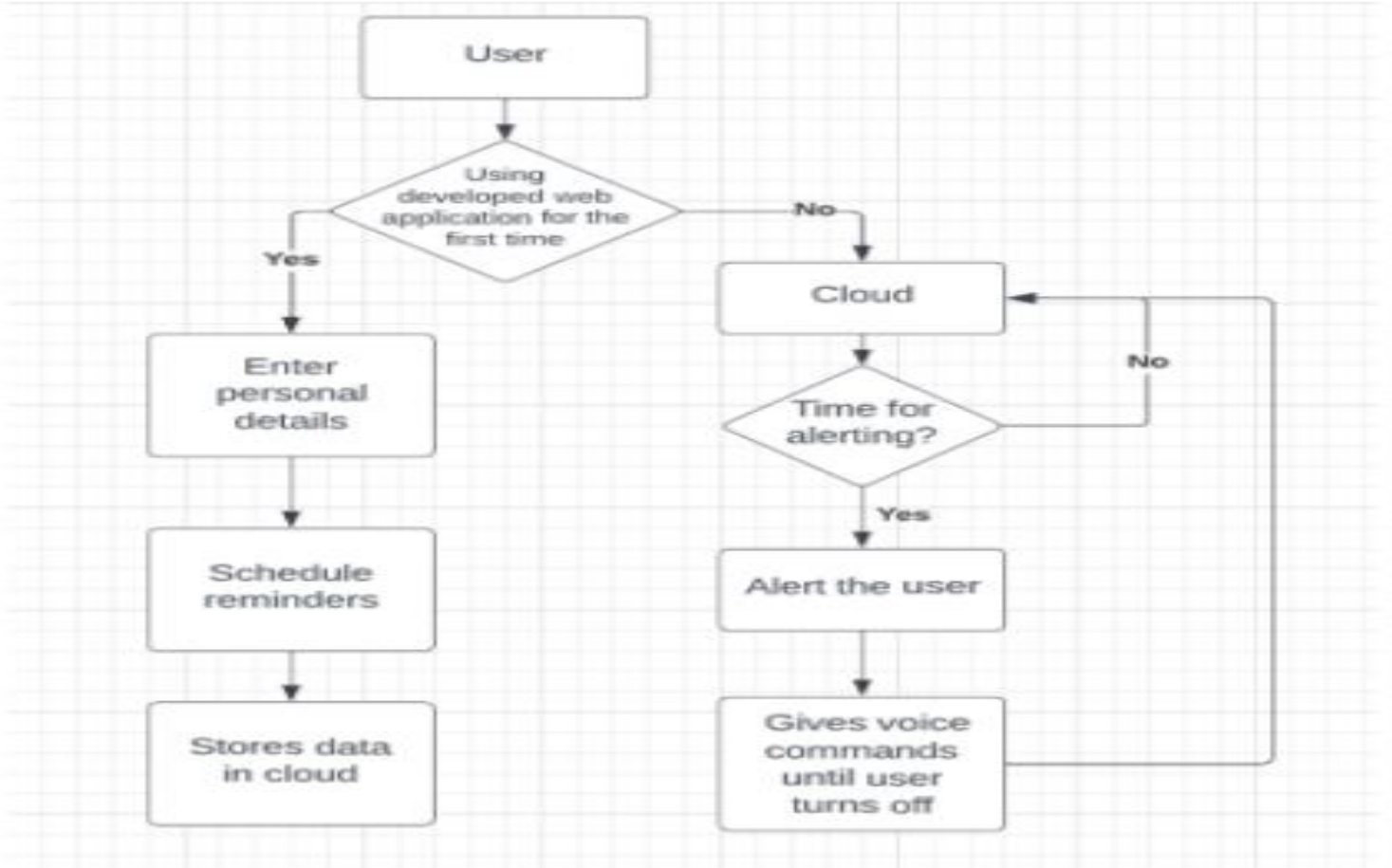
FR NO.	Functional requirements	Sub requirements
FR-1	User registration	Registration through Gmail Registration by phone number
FR-2	User confirmation	Confirmation Via email Confirmation through SMS/messages
FR-3	User login(web)	Login with registered mail id and password
FR-4	User login (mobile app)	Login with registered mobile no and password
FR-5V	Users' medical information	In the app, enter your medicine details with date. Then set the time in the app

4.2 Non-functional Requirements

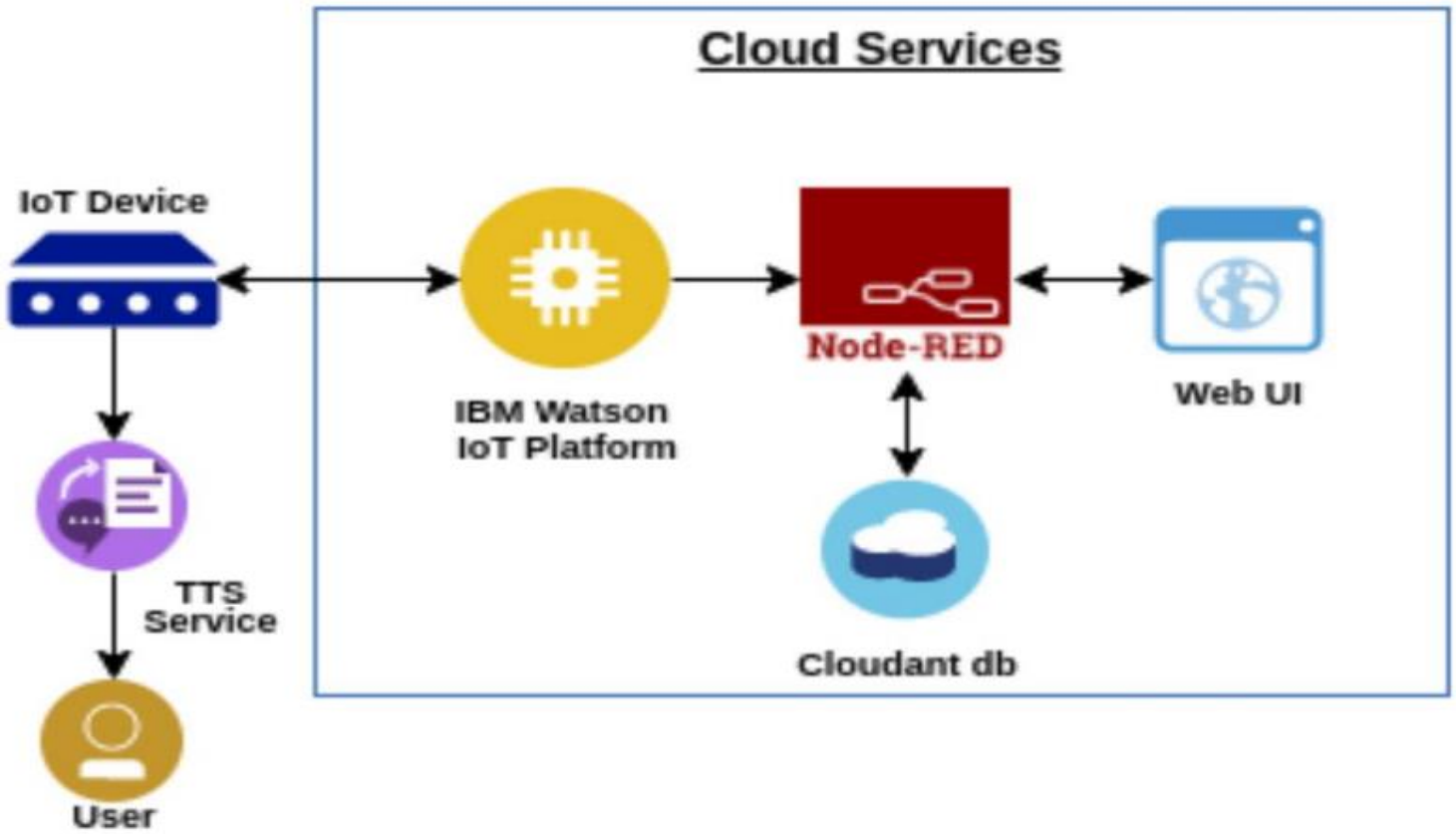
FR NO.	Non-Functional Requirements	Description
NFR-1	Usability	Then system should be user-friendly for the users. It is used to remind the medicine names
NFR-2	Security	The login information should not be accessed by any other users than the respective. The data of the users should be kept confidential
NFR-3	Reliability	Reminds on correct time the user data should be updated and examined after certain period of time
NFR-4	Performance	The voice message will be delivered accurately to the given time. It works
NFR-5	**Availability**	**The system should be monitored 24/7 for the alert of medicines. It can be used by any registered users from any place**
NFR-6	Scalability	It is easily adaptable. The device is compatible and portable the application can handle any number of registrations

5. Project Design

5.1 Data Flow Diagram



5.2 Technical architecture



5.3 User Stories

User Type	Functional Requirements(Epic)	User story Number	User story/Task	Acceptance criteria	Priority	Release
Customer (Mobile user)		USN-1	As a user I can register for the application by entering my email or mobile number,password,and confirming my password	I can access my account/dashboard	High	Sprint1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint 1
		USN-3	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-4	As a user, I can log into the application by entering email or mobile number & password	I can access my account / dashboard	High	Sprint 1
	Dashboard	USN-5	As a user, I can update my reminders and medicines wherever required		High	Sprint-2
		USN-6	As a user, I can check the application whether the medicine dosage is completed.		Medium	Sprint-2
Customer Care Executive		USN-7	For any troubleshooting, the user can send a mail to the technical team.		Low	
Administrator		USN-8	Ensures smooth functioning and data warehousing strategies		Medium	Sprint-3

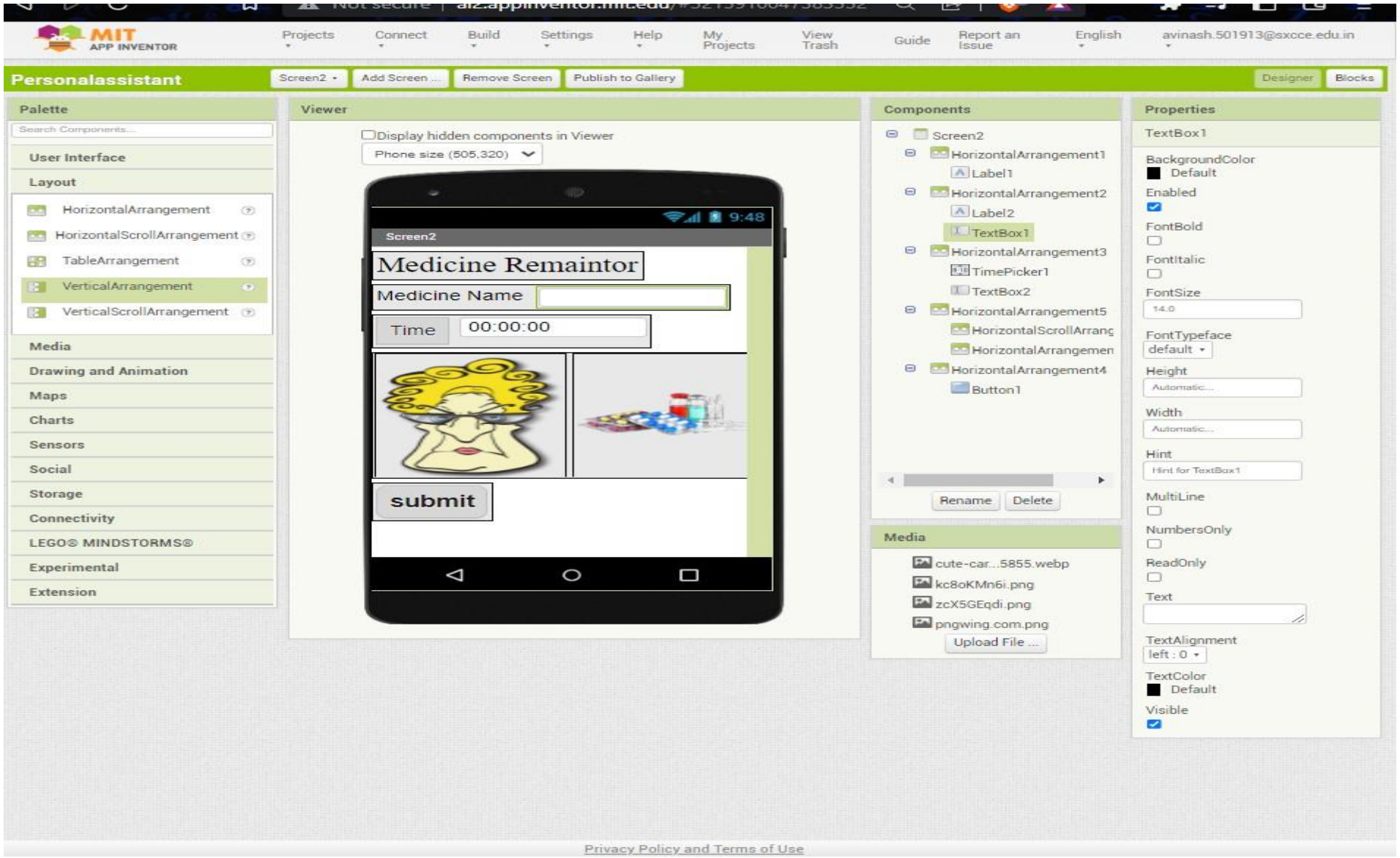
6.1 Sprint Planning And Schedule

Sprint	Functional Requirements (Epic)	User Story Number	User Story /Task	Story Points	Priority	Team Members
Sprint-1	Login	USN-1	As an admin, I can log into the application by entering username &password	5	Medium	Benoj CM
Sprint-1		USN-2	When the admin doesn't enter the username, it displays an error message group	3	Medium	Benoj CM
Sprint-1		USN-3	When the admin doesn't enter the password, it displays an error message popup	4	Medium	Benoj CM
Sprint-1		USN-4	When the admin enters the invalid credentials, it displays an error popup	5	Medium	Benoj CM
Sprint-1		USN-5	When the admin enters the invalid credentials, it displays an error popup	3	High	Benoj CM
Sprint-2	Dashboard	USN-1	Creating a Node-Red dashboard	5	Medium	Avinash P
Sprint-2		USN-2	Developing a Node-Red to publish data to IBM cloud	8	High	Avinash P
Sprint-2		USN-3	Create a register form in Node-Red	7	Medium	Avinash P
Sprint-3	Creating device	USN-1	Creating a device in IBM Watson IOT platform	10	High	Shanu Jose A
Sprint-3	Python	USN-2	Connect the device created in work to the device created in IBM Watson IOT platform.	10	High	Shanu Jose A
Sprint-4	MIT app inventor	USN-1	Create an Interface for login page and Dashboard	5	Low	Maria leo mesha M
Sprint-4		USN-2	Connect MIT app to Node Red	5	High	Maria leo mesha M
Sprint-4		USN-3	As a user, I can keep track of the medicine time	6	Medium	Maria leo mesha M
Sprint-4	Alert	USN-4	Retrieving the time from cloud ant and alert the user through voice command	4	High	Maria leo mesha M

6.2 Sprint Delivery Schedule

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	31/10/2022-03/11/2022	20	04/11/2022
Sprint-2	20	04/11/2022-08/11/2022	20	08/11/2022
Sprint-3	20	09/11/2022-13/11/2022	20	13/11/2022
Sprint-4	20	14/11/2022-17/11/2022	20	18/11/2022

7.Testing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Projects
Connect
Build
Settings
Help
My Projects
View Trash
Guide
Report an Issue
English
avinash.501913@sxcce.edu.in
Personalassistant
Screen2
Add Screen ...
Remove Screen
Publish to Gallery
Designer
Blocks
Palette
Search Components...
User Interface
Layout
HorizontalArrangement
HorizontalScrollArrangement
TableArrangement
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Media
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Maps
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Display hidden components in Viewer
Phone size (505,320)
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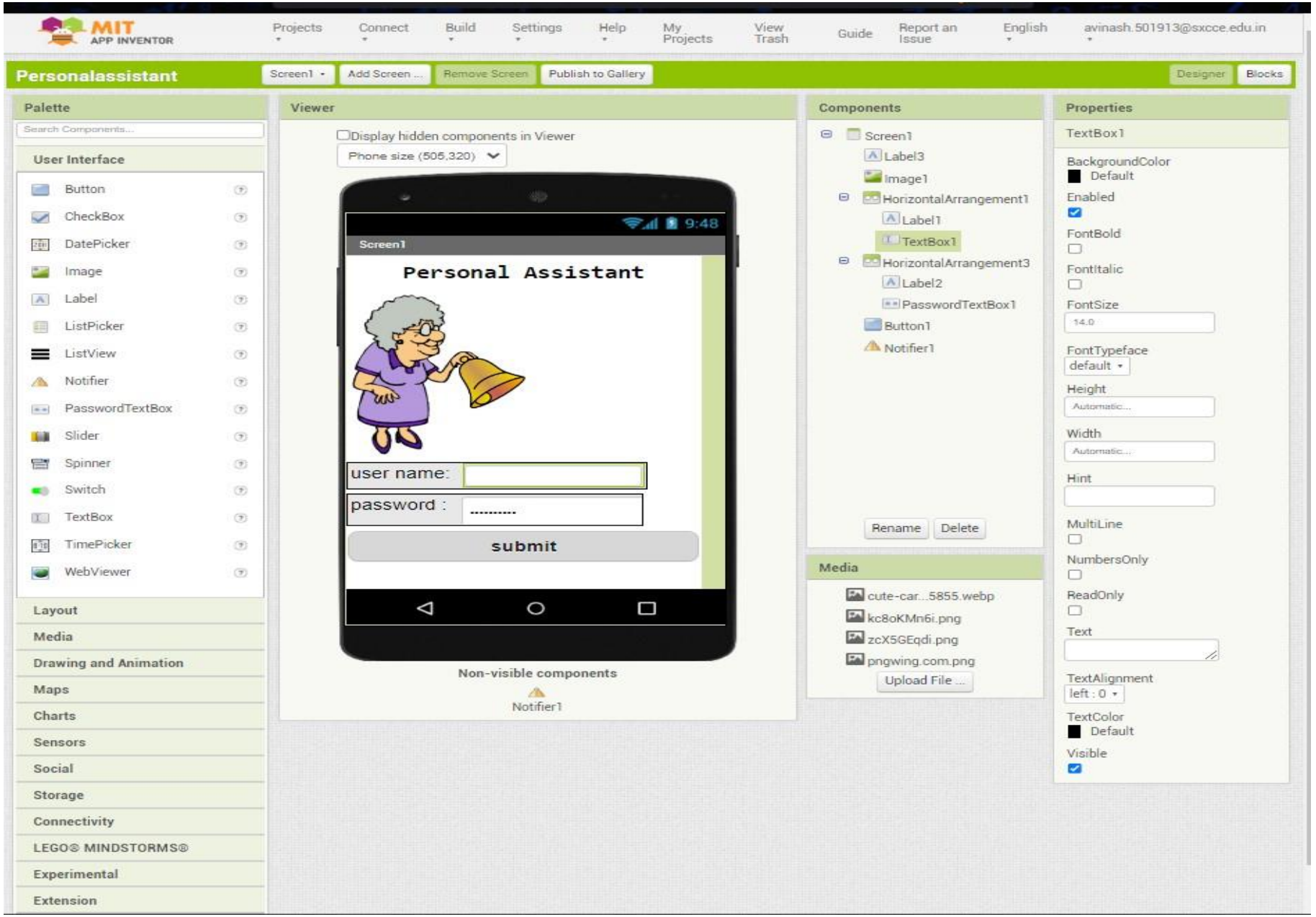
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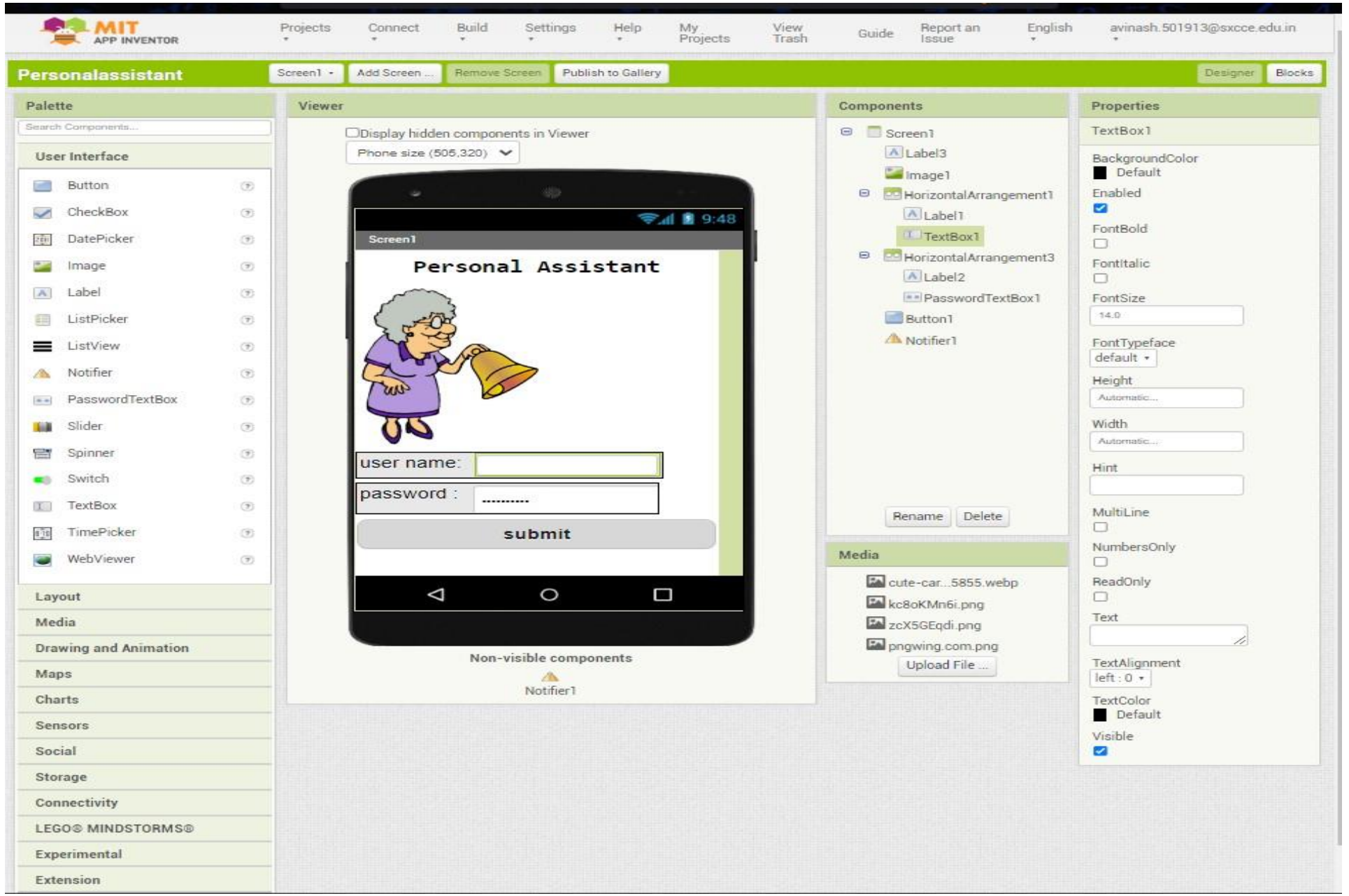
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8.Conclusion

Thus, the Project offers the elderly people, a personal assistant which helps to remainders them Consume medicine at the particular time. By which skipping medicine can be avoided.

9.Future Work

The project can be further developed by bringing into the feature of informing the medicine name during the notification. The voice assistance which is given can be customized by adding the user's voice or the caretaker’s voice. Further the mobile application can update medicines by taking voice commands as an input from the user.

10.Reference

Almeta, Deepti, Kalpana Muda liar, and Palak Patel. "Medication reminder and healthcare–an android application." International Journal of Managing Public Sector Information and Communication Technologies (IJMPICT) 6, no. 2 (2015): 39-48.

De Hana, Geert, Olivier Blankson Henchman’s, and Amy Ahluwalia. "Personal assistants for healthcare treatment at home." In Proceedings of the 2005 annual conference on European association of cognitive ergonomics, pp. 225-231. 2005.

Ermelinda, Alena, and Victor Tiberius. "Voice-controlled intelligent personal assistants in health care: International Delphi Study." Journal of Medical Internet Research 23, no. 4 (2021): e25312.

Ahmed, Saleh, Mahboob Qaosar, Rizka Wakhidatus Sholikah, and Yasuhiko Morimoto. "Early dementia detection through conversations to virtual personal assistant." In 2018 AAAI Spring Symposium Series. 2018.