CUSTOMER CARE REGISTRY

TEAM DETAILS:

Team ID   : PNT2022TMID11566
College Name   : K.L.N. College Of Engineering
Department   : Information Technology

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1. INTRODUCTION:

A comprehensive online customer care solution is used to manage customer interaction and complaints with service providers. The system must be able to integrate with any service provider from any field or sector, including banking, telecommunication, insurance, etc.. The provision of service to customers commonly referred to us client service. The customer value proposition of a business typically includes excellent customer service.

Purpose of the Project:

- An online comprehensive Customer Care Solution is to manage customer interaction and complaints with the Service Providers over phone or through and e-mail. The system should have capability to integrate with any Service Provider from any domain or industry like Banking. Telecom Insurance. etc.
- Customer Service also known as Client Service is the provision of service to customers Its significance varies by product industry and domain. In many cases customer services is more important if the information relates to a service as opposed to as Customer.
- Customer Service may be provided by a Service Representatives Customer Service is normally an integral part of a company's customer value proposition.

2. LITERATURE SURVEY:

1.Pooria Rashvand and Muhd Zaimi Abd Majid (2014) :

In this paper, Critical Criteria on Client and Customer Satisfaction for the Issue of Performance Measurement. The outcome of this paper is to establish the client and customer satisfaction criteria as the two key stakeholders in construction project for the issue of performance measurement based on the reviewed data. The methodology of this study is based on comprehensive literature review of performance measurements for client and customer whereby the data were analyzed, using the metrics which the additive number of each customer and client-satisfaction criteria are occurring in previous study. From the metric analysis, the common factors for customer and client satisfaction were ranked. From the analysis of this paper, it can be concluded that expectation and perception are the two common critical satisfaction criteria for client and customer that must be considered where the satisfaction is required.

2. Freshdesk: bringing in freshness in startup world case by Achutha Jois, Ramnath Krishnan Pallasena, Somnath Chakrabarti

Freshdesk is a cloud-powered Customer Support HHHelp Desk software focusing on solvingcustomer support issues through Social Media like Facebook and Twitter. Freshdesk is used forcustomer support activities by companies of different sizes starting from small business to enter-prises across industries.

Freshdesk's innovative solutions powered by cloud-based technology helpbusinesses to support their customers via e-mail, phone, SMS, social media, websites, and webforums. Today they have more than 50+ million end users with more than 100,000 installations.Digital technologies, tools and techniques have helped them to go global. After winning $40,000 atthe Microsoft BizSpark Startup challenge on 23 June 2011, Freshdesk founding team has neverlooked back. Despite pressure from investors to focus on a single product line, Freshdesk launchedvarious successful product lines like Freshservice (Freshdesk, 2017). Later it launched Freshfone[virtual contact center

software over the cloud] to showcase its ability to make products successful.Freshdesk has global presence at various locations such as Chennai [India], Berlin [Germany],London [UK], Sydney [Australia], San Bruno [CA, USA].

3.To identify the classification of simple and routine enquires – helpdesk

Information Technology Help Desk (HD) support has been established in organizations to provide technical support to users. Over four decades, information technology (IT) has played an important role in reducing costs, improving operations, enhancing customer services, improving communications as well as gaining and sustaining competitive advantages in business environments [26,30]. However, the complexity of business systems, couple with a wide range of hardware, software and networking technologies has resulted in a wide and over-increasing number of technical and functional problems faced by the users, for example, critical network failures with impact on more than 30000 users happen every two days in the USA [1]. If the problems are not resolved in a timely manner, this can lead to loss of productivity by users and of organizations. As a result, the HD has gone from having a traditional role in a non-profit making capacity to playing a vital in ensuring organizational-wide information systems are working properly and efficiently. Unfortunately, the typical HD is now being overwhelmed with incoming enquiries. Very often a majority of enquiries can be classified as simple and routine, and do not require specialized knowledge. The aim of this paper is to present the results of a survey to identify queries that can be classified as simple and routine technical enquiries, and which can be dealt with in a way that takes the pressure off the HD.

4. S. Foo, S.C. Hui and P.C. Leong, "A Web-based Intelligent Help Desk Support Environment"

Some of the research before are Schubert Foo, et al designed and developed web based intelligent help desk support environment named WebHotLine to support the customer service center of a large multinational corporation in the electronics industry, another research from Wang, et al which built iHelp as an intelligent online helpdesk system, to automatically find problems, solution patterns from the past customer.

5. T.L Dingding Wang, "iHelp: An Intelligent Online Helpdesk System", IEEE Transactions on Systems Man and Cybernetics", 2010.

Thus, many companies attempt to build a helpdesk system to support the quality of services, because high quality of customer service is extremely important for the company, and the report showed that 70% of the customer satisfaction is not about the product or service but because of the customer do not like the customer service

REFERNCES:

1. Helpdesk
2. Freshdesk

PROBLEM STATEMENT DEFINITION:

A problem statement is a concise description of the problem or issues a projectseeks to address. The problem statement identifies the current state, the desired future state and any gaps between the two. A problem statement is an important communication tool that can help ensure everyone working on a project knows what the problem they need to address is and why the project is important.

Defining the problem :

Website isn't ShowingorRunning	
Why this happens?	This issue often happens when the WebBrowser is not compatible.
Who does the problem affect?	The user and the users who are usingtheWebsite
What is the issue?	This issue can be related to theincompatibility of the Browser

What is the solution?	To check and download the compatibleversion of the Website

Over Data Utilization on connecting toDesktop

Why this happens?	This happens because the backgroundwindows update process is on.
Who does the problem affect?	The user and the users who areconnectedto the Desktop.
What is the issue?	This issue is over utilization of mobiledataover connecting to the Desktop
What is the solution?	This issue can be solved by disabling thewindows update option in settings

Customer wants to fix a blue screen of death?	
Who does the Problem Affect?	Customer who use the particular thing
What are the boundaries of theproblem?	Customer who use the thing for their personal work, office work etc
What is the issue?	Failure of Hardware or driver sometimesit maybe in software too
When does the issue occur?	It frequently occurs after the customerinstallednew drivers or new piece of software
Where does the issue occur?	It often lies in the Hardware or one ofthe drivers
Why is it important that wefix theproblem?	It is necessary to run the computer or Laptop todo their task or work in order tocomplete it.
What solution to solve this issue?	A quick reboot is sometimes enough tosolve theproblem
What methodology used to solve theissue?	By means of troubleshoot the process orresetting of the software and hardware

Customer wants to fix the Payment issue?	
Who does the Problem Affect?	Customer who use the particular thing
What is the solution to solve thisissuetemporarily?	Check payment method is up todate orTry another payment method
How the issue occurs?	Customer who has entered incorrect card information, payment gateway, or the bankinstitution issue
When does the issue occur?	It occurs when there is insufficientbalance inbank account
Why is it important that we fix theproblem?	For the welfare of the customer needs

3. IDEATION &PRPOSED SOLUTION:

Empathy map Canvas:

An empathy map is **a collaborative tool teams can use to gain a deeper insight into their customers**. Much like a user persona, an empathy map can represent a group of users, such as a customer segment. The empathy map was originally created by Dave Gray and has gained much popularity within the agilecommunity.
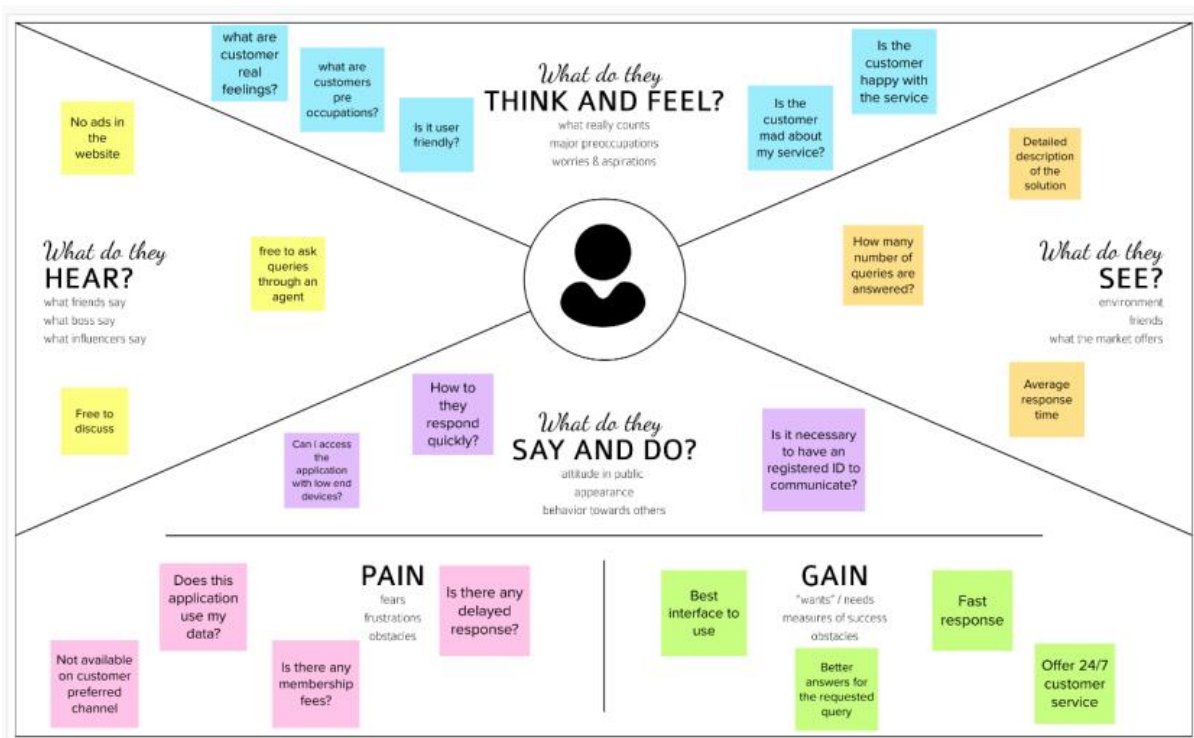
IDEATION&BRAINSTROM:

Template

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- **10 minutes** to prepare
- **1 hour** to collaborate
- **2-8 people** recommended

Share template feedback

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

⏱ 10 minutes

☐ **Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

☐ **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

☐ **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

Open article →

1 Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

⏱ 5 minutes

How might we can solve the issue given by the customer

Key rules of brainstorming
To run an smooth and productive session

- Stay in topic.
- Defer judgment.
- Go for volume.
- Encourage wild ideas.
- Listen to others.
- If possible, be visual.

2 Brainstorm

Write down any ideas that come to mind that address your problem statement.

⏱ 10 minutes

TIP You can select a sticky note and hit the pencil/switch to sketch/icon to start drawing!

BALA KUMAR P K

AKASH BABU S V

NANDA KUMAR T D

ARJUN G S

ARUNESH R

3 Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

⏱ 20 minutes

TIP Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Customer
- Solution to customer
- Notifying customer
- Deals with problem quickly
- Providing services on time
- Customer queries

Chatbox
- Live chat
- Providing chatbox

Feedback
- User feedback
- Asking for rating

Information and security
- Listen carefully to the queries
- Email notification
- Customer privacy

Services
- Providing services on time
- Allocating agent
- Tracking of services
- Filteration based on services
- Providing service details

PROPOSED SOLUTION:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	This Application has been developed to help the customer in processing their complaints.
2.	Idea / Solution description	An web application is created using frontend technologies like HTML, CSS, JS, BOOTSTRAP and for backend python Flask and for database IBM DB2 is used. The application is pushed into IBM Cloud. The admin is responsible for accepting the issues from the customers and assign an agent to the respective customer and the agent solves the issue.
3.	Novelty / Uniqueness	An social media page is created so that the customer can reach out the easily
4.	Social Impact / Customer Satisfaction	It helps the customer to track their issues. For each customer an agent will be assigned so that he/she can easily solve their issues.
5.	Business Model (Revenue Model)	By providing this service to the companies for better customer support.
6.	Scalability of the Solution	It can be measured by the quality of the services we provide, quick response for the issues from the agents we have

PROBLEM SOLUTION FIT:

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) — CS
Who is your customer?
i.e. working parents of 0-5 y.o. Kids

1)The customers who are not able to solve their queries.
2)The customers can solve their problems by raising the tickets.

6. CUSTOMER CONSTRAINTS — CC
What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.

1)This application is supported by all the devices.
2)The solution we propose will have an alert via email feature

5. AVAILABLE SOLUTIONS — AS
Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking

1)By communicating properly with an agent.
2)By reading the guidelines properly.

Explore AS, differentiate

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

2. JOBS-TO-BE-DONE / PROBLEMS — J&P
Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

1)Customer can find the solution for the query that he/she are raised.
2)They can also solve the raised query by using chatbot.

9. PROBLEM ROOT CAUSE — RC
What is the real reason that this problem exists?
What is the back story behind the need to do this job?
i.e. customers have to do it because of the change in regulations.

1)Not reading the guidelines properly.
2)some of the customers have lack of knowledge.
3)Lots of customers have not reads the guidelines properly.

7. BEHAVIOUR — BE
What does your customer do to address the problem and get the job done?
i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

1)All the customers must read the guidelines properly to avoid the problem.
2)All the customer should find a proper solution for their queries.

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

Identify strong TR & EM

3. TRIGGERS — TR
What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.

The customer must know how to solve the problem.

4. EMOTIONS: BEFORE / AFTER — EM
How do customers feel when they face a problem or a job and afterwards?
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

The customer can get help from our agents we are assigned and they feel very satisfied with our services.

10. YOUR SOLUTION — SL
If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

Our solution is to design a helpdesk that is helpful for customer to solve their queries that they have raised.

8.CHANNELS of BEHAVIOUR — CH
8.1 ONLINE
What kind of actions do customers take online? Extract online channels from #7

All the data that are provided by the customers are very safe in cloud storage.

8.2 OFFLINE
What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

They can get better solutions for the queries they raised.

Identify strong TR & EM

4. REQUIREMENTS ANALYSIS:

FUNCTIONAL REQUIREMENTS:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login	Login via Google with Email ID and Password
FR-4	Admin Login	Login via Google with Email ID and Password
FR-5	Query Form	Description of the issues contact form
FR-6	Feedback	Customer Feedback

NON-FUNCTIONAL REQUIREMENTS:

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	To provide a solution to a problem
NFR-2	Security	Track of login authentication
NFR-3	Reliability	Tracking of decade through email
NFR-4	Performance	Effective development of web application
NFR-5	Availability	24/7 service
NFR-6	Scalability	Agent scalability as per the customers

5. PROJECT DESIGN

DATA FLOW DIAGRAMS:
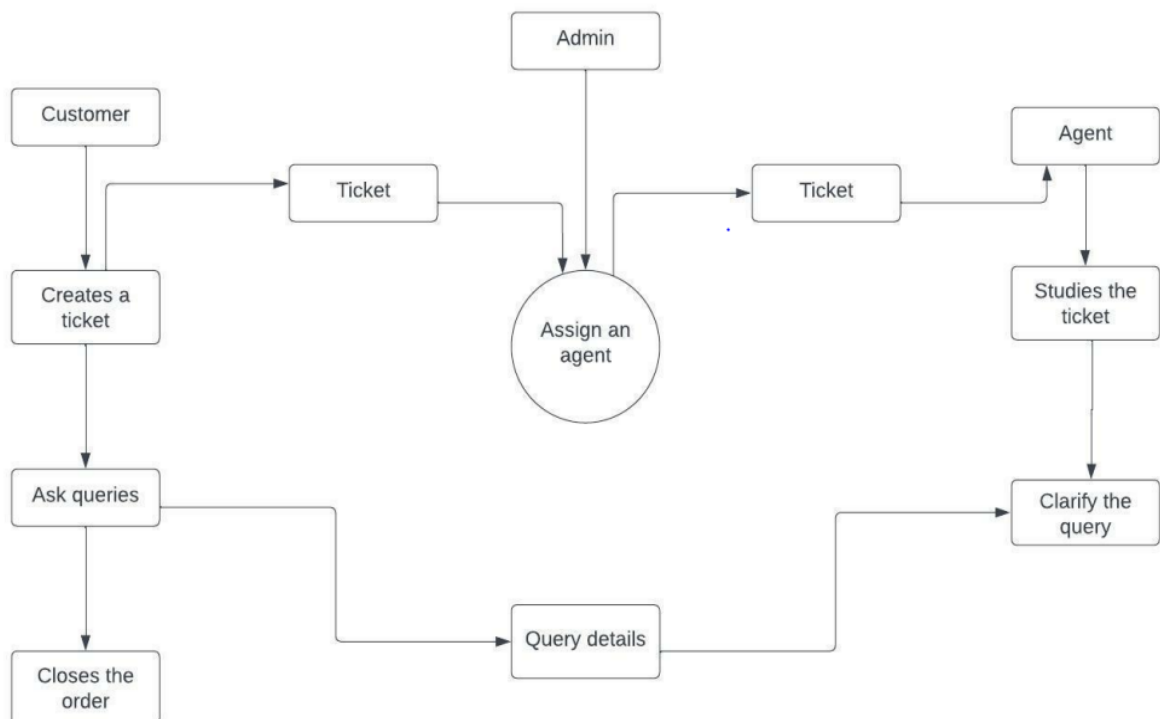
User Stories

Use the below template to list all the user stories for the product.

| User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
	Acknowledgement	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
	Ticket creation	USN-3	As a user, I can create new tickets with descriptions of my query.	I can create a ticket and ask my query.	Medium	Sprint-2
	Forget password	USN-4	As a user, I can reset my password by this option in case I forgot my password.	I can change the password	Medium	Sprint-1
	Login	USN-5	As a user, I can login into the application by entering email & password	I can access my account	High	Sprint-1
	Dashboard	USN-6	As a user, I am able to see all the tickets raised by me.	I get all information in the dashboard	Low	Sprint-1
Agent	Login	USN-1	As an agent, I can login to the application by entering the email id and password.	I can access my account	High	Sprint-2
	Forget password	USN-2	As an agent, I can reset my password in case I forget my password	I can change my password	High	Sprint-2
	Dashboard	USN-3	As an agent, I can able to see all the tickets raised by the customers	I can see all the tickets and clarify the queries	High	Sprint-2
Admin	Login	USN-1	As a admin, I can login to the application by entering email id and password	I can access my account	High	Sprint-3
	Agent creation	USN-2	As a admin, I can able to create agent for the customers to solve the queries	I can create agents	High	Sprint-3
	Forget password	USN-3	As a admin, I can reset my password by this option in case I forgot my password	I can change password	Medium	Sprint-3
	Assigning Agent	USN-4	As a admin, I can assign agents to the customers who raised the tickets.	I can assign agents to the customers	High	Sprint-3

SOLUTION & TECHNICAL ARCHITECTURE:
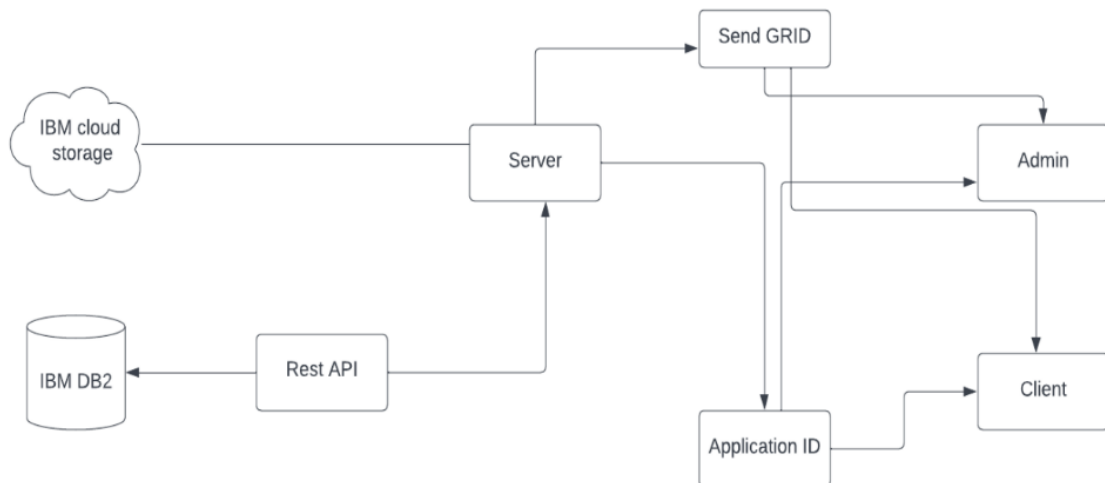
Table-1 : Components & Technologies.

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript
2.	Application Logic-1	Logic for a process in the application	Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	IBM Cloud Foundry, Kubernetes

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Python Flask
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g, Encryption,Intrusion,firewalls
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Virtual Machines
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Microservices
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	CI/CD

6. PROJECT PLANNING & SCHEDULING:

'Project Planning and Scheduling', though separate, are two sides of the same coin in project management. Fundamentally, 'Project planning' is all about choosing and designing effective policies and methodologies to attain project objectives. While 'Project scheduling' is a procedure of assigning tasks to get them completed by allocating appropriate resources within an estimated budget and time-frame.

TITLE	DESCRIPTION	DATE
Literature Survey & Information Gathering	Literature survey on the selected project & gathering information by referring the, technical papers, research publications etc.	19 SEPTEMBER 2022
Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements	20 SEPTEMBER 2022
Ideation	List the by organizing the brainstorming session and prioritize the top 3 ideas based on the feasibility & importance.	14 OCTOBER 2022
Proposed Solution	Prepare the proposed solution document, which includes the novelty, feasibility of idea, business model, social impact, scalability of solution, etc.	23 SEPTEMBER 2022
Problem Solution Fit	Prepare problem - solution fit document.	02 OCTOBER 2022
Solution Architecture	Prepare solution architecture document.	03 OCTOBER 2022

Customer Journey	Prepare the customer journeymaps to understand the user interactions & experiences with the application (entry to exit).	22 OCTOBER 2022
Functional Requirement	Prepare the functional requirement document.	15 OCTOBER 2022
Data Flow Diagrams	Draw the data flow diagrams and submit forreview.	15 OCTOBER 2022
Technology Architecture	Prepare the technology architecture diagram.	15 OCTOBER 2022
Prepare Milestone & ActivityList	Prepare the milestones &activity list of the project.	29 OCTOBER 2022
Project Development - Delivery of Sprint-1, 2, 3 & 4	Develop & submit the developed code by testing it.	IN PROGRESS..

SPRINT PLANNING & ESTIMATION:

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User Panel	USN-1	The user will login to the website and go through the services available on the website.	2	High	Nanda kumar T.D Akash Babu S.V
Sprint-2	Admin Panel	USN-2	The role of the admin is to assign agent for every tickets raised by the user and check out the database about the availability and have the track of all the things that the user are going to service	2	High	Arjun G.S. Arunesh R Balakumar P.K
Sprint-3	Chat Bot	USN-3	The user can directly interact with chatbot regarding the services	2	High	Nanda kumar T.D Akash Babu S.V
Sprint-4	Final Delivery	USN-4	Container of application using docker, kubernetes and deployment of application	2	High	Balakumar P.K Nanda kumar T.D Akash Babu S.V Arjun G.S. Arunesh R

7. TESTING:

Test Cases:

FUNCTIONAL TESTING:

Functional test can be defined as testing two or more modules together with the intent of finding defects, demonstrating that defects are not present, verifying that the module performs its intended functions as stated in the specification and establishing confidence that a program does what it is supposed to do

WHITE BOX TESTING:

Testing based on an analysis of internal workings and structure of a piece of software. This testing can be done sing the percentage value of load and energy. The tester should know what exactly is done in the internal program. Includes techniques such as Branch Testing and Path Testing. Also known as Structural Testing and Glass Box Testing.

BLACK BOX TESTING :

Testing without knowledge of the internal workings of the item being tested. Tests are usually functional. This testing can be done by the user who has no knowledge of how the shortest path is found

USER ACCEPTANCE TESTING:

Acceptance testing can be defined in many ways, but a simple definition is the succeeds when the software functions in a manner that can be reasonable expected by the customer. After the acceptance test has been conducted, one of the two possible conditions exists. This is to fine whether the inputs are accepted by the database or other validations. For example accept only numbers in the numeric field, date format data in the date field. Also the null check for the not null fields. If any error occurs then 24 show the error messages. The function of performance characteristics to specification and is accepted. A deviation from specification is

uncovered and a deficiency list is created. User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.
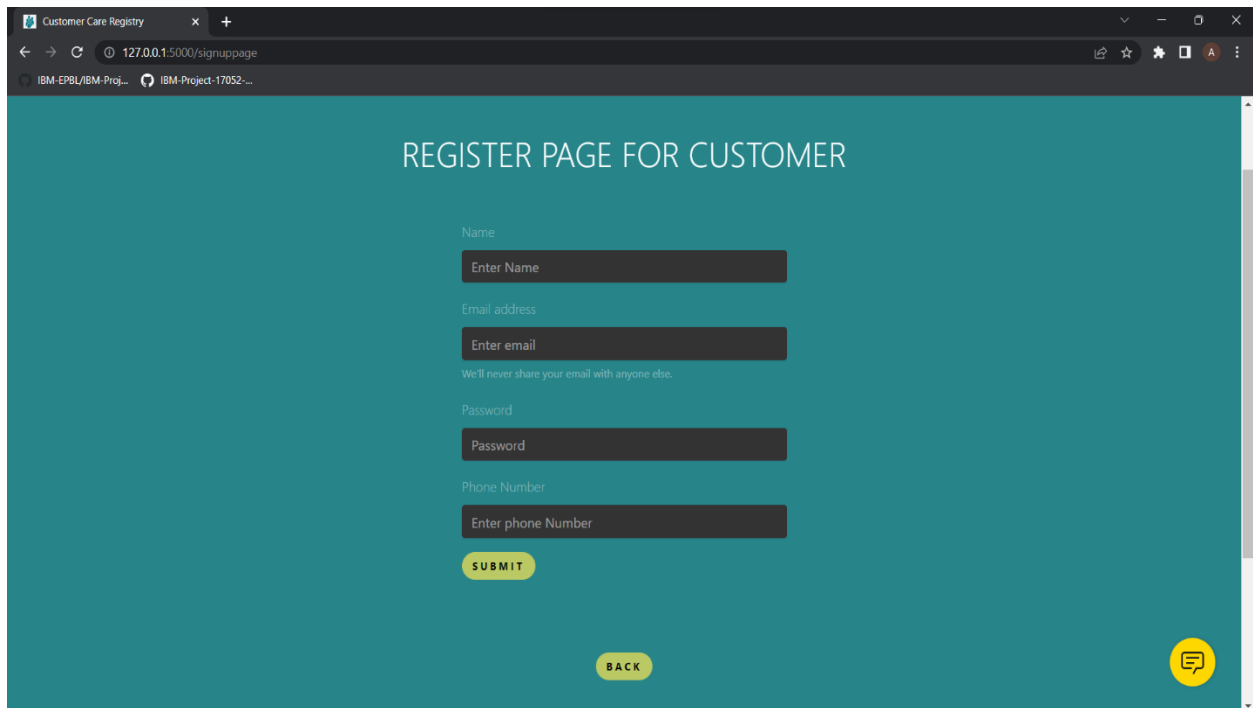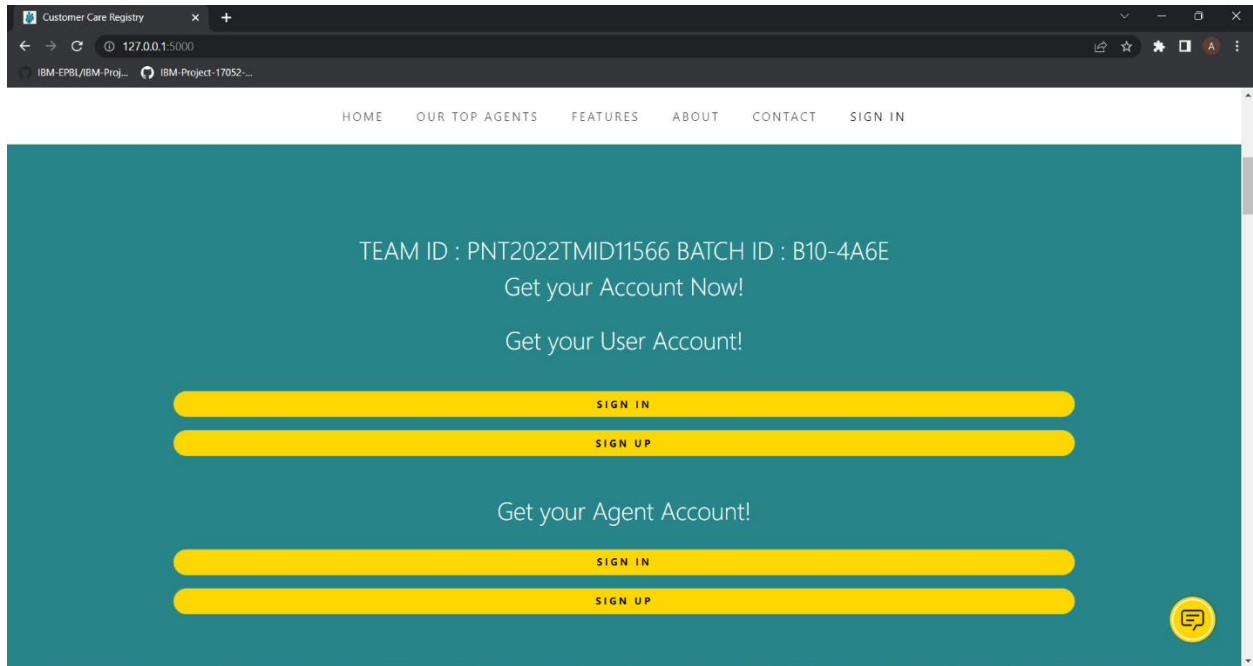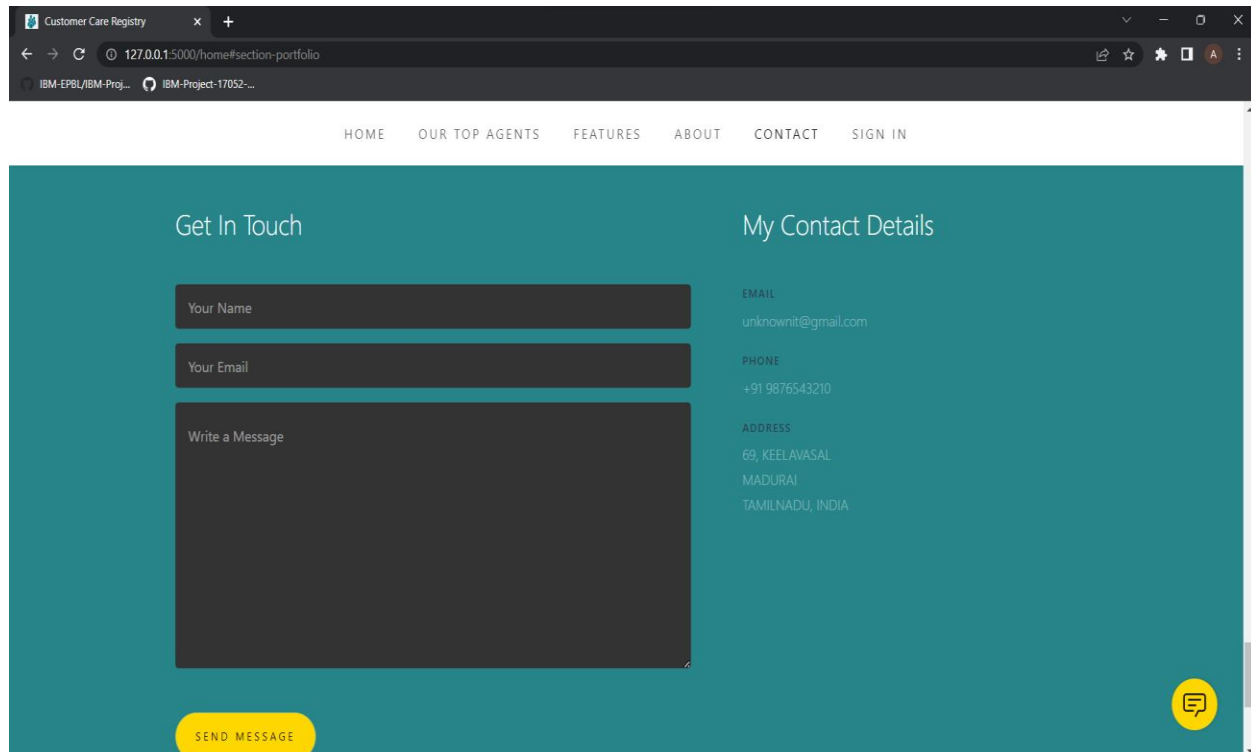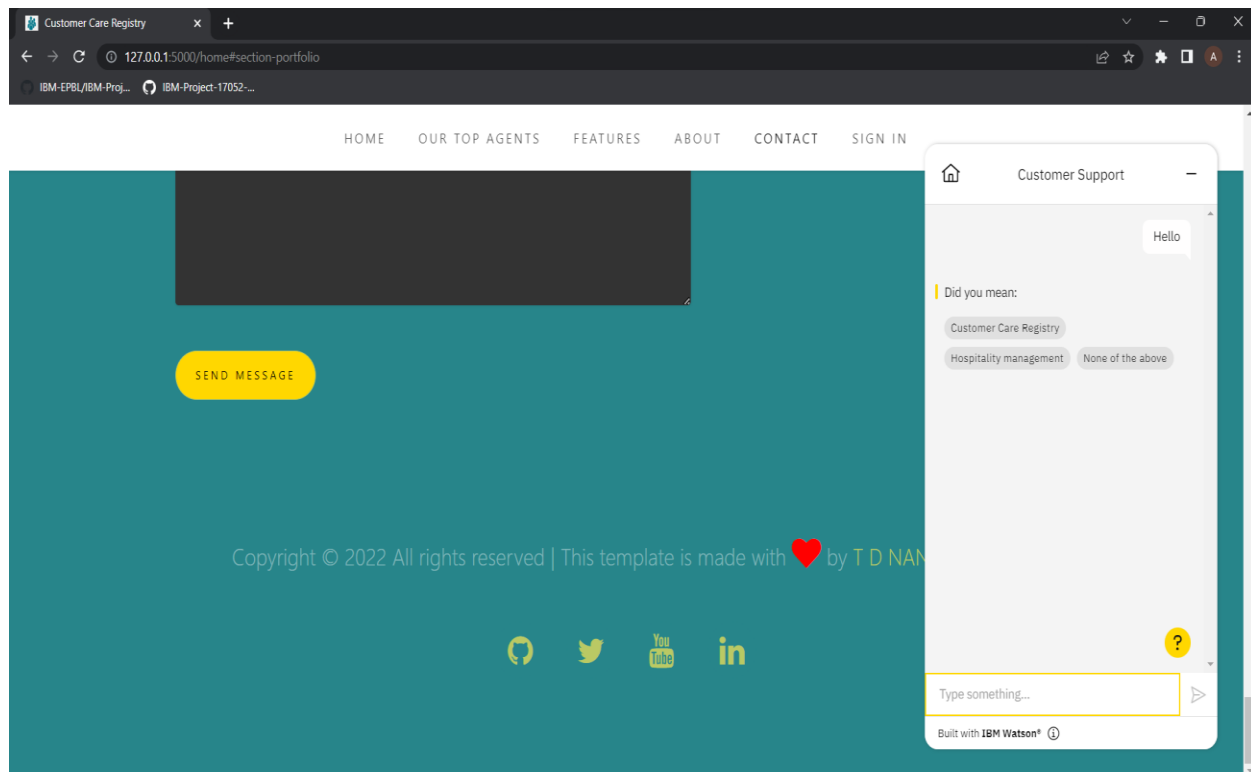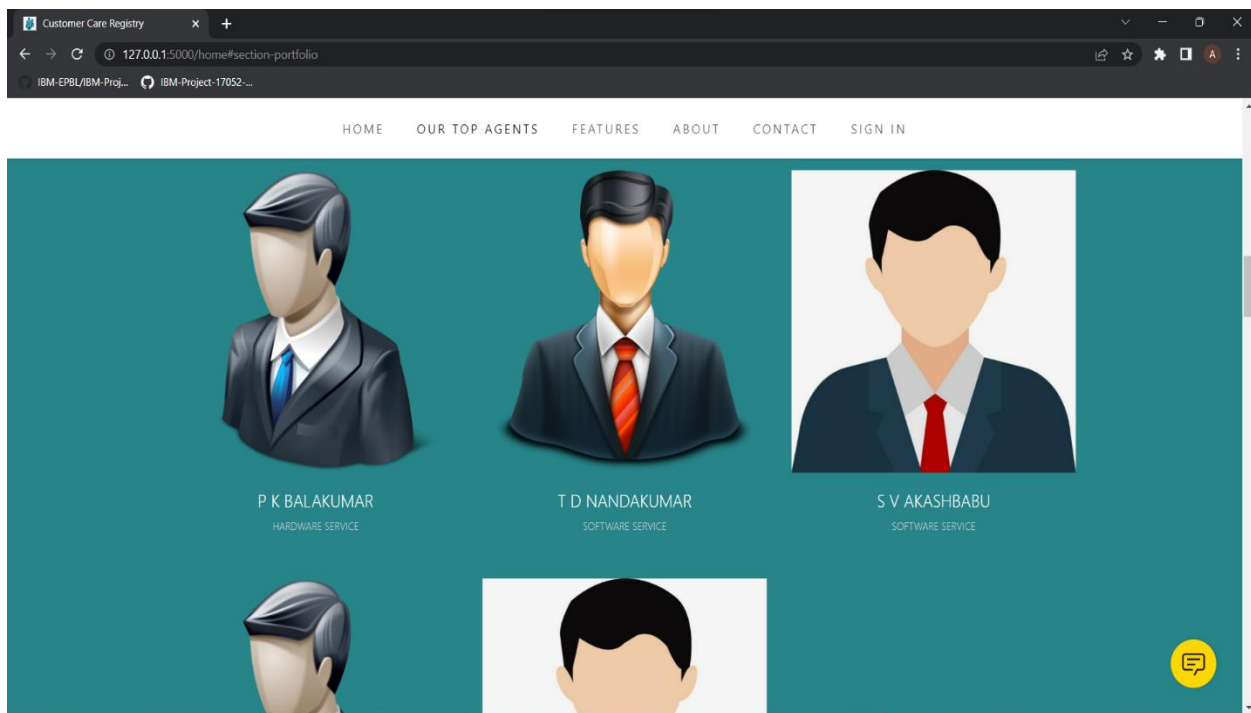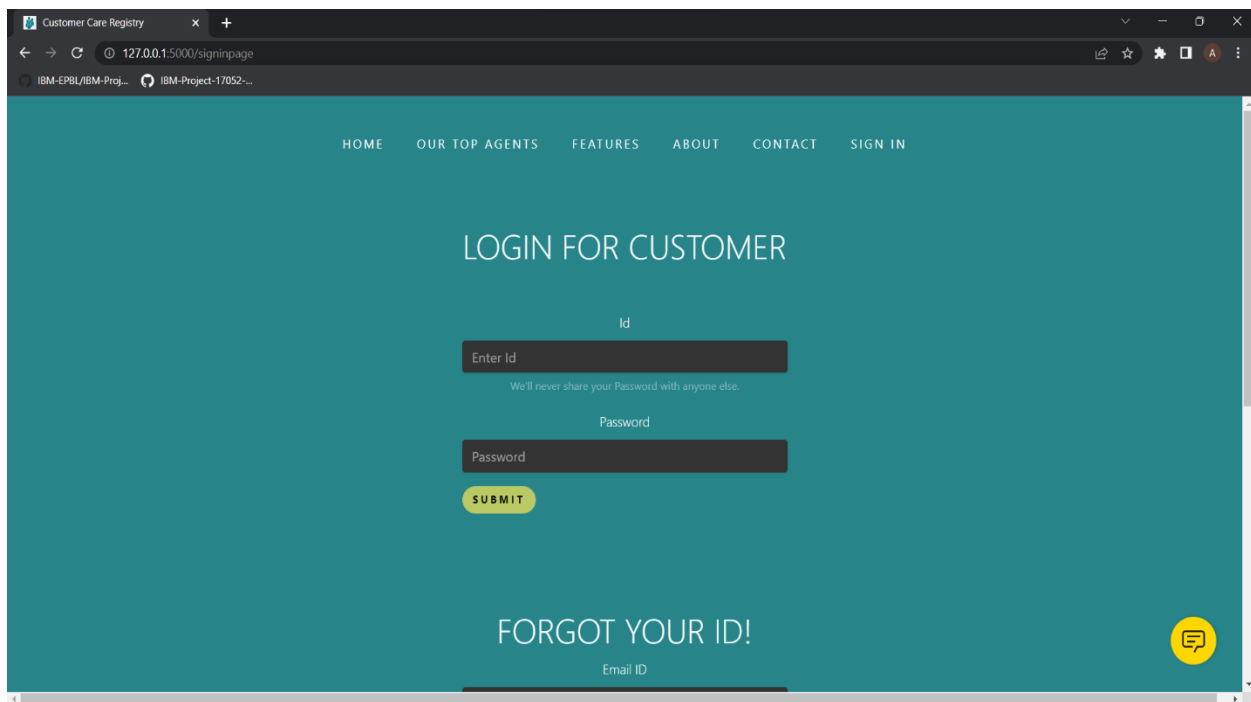
8. RESULT:

PERFORMANCE TESTING:

Performance metrics are data used to track processes within a business. This is achieved using activities, employee behavior, and productivity as key metrics. These metrics are then used by employers to evaluate performance. This is in relation to an established goal such as employee productivity or sales objective.
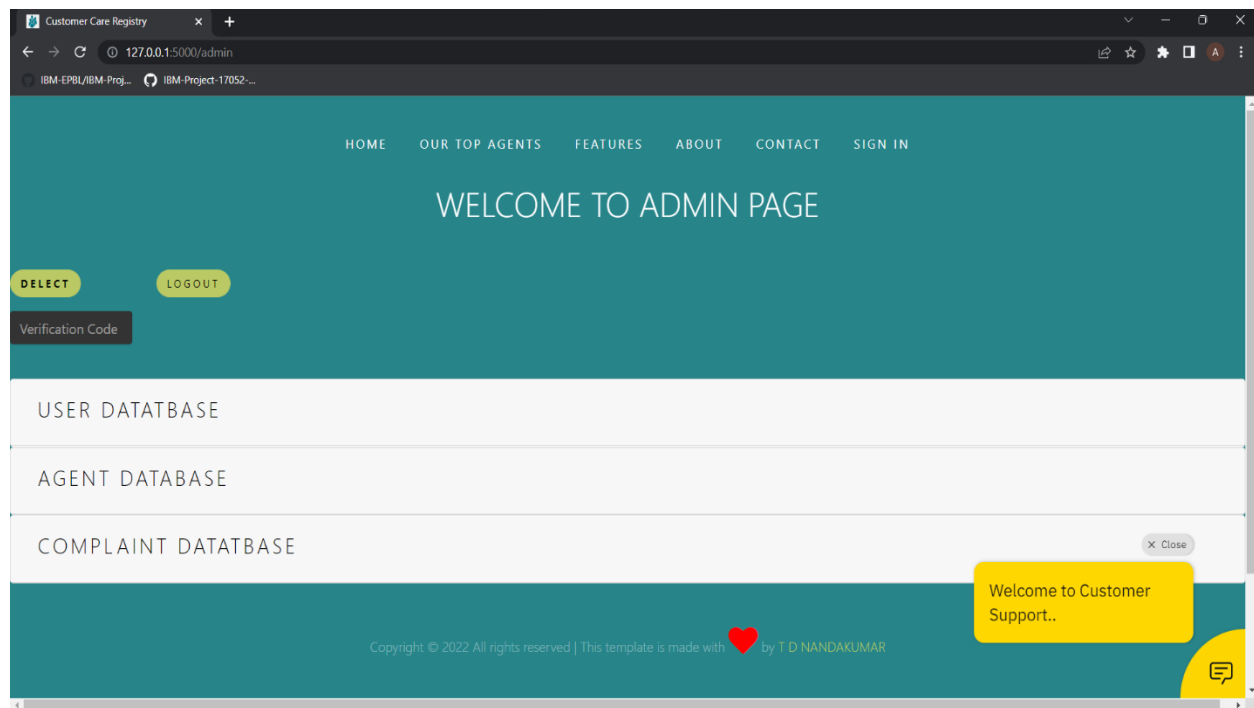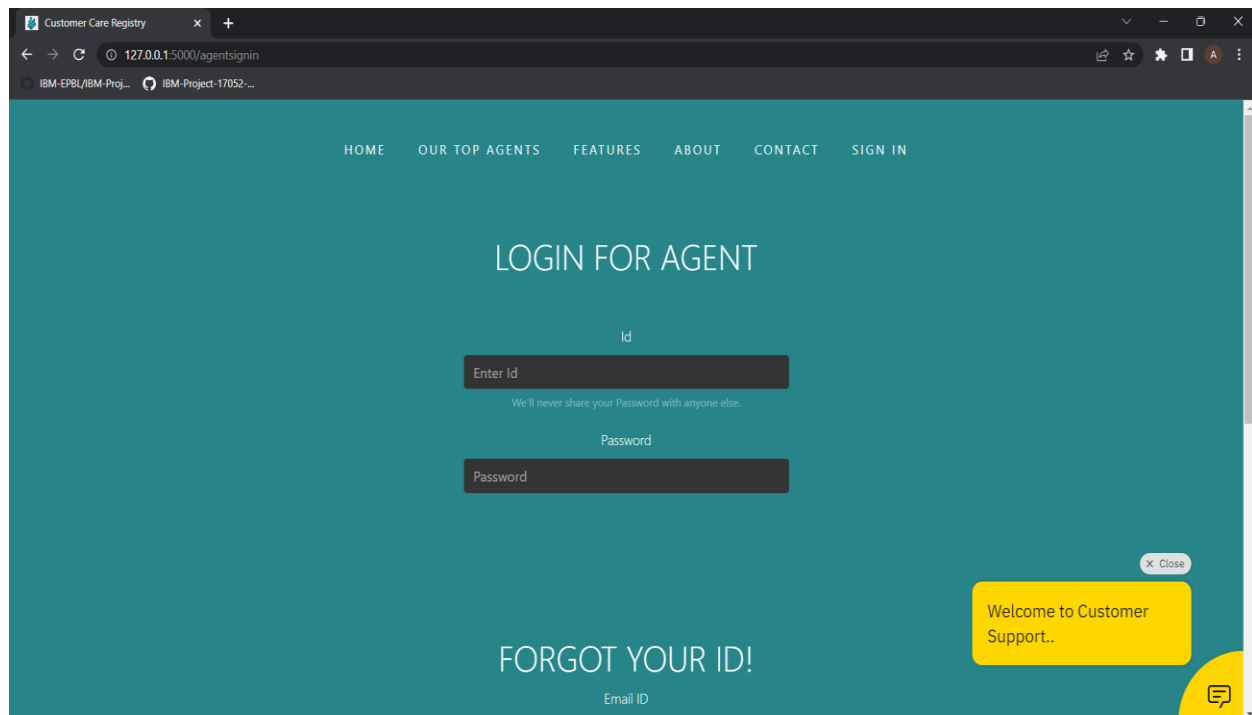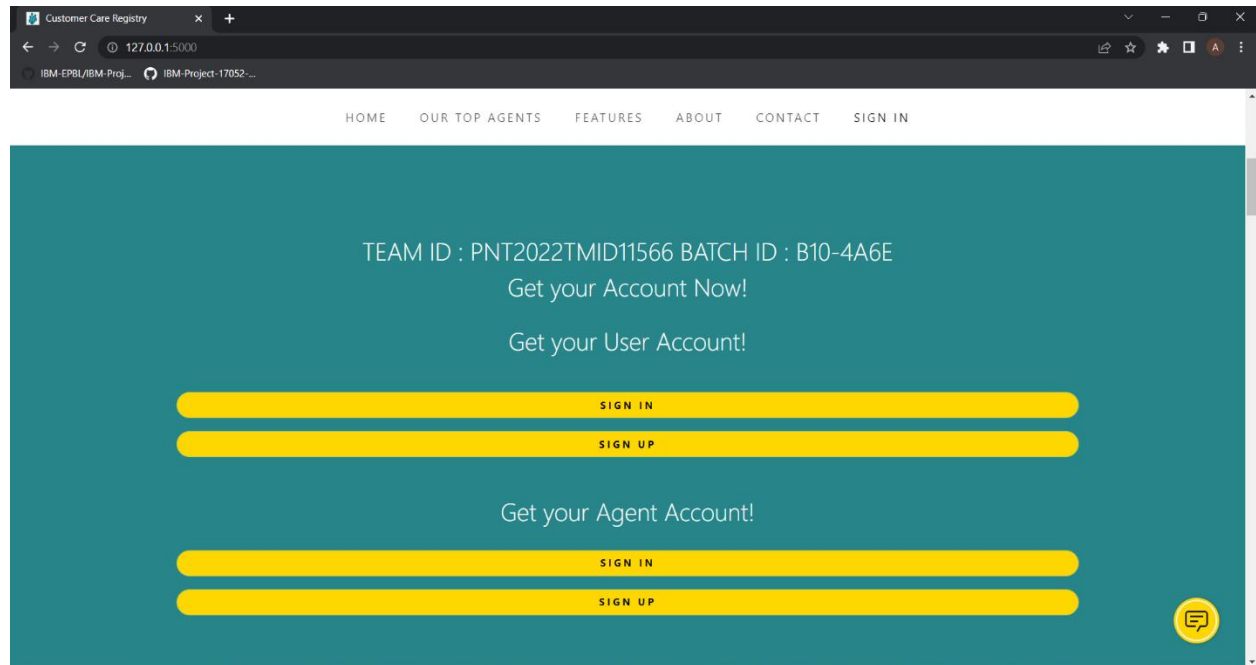
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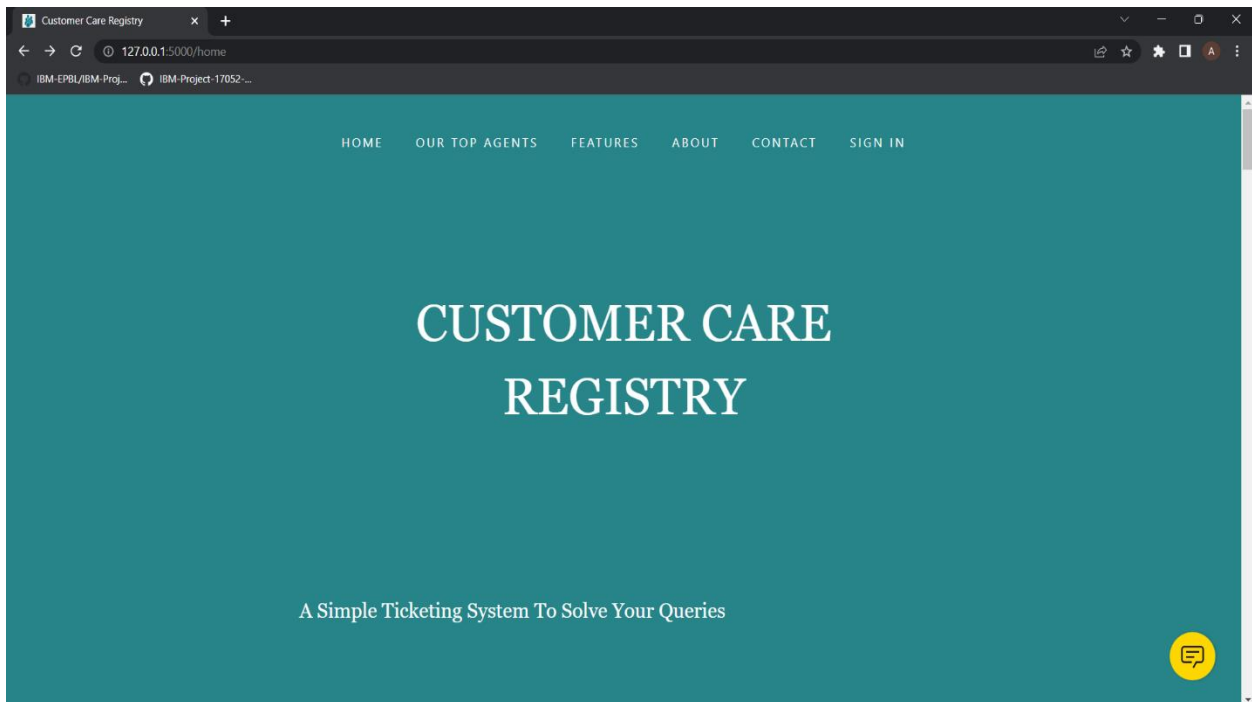
9. ADVANTAGES & DISAVANTAGES:
ADVANTAGES:

- Customers can clarify their doubts just by creating a new ticket
- Customer gets replies as soon as possible
- Not only the replies are faster, the replies are more authentic and practical
- Customers are provided with a unique account, to which the latter can login at any time
- Very minimal account creation process
- Customers can raise as many tickets as they want
- Application is very simple to use, with well-known UI elements
- Customers are given clear notifications through email, of all the processes related lo login, ticket creation etc.,
- Customers' feedbacks are always listened

DISADVANTAGES:

- Only web application is available right now (as of writing) ✕ UI is not so attractive, it's just simple looking
- No automated replies
- No SMS alerts
- Supports only text messages while chatting with the Agent
- No tap to reply feature
- No login alerts. Cannot update the mobile number

10.CONCLUSION:

- It provides more knowledge about the various technologies.
- Companies today are modernizing customer care, using advanced AI to ensure a positive customer experience starting from the first interaction and throughout the buyer's journey.
- Thereby, the customer care registry would be far helpful and approachable.
- It offers easy tracking, recording and notification than any other means.

11.FUTURE SCOPE:

- Customer acquisition is prioritised over retention
- Employees are considered unskilled and leadershire accordingly.
- The shift from a primarily 'cost center' to primarily 'growthcentre' worldview.
- Customer service investment projects are sidelined.
- The job desk for a customer care registry director will focus more on leadership, innovation, and ability to drive company-wide improvement.