

# Personal Assistance For Seniors Who Are Self-Reliant

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## PROJECT OBJECTIVES:

The main objective of this work is to help seniors maintain their quality of life at home and to keep them living their lives their way, as well as to lighten the load of full-time or family caretaker.

## IDEATION:

Empathy Map

Build empathy and keep your focus on the user by putting on their shoes.

Share your feedback

Idea Prioritization

Importance vs Feasibility

Empathy Map.pdf

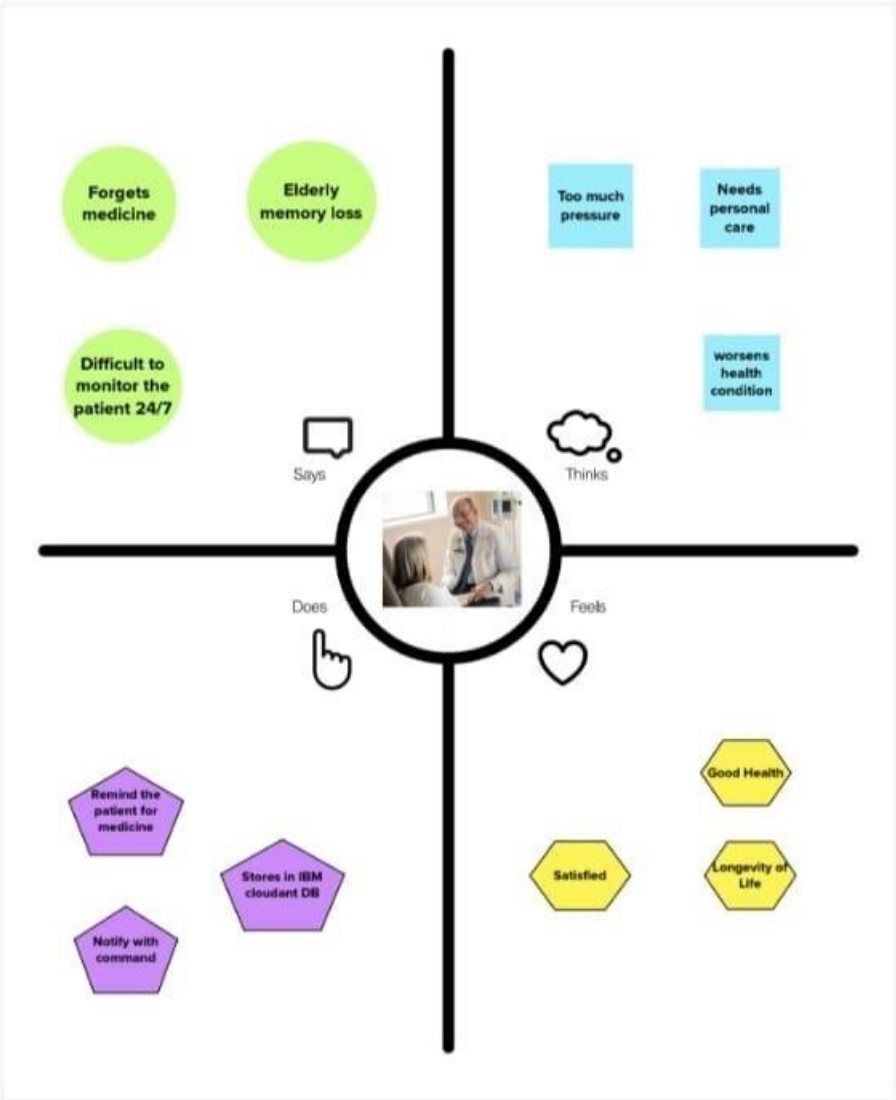
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**EMPATHY MAP:**

# Empathy Map

Dive into the mind of the user for focused product development

● Build empathy and keep your focus on the user by putting yourself in their shoes.



## LITERATURE SURVEY:

### PROJECT DESIGN PHASE 1 :

**1. MARIA GABRIELLA MELCHOIRE** Published on “IRCCS INRCA-National Institute of Health and Science on Ageing...2022”. Caring help is essential for carrying out everyday activities when older persons age alone and become weak with functional limitations. The current study set out to examine the role and features of privately employed Personal Care Assistants (PCAs) who provide care for elderly people in Italy in light of the family's decreasing capacity to provide care and the under-resourcing of governmental services.

In the "Inclusive ageing in place" (IN-AGE) project, 120 qualitative interviews with elderly persons in their homes in the Italian regions of Lombardy, Marche, and Calabria were conducted in 2019. Along with some basic quantifications of assertions, a content analysis was done.

Results revealed that PCAs were helpful in 27 situations, mostly when older citizens' health difficulties were raised.

**2. GUNTHER EYSENBACH** Published on “JMIR M health U health 2021”. With the benefits of hands-free and eyes-free engagement modalities to manage requests, voice assistants based on smart speakers promise to support the elderly population. The advantages of this kind of gadget are seen differently by older persons, although little is known about this. The ease of a speech-based engagement contributed to the favourable first reception to voice assistants.

Particularly, it was common to finish an engagement with a voice assistant by expressing gratitude or providing criticism on the quality of the responses. Asking queries about health care and streaming music were the two main themes of orders given during the first conversation. However, the majority of the

subsequent responses were negative due to the challenges in creating a structured language for a command.

**3. Mithra Venkatesan** published on 2021 IEEE Pune Section International Conference (Pune Con)". The robot for the elderly discussed in this essay is made up of numerous electrical components that can be changed in the future and utilised to create new robotic appliances that may be used in a domestic setting. A personal assistant robot called "Robo care for Elderly" is a prototype that will one day be utilized to care for and accompany the elderly. The Raspberry Pi microcomputer, an ultrasonic sensor, a PIR sensor, a temperature sensor, LEDs, an integrated Bluetooth module, a Dc motor, a servo motor, speakers, etc. are all part of this system. The major goal of the created work is to create a personal assistant robot prototype that is affordable and usable in every home, improving the usage of technology.

**4. Ramin Yaghoubzadeh Torky** published on "International Workshop on Intelligent Virtual Agents 2017". Cognitively impaired individuals struggle to independently plan their everyday activities. A virtual agent could be a helpful daily calendar aide, but this requires that these particular user groups accept the system and can communicate effectively with it. In this study, studies that address these issues for older users and users with cognitive impairment are presented. Results from focus groups and interviews indicate that using a participatory design approach can boost acceptance. The viability of spoken-language interaction is shown through actual interaction studies with a prototype, which also disclose mitigation techniques for comprehending issues.

**5. Arsénio Reis** published on "International Conference on Universal Access in Human- Computer Interaction ". One of the key contributors to a person's life quality degrading as their ageing process progresses is social isolation and loneliness. These factors, which are brought on by the person's decreased social engagement with their friends, family, and

former coworkers groups, can have a significant impact on their general health. On the other hand, software and hardware technologies have advanced to the point where electronic assistant can now both speak with users using natural voice language and gather information from them via camera photos. In this regard, a paradigm for the elderly's acceptance of electronic intelligent assistants has been put forth in prior research. In the current study, it is evaluated whether employing.

1. **Manuel Bolaños** published on “ Universidad de Granada, E.T.S. of Computer and Telecommunication Engineering, Granada, Spain”. Because of the trend toward higher population growth worldwide, some authors agree that older people experience social and technological isolation, if not outright exclusion, as a result of their ageing condition.

Therefore, studies are required to identify the expectations of this population in terms of the usage and adoption of technology. As a result, new technological developments implement specific requirements that aid older people in adjusting to their use. This essay discusses a study conducted to assess how well-liked smart virtual assistants are among the elderly. Considering certain experiences in the development and implementation of technology for this kind of study, the design and execution of a recreational strategy to remember taking drugs.

2. **Katherine O'Brien MD** published on “ <https://doi.org/10.1111/jgs.16217> on 2019”. The desire of many older persons to age in place may be supported with voice-controlled intelligent personal assistants (VIPAs; examples include Amazon Echo and Google Home). The use of VIPAs by older persons in the actual world hasn't been studied before. We wanted to find out how elderly people and their caretakers use VIPAs. Retrospective analysis of all Amazon Echo reviews with confirmed purchases that were published on the website between January 2015 and January 2018, with the health-related older adult key terms filtered out. To find pertinent themes, open-ended reviews were qualitatively examined.

3. **Heetae Yang and Hwansoo Lee** published on “*Information Systems and e-Business Management* on 2018”. The market for virtual personal assistant (VPA) gadgets is emerging as a new field of conflict for international information technology businesses with the development of artificial intelligence technologies. Based on perceived value theory, this study creates a thorough research model to explain why potential users could choose to embrace and employ VPA devices. It examines the connection between qualities associated to a product's perceived utility, delight, and enjoyment (i.e., portability, automation, and visual attractiveness). Using data from 313 survey samples, partial least squares analysis is used to assess the research model and hypotheses. The findings demonstrate that usage intention is significantly influenced by perceived utility and enjoyment. The

software and hardware-based utilitarian value, has the biggest effect on perceived usefulness.

## **PROBLEM SOLUTION FIT:**

1

Problem-Solution fit canvas 2.0

1. PATIENT SEGMENT(S)  
Who is your patient?  
According to our problem statement, doctors' active patients are older people.

2. JOBS-TO-BE-DONE / PROBLEMS  
Which jobs are to be done (or problems) do you address for your patients?  
Patient care is the core responsibility of a medical practitioner. They have to assure that the patient is given the best possible care. In hospitals or any other medical institution, the doctors and nurses take care of their patients very carefully.

3. TRIGGERS  
What triggers customers to take action? i.e., seeing their neighbor move in.  
For Example: Something that either sets off a disease in people who are genetically predisposed to developing the disease, or that causes a certain symptom to occur in a person who has a disease.

4. EMOTIONS: BEFORE / AFTER  
How do patients feel when they face a problem or sign up and afterwards?  
The patients would feel anxious at first, then they would try to think of a solution to solve it themselves.

5. PATIENT CONSTRAINTS  
What constraints prevent your patients from taking action or from their choices of solutions?  
Within healthcare systems, these constraints may show up as bottlenecks within the process. While the bottleneck is evidence of a constraint, the constraint is usually related to equipment, staff or a policy which is stopping the process from functioning effectively.

6. PROBLEM ROOT CAUSE  
What is the real reason that this problem exists? What is the back story behind the need to do this job?  
If there is no internet connection, there would be no sharing of information from one person to another and GPS would be no use in the absence of a network connection. Due to these flaws, the problem exists. The world functions with the help of networks, so our patient tracker application also operates on an internet connection.

7. YOUR SOLUTION  
If we are working on a problem/bottleneck, what does your current solution look like in the current, and how does each fit the reality.  
If we are working on a new/breaking problem, how does it think and how the solution comes and comes up with a solution that the entire patient population, rather a process and another patient population.  
Here we introduce a smart medicine reminder system based on IOT. The proposed scheme was particularly created for the Android platform. For our system, we implement a reminder system which provides an alarm when it is time to take medicine.

8. AVAILABLE SOLUTIONS  
Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried earlier? What pros & cons do these solutions have?  
When the notification call or message will be passed on to the patients.

9. BEHAVIOUR  
What does your patients do to address the problem and get the job done?  
The patients could get help from the help options in the settings of the application and if they are facing any issues, they can make a report on that option and the authorities will look into the problem.

10. CHANNELS OF BEHAVIOUR  
What kind of actions do patients take online?  
If it is an online mode, the patients can make a report in the help/question forum in the setting option.  
What kind of actions do patients take offline?  
If it is an offline mode, the patients can directly send a text backmail or message to the receiver.

## PROPOSED SOLUTION:

Browser tabs: You are signed in, Welcome to Project, IBM, IBM-EPBL/IBM-Proje, Solution Requi, Customer Jou, Proposed Soli, Empathy Map, New Tab

Address bar: File | C:/Users/NIVITHA%20R/Downloads/Solution%20Requirements.pdf

Document: Solution Requirements.pdf (1 / 2, 33%)

Thumbnail 1:

Thumbnail 2:

Page 1 Content:

Project Design Phase 1  
Solution Requirements (Functional & Non-Functional)

Functional Requirements

Req ID	Functional Requirement	Acceptance Criteria
FR-1	User Authentication	Users must be able to log in using their email and password. The system must support password reset and forgot password functionality.
FR-2	Data Management	The system must allow users to add, update, and delete their health data. Data must be stored securely and encrypted.
FR-3	Reporting & Analytics	Users must be able to view their health data over time and receive alerts for abnormal readings. The system must generate reports and share them with healthcare providers.
FR-4	Integration with External Devices	The system must integrate with external IoT devices (e.g., smart scales, blood pressure monitors) to collect real-time data.
FR-5	Mobile App	The system must have a mobile app for iOS and Android that allows users to access their data and receive notifications.

Non-Functional Requirements

Req ID	Non-Functional Requirement	Acceptance Criteria
NFR-1	Performance	The system must support up to 10,000 concurrent users and respond within 2 seconds.
NFR-2	Security	The system must be secure and compliant with GDPR and HIPAA regulations. All data must be encrypted at rest and in transit.
NFR-3	Availability	The system must be available 24/7 with a maximum uptime of 99.9%.
NFR-4	Scalability	The system must be able to scale horizontally to support future growth.

Page 2 Content:

Req ID	Requirement	Priority
FR-1	Functional	High
FR-2	Functional	High
FR-3	Functional	Medium
FR-4	Functional	Medium
FR-5	Functional	Medium
NFR-1	Non-Functional	High
NFR-2	Non-Functional	High
NFR-3	Non-Functional	Medium
NFR-4	Non-Functional	Medium

Task List:

- Implement User Authentication
- Implement Data Management
- Implement Reporting & Analytics
- Implement Integration with External Devices
- Implement Mobile App

## SOLUTION ARCHITECTURE:

Browser tabs: You are signed in, Welcome to Project, IBM, IBM-EPBL/IBM-Proje, Proposed Solution, Empathy Map, New Tab

Address bar: github.com/IBM-EPBL/IBM-Proje-6381-1658827594/blob/main/Project%20Design%20and%20Planning/Project%20Design%20Phase-I/Solution%20Architecture.pdf

Document: Proposed Solution.pdf (1 / 2, 33%)

Diagram: Example - Solution Architecture Diagram:

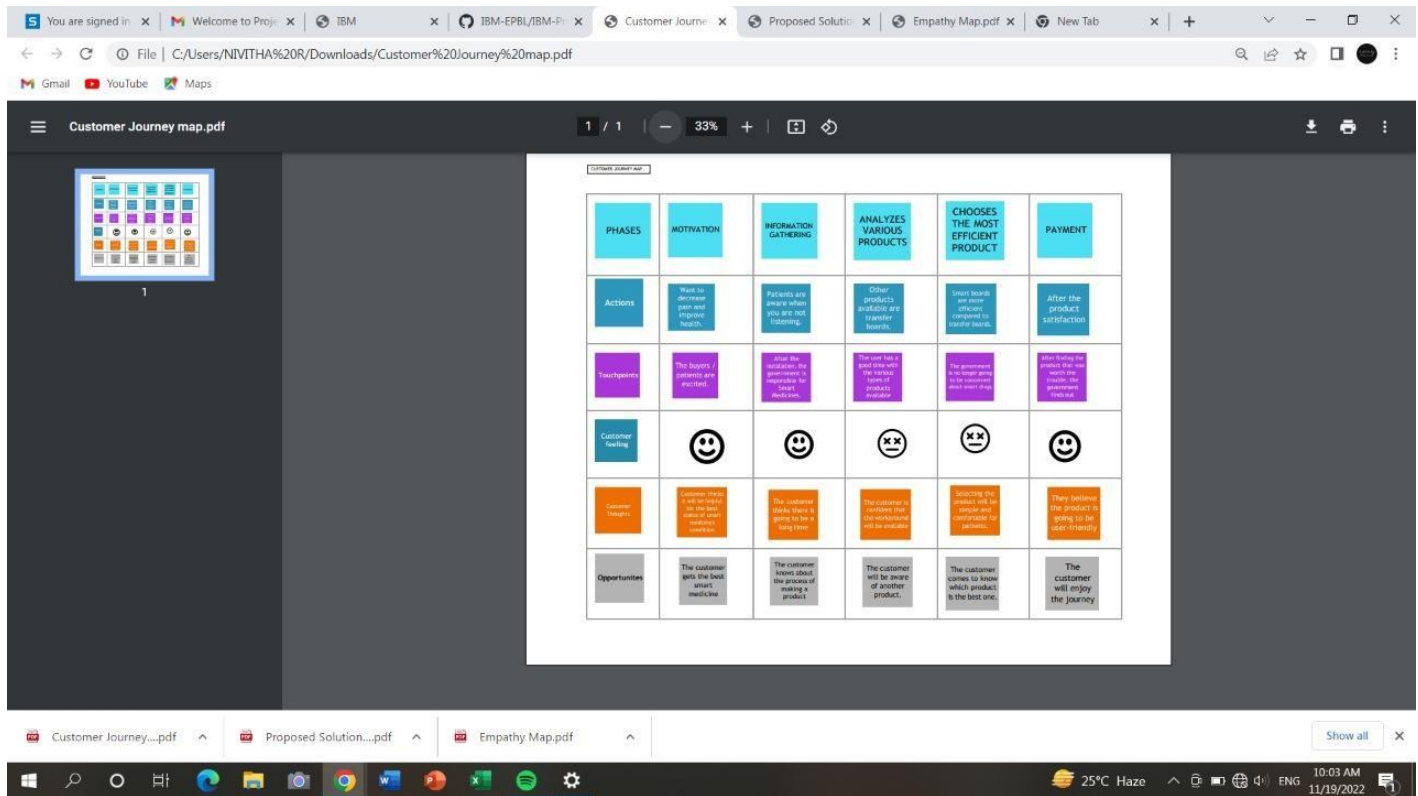
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graph LR; S1[1 Pulse-rate sensor] --> ID[4 IoT devices]; S2[2 Blood pressure sensor] --> ID; S3[3 Temperature sensor] --> ID; ID --> FNN[6 Fuzzy neural network]; ID --> IOS[5 IoT server]; FNN --> IOS; IOS --> G[7 Gateway]; G --> C[8 Cloud]; IOS --> AA[Android app];
```

The diagram illustrates the solution architecture. It starts with three sensors (1. Pulse-rate sensor, 2. Blood pressure sensor, 3. Temperature sensor) connected to IoT devices (4). The IoT devices send data to a Fuzzy neural network (6) and an IoT server (5). The Fuzzy neural network also sends data to the IoT server. The IoT server connects to a Gateway (7), which then connects to the Cloud (8). The IoT server also connects to an Android app.

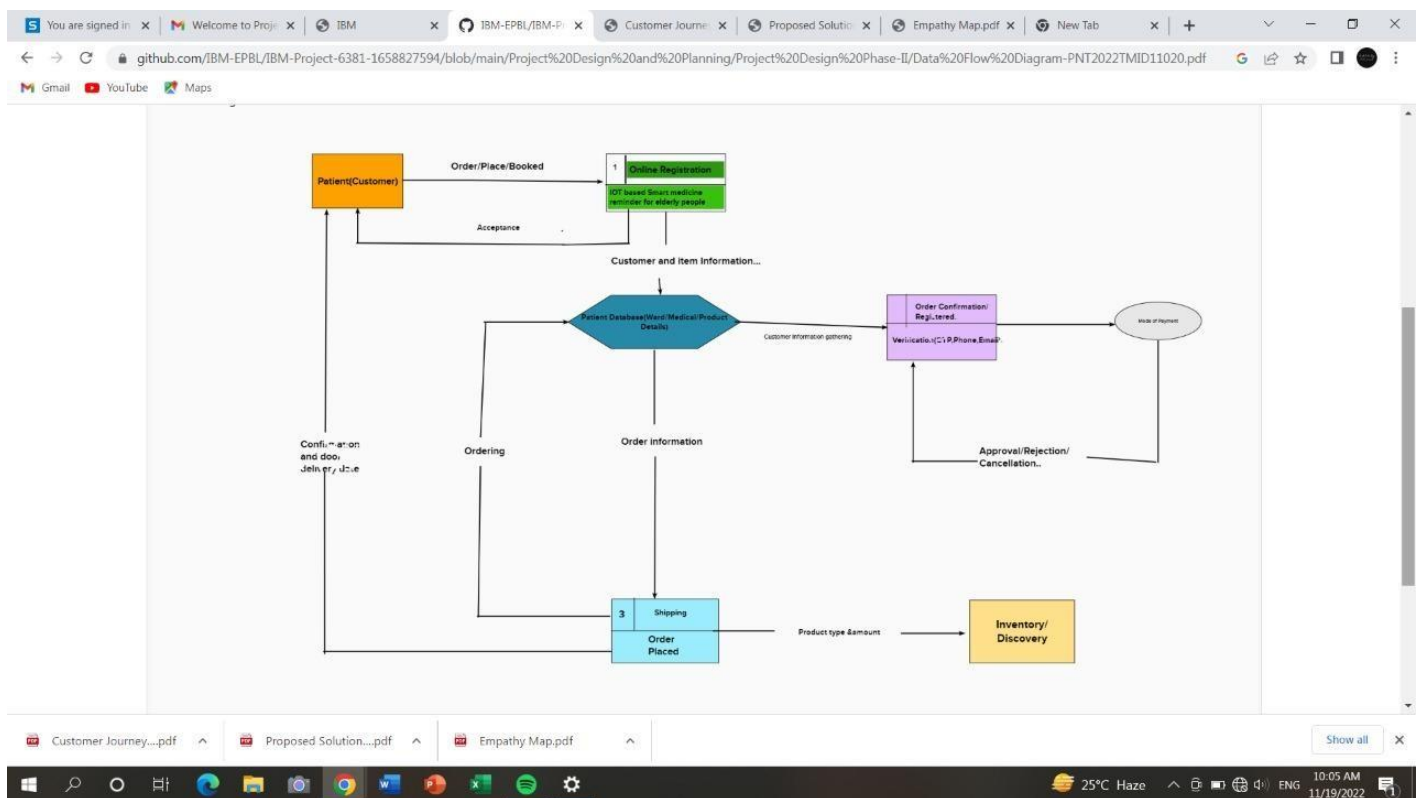
## PROJECT DESIGN PHASE 2 :

## CUSTOMER JOURNEY MAP :





## DATA FLOW DIAGRAM :



## FUNCTIONAL REQUIRMENTS :

Project Planning Template (Product Building, Sprint Planning, Service, etc.)

Project Name: PNT2022TMID11020 Project Planning.pdf

Project Manager: [Name]

Project Start: [Date]

Project End: [Date]

Project Status: [Status]

Project Description: [Description]

Project Objectives: [Objectives]

Project Deliverables: [Deliverables]

Project Risks: [Risks]

Project Stakeholders: [Stakeholders]

Project Milestones: [Milestones]

Project Budget: [Budget]

Project Resources: [Resources]

Project Schedule: [Schedule]

Project Performance: [Performance]

Project Communication: [Communication]

Project Governance: [Governance]

Project Change Management: [Change Management]

Project Quality Management: [Quality Management]

Project Risk Management: [Risk Management]

Project Stakeholder Management: [Stakeholder Management]

Project Procurement Management: [Procurement Management]

Project Financial Management: [Financial Management]

Project Human Resource Management: [Human Resource Management]

Project Information Management: [Information Management]

Project Legal Management: [Legal Management]

Project Environmental Management: [Environmental Management]

Project Social Management: [Social Management]

Project Cultural Management: [Cultural Management]

Project Ethical Management: [Ethical Management]

Project Sustainability Management: [Sustainability Management]

Project Innovation Management: [Innovation Management]

Project Digital Management: [Digital Management]

Project Data Management: [Data Management]

Project Security Management: [Security Management]

Project Privacy Management: [Privacy Management]

Project Compliance Management: [Compliance Management]

Project Accessibility Management: [Accessibility Management]

Project Usability Management: [Usability Management]

Project Reliability Management: [Reliability Management]

Project Maintainability Management: [Maintainability Management]

Project Portability Management: [Portability Management]

Project Interoperability Management: [Interoperability Management]

Project Compatibility Management: [Compatibility Management]

Project Scalability Management: [Scalability Management]

Project Flexibility Management: [Flexibility Management]

Project Adaptability Management: [Adaptability Management]

Project Resilience Management: [Resilience Management]

Project Robustness Management: [Robustness Management]

Project Fault Tolerance Management: [Fault Tolerance Management]

Project Error Handling Management: [Error Handling Management]

Project Exception Handling Management: [Exception Handling Management]

Project Logging Management: [Logging Management]

Project Monitoring Management: [Monitoring Management]

Project Alerting Management: [Alerting Management]

Project Reporting Management: [Reporting Management]

Project Auditing Management: [Auditing Management]

Project Archiving Management: [Archiving Management]

Project Backup Management: [Backup Management]

Project Recovery Management: [Recovery Management]

Project Disaster Management: [Disaster Management]

Project Business Continuity Management: [Business Continuity Management]

Project Incident Management: [Incident Management]

Project Problem Management: [Problem Management]

Project Change Management: [Change Management]

Project Configuration Management: [Configuration Management]

Project Version Management: [Version Management]

Project Release Management: [Release Management]

Project Deployment Management: [Deployment Management]

Project Rollback Management: [Rollback Management]

Project Upgrade Management: [Upgrade Management]

Project Migration Management: [Migration Management]

Project Integration Management: [Integration Management]

Project Interfacing Management: [Interfacing Management]

Project API Management: [API Management]

Project Data Management: [Data Management]

Project Database Management: [Database Management]

Project Query Management: [Query Management]

Project Indexing Management: [Indexing Management]

Project Caching Management: [Caching Management]

Project Compression Management: [Compression Management]

Project Encryption Management: [Encryption Management]

Project Decryption Management: [Decryption Management]

Project Authentication Management: [Authentication Management]

Project Authorization Management: [Authorization Management]

Project Access Management: [Access Management]

Project Session Management: [Session Management]

Project Cookie Management: [Cookie Management]

Project Local Storage Management: [Local Storage Management]

Project IndexedDB Management: [IndexedDB Management]

Project Web Storage Management: [Web Storage Management]

Project Service Worker Management: [Service Worker Management]

Project Manifest Management: [Manifest Management]

Project App Shell Management: [App Shell Management]

Project PWA Management: [PWA Management]

Project Progressive Web App Management: [Progressive Web App Management]

Project Hybrid App Management: [Hybrid App Management]

Project Native App Management: [Native App Management]

Project Cross-Platform App Management: [Cross-Platform App Management]

Project Mobile App Management: [Mobile App Management]

Project Desktop App Management: [Desktop App Management]

Project Web App Management: [Web App Management]

Project SaaS Management: [SaaS Management]

Project IaaS Management: [IaaS Management]

Project PaaS Management: [PaaS Management]

Project FaaS Management: [FaaS Management]

Project Serverless Management: [Serverless Management]

Project Cloud Management: [Cloud Management]

Project Multi-Cloud Management: [Multi-Cloud Management]

Project Hybrid Cloud Management: [Hybrid Cloud Management]

Project Edge Cloud Management: [Edge Cloud Management]

Project IoT Management: [IoT Management]

Project IIoT Management: [IIoT Management]

Project CPS Management: [CPS Management]

Project Smart City Management: [Smart City Management]

Project Smart Home Management: [Smart Home Management]

Project Smart Building Management: [Smart Building Management]

Project Smart Transportation Management: [Smart Transportation Management]

Project Smart Agriculture Management: [Smart Agriculture Management]

Project Smart Manufacturing Management: [Smart Manufacturing Management]

Project Smart Healthcare Management: [Smart Healthcare Management]

Project Smart Education Management: [Smart Education Management]

Project Smart Retail Management: [Smart Retail Management]

Project Smart Marketing Management: [Smart Marketing Management]

Project Smart Customer Service Management: [Smart Customer Service Management]

Project Smart HR Management: [Smart HR Management]

Project Smart Finance Management: [Smart Finance Management]

Project Smart Insurance Management: [Smart Insurance Management]

Project Smart Legal Management: [Smart Legal Management]

Project Smart Government Management: [Smart Government Management]

Project Smart Infrastructure Management: [Smart Infrastructure Management]

Project Smart Energy Management: [Smart Energy Management]

Project Smart Water Management: [Smart Water Management]

Project Smart Environment Management: [Smart Environment Management]

Project Smart Society Management: [Smart Society Management]

Project Smart Future Management: [Smart Future Management]

## TECHNOLOGY ARCHITECTURE:

Technology Architecture

IoT Device

Cloud Services

IBM Watson IoT Platform

Node-RED

Web UI

Cloudant db

MIT App

Doctor

notification on or alert

User

TTS Service

Diagram illustrating the Technology Architecture:

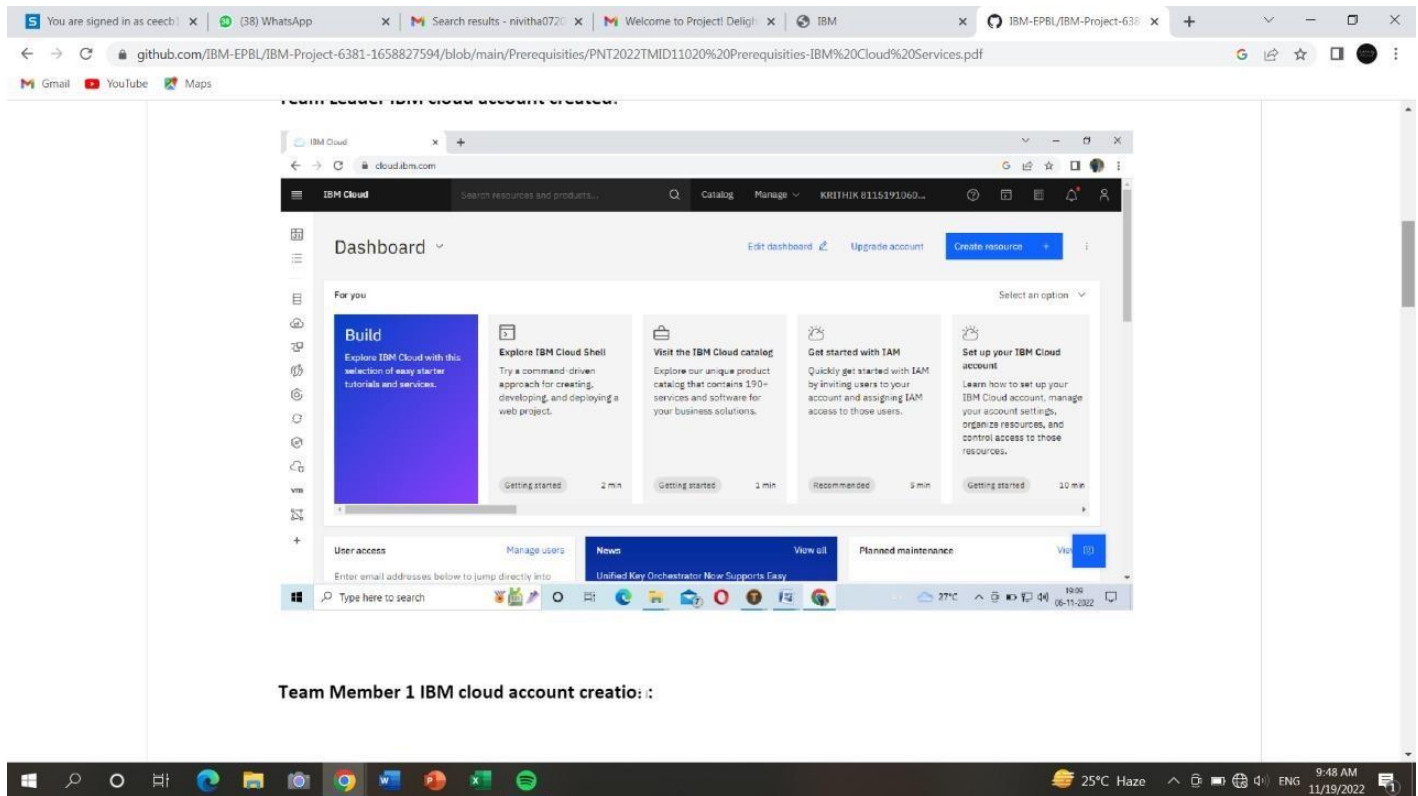
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graph LR
    IoT[IoT Device] --> Watson[IBM Watson IoT Platform]
    Watson --> Node[Node-RED]
    Node --> Web[Web UI]
    Node --> Cloud[Cloudant db]
    Web --> MIT[MIT App]
    MIT --> Doctor[Doctor]
    Doctor --> MIT
    User[User] --> TTS[TTS Service]
    TTS --> IoT
    
```

## PROJECT PLANNING PHASE :

## MILESTONE AND ACTIVITY LIST :





Team Member 1 IBM cloud account creatio :

## IBM SOFTWARE:



Step 2 : Open Python IDE Environment and installed python version