ARTIFICIAL INTELLIGENCE

AI BASED DISCOURSE FOR BANKING INDUSTRY

PROJECT REPORT

IBM PROJECT – TEAM ID: PNT2022TMID39554

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1. INTRODUCTION

Banking has become the part and parcel of everyone’s life. Almost everyone uses the banking sector to perform their tasks. Most of the tasks are been carried out manually. Now the use of mobile and internet banking facility has reached greater heights. Chat bots is becoming trending today. They are Artificial Intelligence (AI) based computer programs that interact with users using natural languages. In this project we are trying to perform banking operations via AI based chat bots using Watson's Assistant.

1.1. PROJECT OVERVIEW

In this project, we will be building a chatbot using Watson's assistant. This chat should have the following capabilities:

- The Bot should be able to guide a customer to create a bank account.
- The Bot should be able to answer loan queries.
- The Bot should be able to answer general banking queries.
- The Bot should be able to answer queries regarding net banking.

1.2. PURPOSE

The main purpose of this project is to build a chatbot using watson's assistant that helps banks for automating business processes such as customer service by providing Accurate, Easy, and Interactive banking transactions.

The other significant purpose of the project is as follows:

- To ensure easier banking process.
- To minimize the time consumption.
- To has 24*7 accesses to the bank.

2. LITERATURE SURVEY

2.1. EXISTING PROBLEM

Banking is one the crucial sector, it deals with financial transactions which can be availed by everyone, but banks are not able to resolve the queries of customers at all times related to the products or services in satisfactory way in turn hinders the customer satisfaction. In order to guide the customers throughout all the financial services provided by the bank, an intelligent system has to be introduced to provide people with the best solution possible. The users are bank customers who needs 24/7 service to clear all their queries and guide them through all the banking processes. So, an enhanced and smarter way of interaction with the customers has to be built to ensure efficient delivery of service.

2.2. REFERENCES

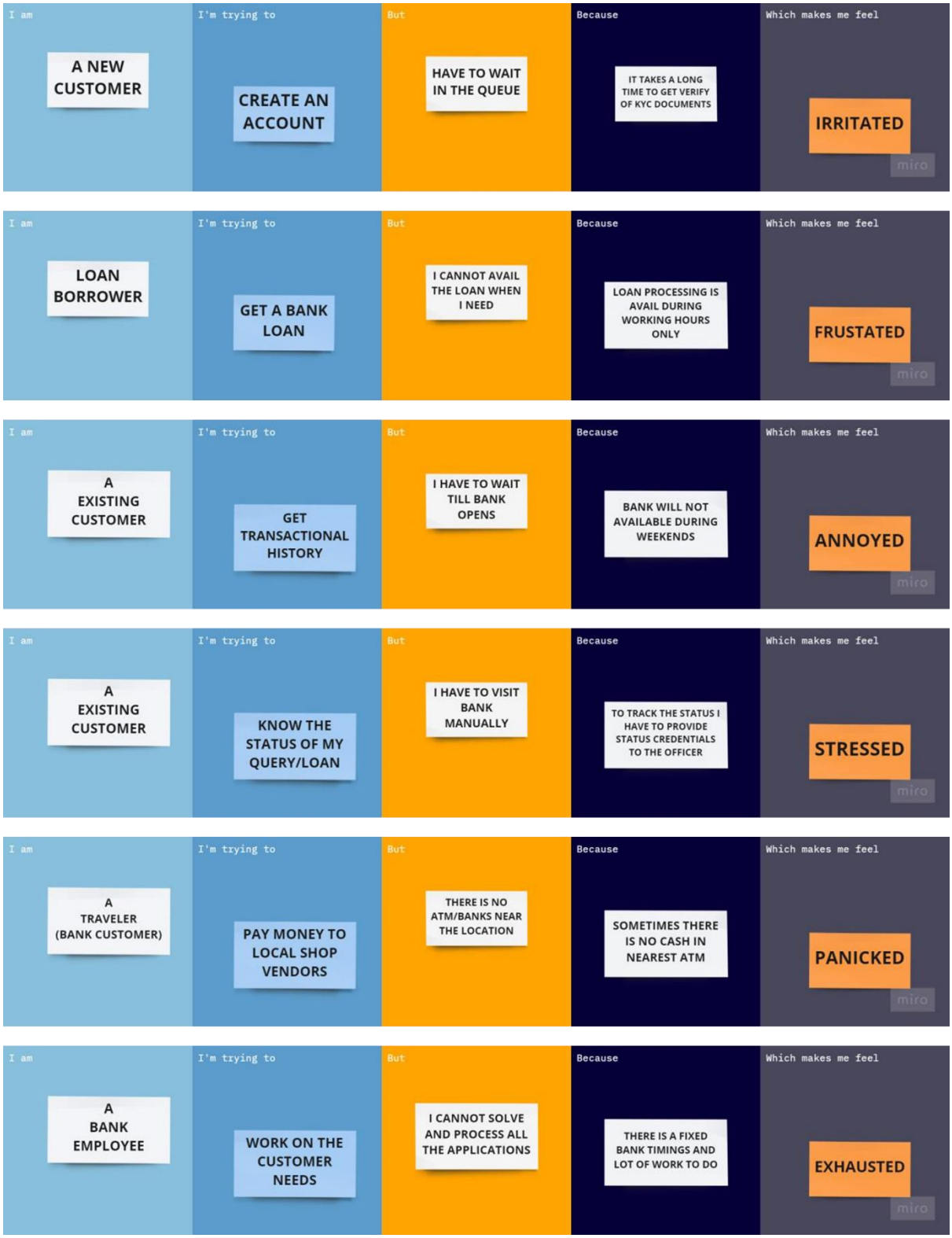
1. K.Satheesh Kumar, S.Tamilselvan, B.Ibrahim Sha, S.Harish, "Artificial Intelligence Powered Banking Chatbot", International Journal of Engineering Science and Computing, March 2018

2. S. T. Lai, F. Y. Leu, and J. W. Lin, “A banking chatbot security control procedure for protecting user data security and privacy,” in BWCCA, 2018.

3. Intelligence, A. (2016). Chatbot Market Size, Share & Trends Industry Forecast 2022. Arizton Advisory & Intelligence. https://www.arizton.com/market-reports/chatbot-market-global. Assessed on July 22nd, 2019.

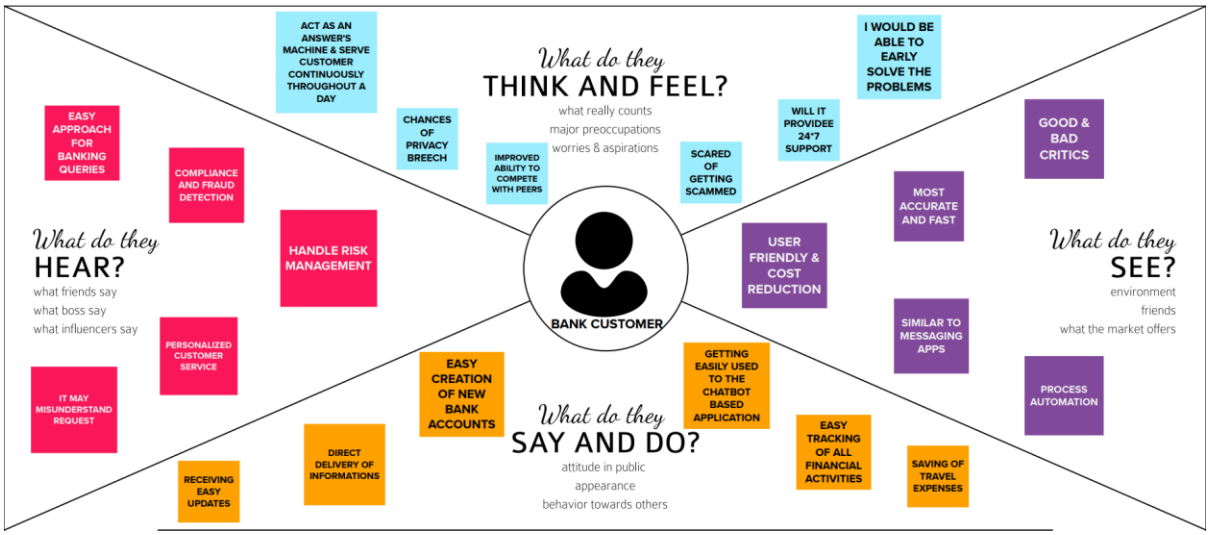
4. M. S. Selvi, A. Kayalvizhi, and C. Premalatha, “Effective back-channel response to user queries using banking bot artificial intelligent system”, International Journal Innovative Technology and Exploring Engineering (IJITEE), Vol. 8, no.12, Oct. 2019.

2.3. PROBLEM STATEMENT DEFINITION

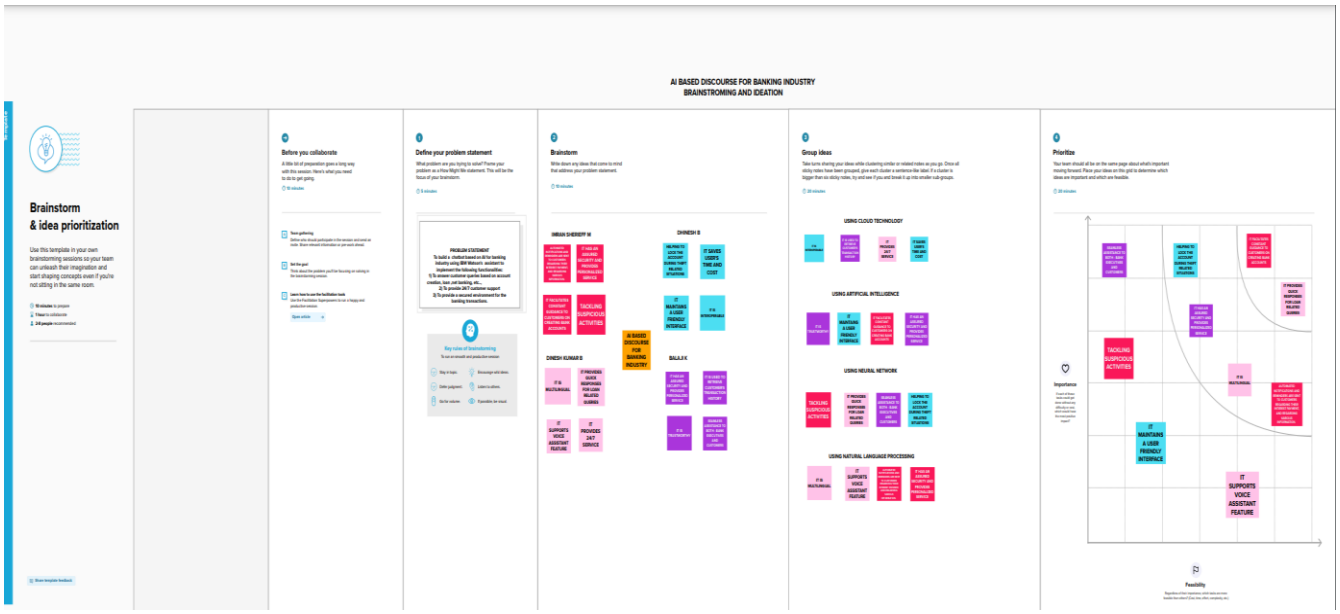


3. IDEATION & PROPOSED SOLUTION

3.1. EMPATHY MAP CANVAS



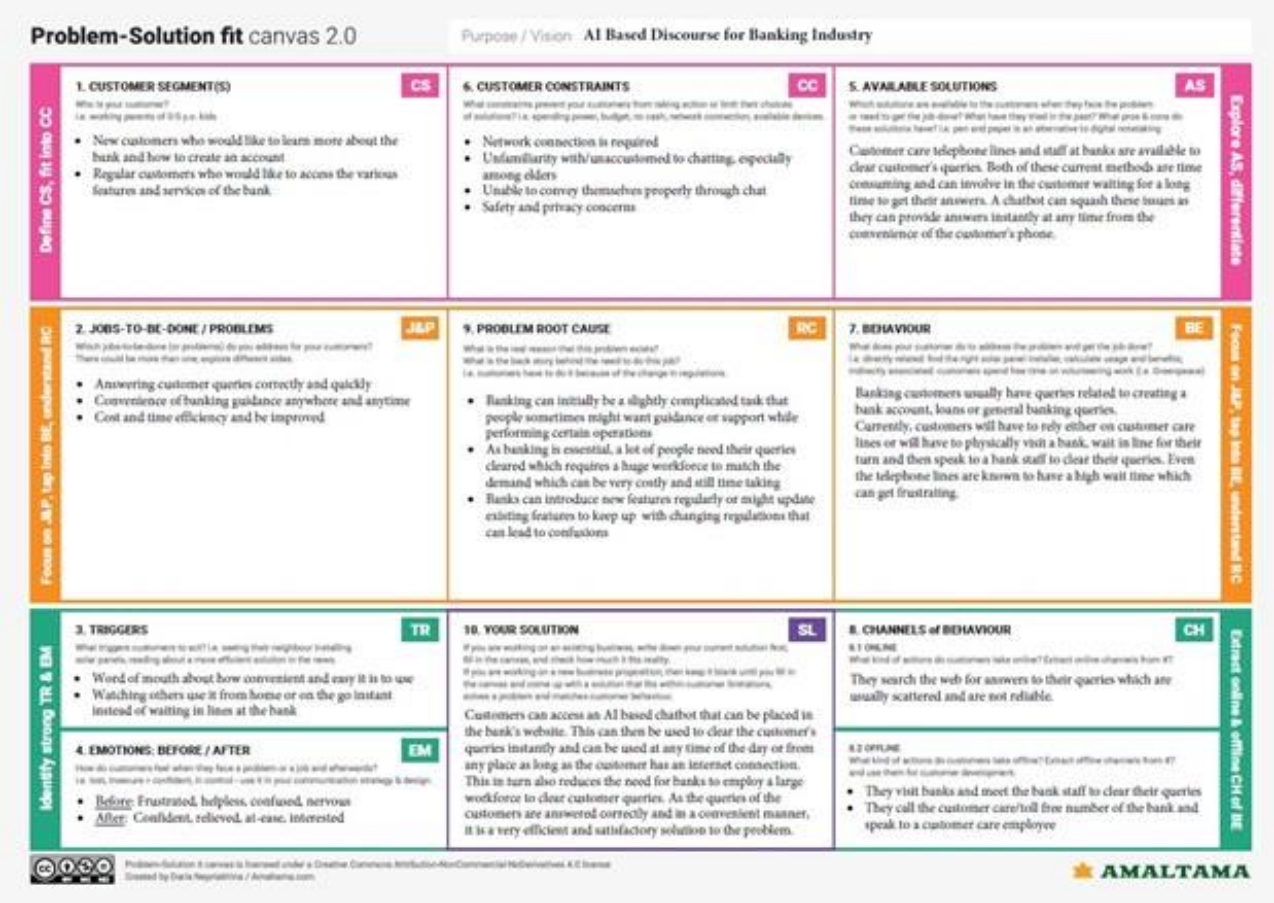
3.2. IDEATION & BRAINSTORMING



3.3. PROPOSED SOLUTION

S.NO.	PARAMETER	DESCRIPTION
1.	Problem statement (Problem to be solved)	To build an efficient AI based banking chatbot or banking assistant to effectively to curb out the following constraints: • Guiding customer on account creation, net banking, etc., • Answering queries regarding financial and loan instantly.
2.	Idea/Solution description	The following approaches are used to built an efficient chatbot for banking industry: • IBM Watson Assistant – To build chatbot interface • Flask – Web framework for the chatbot • NLP – Answering customer queries • AI, DL – To Automate the banking process
3.	Novelty/Uniqueness	This AI powered chatbot gives a 24*7 efficient automated banking process to both customers and staffs by giving solutions their queries which saves time and effort.
4.	Social Impact/Customer Satisfaction	This chatbot provides a huge and effective banking process to the Banking staff, customer, borrowers, lenders, depositor etc.,
5.	Business Model (Revenue Model)	By implementing this chatbot banks can enable more reliable services to customers which gains customer loyalty and saves the cost needed for manual support.
6.	Scalability of the solution	Implementing this chatbot banks can manage and measure demands in the sectors and improve the profit for the management with the help of measured volumes of the needed services.

3.4. PROBLEM SOLUTION FIT



4. REQUIREMENT ANALYSIS

4.1. FUNCTIONAL REQUIREMENT

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	• Validation of Login ID and Password.
FR-4	Query Support	• AI chatbot for supporting guidelines.
FR-5	Existing user Support	• Change of ownership • Mistakes Correction Query support • Bank Card (Debit and Credit) • Shift in Branches • Account Freeze action and Security services. • Changes made confirmation through mail or OTP.
FR-6	Loan Related Service	• Types of Loan Details. • Interest and Benefit Schemes. • Instant Details of Loan status. • Verification of User Identity

FR-7	Online Banking Support	• UPI linkage to account. • Security Services in unauthorized UPI linkage. • Account Balance Check • Instant Money transfer Action. • Message when Money transaction. • Account Freeze action.

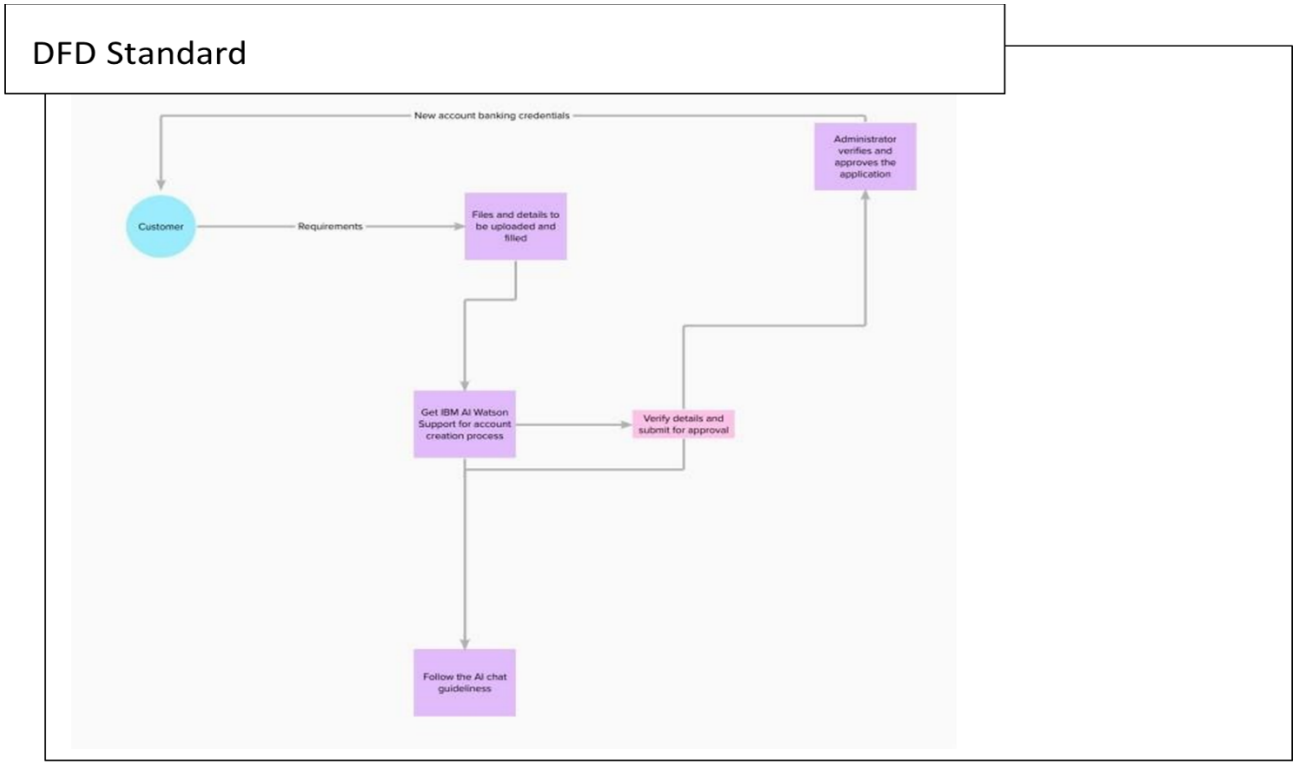
4.2. NON-FUNCTIONAL REQUIREMENT

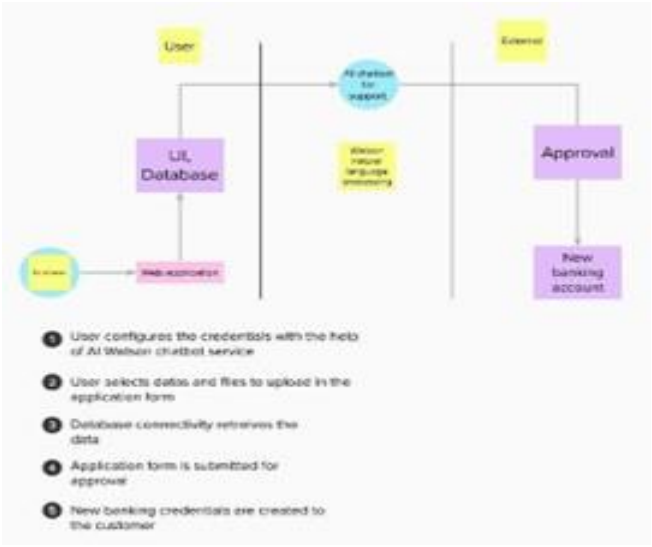
NFR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	Customer can access chatbot more efficiently and in a simpler way. Multilanguage functionality is supported. Top chat topics are displayed for easy access.
NFR-2	**Security**	Customer can have utmost security of their information. The details are stored in cloud where the bank employee have total control in accessing valuable information. Customers also get a mail if requested for a confidential information.
NFR-3	**Reliability**	If the criteria or the topic which customer expects is not met via chatbot, bank employee will be able to provide details for that issue within a short span of time.
NFR-4	**Performance**	Chatbot can provide consistency and frequent updating of queries are made without any loss in information.

NFR-5	**Availability**	It is available 24x7 and the progress is not lost, even if the servers go down. Cloud storage ensures that data is protected and can we retrieved whenever needed.
NFR-6	**Scalability**	New user interfaces are made in the chatbot for good customer experience. It can support wide range of users queries and provide instant responses. The queries of more than 1000 people can be answered using the chatbot.

5. PROJECT DESIGN

5.1. DATA FLOW DIAGRAMS



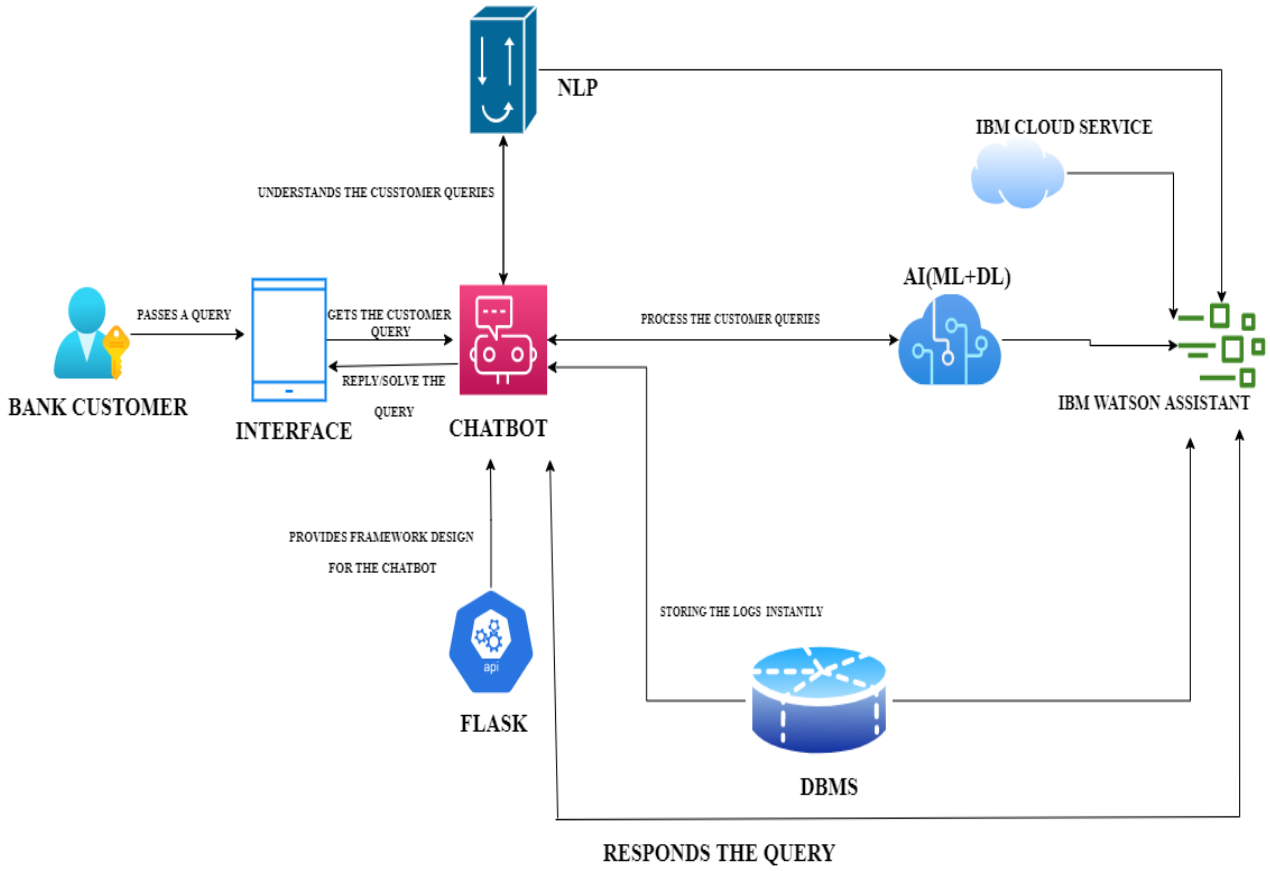


5.2. SOLUTION & TECHNICAL ARCHITECTURE

AI BASED DISCOURSE FOR BANKING INDUSTRY

TEAM ID: PNT2022TMID39544

SOLUTION ARCHITECTURE



5.3. USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	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
		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 Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-6	As a user, I can get the application completion status and files to be required to create the account.	I can receive completion status and create the account.	Low	Sprint-2
Customer (Web user)	Registration	USN-1	As a web user, I can go through many social media websites, get the details and I can register for the application	I can access my application dashboard	High	Sprint-1
		USN-2	As a user, I can get the details of the application through email.	I can receive confirmation email to link my application	Medium	Sprint-1
	Login	USN-3	As a user, I can link my google account to register my application.	I can register my application.	High	Sprint-1
	Dashboard	USN-4	As a user, I can manage and get a detailed view of the application	Any changes in the application comes to my knowledge while checking dashboard.	Low	Sprint-2
Customer Care Executive	IBM Watson		AI based IBM Watson provides full support for the customer to guide and create new banking account	I can fill the respective details in the respective field.	High	Sprint-1
	Support		Customer support is also mentioned for describing important issue faced by the customer.	I can get the detailed solution for the queries	Medium	Sprint-1
Administrator	Verification		Administrator can completely verify the submitted application.	I can get verified for application.	High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

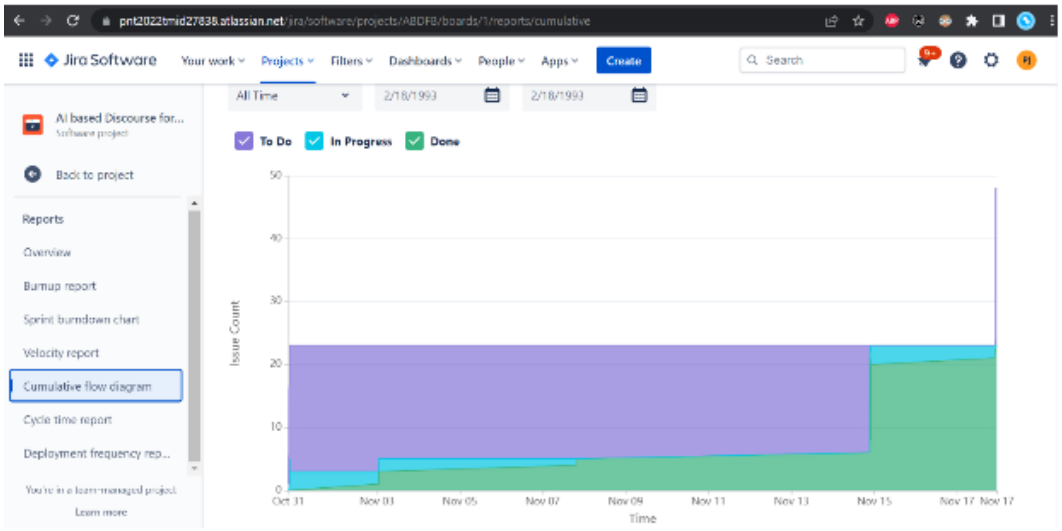
6.1. PROJECT PLANNING & ESTIMATION

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Building of Assistant	USN-1	Creation of Banking Chatbot or Assistant using IBM Watson Assistant/ As a user, I can see a Banking Assistant.	12	High	Balaji k, Imran Sherieff M
Sprint-1		USN-2	Understanding Customer's Banking Related Queries and skills/ As a user, I can see a Chatbot with Banking skills.	8	Moderate	Dhinesh B, Dinesh Kumar B
Sprint-2	Modelling of Assistant	USN-3	Building action and Adding responses to Account Creation/As a user, I can see a Chatbot which helps to create an account	5	High	Imran Sherieff M
Sprint-2		USN-4	Building action and Adding responses to Banking related queries/As a user, I can see a Chatbot which helps to solve the banking queries.	5	High	Dinesh Kumar B
Sprint-2		USN-5	Building action and Adding responses to Net Banking/As a user, I can see a Chatbot which helps to access Net Banking	5	High	Dhinesh B
Sprint-2		USN-6	Building action and Adding responses to Loan Queries/As a user, I can see a Chatbot which helps in Loan related Queries.	5	High	Balaji K
Sprint-3	Testing & Deployment Phase-I	USN-7	Testing the chatbot performance with the trained banking functionalities or conversations/As a user, I can know the chatbots performance level	10	High	Imran Sherieff M, Dhinesh B
Sprint	**Functional Requirement (Epic)**	**User Story Number**	**User Story / Task**	**Story Points**	**Priority**	**Team Members**
Sprint-3		USN-8	Integration of Flask webpage with the chatbot assistant to provide a framework/As a user, I can see a webpage to access the chatbot.	10	High	Dinesh Kumar B, Balaji K
Sprint-4	Deployment Phase-II & Model Improvement	USN-9	Deployment of AI based chatbot for banking Industry or Running the Chatbot service/As a user, I can see and use a 24*7 banking chatbot.	15	High	Imran Sherieff M, Balaji K, Dhinesh B, Dinesh Kumar B
Sprint-4		USN-10	Improving the model efficiency whenever needed/As a user, I can see new updated chatbot in Future days.	5	Moderate	Imran Sherieff M, Balaji K, Dhinesh B, Dinesh Kumar B

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	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

6.3. REPORTS FROM JIRA



7. CODING & SOLUTIONING

7.1. FEATURE 1

CREATING CHATBOT & INTEGRATE WITH FLASK WEB PAGE

Importing Libraries

```
from flask import Flask, render_template
```

Importing the flask module into the project is mandatory. An object of the Flask class is our WSGI application. Flask constructor takes the name of the current module (__name__).

Creating our flask application and loading

```
app = Flask(__name__)
```

Routing to the Html Page

Here, the declared constructor is used to route to the HTML page created earlier.

The '/' route is bound with the bot function. Hence, when the home page of a web server is opened in the browser, the HTML page will be rendered.

```
@app.route('/')
def bot():
    return render_template('chatbot.html')
```

Main Function

This is used to run the application in localhost.

```
if __name__ == '__main__':
    app.run()
```

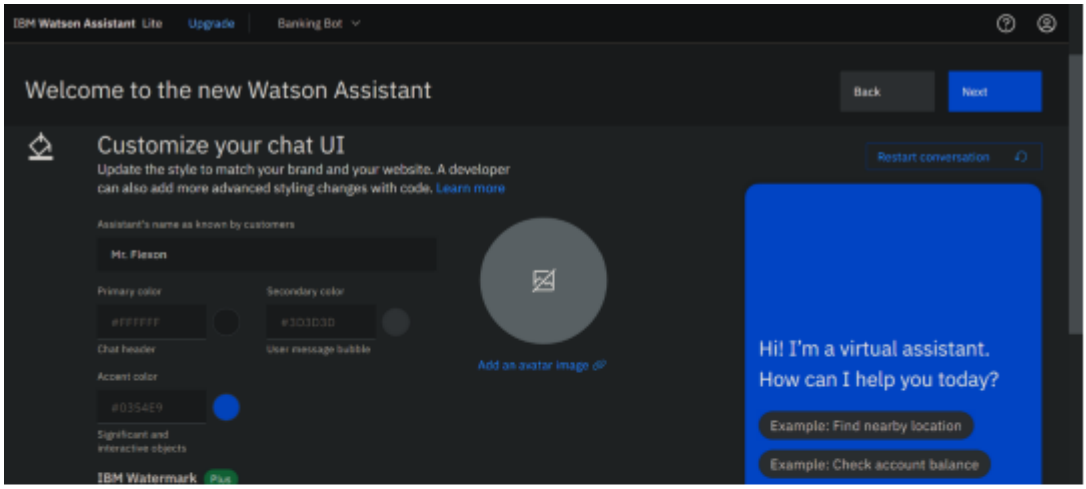
7.2. FEATURE 2

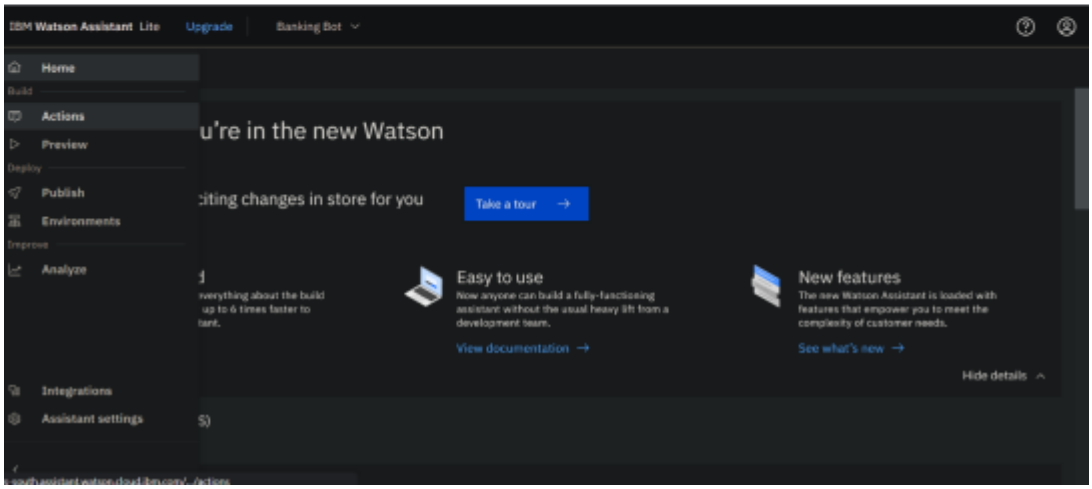
AUTO GENERATED SOURCE CODE IS COPIED FROM IBM WATSON'S ASSISTANT AND PLACE INSIDE BODY TAG.

```
<script>
        window.watsonAssistantChatOptions = {
          integrationID: "ee5f1f2d-b3b8-46e1-8bae-7b717fca68e4", // The ID of this
integration.
          region: "us-south", // The region your integration is hosted in.
          serviceInstanceID: "bcc8994a-87d9-419c-9749-73689e7b11ef", // The ID of
your service instance.
          onLoad: function(instance) { instance.render(); }
        };
        setTimeout(function(){
          const t=document.createElement('script');
          t.src="https://web-chat.global.assistant.watson.appdomain.cloud/versions/" +
(window.watsonAssistantChatOptions.clientVersion || 'latest') +
"/WatsonAssistantChatEntry.js";
          document.head.appendChild(t);
        });
      </script>
```

Through this code, the created CHATBOT with the functionalities,

- Savings Account Action
- Current Account Action
- Loan Account Action
- Net Banking Action
- General Query Action can be achieved.


IBM Watson Assistant Lite
Upgrade
Banking Bot
Welcome to the new Watson Assistant
Back
Next
Customize your chat UI
Update the style to match your brand and your website. A developer can also add more advanced styling changes with code. Learn more
Restart conversation
Assistant's name as known by customers
Mr. Fiesco
Primary color
Secondary color
Chat header
User message bubble
Accent color
Significant and interactive objects
Add an avatar image
IBM Watermark
Plus
Hi! I'm a virtual assistant. How can I help you today?
Example: Find nearby location
Example: Check account balance


IBM Watson Assistant Lite
Upgrade
Banking Bot
Home
Build
Actions
Preview
Deploy
Publish
Environments
Improve
Analyze
Integrations
Assistant settings
u're in the new Watson
iting changes in store for you
Take a tour
Easy to use
Now anyone can build a fully-functioning assistant without the usual heavy lift from a development team.
View documentation
New features
The new Watson Assistant is loaded with features that empower you to meet the complexity of customer needs.
See what's new
Hide details

8. TESTING

8.1. TEST CASES

	Test Scenarios
1	Verify user is able to open and view chatbot UI
2	Verify user is able to interact with chatbot or not
3	Verify chatbot is able to respond to user queries immediately
4	Verify chatbot is able to provide options for user to choose various choices
	Savings Account Related Actions
1	Verify user is able to select type of savings account
2	Verify user is able to know the procedure to create savings account for selected type
3	Verify user is check the minimum balance
4	Verify user is able to find interest rate
	Current Account Related Actions
1	Verify user is able to select type of company
2	Verify user is able to know the procedure to create current account for selected type
3	Verify user is able to know about zero balance current account
4	Verify user is able to know the procedure to close current account
	Loan Account Related Actions
1	Verify user is able to choose options for selecting type of available loan policies
2	Verify user is able to know about available loan amounts
3	Verify user is able to check the loan status
4	Verify user is able to know about joint loan
	General Query Related Actions
1	Verify user is able to know about bank working days
2	Verify user is able to know about list of branches
3	Verify user is able to find the nearest branch
4	Verify user is able to know about storage locker facility
5	Verify user is able to know about currency conversion facility

8.2. USER ACCEPTANCE TESTING

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the AI-based discourse for Banking Industry project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	1	0	0	1
Client Application	1	0	0	1
Security	1	0	0	1

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	1	0	0	0	1
Duplicate	3	1	0	1	5
External	1	3	0	1	5
Fixed	2	5	3	2	12
Not Reproduced	0	0	0	1	1
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0
Totals	7	9	3	5	24

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Outsource Shipping	0	0	0	0
Exception Reporting	1	0	0	1
Final Report Output	1	0	0	1
Version Control	1	0	0	1

9. RESULTS

9.1. PERFORMACE METRICS

Model Performance Testing

S.No.	Parameter	Values	Screenshot
1	**MODEL SUMMARY**	The chatbot is used by the user to interact and select queries that are populated based on frequently asked question of banking customers. There can be multiple instances of a single chatbot inquiring different user at the same time. It quickly responds with expected answers to frequently asked customer queries. It can be scaled as per the requirements of the bank to include answers to queries related to any new feature or service introduced by the bank.	
2.	**ACCURACY**	Training Accuracy – 100% Validation Accuracy – 100%	

10. ADVANTAGES AND DISADVANTAGES

ADVANTAGES

1. Round-the-clock support: Chatbots provide 24/7 client support, so existing and potential customers can try and solve their banking problems after work hours and on weekends. This ultimately also leads to better customer experience.

2. Enhanced productivity of bank personnel: Not all clients' problems require the help of a staff member. Artificial intelligence may successfully deal with minor issues leaving only the most urgent and complicated cases for the human approach.

3. More convenient mode of communication: Chatbots may combine various functionalities that would make them convenient for customers of different age groups.

DISADVANTAGES

1. Internet Issues: Chatbots will not work without the internet. If there is a network problem, chatbots may stop working and will not respond to client queries.

2. Requirement of technical knowledge: Users who make use of chatbots must know how to use chatbots. Otherwise, it is difficult to do interaction with chatbot.

3. Providing unexpected answers: Chatbots in some cases may get confused due to prolonged user inputs and may provide irrelevant answers.

4. Inability to interpret multiple queries: Chatbots can't understand multiple questions at a time if a user continuously posts queries to it. So it is necessary for a user to post queries one-by-one.

11. CONCLUSION

Chatbots developed using AI are able to answer any frequently asked banking queries on account creation, loan, net banking, other services etc. It addresses the queries of customers immediately and effectively in a cost-efficient manner. It eliminates the need for a massive customer care workforce and even reduces the workload of the bank employees whose efforts can be used elsewhere. AI Chatbots provides 24/7 service to clear all customer queries and guide them through all the banking processes. It can be scaled as per the requirements of the bank to include answers to queries related to any new feature or service introduced by the bank. In order to overcome the user satisfaction issues associated with banking services, chatbot will provide personal and efficient communication between the user and the bank. It is built to be the overall virtual assistant that can facilitate customers to ask banking-related questions without visiting the bank or calling up customer service centre as well as providing them with relevant suggestions.

12. FUTURE SCOPE

Chatbots help people obtain the information they need and solve their problems. The technology sector has seen a massive increase in AI development, which has led to the creation of chatbots that can help users easily find the information they need online. AI Chatbots effectively creates a strong brand image. They will continue to evolve and play an important role in customer service for businesses.

1. Bots for Internal Business Communications

Chatbots can be used for various purposes, including addressing common problems, communicating with employees, and finishing HR-related tasks and transactional functions. Chatbots for websites are acting as a guide to new employees through company protocols, recording answers for screen questions, and assisting with the onboarding process for new employees. Chatbots can save time for IT desk agents and help with more complicated issues.

2. Content Marketing

Chatbots can communicate with the target market by speaking with them in complete sentences with a natural and easy-going conversational flow. Some markets use these bots to serve customer service and retail, amongst others. Chatbots can segment consumers for future marketing campaigns. This can be incredibly useful for creating more accurate target marketing. Based on the information from dialogue with chatbots, marketers can use this information to help with personalizing brand content.

3. Social Media

Chatbots have better customer interaction rates on social media. Chatbot interactions increase consumer confidence in a brand or business. Customers are informed with daily or weekly announcements about deals, events, and promotions via social media. With time, it is used for voicing opinions, ordering products and services, offering reviews, and even getting in touch with businesses.

4. Use of AI in contact centres

AI chatbots without human involvement can handle simple requests such as changing a password, requesting a balance, scheduling an appointment, etc.

14. APPENDIX

SOURCE CODE

app.py

```
from flask
import Flask,
render_template

                    app = Flask(__name__)

                    @app.route('/')
                    def bot():
                        return render_template('chatbot.html')


                    if __name__ == '__main__':
                        app.run()
```

chatbot.html

```
<!DOCTYPE
html>
             <html lang="en">
             <head>
                 <title>AI BASED DISCOURSE FOR BANKING INDUSTRY</title>
                 <link rel="stylesheet" href="{{ url_for('static',
             filename='style.css') }}">
             </head>
             <body>

                 <div class="main">
                     <div class="navbar">
                         <div class="icon">
                             <h2 class="logo">BankingBot</h2>
                         </div>

                         <div class="menu">
                             <ul>
                                 <li><a href="#">HOME</a></li>
```

```
                    <li><a href="#">ACCOUNTS</a></li>
                    <li><a href="#">SERVICE</a></li>
                    <li><a href="#">CONTACT</a></li>
                    <li><a href="#">ABOUT</a></li>
                </ul>
            </div>

            <div class="search">
                <input class="srch" type="search" name="" placeholder="Type
To text">
                <a href="#"> <button class="btn">Search</button></a>
            </div>

        </div>
        <div class="content">
            <h1>AI Based Discourse for <br><span>Banking</span>
<br>Industry</h1>
            <p class="par">- Project Nalaiya Thiran 2022 <br> TEAM ID:
PNT2022TMID39554  <br> TEAM MEMBERS:<br> <B>     IMRAN SHERIEFF M<br>
BALAJI K<br>    DINESH KUMAR B<br>  DHINESH B </B></p>

                <button class="cn"><a href="#">JOIN US</a></button>

                <div class="form">
                    <h2>Login Here</h2>
                    <input type="email" name="email" placeholder="Enter
Email Here">
                    <input type="password" name="" placeholder="Enter
Password Here">
                    <button class="btnn"><a href="#">Login</a></button>

                    <p class="link">Don't have an account<br>
                    <a href="#">Sign up </a> here</a></p>
                    <p class="liw">Log in with</p>

                    <div class="icons">
                        <a href="#"><ion-icon name="logo-facebook">></ion-
icon></a>
                        <a href="#"><ion-icon name="logo-instagram">></ion-
icon></a>
                        <a href="#"><ion-icon name="logo-twitter">></ion-
icon></a>
                        <a href="#"><ion-icon name="logo-google">></ion-
icon></a>
                        <a href="#"><ion-icon name="logo-skype">></ion-
icon></a>
```

```
                            </div>

                        </div>
                            </div>
                        </div>
                </div>
            </div>
            <script
        src="https://unpkg.com/ionicons@5.4.0/dist/ionicons.js"></script>
            <script>
                window.watsonAssistantChatOptions = {
                  integrationID: "ee5f1f2d-b3b8-46e1-8bae-7b717fca68e4", // The ID
        of this integration.
                  region: "us-south", // The region your integration is hosted in.
                  serviceInstanceID: "bcc8994a-87d9-419c-9749-73689e7b11ef", // The
        ID of your service instance.
                  onLoad: function(instance) { instance.render(); }
                };
                setTimeout(function(){
                  const t=document.createElement('script');
                  t.src="https://web-
        chat.global.assistant.watson.appdomain.cloud/versions/" +
        (window.watsonAssistantChatOptions.clientVersion || 'latest') +
        "/WatsonAssistantChatEntry.js";
                  document.head.appendChild(t);
                });
              </script>
        </body>
        </html>
```

style.css

```
 *{
            margin: 0;
            padding: 0;
        }

        .main{
            width: 100%;
            background: linear-gradient(to top, rgba(0,0,0,0.5)50%,rgba(0,0,0,0.5)50%),
        url("https://raw.githubusercontent.com/IBM-EPBL/IBM-Project-15624-
        1659601914/306206e5873938cd7be1bc520315bf7b5a909bab/Project%20Development%20Phase
        /Sprint%203/display.jpg");
```

```
    background-position: center;
    background-size: contain;
    height: 100vh;
    filter: brightness(1.5);
}

.navbar{
    width: 1200px;
    height: 75px;
    margin: auto;
}

.icon{
    width: 200px;
    float: left;
    height: 70px;
}

.logo{
    color: #fff;
    font-size: 35px;
    font-family: Arial;
    padding-left: 20px;
    float: left;
    padding-top: 10px;
    margin-top: 5px
}

.menu{
    width: 400px;
    float: left;
    height: 70px;
}

ul{
    float: left;
    display: flex;
    justify-content: center;
    align-items: center;
}

ul li{
    list-style: none;
    margin-left: 62px;
    margin-top: 27px;
    font-size: 14px;
```

```
}

ul li a{
    text-decoration: none;
    color: #fff;
    font-family: Arial;
    font-weight: bold;
    transition: 0.4s ease-in-out;
}

ul li a:hover{
    color: #ff7200;
}

.search{
    width: 330px;
    float: left;
    margin-left: 270px;
}

.srch{
    font-family: 'Times New Roman';
    width: 200px;
    height: 40px;
    background: transparent;
    border: 1px solid #ff7200;
    margin-top: 13px;
    color: #fff;
    border-right: none;
    font-size: 16px;
    float: left;
    padding: 10px;
    border-bottom-left-radius: 5px;
    border-top-left-radius: 5px;
}

.btn{
    width: 100px;
    height: 40px;
    background: #ff7200;
    border: 2px solid #ff7200;
    margin-top: 13px;
    color: #fff;
    font-size: 15px;
    border-bottom-right-radius: 5px;
    border-bottom-right-radius: 5px;
```

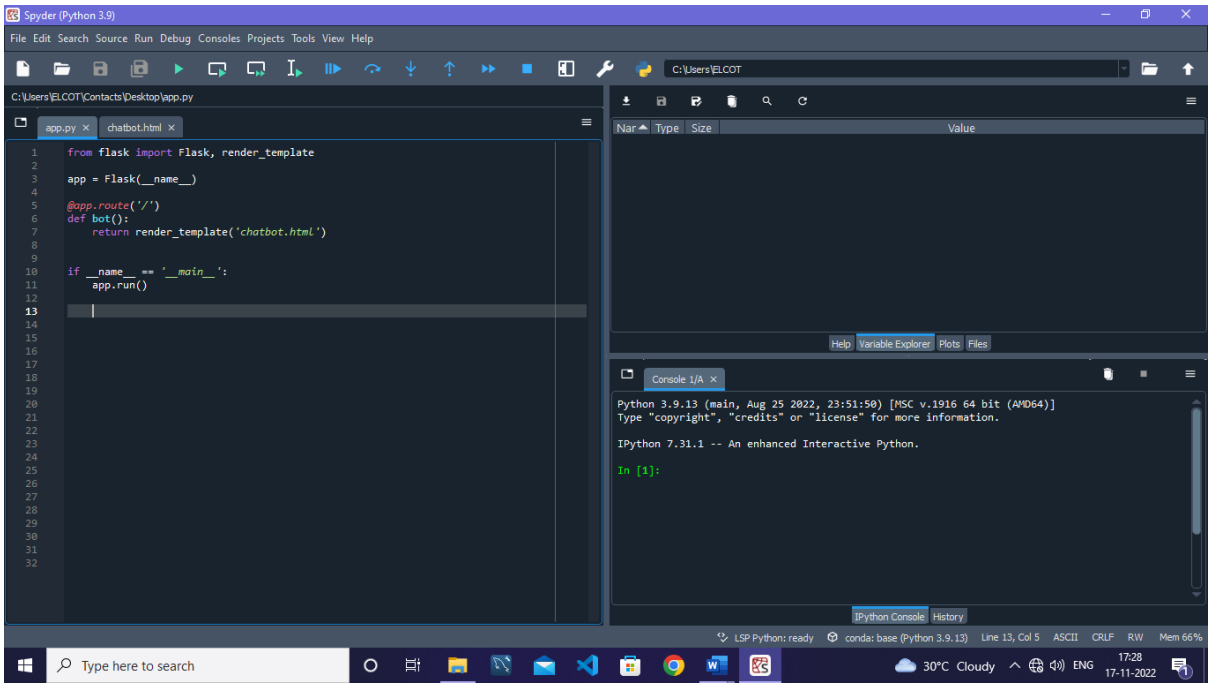
```
    transition: 0.2s ease;
    cursor: pointer;
}
.btn:hover{
    color: #000;
}

.btn:focus{
    outline: none;
}

.srch:focus{
    outline: none;
}

.content{
    width: 1200px;
    height: auto;
    margin: auto;
    color: #fff;
    position: relative;
}

.content .par{
    padding-left: 20px;
    padding-bottom: 25px;
    font-family: Arial;
    letter-spacing: 1.2px;
    line-height: 30px;
}

.content h1{
    font-family: 'Times New Roman';
    font-size: 50px;
    padding-left: 20px;
    margin-top: 9%;
    letter-spacing: 2px;
}

.content .cn{
    width: 160px;
    height: 40px;
    background: #ff7200;
    border: none;
    margin-bottom: 10px;
    margin-left: 20px;
```

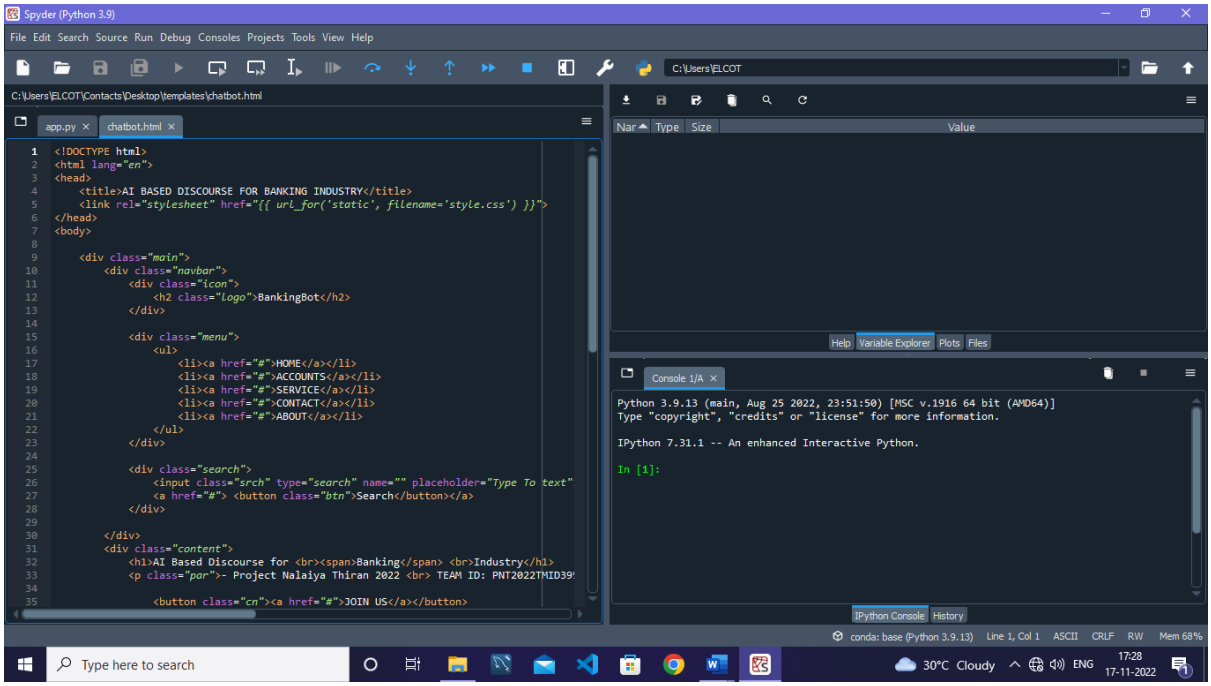
```
    font-size: 18px;
    border-radius: 10px;
    cursor: pointer;
    transition: .4s ease;

}

.content .cn a{
    text-decoration: none;
    color: #000;
    transition: .3s ease;
}

.cn:hover{
    background-color: #fff;
}

.content span{
    color: #ff7200;
    font-size: 65px
}

.form{
    width: 250px;
    height: 380px;
    background: linear-gradient(to top, rgba(0,0,0,0.8)50%,rgba(0,0,0,0.8)50%);
    position: absolute;
    top: -20px;
    left: 870px;
    transform: translate(0%,-5%);
    border-radius: 10px;
    padding: 25px;
}

.form h2{
    width: 220px;
    font-family: sans-serif;
    text-align: center;
    color: #ff7200;
    font-size: 22px;
    background-color: #fff;
    border-radius: 10px;
    margin: 2px;
    padding: 8px;
}
```

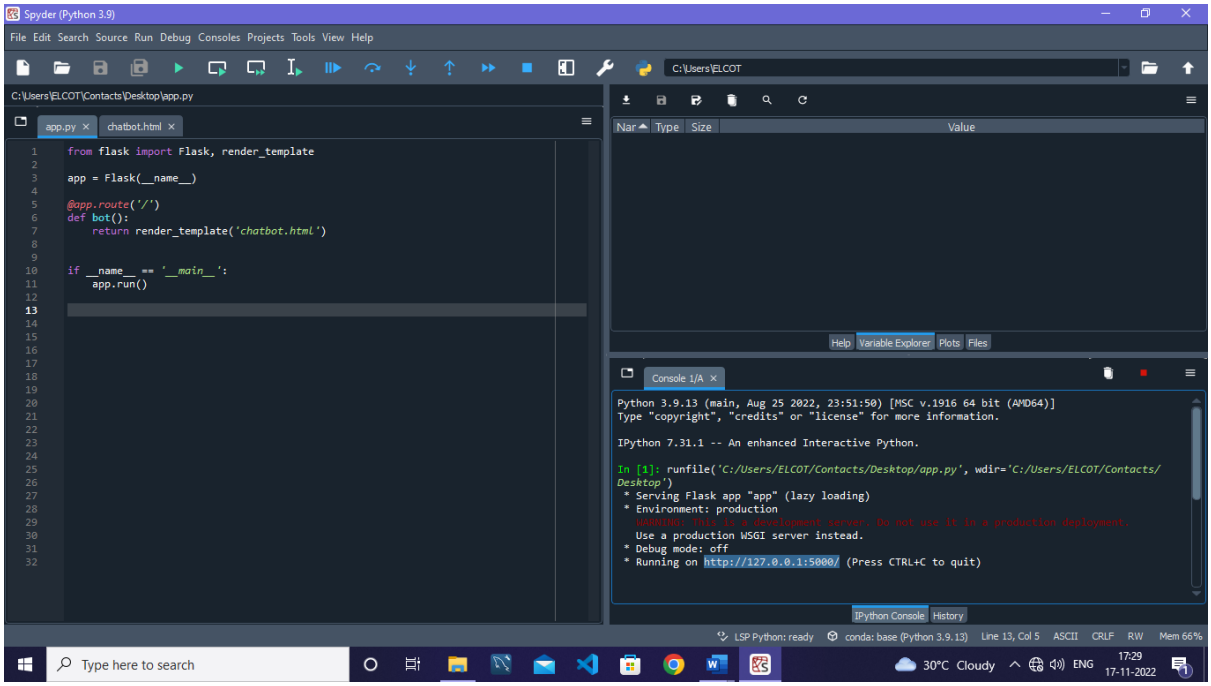
```
.form input{
    width: 240px;
    height: 35px;
    background: transparent;
    border-bottom: 1px solid #ff7200;
    border-top: none;
    border-right: none;
    border-left: none;
    color: #fff;
    font-size: 15px;
    letter-spacing: 1px;
    margin-top: 30px;
    font-family: sans-serif;
}

.form input:focus{
    outline: none;
}

::placeholder{
    color: #fff;
    font-family: Arial;
}

.btnn{
    width: 240px;
    height: 40px;
    background: #ff7200;
    border: none;
    margin-top: 30px;
    font-size: 18px;
    border-radius: 10px;
    cursor: pointer;
    color: #fff;
    transition: 0.4s ease;
}
.btnn:hover{
    background: #fff;
    color: #ff7200;
}
.btnn a{
    text-decoration: none;
    color: #000;
    font-weight: bold;
}
.form .link{
```

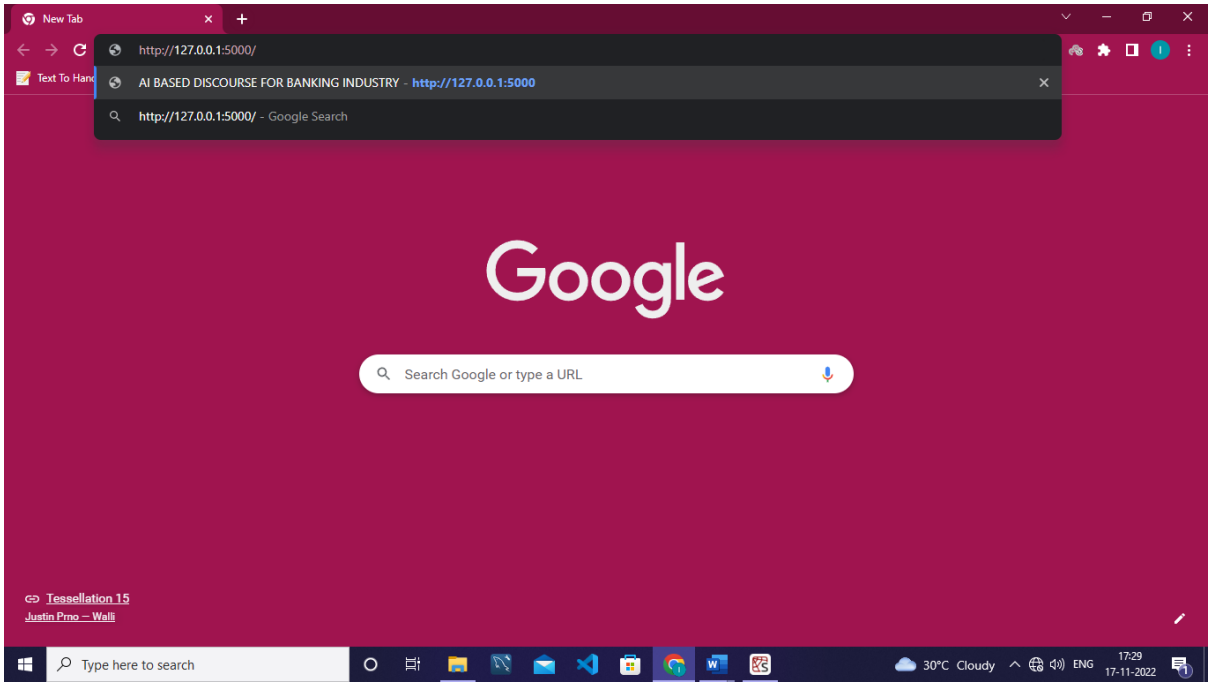
```
    font-family: Arial, Helvetica, sans-serif;
    font-size: 17px;
    padding-top: 20px;
    text-align: center;
}
.form .link a{
    text-decoration: none;
    color: #ff7200;
}
.liw{
    padding-top: 15px;
    padding-bottom: 10px;
    text-align: center;
}
.icons a{
    text-decoration: none;
    color: #fff;
}
.icons ion-icon{
    color: #fff;
    font-size: 30px;
    padding-left: 14px;
    padding-top: 5px;
    transition: 0.3s ease;
}
.icons ion-icon:hover{
    color: #ff7200;
}
```

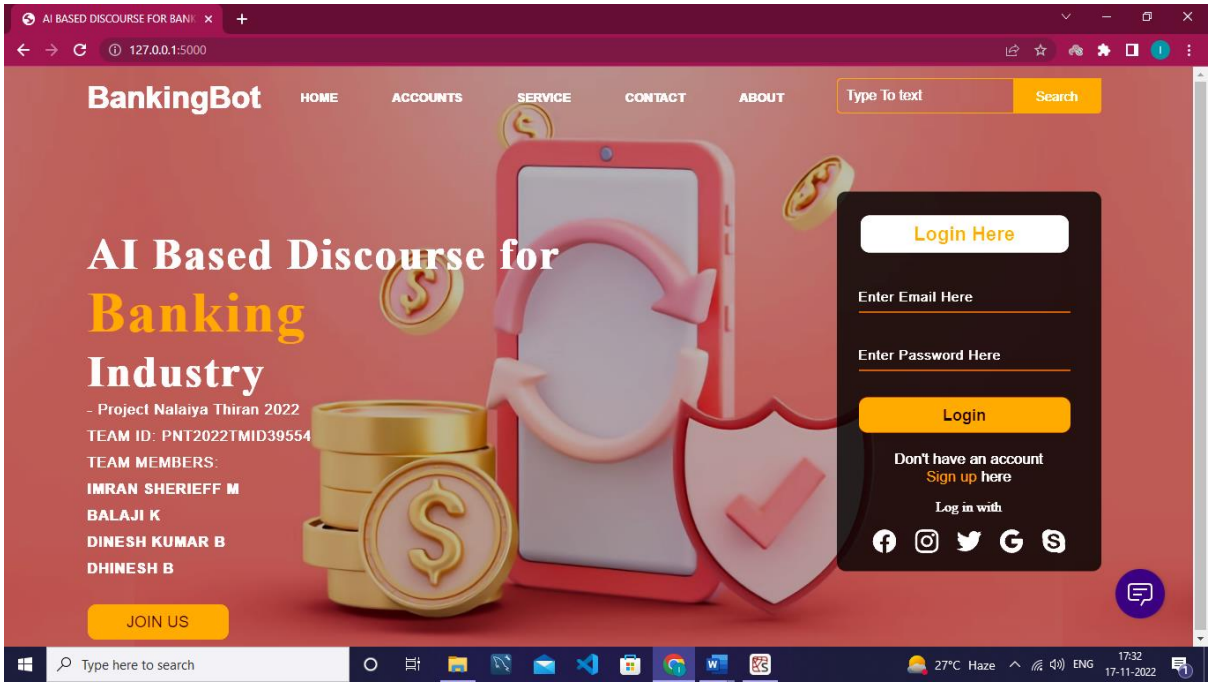
OUTPUT SCREENSHOTS

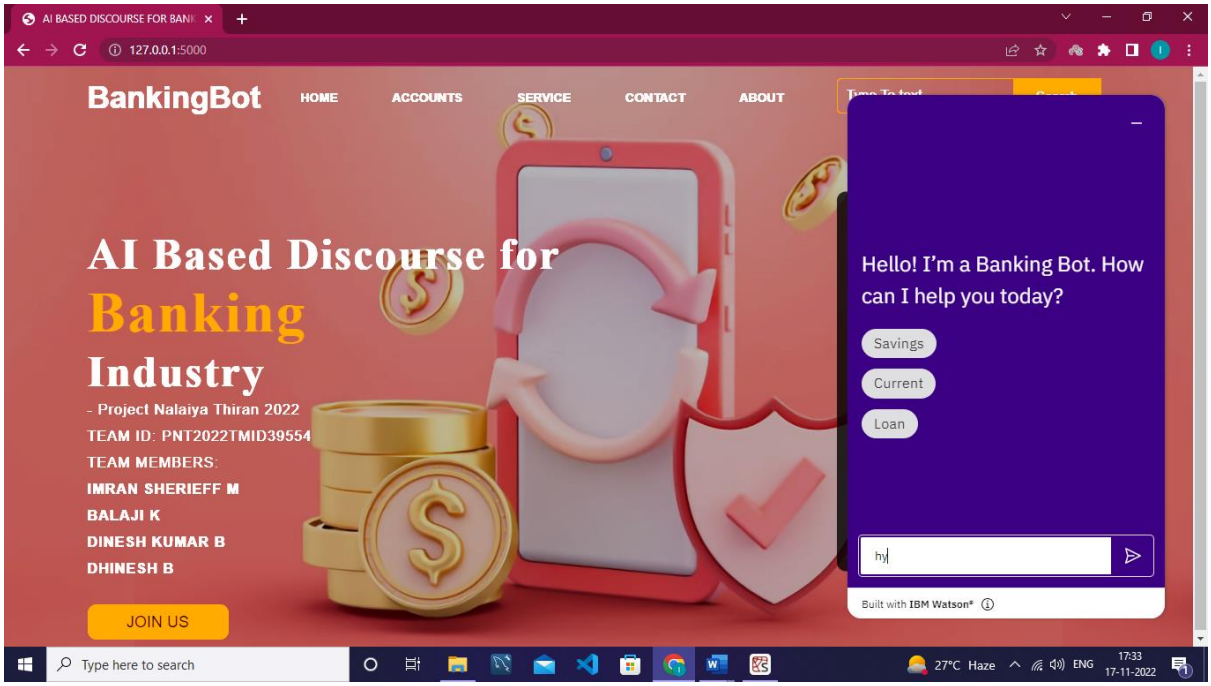


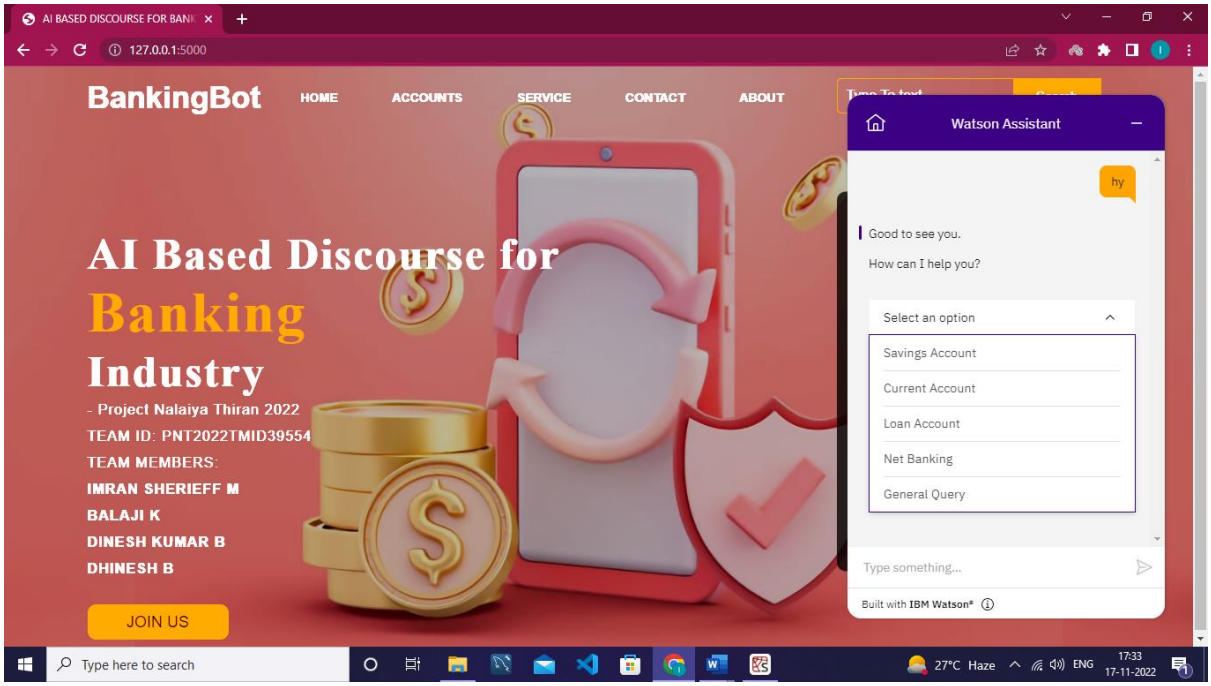


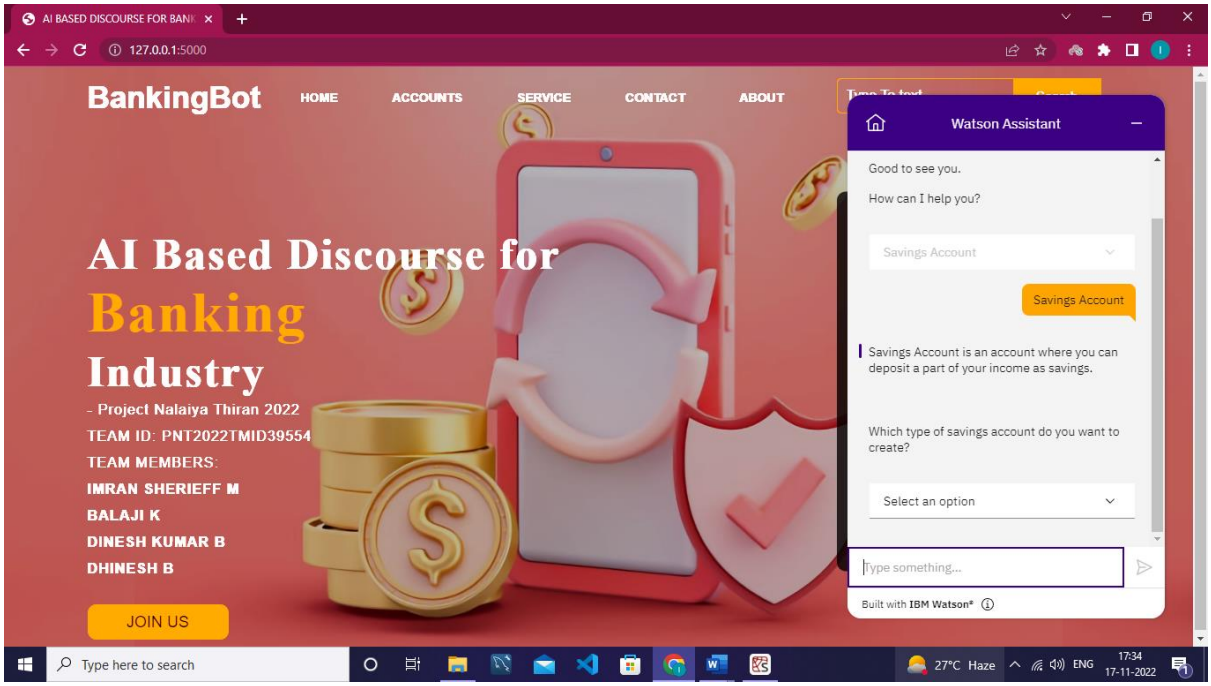

Spyder (Python 3.9)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:\Users\ELCOT\Contacts\Desktop\app.py
app.py
chatbot.html
from flask import Flask, render_template
app = Flask(__name__)
@app.route('/')
def bot():
return render_template('chatbot.html')
if __name__ == '__main__':
app.run()
Nar Type Size Value
Help Variable Explorer Plots Files
Console 1/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
In [1]: runfile('C:/Users/ELCOT/Contacts/Desktop/app.py', wdir='C:/Users/ELCOT/Contacts/Desktop')
* Serving Flask app "app" (lazy loading)
* Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
* Debug mode: off
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
IPython Console History
LSP Python: ready
conda: base (Python 3.9.13)
Line 13, Col 5
ASCII
CRLF
RW
Mem 66%
Type here to search
30°C Cloudy
ENG
17:29
17-11-2022

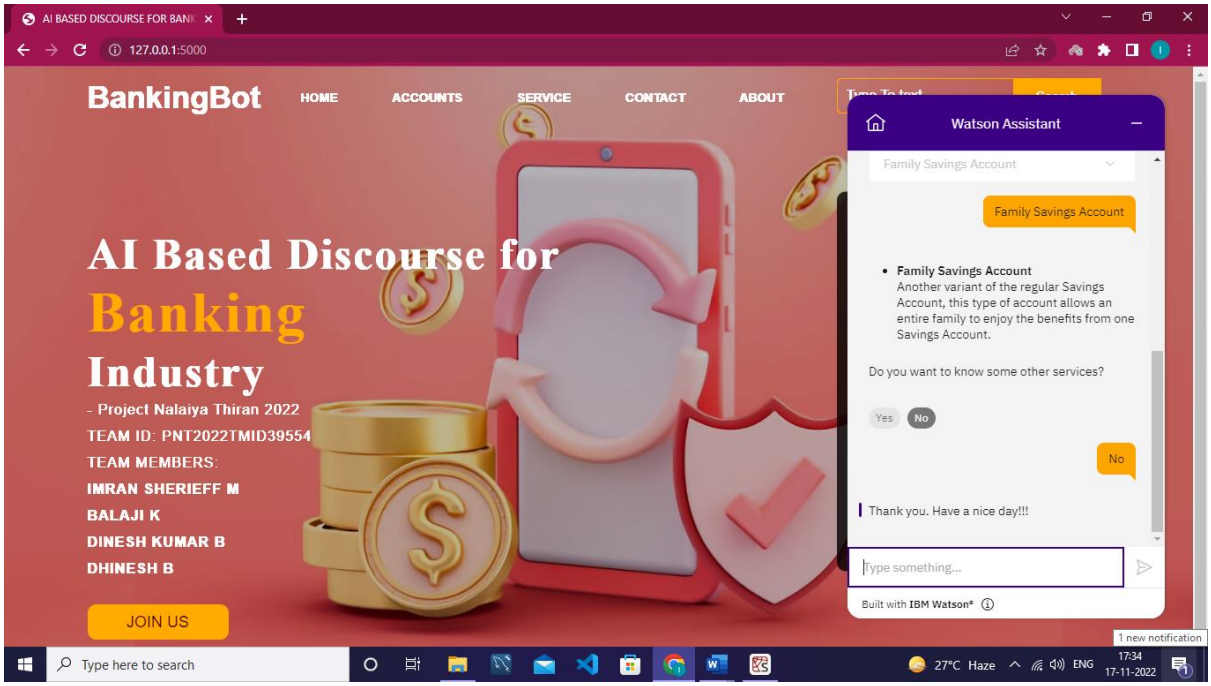

New Tab
http://127.0.0.1:5000/
AI BASED DISCOURSE FOR BANKING INDUSTRY - http://127.0.0.1:5000
http://127.0.0.1:5000/ - Google Search
Google
Search Google or type a URL
Tessellation 15
Justin Prno – Walli
Type here to search
30°C Cloudy
ENG
17:29
17-11-2022


AI BASED DISCOURSE FOR BANK
127.0.0.1:5000
BankingBot
HOME
ACCOUNTS
SERVICE
CONTACT
ABOUT
Type To text
Search
AI Based Discourse for
Banking
Industry
- Project Nalaiya Thiran 2022
TEAM ID: PNT2022TMID39554
TEAM MEMBERS:
IMRAN SHERIEFF M
BALAJI K
DINESH KUMAR B
DHINESH B
JOIN US
Login Here
Enter Email Here
Enter Password Here
Login
Don't have an account
Sign up here
Log in with
Type here to search
27°C Haze
ENG
17:32
17-11-2022


AI BASED DISCOURSE FOR BANK
127.0.0.1:5000
BankingBot
HOME
ACCOUNTS
SERVICE
CONTACT
ABOUT
AI Based Discourse for
Banking
Industry
- Project Nalaiya Thiran 2022
TEAM ID: PNT2022TMID39554
TEAM MEMBERS:
IMRAN SHERIEFF M
BALAJI K
DINESH KUMAR B
DHINESH B
JOIN US
Hello! I'm a Banking Bot. How can I help you today?
Savings
Current
Loan
hy
Built with IBM Watson®
Type here to search
27°C Haze
ENG
17:33
17-11-2022


AI BASED DISCOURSE FOR BANK
127.0.0.1:5000
BankingBot
HOME
ACCOUNTS
SERVICE
CONTACT
ABOUT
AI Based Discourse for
Banking
Industry
- Project Nalaiya Thiran 2022
TEAM ID: PNT2022TMID39554
TEAM MEMBERS:
IMRAN SHERIEFF M
BALAJI K
DINESH KUMAR B
DHINESH B
JOIN US
Watson Assistant
hy
Good to see you.
How can I help you?
Select an option
Savings Account
Current Account
Loan Account
Net Banking
General Query
Type something...
Built with IBM Watson*
Type here to search
27°C Haze
ENG
17:33
17-11-2022


AI BASED DISCOURSE FOR BANK
127.0.0.1:5000
BankingBot
HOME
ACCOUNTS
SERVICE
CONTACT
ABOUT
AI Based Discourse for
Banking
Industry
- Project Nalaiya Thiran 2022
TEAM ID: PNT2022TMID39554
TEAM MEMBERS:
IMRAN SHERIEFF M
BALAJI K
DINESH KUMAR B
DHINESH B
JOIN US
Watson Assistant
Good to see you.
How can I help you?
Savings Account
Savings Account
Savings Account is an account where you can deposit a part of your income as savings.
Which type of savings account do you want to create?
Select an option
Type something...
Built with IBM Watson*
Type here to search
27°C Haze
ENG
17:34
17-11-2022



GITHUB LINK

https://github.com/IBM-EPBL/IBM-Project-15624-1659601914

PROJECT DEMO LINK

https://youtu.be/b4tNM-kTr0M