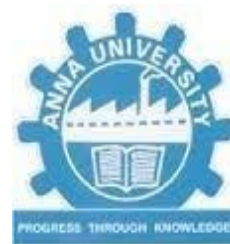




AI BASED DISCOURSE FOR BANKING INDUSTRY



NALAIYA THIRAN PROJECT BASED LEARNING

on

**PROFESSIONAL READINESS FOR INNOVATION,
EMPLOYABILITY AND ENTREPRENEURSHIP**

A PROJECT REPORT

KISHORE P	(720819104057)
IRFAN RAHIM	(720819104044)
IMRAN KHAN	(720819104043)
KAVIARASAN	(720819104053)

**BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE AND ENGINEERING**

HINDUSTHAN INSTITUTE OF TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A' Grade by NAAC
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COIMBATORE – 641 032

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ABSTRACT

The usage of artificial intelligence in banking is an important theme within entrepreneurial research. The purpose of the study was to analyse the motivations, challenges and opportunities for Swedish banking institutes to implement artificial intelligence based solutions into their customer service process. The research is based on a case study of the Swedish banking institute Swedbank AB, who introduced an AI based virtual assistant (Nina) to deal with customer requests. For the qualitative study, interviews with Swedish banking customer and experts were conducted. Further, to understand the managerial motivations of Swedbank, a theory of Moore (2008) regarding innovation management was applied. The findings display that Nina improved the service spectrum of Swedbank with the potential of decreasing costs, while maintaining customer satisfaction. Further, the results displayed a high acceptance of new technologies from the customer perspective. This provides the foundation for Swedbank to introduce further artificial intelligence based services. Banking institutes and other service oriented organisations with high customer interaction can use the implications of the thesis when considering to more effectively handle customer requests.

CHAPTER-1 INTRODUCTION

The ongoing era of digitalization, decentralization and disruption is shaping industries and consumption on a broad scale (Desai, 2014). Digital technologies are connecting billions of consumers and allow the deployment of low cost connected devices in every business sector. The current generation is adjusted to the digital environment and naturally expects services and products to meet the current digital technology standards. Further, investments into digital technologies and businesses have risen and are rewarded by the public markets (PWC Editorial, 2016). Artificial intelligence (AI) technologies are part of this development and the banking sector is hereby deemed to see a major impact. According to a report by Accenture, a global management consulting and professional services company, four out of five bankers assume that AI is going to revolutionize the way banking is executed. The report suggests that artificial intelligence will affect banking by enhancing the customer experience. Banking products and service may become increasingly personalized giving customers the impression that their banking institutes know their specific habits and needs (Accenture, 2016). But the introduction of AI technologies comes with potential challenges and risks. Banks are processing highly sensitive data. Thus, privacy and data security concerns are essential elements of the process. Additionally, customers might prefer the contact with persons regarding certain issues, leading to a rejection of AI based interfaces (Kelly, 2017). Hence, the introduction of such technologies into the active process should be executed with consideration of the possible risks.

CHAPTER-2 OBJECTIVE

The Objectives of the Project are:

PRIMARY OBJECTIVES

- The main purpose of chatbots in banking is providing a better customer experience. However, they also help the staff and prevent stressful situations that arise from direct communication with clients.
- The core purpose of banking chatbots is to provide the customers with prompt service and to improve the operational efficiency of the bank and its employees. Besides, Conversational AI in banking also assists the staff to distribute their workload
- Chatbots allow businesses to connect with customers in a personal way without the expense of human representatives. For example, many of the questions or issues customers have are common and easily answered. That's why companies create FAQs and troubleshooting guides.
- Banking chatbots have huge potential in customer engagement. It gives customers 24/7 access to support and banks can make great use of Conversational AI and improve customer engagement to enhance the experience and improve retention.

SCOPE OF THE STUDY:

The extent of this exploration is to decide whether AI-empowered Chatbots can change the client experience and assist the Banks with developing their business by accomplishing supportable upper hand and satisfying the client's requests. This exploration likewise assists with figuring out the impression of clients when a bank carries out innovation like a Chatbot. This exploration will likewise focus on the issues and limitations of the chatbot application This research will assist with contributing to the possibility of things to come of Chatbots in the financial industry of the Nepal market. This research might be valuable for the following :

- Specialists who are keen on enumerated learning about AI-empowered Chatbot execution in the financial industry
- Banking and Financial areas of Nepal
- Government sector of Nepal who are working predominantly with the client information

CHAPTER-3 IDEATION PHASE

3.1 LITERATURE SURVEY

- Conversation to Automation in Banking Through Chatbot Using Artificial MachineIntelligence Language

Authors: Vinod Kumar Shukla, Sasha Fathima Suhel, Sonali Vyas, Ved Prakash Mishra

Year: 2020

Title: Conversation to Automation in Banking Through Chatbot Using Artificial MachineIntelligence Language

Methodology: This paper examines some of the latest AI patterns and activities. System- Chatbots are made. In the banking industry, the introduction of Artificial Intelligence has driven chatbots and changed the face of the interaction between bank and customers.

Advantage: Artificial Intelligence involves creating machines that are capable of simulating knowledge. It also explores the existing usability of chatbot to assess whether it can fulfill customers ever-changing needs.

Disadvantage: The dialogue capability can be limited to very a very specific set or format of questions that are established by the chatbot development team.

- Artificial Intelligence in Banking sector: Evidence from Bahrain

Authors: Yomna Abdulla, Rabab Ebrahim, Sumathi Kumaraswamy

Year: 2020

Title: Artificial Intelligence in Banking sector: Evidence from Bahrain

Methodology: Artificial intelligence applications and robotic process automation for chatbots are discussed. Findings highlight that a high priority is given to the digital transformation journey in banks, which suggests that further development and implantation of technology in banks will be seen in the near future.

Advantage: AI can be best described as the computerized processes that employ knowledge, reasoning, and communication that aids smart decision making by chatbots in banks.

Disadvantage: Banking sector faces significant challenges relating to security, risk management and inefficiency that decrease the overall performance of banks.

- Adapting to Artificial Intelligence through Workforce Re-skilling within the Banking Sector in South Africa

Authors: Tebaga Lucky Mamela, Nita Sukdeo, Sambil Charles Mukwakungu

Year: 2020

Title: Adapting to Artificial Intelligence through Workforce Re-skilling within the Banking Sector in South Africa

Methodology: This research paper intends to inspire the banking sector to re-skill the banking Institution's workforces in South Africa to adapt to the Artificial Intelligence technologies.

Advantage: Re-skilling the banking workforce to cooperate and collaborate effectively with Artificial Intelligence will enable not only efficiency but futuristic innovation and continuous growth.

Disadvantage: Although AI is creating millions of new jobs, the banking institutions does the substitution of workforces with intelligent robots that

could increase the inequality among the highly skilled workforce.

- Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language

Authors: Shashank Bairy, Rashmi R

Year: 2021

Title: Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language

Methodology: Chatbot is a software application that listens to a user's query in natural language and responds accordingly. There is rapid adoption of the latest technologies in banking and chatbots are one of them. Answering customer queries and assisting customers with banking transactions are some of the ways in which it's making an impact on the industry.

Advantage: Netbanking websites are complex and involve navigating through a lot of pages to find the information that users need. Bank staff undergo a lot of stressful situations when communicating with clients directly. Such situations can be avoided gracefully by using chatbots with AI.

Disadvantage: Chatbots cannot hold the conversation which means it cannot answer multiple questions at the same time.

- A Review of Chatbots in the Banking Sector

Authors: Navleen Kaur, Dr Monika Sharma, Supriya Lamba Sahdev, Laraibe Siddiqui

Year: 2020

Title: A Review of Chatbots in the Banking Sector

Methodology: Artificial intelligence (AI), is simulation of human intelligence in machines. Artificial intelligence consists of generally two fundamental ideas. First it involves studying human brains like how their thought process works and secondly it helps representing those processes through machine learning.

Advantage: AI is used in banking industry to minimize the chances of fraud and scam. It is also used to carry out effective decision-making

Disadvantage: 24.1% i.e. 27 people out of 112 are not sure that using artificial intelligence in banking is beneficial. 4.5% i.e. 5 people out of 112 don't think that it is beneficial at all. 22.3% i.e. 25 people don't agree that it has any impact on fast services.

- Application of Artificial Intelligence and Its Powered Technologies in the Indian Banking and Financial Industry

Authors: Dr. Anil B Malali, Dr. S. Gopalakrishnan

Year: 2020

Title: Application of Artificial Intelligence and Its Powered Technologies in the Indian Banking and Financial Industry

Methodology: Examine the dynamics of AI ecosystems in the banking and financial industry and how it is fast becoming a most important disrupter by looking at some of the critical unsolved problems in this area of business

Advantage: AI will empower banking organizations to completely redefine how they operate, establish innovative products and services, and most importantly impact customer experience interventions.

Disadvantage: AI and ML are replacing the human analysts in business activities since human selection involves high cost.

- Chatbots in banking industry : A case study

Authors: Dr. Shalini Sayiwal

Year : 2020

Title: CHATBOTS IN BANKING INDUSTRY: A CASE STUDY

Methodology: Chatbots designed with AI are one of the most promising strategies of a banking business that can lead the bank to win the satisfaction vote of their loyal customers.

Advantage: Chatbots are relatively inexpensive to develop and maintain compared to the humanequivalent. Chatbots are more intuitive and easier to use. There is no download required and the experience can be personalized over time through machine learning.

Disadvantage: Chatbots have significant limitations based on accents and languages.

S.No	Author	Title of the Paper	Methodology	Pros (Advantage)	Cons (Disadvantage)
1.	Vinod Kumar Shukla, Sasha Fathima Suhel, Sonali Vyas, Ved Prakash Mishra (2020)	Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language	This paper examines some of the latest AI patterns and activities. System-Chatbots are made. In the banking industry, the introduction of Artificial Intelligence has driven chatbots and changed the face of the interaction between bank and customers.	Artificial Intelligence involves creating machines that are capable of simulating knowledge. It also explores the existing usability of chatbot to assess whether it can fulfill customers ever-changing needs.	The dialogue capability can be limited to very a very specific set or format of questions that are established by the chatbot development team.
2.	Yomna Abdulla, Rabab Ebrahim, Sumathi Kumaraswamy (2020)	Artificial Intelligence in Banking sector: Evidence from Bahrain	Artificial intelligence applications and robotic process automation for chatbots are discussed. Findings highlight that a high priority is given to the digital transformation journey in banks, which suggests that further development and implantation of technology in banks will be seen in the near future.	AI can be best described as the computerized processes that employ knowledge, reasoning, and communication that aids smart decision making by chatbots in banks.	Banking sector faces significant challenges relating to security, risk management and inefficiency that decrease the overall performance of banks.

3.	Tebaga Lucky Mamela, Nita Sukdeo, Sambil Charles Mukwakungu (2020)	Adapting to Artificial Intelligence through Workforce Re-skilling within the Banking Sector in South Africa	This research paper intends to inspire the banking sector to re-skill the banking Institution's workforces in South Africa to adapt to the Artificial Intelligence technologies.	Re-skilling the banking workforce to cooperate and collaborate effectively with Artificial Intelligence will enable not only efficiency but futuristic innovation and continuous growth.	Although AI is creating millions of new jobs, the banking institutions does the substitution of workforces with intelligent robots that could increase the inequality among the highly skilled workforce.
4.	Shashank Bairy, Rashmi R (2021)	A Review of Chatbots in the Banking Sector	Chatbot is a software application that listens to a user's query in natural language and responds accordingly. There is rapid adoption of the latest technologies in banking and chatbots are one of them. Answering customer queries and assisting customers with banking transactions are some of the ways in which it's making an impact on the industry.	Netbanking websites are complex and involve navigating through a lot of pages to find the information that users need. Bank staff undergo a lot of stressful situations when communicating with clients directly. Such situations can be avoided gracefully by using chatbots with AI.	Chatbots cannot hold the conversation which means it cannot answer multiple question at the same time.
5.	Navleen Kaur, Dr Monika Sharma, Supriya Lamba	Banking 4.0: -The Influence of Artificial	Artificial intelligence (AI), is simulation of human	AI is used in banking industry to minimize the chances of fraud	24.1% i.e. 27 people out of 112 are not sure that

	Sahdev, Laraibe Siddiqui (2020)	Intelligence on the Banking Industry & How AI is Changing the Face of Modern Day Banks	intelligence in machines. Artificial intelligence consists of generally two fundamental ideas. First it involves studying human brains like how their thought process works and secondly it helps representing those processes through machine learning.	and scam. It is also used to carry out effective decision-making.	using artificial intelligence in banking is beneficial. 4.5% i.e. 5 people out of 112 don't think that it is beneficial at all. 22.3% i.e. 25 people don't agree that it has any impact on fast services.
6.	Dr. Anil B Malali, Dr. S. Gopalakrishnan (2020)	Application of Artificial Intelligence and Its Powered Technologies in the Indian Banking and Financial Industry	Examine the dynamics of AI ecosystems in the banking and financial industry and how it is fast becoming a most important disrupter by looking at some of the critical unsolved problems in this area of business.	AI will empower banking organizations to completely redefine how they operate, establish innovative products and services, and most importantly impact customer experience interventions.	AI and ML are replacing the human analysts in business activities since human selection involves high cost.
7.	Dr. Shalini Sayiwal (2020)	CHATBOTS IN BANKING INDUSTRY: A CASE STUDY	Chatbots designed with AI are one of the most promising strategies of a banking business that can lead the bank to win the satisfaction vote of their loyal customers.	Chatbots are relatively inexpensive to develop and maintain compared to the human equivalent. Chatbots are more intuitive and easier to use.	Chatbots have significant limitations based on accents and languages.

3.2 EMPATHY MAP

Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes. It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.



3.3 IDEATION


Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

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.




Step-1: Team Gathering, Collaboration and Select the Problem Statement


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



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

A

Team gathering

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

B


Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C

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


PROBLEM STATEMENT


The aim of our project is to build a chatbot using IBM Watson's assistant. This chatbot should be able to answer any general banking queries on account creation, loan, net banking, other services etc. The chatbot should provide 24/7 customer support with all the necessary data for solving their queries which reduces their time on moving to banks directly.





Key rules of brainstorming


To run a smooth and productive session


 Stay in topic.

 Encourage wild ideas.

 Defer judgment.

 Listen to others.

 Go for volume.

 If possible, be visual.

Step-3: Brainstorming, Idea Listing and Grouping

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!

KISHORE

- It provides instant solution for general banking queries
- It is multilingual
- It is interoperable
- It facilitates constant guidance to customers on creating bank accounts

KAVIARASAN

- It provides reliable service on answering net banking queries
- It saves user's time and cost
- It is trustworthy
- It works in a very fast and intelligent manner

IMRAN KHAN

- It maintains a confidential conversation with customers
- It provides quick responses for loan related queries
- It supports voice assistance feature
- It maintains a user friendly interface

IRFAN RAHIM

- It has an assured security and provides personalized service
- It provides efficient and convenient customer support
- It is used to retrieve customer's old transaction history quickly
- It is available 24/7

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

Using Natural Language Processing

- It supports voice assistance feature
- It is multilingual
- It provides instant solution for general banking queries
- It has an assured security and provides personalized service

Using Neural network

- It works in a very fast and intelligent manner
- It provides quick responses for loan related queries
- It provides reliable service on answering net banking queries
- It provides efficient and convenient customer support

Using Artificial Intelligence

- It is trustworthy
- It maintains a user friendly interface
- It facilitates constant guidance to customers on creating bank accounts
- It maintains a confidential conversation with customers

Using Cloud technology

- It is used to retrieve customer's old transaction history quickly
- It is interoperable
- It is available 24/7
- It saves user's time and cost

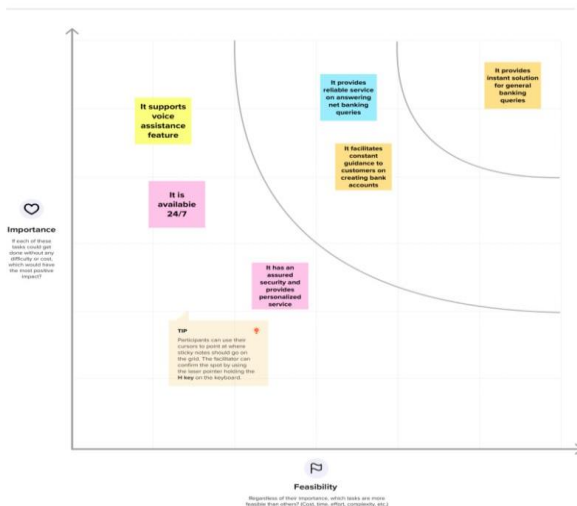
Step-2: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



3.4 PROBLEM STATEMENT

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. 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 centres as well as providing them with relevant suggestions.

Who does the problem affect?	A customer of the bank
What are the boundaries of the problem?	Customers who have queries related to banking or trying to use various services of the bank
What is the issue?	Customers need to visit banks frequently for simple queries. Banks are not able to answer huge volumes of customers queries efficiently.
When does the issue occur?	When the customer is unable to visit a bank
Where does the issue occur?	It occurs in banking industries

Why is it important that we fix the problem?	It addresses the queries of customers immediately and effectively in a cost efficient manner.
What solution to solve this issue?	Chatbot should be able to answer any general banking queries on account creation, loan, net banking, other services etc. AI chatbots can help the customers to complete their work quickly and efficiently.
What methodology used to solve the issue?	Artificial intelligence mimics the human brain in order to make chatting with the chatbot more life- like.

Miro Customer Problem Statement Canvas:

I am a student who just created a bank account	I'm trying to understand more about the available features of the bank	But I have to waste a lot of time at the bank	Because I have to ask a bank employee about my doubts	Which makes me feel Irritated
I am a new customer	I'm trying to learn more about banking	But it takes a long time	Because there is always a long queue as bank employees are busy	Which makes me feel frustrated
I am an old customer at the bank	I'm trying to find out my balance and check my statement	But I have to travel to the bank now and then	Because I have to speak to a bank employee to get the work done	Which makes me feel exhausted

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	A student who just created a bank account	Understand more about the available features of the bank	I have to waste a lot of time at the bank	I have to ask a bank employee about my doubts	irritated
PS-2	A new customer	Learn more about banking	It takes a long time	There is always a long queue as bank employees are busy	frustrated
PS-3	An old customer at the bank	Find out my balance and check my statement	I have to travel to the bank now and then	I have to speak to a bank employee to get the work done	exhausted

CHAPTER-4 PROJECT DESIGN PHASE-1

4.1 PROPOSED SOLUTION

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Banks are not able to resolve the queries of customers at all times related to the products or services in a satisfactory way which in turn hinders the customer satisfaction. Customers need to visit banks frequently for simple queries.
2.	Idea / Solution description	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.
3.	Novelty / Uniqueness	Chatbots developed using AI should be able to answer any general 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.

4.	Social Impact / Customer Satisfaction	In order to attain 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 customerservice centers as well as providing them with relevant suggestions.
5.	Business Model (Revenue Model)	Employing a chatbot will be a cost-effective solution to clear customer queries for banks. Iteliminates the need for a massive customer care workforce and even reduces the workloadof the bank employees whose efforts can be used elsewhere.
6.	Scalability of the Solution	AI Chatbots provides 24/7 service to clear all customer queries and guide them through all the banking processes. It supports voice assistance feature and maintains a confidentialconversation with customers. It can be scaled as per the requirements of the bank to includeanswers to queries related to any new feature or service introduced by the bank.

4.2 PROBLEM SOLUTION FIT

Problem-Solution fit canvas 2.0

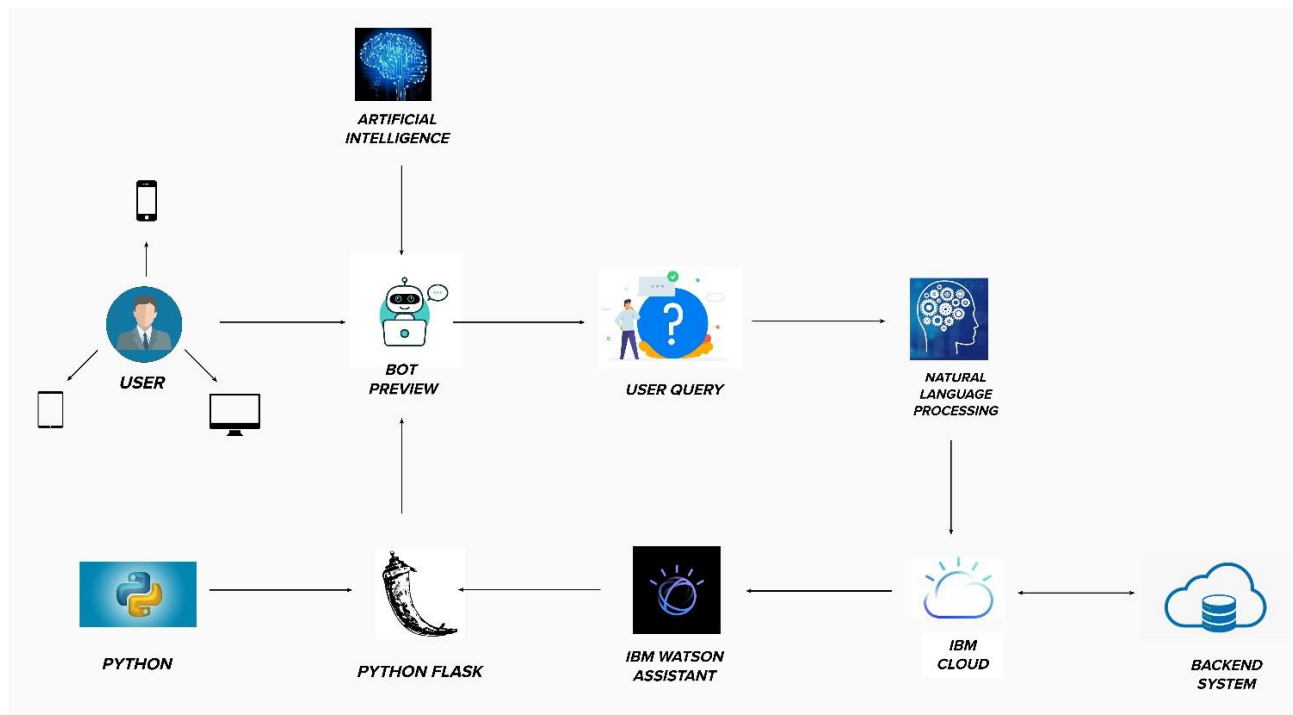
Purpose / Vision AI Based Discourse for Banking Industry

Define CS, fit into CC	<p>1. CUSTOMER SEGMENT(S) CS</p> <p>Who is your customer? I.e. working parents of 0-5 y.o. kids</p> <ul style="list-style-type: none"> New customers who would like to learn more about the bank and how to create an account Regular customers who would like to access the various features and services of the bank 	<p>6. CUSTOMER CONSTRAINTS CC</p> <p>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.</p> <ul style="list-style-type: none"> Network connection is required Unfamiliarity with/unaccustomed to chatting, especially among elders Unable to convey themselves properly through chat Safety and privacy concerns 	<p>5. AVAILABLE SOLUTIONS AS</p> <p>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</p> <p>Customer care telephone lines and staff at banks are available to clear customer's queries. Both of these current methods are time consuming and can involve in the customer waiting for a long time to get their answers. A chatbot can squash these issues as they can provide answers instantly at any time from the convenience of the customer's phone.</p>	Explore AS, differentiate
	Focus on J&P, tap into BE, understand RC	<p>2. JOBS-TO-BE-DONE / PROBLEMS J&P</p> <p>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</p> <ul style="list-style-type: none"> Answering customer queries correctly and quickly Convenience of banking guidance anywhere and anytime Cost and time efficiency and be improved 	<p>9. PROBLEM ROOT CAUSE RC</p> <p>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.</p> <ul style="list-style-type: none"> Banking can initially be a slightly complicated task that people sometimes might want guidance or support while performing certain operations As banking is essential, a lot of people need their queries cleared which requires a huge workforce to match the demand which can be very costly and still time taking Banks can introduce new features regularly or might update existing features to keep up with changing regulations that can lead to confusions 	
Identify strong TR & EM		<p>3. TRIGGERS TR</p> <p>What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.</p> <ul style="list-style-type: none"> Word of mouth about how convenient and easy it is to use Watching others use it from home or on the go instant instead of waiting in lines at the bank <p>4. EMOTIONS: BEFORE / AFTER EM</p> <p>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.</p> <ul style="list-style-type: none"> <u>Before</u>: Frustrated, helpless, confused, nervous <u>After</u>: Confident, relieved, at-ease, interested 	<p>10. YOUR SOLUTION SL</p> <p>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.</p> <p>Customers can access an AI based chatbot that can be placed in the bank's website. This can then be used to clear the customer's queries instantly and can be used at any time of the day or from any place as long as the customer has an internet connection. This in turn also reduces the need for banks to employ a large workforce to clear customer queries. As the queries of the customers are answered correctly and in a convenient manner, it is a very efficient and satisfactory solution to the problem.</p>	<p>8. CHANNELS of BEHAVIOUR CH</p> <p>8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7</p> <p>They search the web for answers to their queries which are usually scattered and are not reliable.</p> <p>8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</p> <ul style="list-style-type: none"> They visit banks and meet the bank staff to clear their queries They call the customer care/toll free number of the bank and speak to a customer care employee

4.3 SOLUTION ARCHITECTURE







A Solution architecture (SA) is an architectural description of a specific solution. SAs combine guidance from different enterprise architecture viewpoints (business, information and technical), as well as from the enterprise solution architecture (ESA). Ultimately, solution architecture is aimed at the following overarching goals:

- Streamlining of day-to-day activities
- Providing a more efficient production environment
- Lowering costs and gaining cost-effectiveness
- Providing a secure, stable, and supportable environment



CHAPTER-5 PROJECT DESIGN PHASE-2

5.1 CUSTOMER JOURNEY MAP

SCENARIO Browsing, booking, attending, and rating a local city tour	Entice How does someone initially become aware of this process?	Enter What do people experience as they begin the process?	Engage In the core moments in the process, what happens?	Exit What do people typically experience as the process finishes?	Extend What happens after the experience is over?
 Steps What does the person (or group) typically experience?	<div>Suggestions from bank</div> <div>Chatbots provide quick replies for customer queries</div>	<div>Offers convenience</div> <div>Reduces time for users to visit banks regularly</div>	<div>Convenience</div> <div>Customers find it easy to use chatbots at their convenience</div> <div>Simple UI</div> <div>Chatbots has a user friendly interface</div>	<div>Interoperable</div> <div>Chatbots are compatible on different platforms</div> <div>Trustworthy</div> <div>Chatbots assure secure conversation with customers</div> <div>Intelligent</div> <div>Chatbots are well trained to make interaction with customers</div>	<div>Reliability</div> <div>Chatbots provide reliable information to customer queries</div> <div>Accessibility</div> <div>Chatbots are accessible anywhere and at anytime easily</div> <div>Scalable</div> <div>Chatbots enhance customer satisfaction</div> <div>Cost effective</div> <div>Chatbots are easy to use with free of cost</div>
 Interactions What interactions do they have at each step along the way? ■ People: Who do they see or talk to? ■ Places: Where are they? ■ Things: What digital touchpoints or physical objects would they use?	<div>Customers should be able to type their queries easily</div> <div>Chatbots should be able to interpret the customer queries</div>	<div>Chatbots provide various options for customers to interact and they may choose options at their convenience</div> <div>Customers have information at their fingertips</div>	<div>Customers can able to get the instant replies from chatbots</div> <div>Chatbots provides voice based banking services</div> <div>Customers can make queries in their preferred languages</div>	<div>Customers can efficiently use chatbots on a variety of platforms</div> <div>Customers can get tasks done easily by chatbots</div>	<div>Customers feel easier on interacting with chatbots to clear their queries</div> <div>Chatbots are efficient in satisfying customer needs</div>
 Goals & motivations At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")	<div>Chatbots should resolve customer queries at any time</div> <div>Chatbots only provide relevant and correct information to customers</div>	<div>Customer does not need to wait to get their queries answered</div> <div>Human help and workforce is not required</div>	<div>Chatbots should be able to answer loan queries of customers</div> <div>Chatbots should be able to guide customers in creating bank account</div> <div>Chatbots should be able to answer net banking queries of customers</div>	<div>Chatbots should ensure personalised conversation with customers</div> <div>Chatbots should provide quick responses for customer queries at any time</div>	<div>Customers should be able to get good guidance on banking by chatbots</div> <div>Chatbots should enhance customer satisfaction</div>
 Positive moments What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?	<div>Customers enjoy convenience of getting queries clarified from home</div> <div>Free to use</div>	<div>Chatbots addresses the customer queries immediately which makes them happier</div> <div>Chatbots can eliminate long queues as it is available anywhere which makes the customers satisfied</div>	<div>Chatbots has an user friendly interface so customers interact with it easily</div> <div>Chatbots provide links/attachments for certain queries so customers get clear explanation for their queries</div> <div>Customers feel happy in using chatbots as it has no waiting time</div>	<div>Customers feel secure in using chatbots at end</div> <div>Customers feel their workload gets reduced by using chatbots at end</div>	<div>Customers need not be exhausted on travelling to banks for simple queries as chatbots provides quick responses</div> <div>Chatbots make customers to learn more on banking features which avoids them being frustrated</div>
 Negative moments What steps does a typical person find frustrating, confusing, annoying, costly, or time consuming?	<div>Not as comfortable as speaking to a human</div> <div>Requires internet</div>	<div>Certain amount of technical knowledge and skills required</div> <div>A greater probability of misunderstandings to occur</div>	<div>Chatbots can't understand multiple questions at a time that makes customers angry</div> <div>Customers feel disappointed if chatbots provides unexpected answers</div> <div>Chatbots are not multilingual in some cases which makes customers unhappy as they can't use it in their preferred language</div>	<div>Customers are mislead if the chatbots doesn't provide reliable information</div> <div>Customers become unhappy at end if chatbot doesn't provide good interaction with them</div>	<div>Customers need to look for alternate options despite only depending on chatbots</div> <div>If chatbot training is not proper, customers are unsatisfied</div>
 Areas of opportunity How might we make each step better? What ideas do we have? What have others suggested?	<div>Chatbots are available 24/7</div> <div>Chatbots provides privacy</div>	<div>Chatbots provides accurate answers</div> <div>Chatbots has a customizable user interface</div>	<div>Chatbots maintains confidential conversations</div> <div>Chatbots are easily accessible by customers at their convenience</div> <div>Chatbots are intelligent and well trained to resolve customer queries</div>	<div>Chatbots are simple and efficient for customer usage</div> <div>Chatbots works fast enough to provide reliable solutions to customer queries</div>	<div>Chatbots improves customer satisfaction</div> <div>Chatbots are portable and scalable in nature</div>

5.2 SOLUTION REQUIREMENTS

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Savings Account Related Actions	<ul style="list-style-type: none">• Type of Savings Account Creation Details• Interest Rate• Minimum Balance• Debit Card• Credit Card
FR-2	Current Account Related Actions	<ul style="list-style-type: none">• Type of Company• Current Account Closure Steps• Update GSTIN• Zero Balance Current Account
FR-3	Loan Account Related Actions	<ul style="list-style-type: none">• Type of Loan• How long for approval• Available Loan Amounts• Loan Status• Joint Loan
FR-4	General Queries Related Actions	<ul style="list-style-type: none">• Bank Working Days• List of Branches• Storage Locker Facility• Currency Conversion Facility• CIBIL• Find a nearest branch
FR-5	Net Banking Related Actions	<ul style="list-style-type: none">• Login Steps• Change Net Banking Password• Daily Limit• Types of Fund Transfer• Add Beneficiary

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

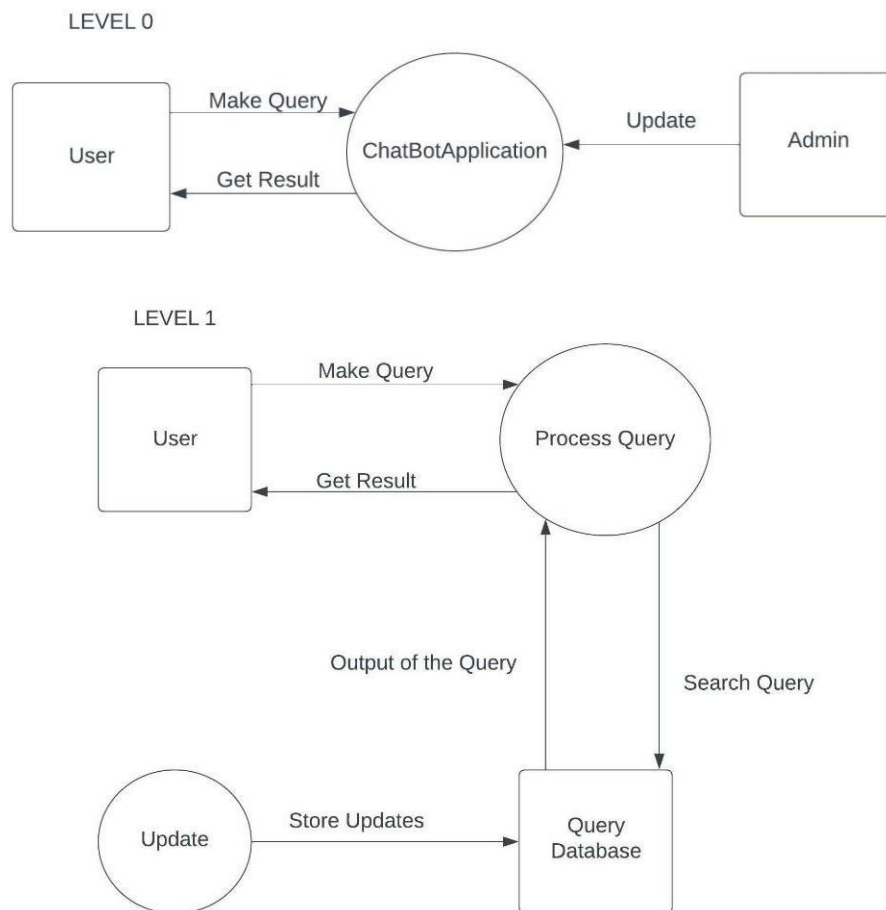
	Non-Functional Requirement	Description
	Usability	Chatbots developed using AI should be able to answer any general banking queries on account creation, loan, net banking, other services etc. It addresses the queries of customers immediately and effectively in a cost efficient manner.
	Security	The AI Chatbot maintains a confidential conversation with customers. Chatbot will provide personal and efficient communication between the user and the bank.
	Reliability	Chatbots are trained very well using AI to provide solutions for the popular and frequently asked questions, thereby providing the best suited service quickly. Thus AI Chatbots has a reliable end-user experience.
	Performance	AI Chatbots are a great way to overcome the limitation of workload of humans. There can be multiple instances of a single chatbot inquiring different people at the same time. Such chatbots work in real time with no need for the customers to wait. This ensures faster, easier and more efficient face-time with customers.
	Availability	AI Chatbots provide 24/7 service to clear all customer queries and guide them

		through all the banking processes. It is available to anyone with access to the internet with basic hardware.
	Scalability	AI Chatbots are helping banking industry to scale their customer service and to improve customer service satisfaction at the same time. 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.
	Availability	The availability of dataset must be constrained for accurate data
	Scalability	Any kind of data can be explored and the system is quiet expandable

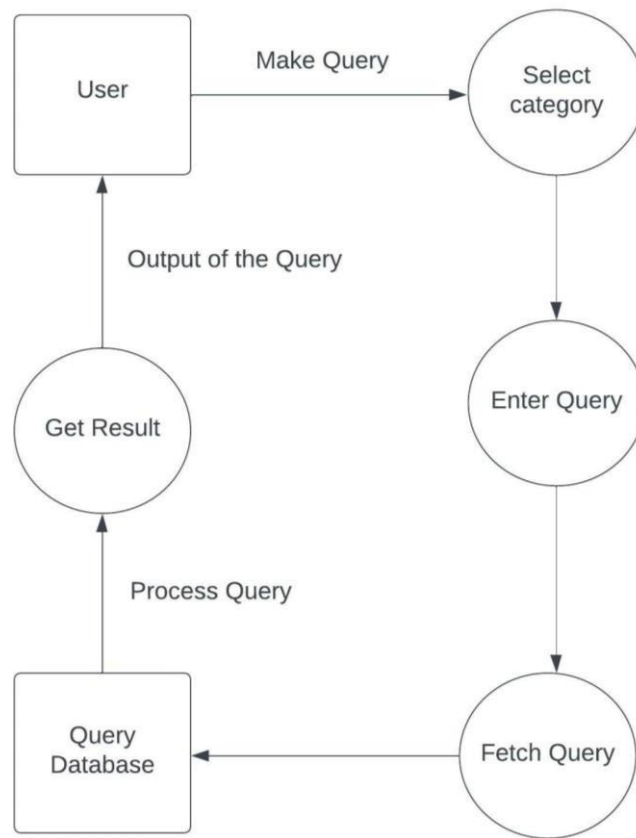
5.3 DATA FLOW DIAGRAMS

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



LEVEL 2



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 (Mobile or Webuser)	Savings Account Related Actions	USN-1	As a user, in the Savings Account option, I can select Types of Savings Account to get details regarding documents required for creating that savings account.	I can clear my queries regarding types of savings account	High	Sprint-1
		USN-2	As a user, I can check the Interest Rates of Savings Account	I can clear my queries regarding interest rates of savings account	High	Sprint-1
		USN-3	As a user, I can check the Minimum Balance of Savings Account	I can clear my queries regarding minimum balance of savings account	Medium	Sprint-2
	Current Account Related Actions	USN-4	As a user, I can choose the Type of Company to know the information on documents to be submitted for creating current account	I can clear my queries regarding types of companies	High	Sprint-1
		USN-5	As a user, I want to get details on procedure to close my Current Account	I can clear my queries regarding current account closure	High	Sprint-2
	Loan Account Related Actions	USN-6	As a user, I can choose the Type of Loans to know the information on choosing an essential loan scheme	I can clear my queries regarding types of loan account	High	Sprint-1
		USN-7	As a user, I can check the Loan Amounts that can be offered for corresponding Loan Accounts chosen	I can clear my queries regarding loan amounts of loan account	High	Sprint-2
		USN-8	As a user, I can check the Status of Loan for my Loan Accounts	I can clear my queries regarding loan status of loan account	Low	Sprint-2
	General Queries Related Actions	USN-9	As a user, I want to get the procedure details for Currency Conversion facility of my bank account	I can clear my queries regarding currency conversion facilities of bank account	Low	Sprint-1
		USN-10	As a user, I want to check my CIBIL score for my loan application and to ensure whether my loan application is approved by the bank.	I can clear my queries regarding CIBIL score of loan application	Medium	Sprint 3
		USN-11	As a user, I want to get the procedure details for maintaining Storage Locker facility of my bank account	I can clear my queries regarding storage locker facilities of bank account	High	Sprint-3

5.4 TECHNOLOGY STACK

Technical Architecture Steps:

1. User queries to the Chat Bot
2. Bot previews the query
3. Query is transferred to Watson Assistant
4. Natural Processing Language is used to understand the query
5. Watson Assistant sends the query
6. Watson finds the relevant response from cloud database
7. Queries and responses (sent and received) is stored in cloud database
8. All queries and related information is sent to the bank for improvement

TECHNICAL ARCHITECTURE:

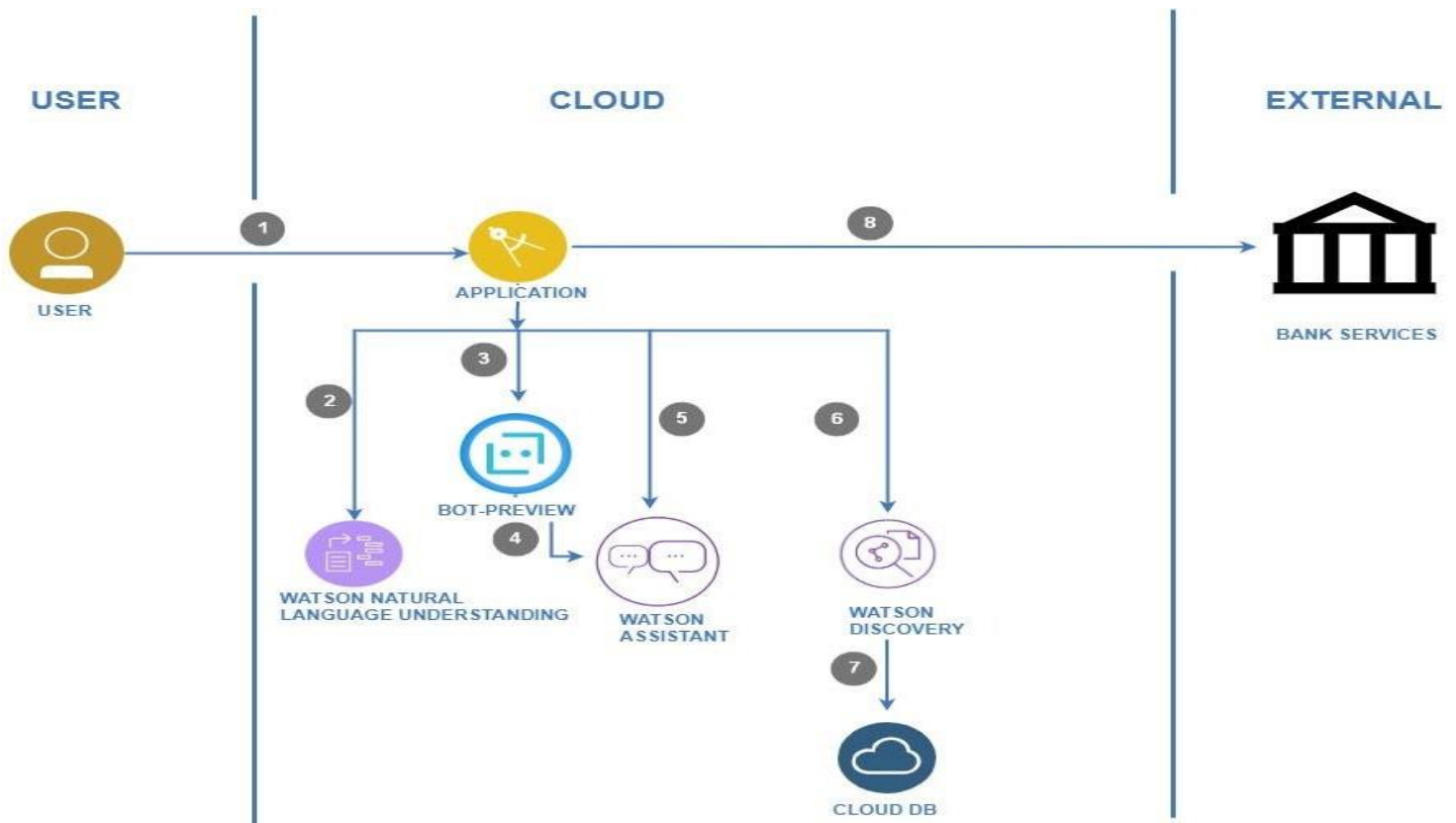


Table-1: Components & Technologies:

S.No	Component	Description	Technology
1.	Bot Preview	A simple page is presented to the user with a chat layout that has an input box field available to get user queries and preset options are presented for the user to select.	HTML, CSS, JavaScript
2.	Application Logic-1	An input bar is provided that enables the user to type queries.	Java / Python
3.	Application Logic-2	Regularly asked queries or options are presented to the user.	IBM Watson STT service
4.	Application Logic-3	Processes responses to custom queries and displays a relevant response.	IBM Watson Assistant
5.	Cloud Database	Queries and answers to queries are stored in the cloud and are accessed whenever a query is asked.	IBM Cloudant DB
6.	External API-1	It provides an interface between the application and the cloud to send the query from the application to the cloud.	Watson Assistant v2 API
7.	External API-2	A cloud based API that supports several cloud based applications and operations.	IBM Cloud API
8.	Deep Learning Model	It is trained with several queries and uses that knowledge to provide relevant responses to queries with a good enough accuracy.	Deep Learning
9.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Flask Application Cloud Server Configuration: IBM Cloud	Python Flask, IBM Cloud

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Python Flask, CSS Frameworks
2.	Security Implementations	General access control and the built-in security features of IBM Cloud are present.	IBM Watson Assistant, IBM CloudantDB
3.	Scalable Architecture	The architecture consists of three tiers, the client side, the web server and the cloud server. Each of these can be scaled as per requirements.	Client Side: Flask (Python) Web Server: IBM Watson Assistant Cloud Server: IBM Cloud
4.	Availability	The chatbot is available 24/7 on almost all devices that support an internet browser.	IBM Cloud, Flask (Python)
5.	Performance	Responds to several thousands of queries at the same time.	IBM Load Balancer, IBM Cloud

CHAPTER-6 PROJECT PLANNING PHASE

6.1 Prepare Milestone and Activity List

Product Backlog, Sprint Schedule, and Estimation

Use the below template to create product backlog and sprint schedule

Milestone	Task	Starting Date	Ending Date	Project Completion Status	Team Members
Create IBM Service	Creation of Banking Chatbot or Assistant using IBM Watson Assistant	24 Oct 2022	25 Oct 2022	9%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R
	Understanding Customer's Banking Related Queries and skills	25 Oct 2022	29 Oct 2022	15%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R
Create Skills and Assistant for Chatbot	Training the Chatbot with Banking related dataset	31 Oct 2022	01 Nov 2022	24%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R
	Building action and Adding responses to Account Creation	01 Nov 2022	02 Nov 2022	29%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R
	Building action and Adding responses to Banking related queries	02 Nov 2022	03 Nov 2022	34%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R J
	Building action and Adding responses to Net Banking	03 Nov 2022	04 Nov 2022	39%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R
	Building action and Adding responses to Loan Queries	04 Nov 2022	05 Nov 2022	44%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R
Testing Assistant & Integrate with Flask webpage	Testing the chatbot performance with the trained banking functionalities or conversations	07 Nov 2022	09 Nov 2022	60%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R
	Integration of Flask webpage with the chatbot assistant to provide a framework	09 Nov 2022	12 Nov 2022	83%	Kishore P, Imran Khan S, Irfan Khan Z, Kaviarasan R

Deployment Of Chatbot	Final Deployment of AI based chatbot for	14 Nov 2022	19 Nov 2022	100%	
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6.2 Sprint Delivery Plan

Product Backlog, Sprint Schedule, and Estimation

Use the below template to create product backlog and sprint schedule

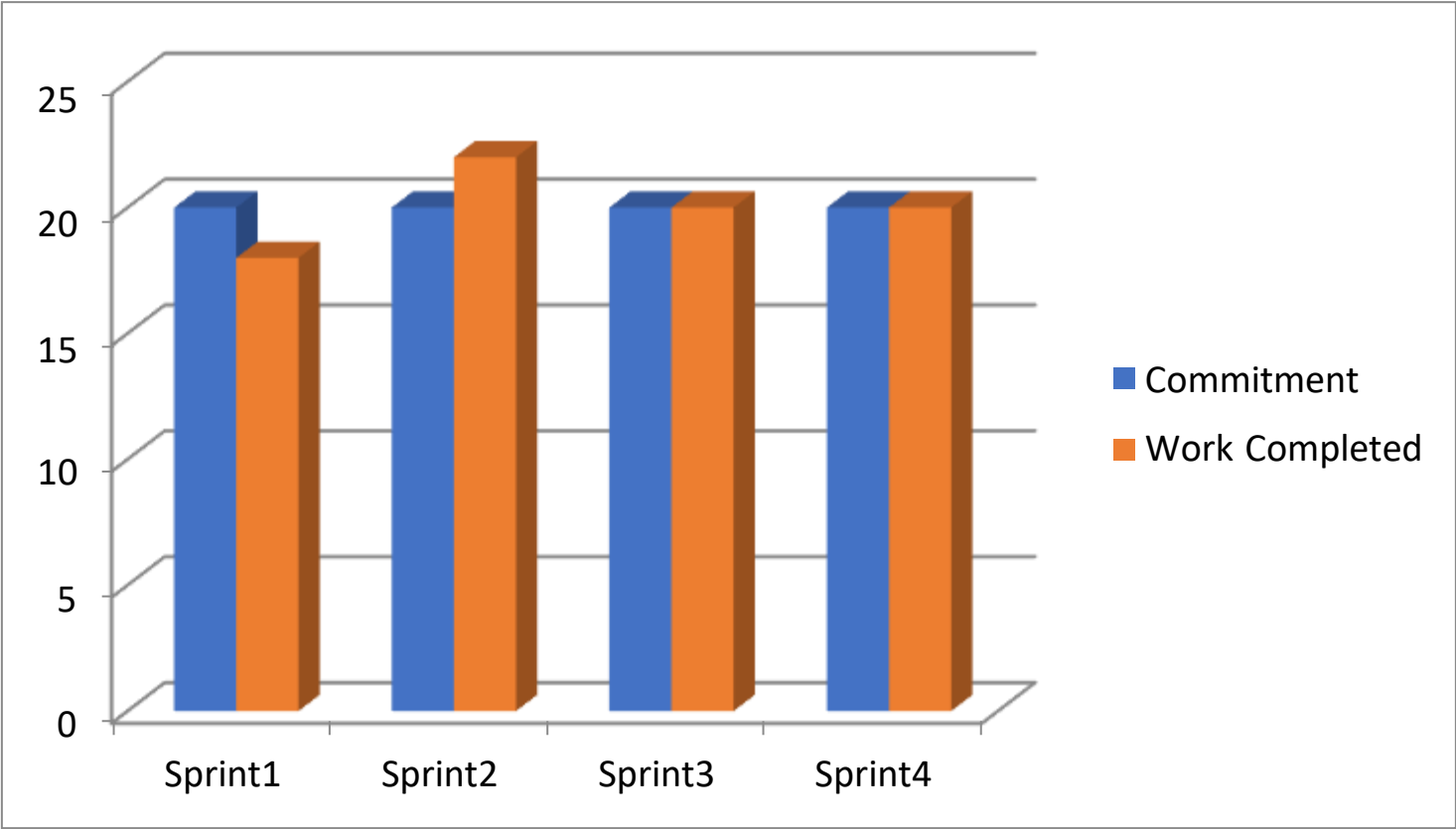
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Savings Account Related Actions	USN-1	As a user, in the Savings Account option, I can select Types of Savings Account to get details regarding documents required for creating that savings account.	4	High	KISHORE P
Sprint-1		USN-2	As a user, I can check the Interest Rates of Savings Account	4	High	KISHORE P
Sprint-1		USN-3	As a user, I can check the Minimum Balance of Savings Account	3	Medium	KISHORE P
Sprint-1	Current Account Related Actions	USN-4	As a user, I can choose the Type of Company to know the information on documents to be submitted for creating current account	5	High	KISHORE P
Sprint-1		USN-5	As a user, I want to get details on procedure to close my Current Account	4	High	KISHORE P
Sprint-2	Loan Account Related Actions	USN-6	As a user, I can choose the Type of Loans to know the information on choosing an essential loan scheme	3	High	IRFAN RAHIM
Sprint-2		USN-7	As a user, I can check the Loan Amounts that can be offered for corresponding Loan Accounts chosen	3	High	IRFAN RAHIM
Sprint-2		USN-8	As a user, I can check the Status of Loan for my Loan Accounts	1	Low	IRFAN RAHIM

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2	General Queries Related Actions	USN-9	As a user, I want to get the procedure details for Currency Conversion facility of my bankaccount	2	Medium	IRFAN RAHIM
Sprint-2		USN-10	As a user, I want to check my CIBIL score for my loan application and to ensure whether myloan application is approved by the bank.	1	Low	IRFAN RAHIM
Sprint-2		USN-11	As a user, I want to get the procedure details formaintaining Storage Locker facility of my bank account	3	High	IRFAN RAHIM
Sprint-2	Net Banking Related Actions	USN-12	As a user, I want to get the procedure details for changing the Net Banking password of my bankaccount	3	High	IRFAN RAHIM
Sprint-2		USN-13	As a user, I can select types of fund transfers to get details regarding different services availablein net banking	2	Medium	IRFAN RAHIM
Sprint-2		USN-14	As a user, I want to get the procedure details foradding beneficiaries to my net banking account.	2	Medium	IRFAN RAHIM
Sprint-3	Web Application	USN-15	As a user, I want to access the chatbot in a webbrowser that can be accessed from almost all devices.	20	High	IMRAN KHAN Z
Sprint-4	User Interface and Web Pages	USN-16	As a user, I want to view pages of the bankingwebsite and have access to the chatbot easily.	20	High	KAVIARAS AN R

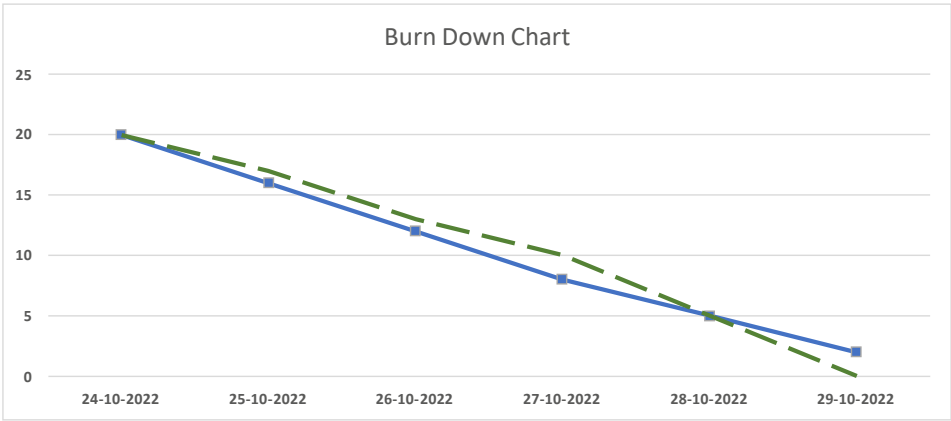
Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	18	02 Nov 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	22	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

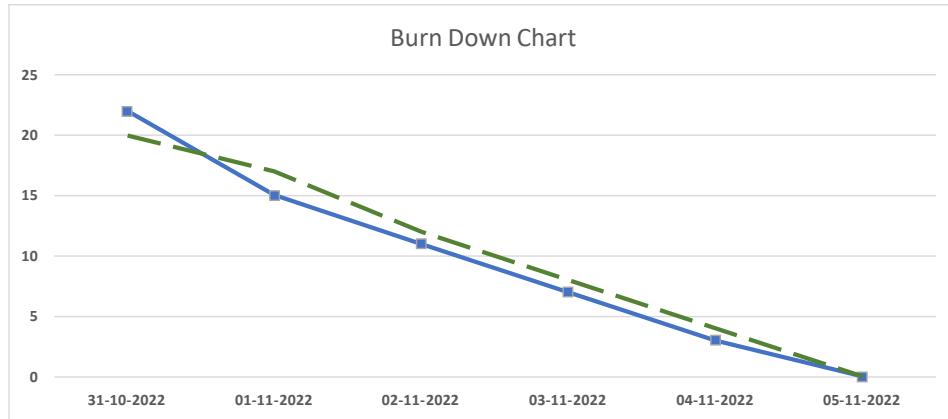
VELOCITY CHART



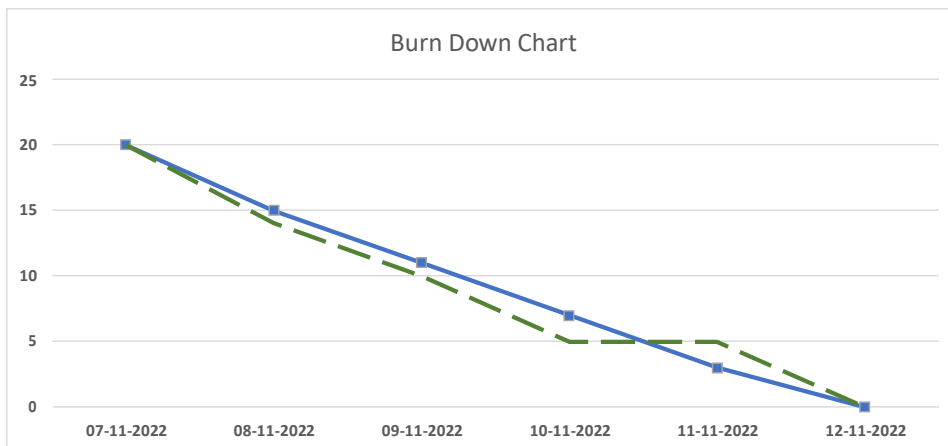
BURNDOWN CHART



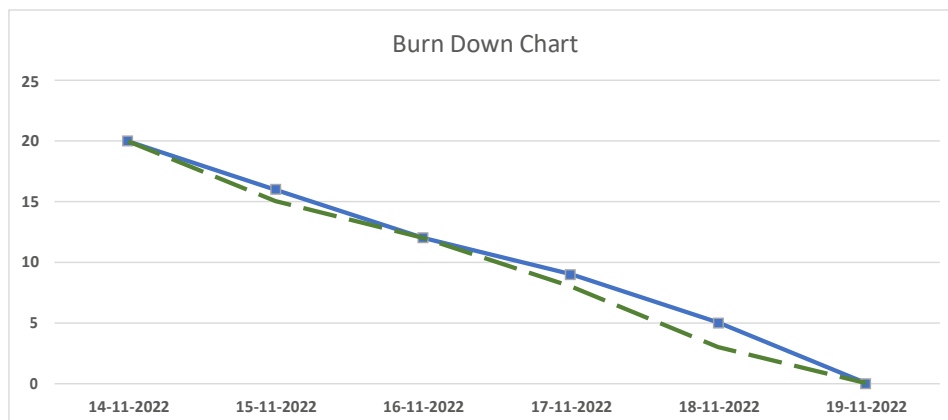
Sprint 1



Sprint 2



Sprint 3



Sprint 4

CHAPTER-7

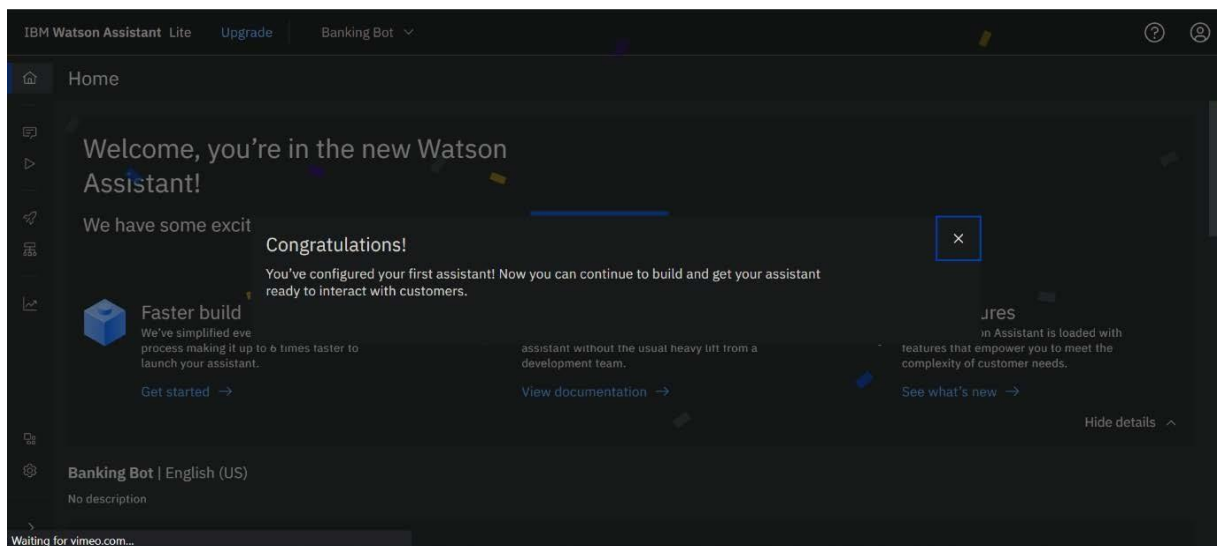
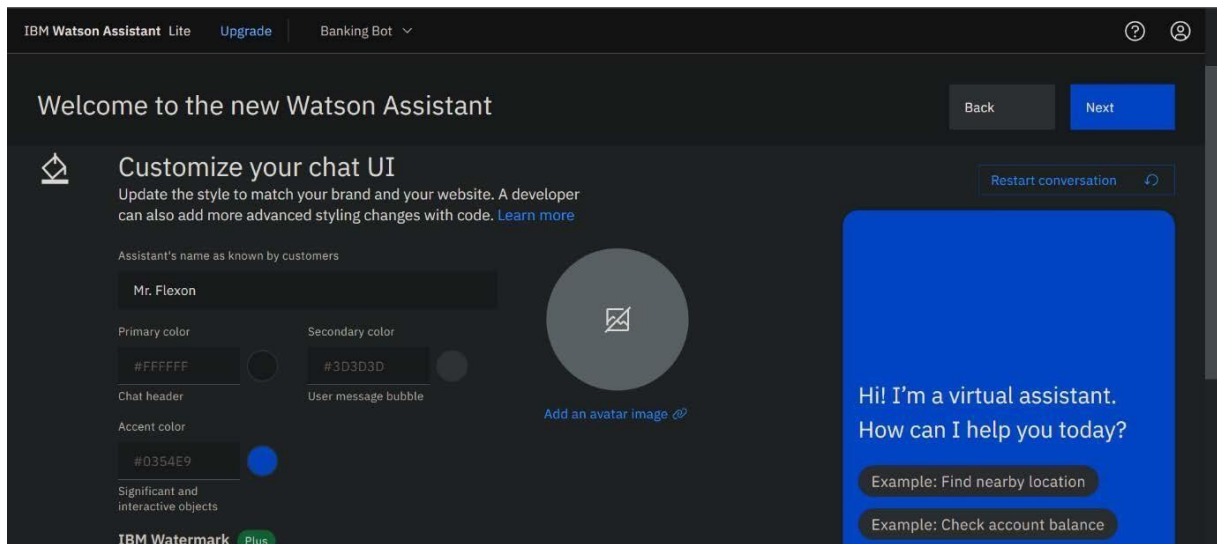
PROJECT DEPLOYMENY PHASE

7.1 Project Development - Delivery of Sprint – 1

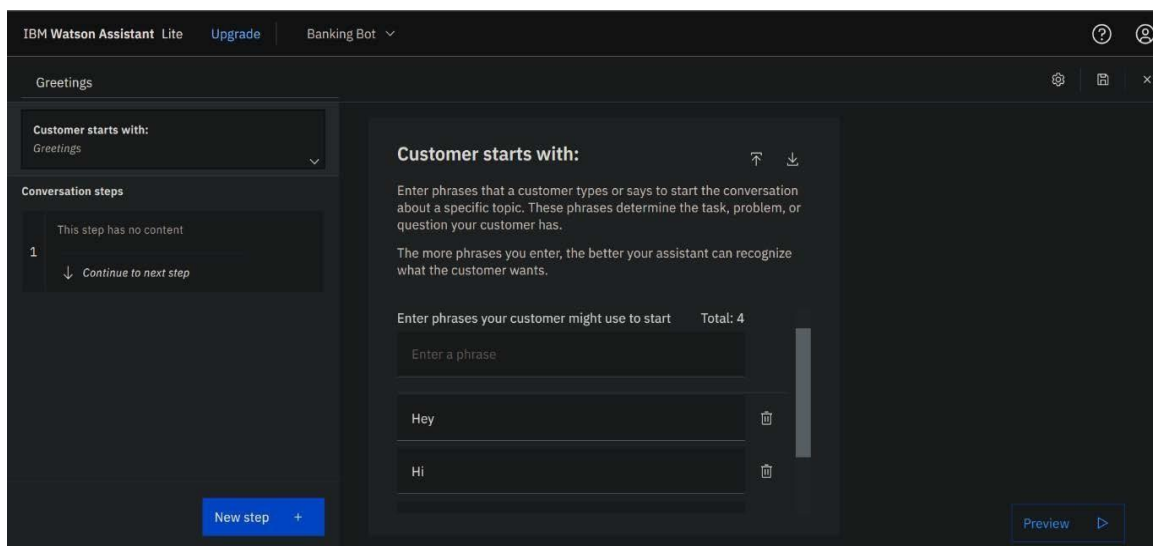
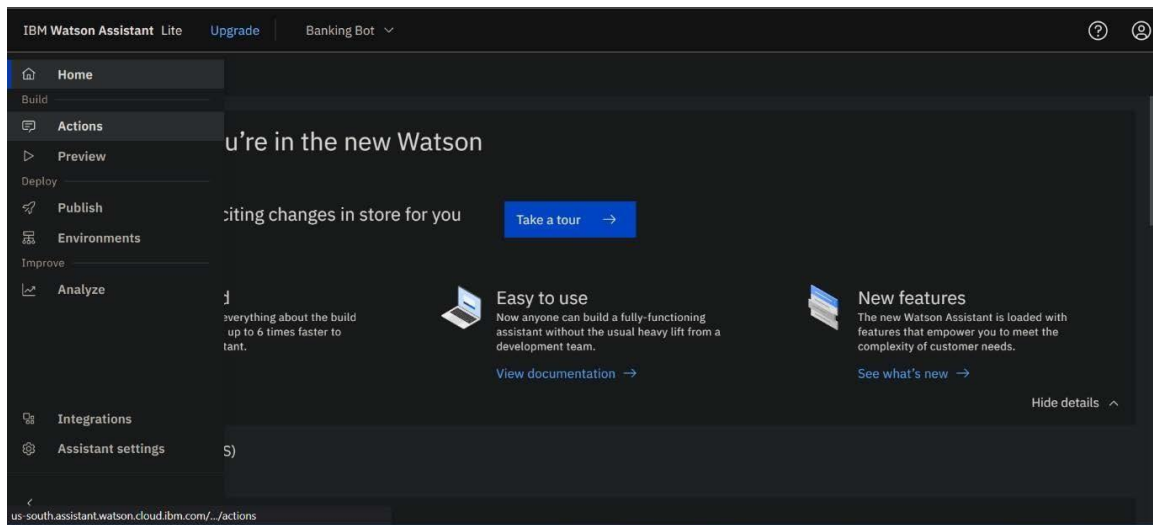
Create IBM Watson Assistant Service:

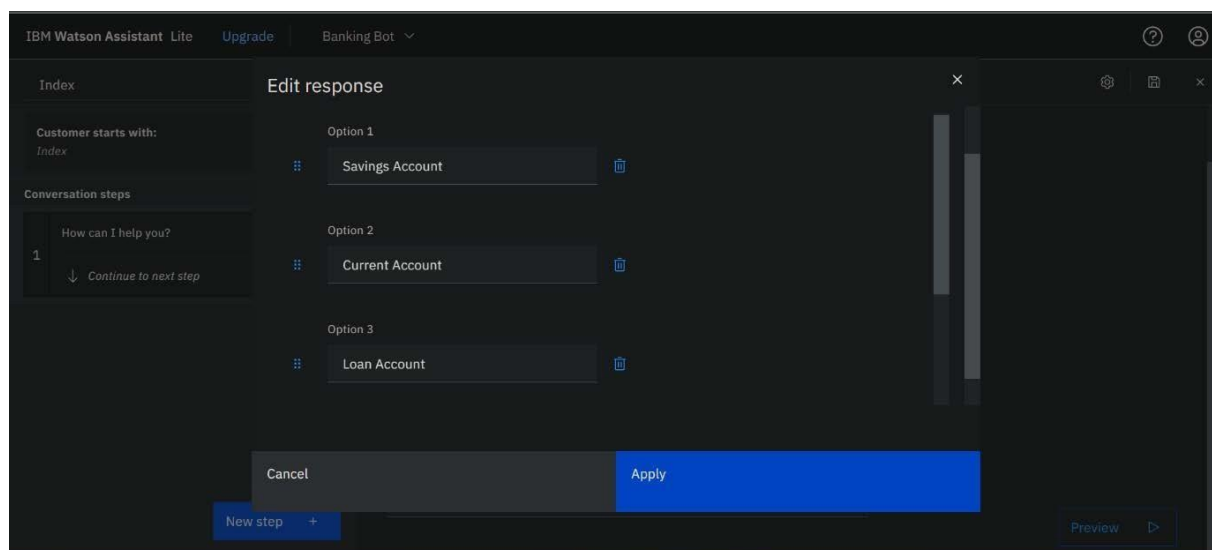
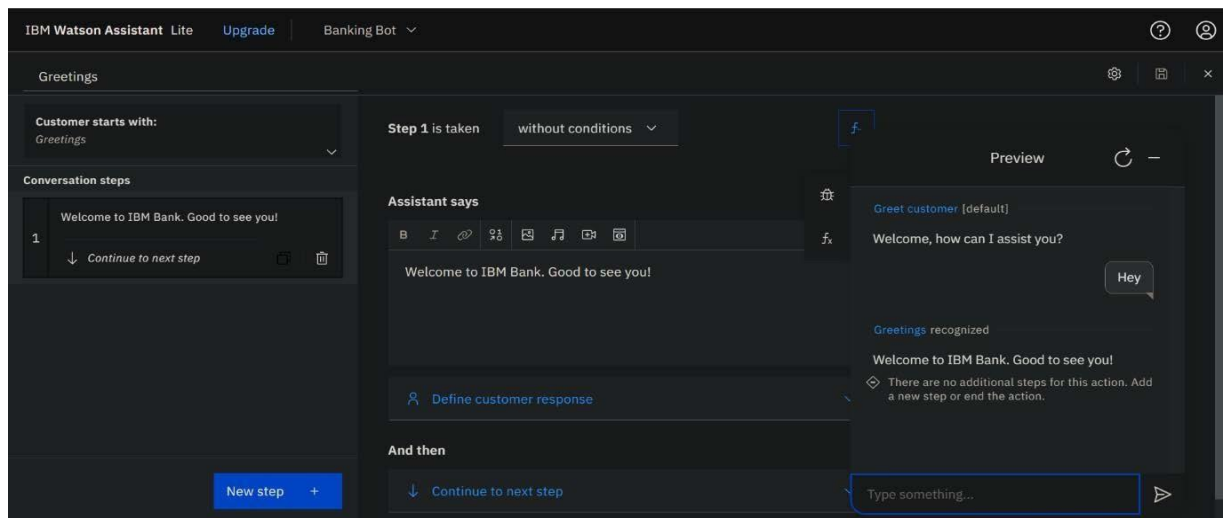
The screenshot shows the 'Create your first assistant' screen in the IBM Watson Assistant console. The top navigation bar includes 'IBM Watson Assistant Lite' and an 'Upgrade' link. A 'Welcome to the new Watson Assistant' message is displayed with a 'Next' button. Below this, a progress bar shows four steps: 'Create' (active), 'Personalize', 'Customize', and 'Preview'. The main heading is 'Create your first assistant', followed by a brief introduction. A form for 'Assistant name' has 'Banking Bot' entered. A note states: 'Your assistant name will be kept internally and not visible to your customers'. At the bottom, there is a 'Description (optional)' field and a character count '0/128'.

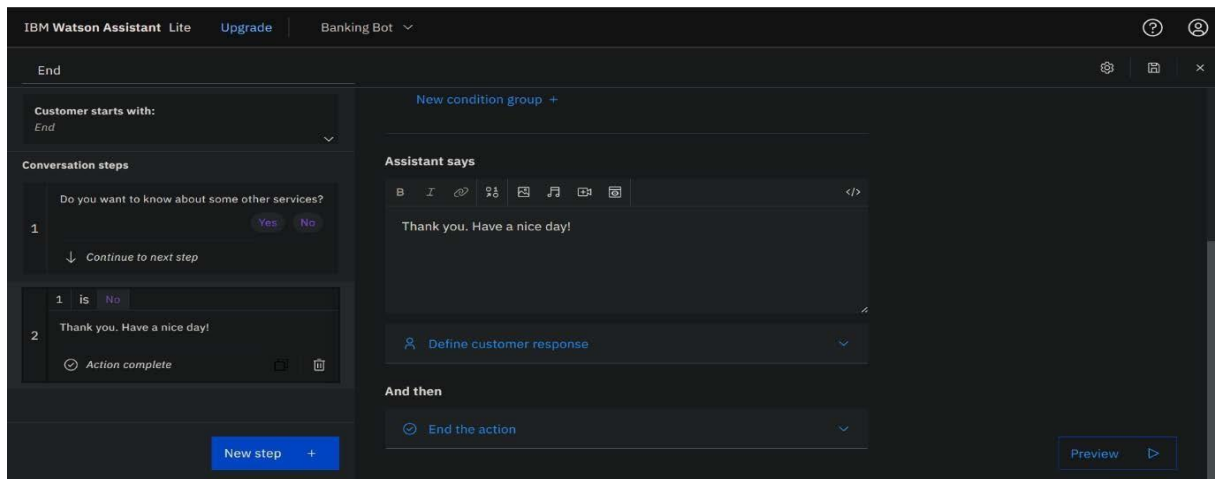
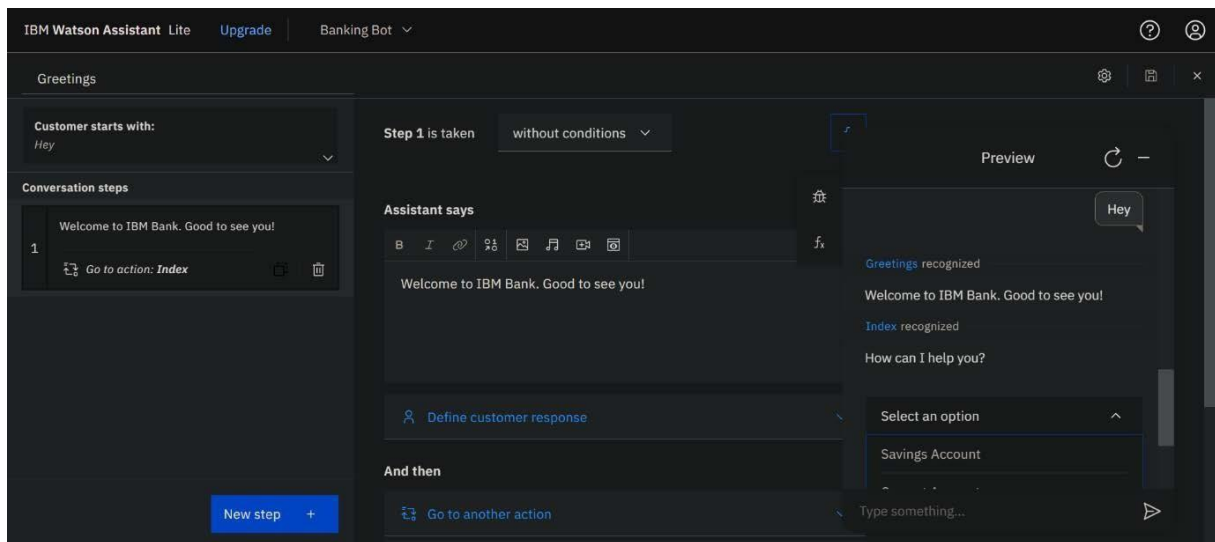
The screenshot shows the 'Tell us about yourself' screen in the IBM Watson Assistant console. The top navigation bar includes 'IBM Watson Assistant Lite', 'Upgrade', and a dropdown menu for 'Banking Bot'. A 'Welcome to the new Watson Assistant' message is displayed with 'Back' and 'Next' buttons. The main heading is 'Tell us about yourself', followed by a note: 'This information will be used to personalize your onboarding experience.' There are four dropdown menus: 'Where do you plan on deploying your assistant?' (selected: Web), 'Which industry do you work in?' (selected: Banking and financial services), 'What is your role on the team building the assistant?' (selected: Developer), and 'Which statement describes your needs best?' (selected: I'm using Watson Assistant to complete a course or certif). On the right, a chat interface shows a conversation about 'Speed Demons' in stock, with a response indicating they are available in white in a size 9. At the bottom of the chat, there are two buttons: 'I'll pick them up!' and 'Ship them to me, please!'.



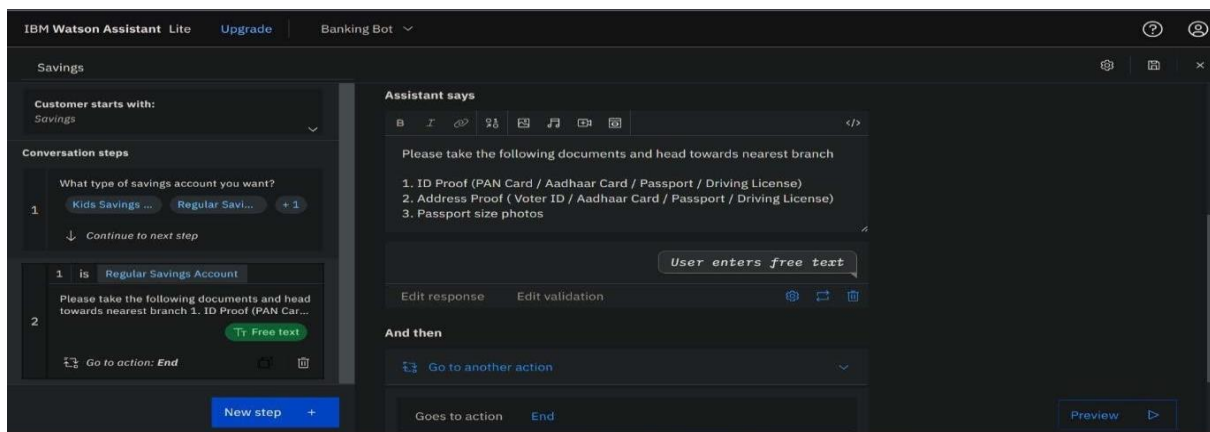
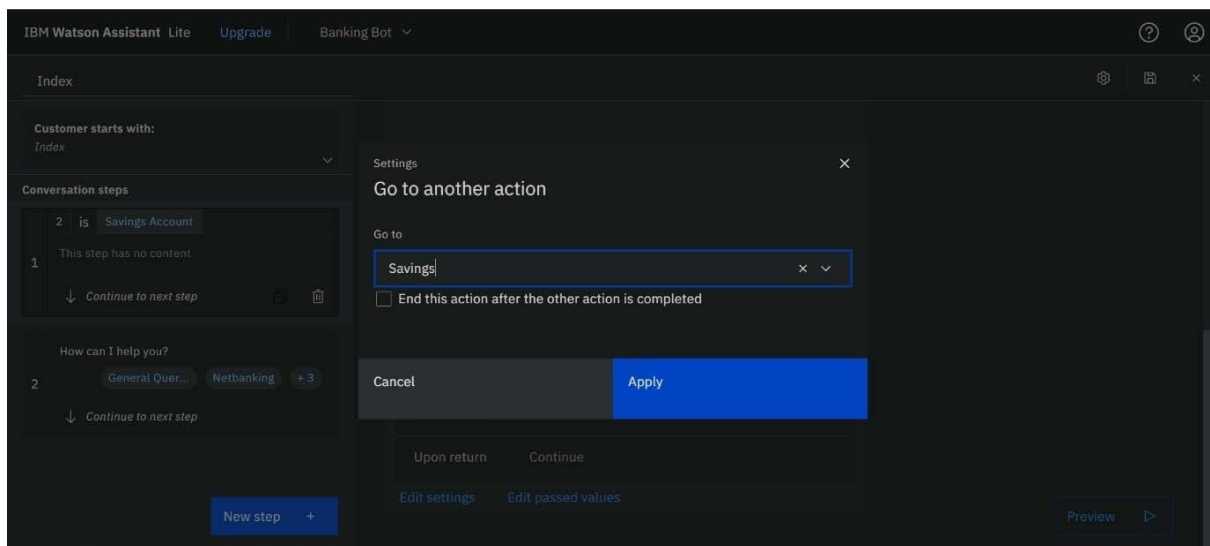
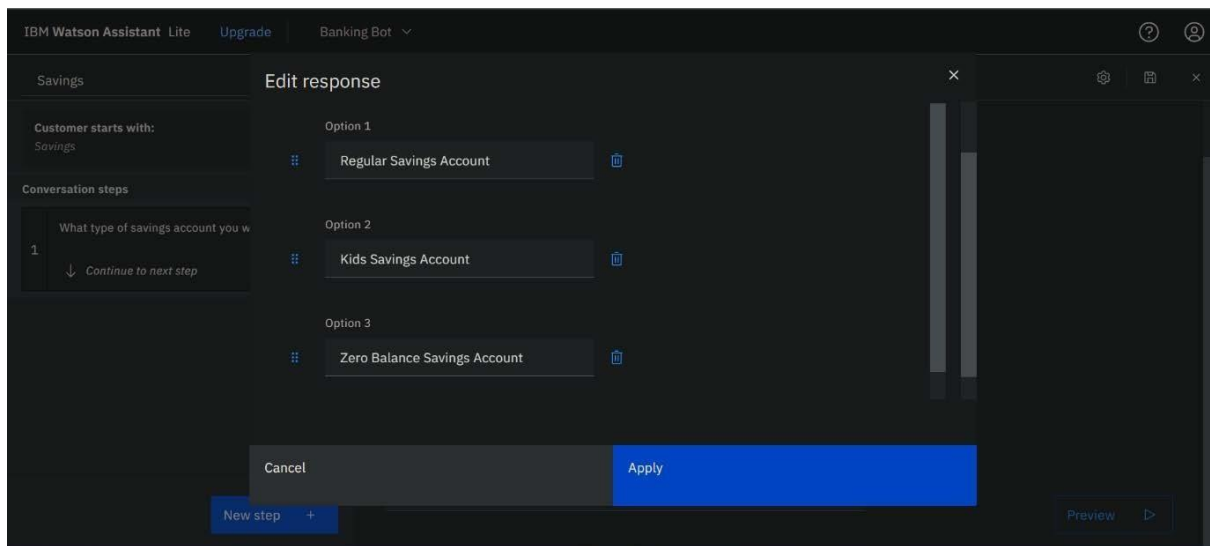
Chatbot Skills Creation:







Creating Savings Account Action:



IBM Watson Assistant Lite Upgrade Banking Bot

Savings

Customer starts with: Savings

Conversation steps

1 What type of savings account you want?

Kids Savings ... Regular Savi... +1

Continue to next step

1 is Regular Savings Account

2 Please take the following documents and head towards nearest branch 1. ID Proof (PAN Card / Aadhaar Card / Passport / Driving License) 2. Address Proof (Voter ID / Aadhaar Card / Passport / Driving License) 3. Passport size photos

Free text

Go to action: End

New step +

Assistant says

Please take the following documents and head towards nearest b

1. ID Proof (PAN Card / Aadhaar Card / Passport / Driving License) 2. Address Proof (Voter ID / Aadhaar Card / Passport / Driving License) 3. Passport size photos

User enters free text

Edit response Edit validation

And then

Go to another action

Goes to action End

Preview

Savings Account

Savings recognized

What type of savings account you want?

Regular Savings Account Kids Savings Account Zero Balance Savings Account

Regular Savings Account

Use the up arrow for prior messages

IBM Watson Assistant Lite Upgrade Banking Bot

Savings

Customer starts with: Savings

Conversation steps

1 What type of savings account you want?

Kids Savings ... Regular Savi... +1

Continue to next step

1 is Regular Savings Account

2 Please take the following documents and head towards nearest branch 1. ID Proof (PAN Card / Aadhaar Card / Passport / Driving License) 2. Address Proof (Voter ID / Aadhaar Card / Passport / Driving License) 3. Passport size photos

Free text

Go to action: End

New step +

Assistant says

Please take the following documents and head towards nearest b

1. ID Proof (PAN Card / Aadhaar Card / Passport / Driving License) 2. Address Proof (Voter ID / Aadhaar Card / Passport / Driving License) 3. Passport size photos

User enters free text

Edit response Edit validation

And then

Go to another action

Goes to action End

Preview

Please take the following documents and head towards nearest branch

1. ID Proof (PAN Card / Aadhaar Card / Passport / Driving License) 2. Address Proof (Voter ID / Aadhaar Card / Passport / Driving License) 3. Passport size photos

Okay!

End recognized

Do you want to know about some other

Type something...

IBM Watson Assistant Lite Upgrade Banking Bot

Savings

Customer starts with: Savings

Conversation steps

1 What type of savings account you want?

Kids Savings ... Regular Savi... +1

Continue to next step

1 is Regular Savings Account

2 Please take the following documents and head towards nearest branch 1. ID Proof (PAN Card / Aadhaar Card / Passport / Driving License) 2. Address Proof (Voter ID / Aadhaar Card / Passport / Driving License) 3. Passport size photos

Free text

Go to action: End

New step +

Assistant says

Please take the following documents and head towards nearest b

1. ID Proof (PAN Card / Aadhaar Card / Passport / Driving License) 2. Address Proof (Voter ID / Aadhaar Card / Passport / Driving License) 3. Passport size photos

User enters free text

Edit response Edit validation

And then

Go to another action

Goes to action End

Preview

End recognized

Do you want to know about some other services?

Yes No

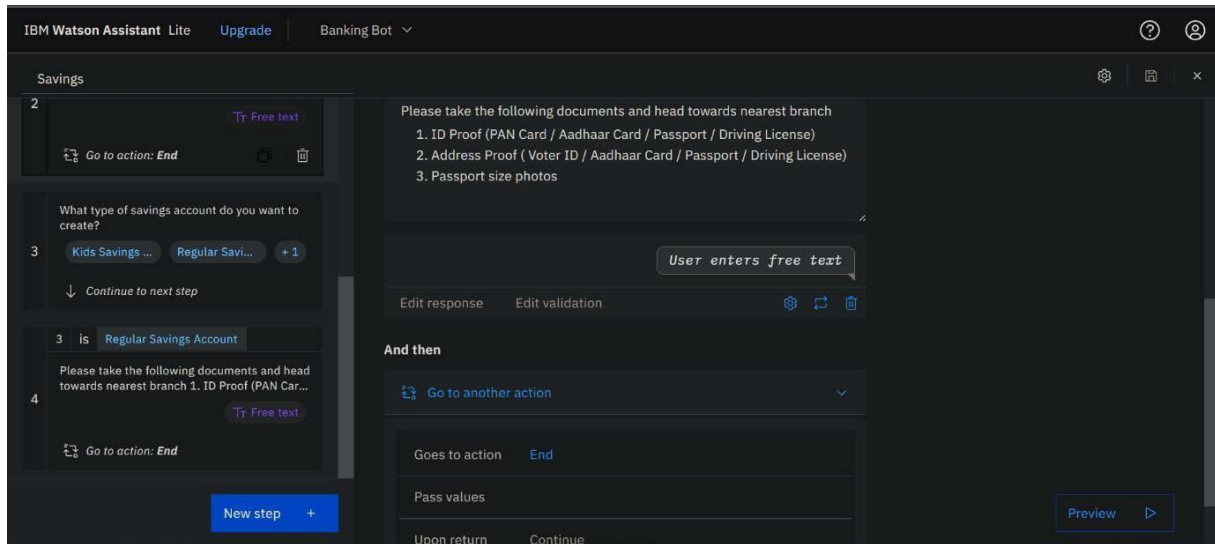
No

Thank you. Have a nice day!

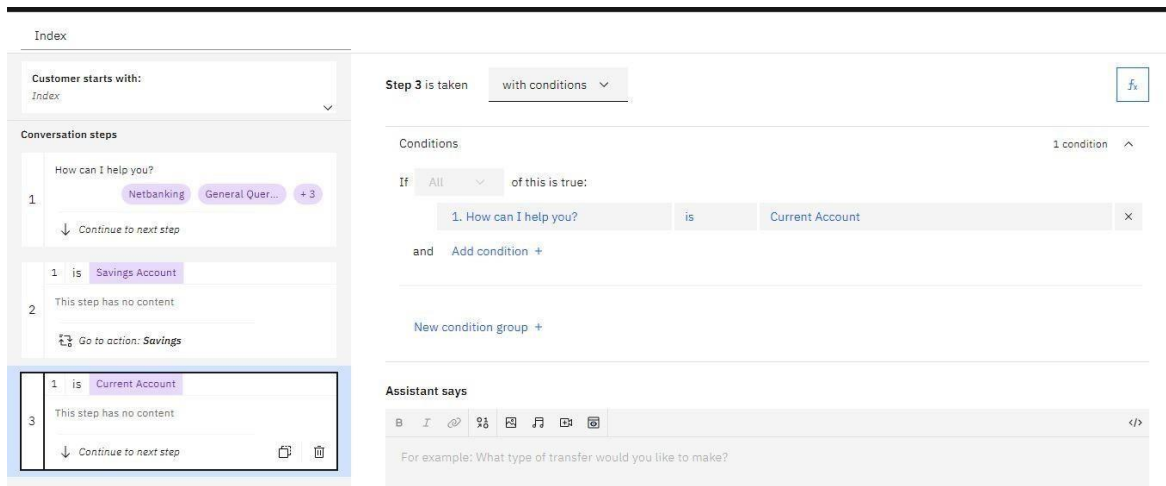
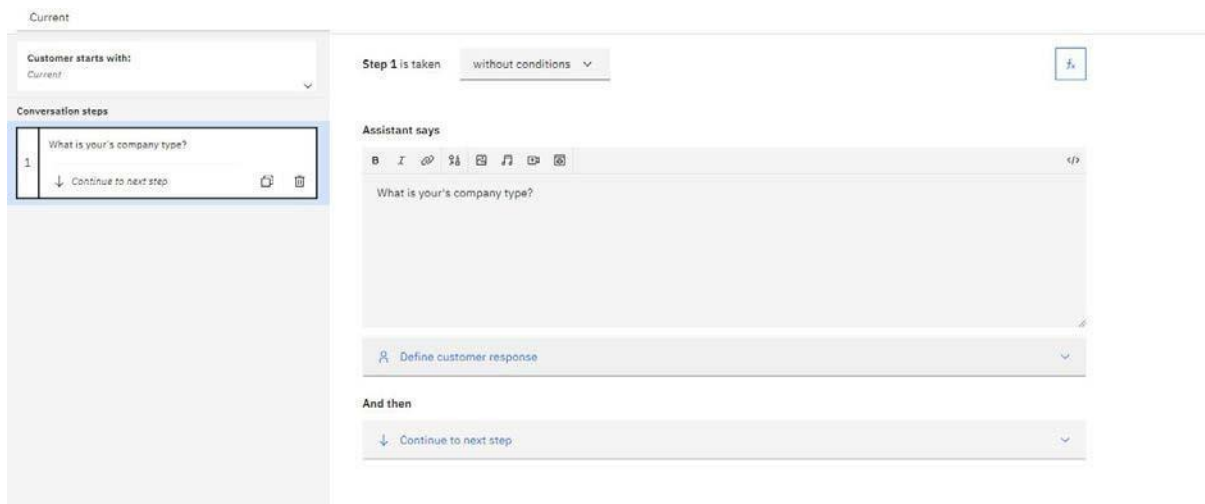
Greetings recognized

There are no additional steps for this action. Add a new step or end the action.

Use the up arrow for prior messages



Creating Current Account Action:



Current

Customer starts with:
Current

Conversation steps

1 What is your's company type?
Proprietorship Partnership
Continue to next step

2 1 is Proprietorship
Please take the following documents and approach the closest branch:
 1. Income tax returns of...
Continue to next step

Step 2 is taken with conditions

Conditions 1 condition

If All of this is true:

1. What is your's company type? is Proprietorship

and Add condition +

New condition group +

Assistant says

Please take the following documents and approach the closest branch:

1. Income tax returns of proprietor for last 3 years
2. Company Agreement
3. Pan card

Current

Customer starts with:
Current

Conversation steps

1 What is your's company type?
Proprietorship Partnership
Continue to next step

1 is Proprietorship
Please take the following documents and approach the closest branch:
 1. Income tax returns of...
Free text

2 Go to action: End

1 is Partnership
3 Please take the following documents and approach the closest branch:
 1. Income tax returns of...
Continue to next step

Step 3 is taken with conditions

Conditions 1 condition

If All of this is true:

1. What is your's company type? is Partnership

and Add condition +

New condition group +

Assistant says

Please take the following documents and approach the closest branch:

1. Income tax returns of proprietor for last 3 years
2. Company Agreement
3. Pan card for both partners

1 is Proprietorship
2 Please take the following documents and approach the closest branch:
 1. Income tax returns of...
Free text
Continue to next step

new condition group +

Assistant says

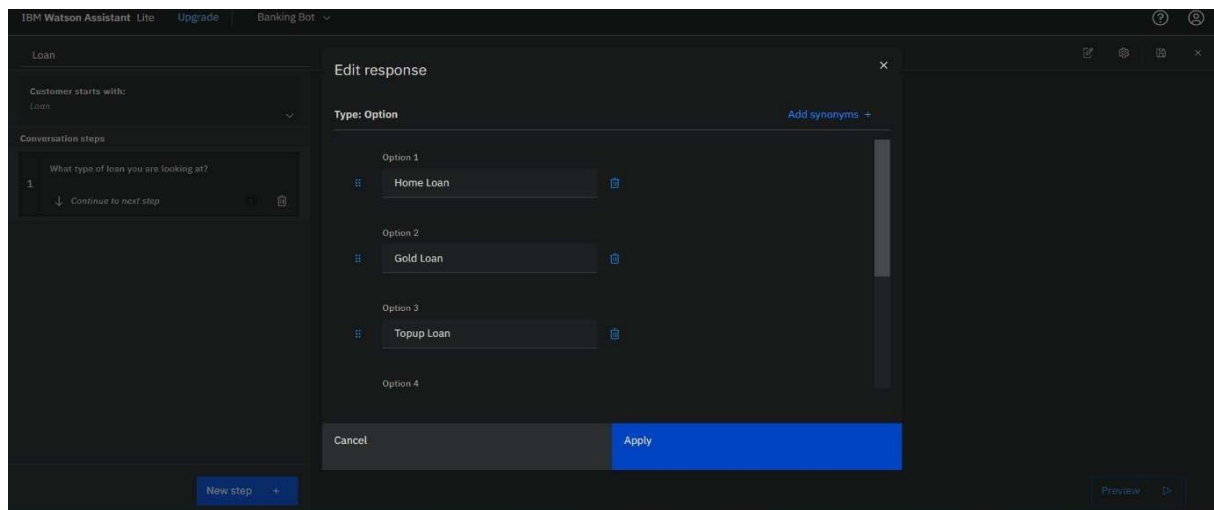
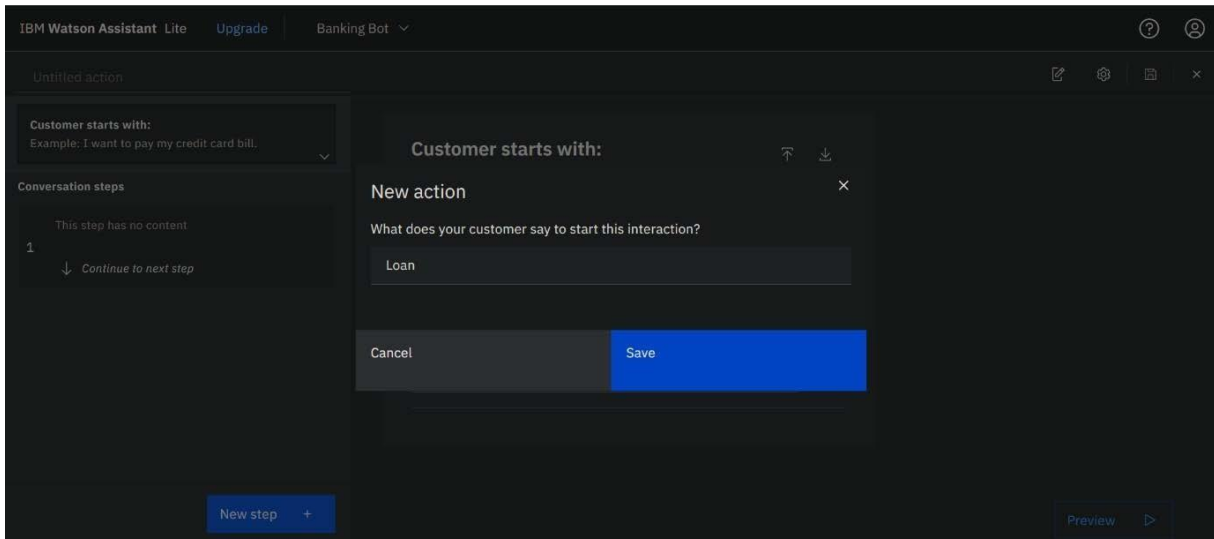
Please take the following documents and approach the closest branch:

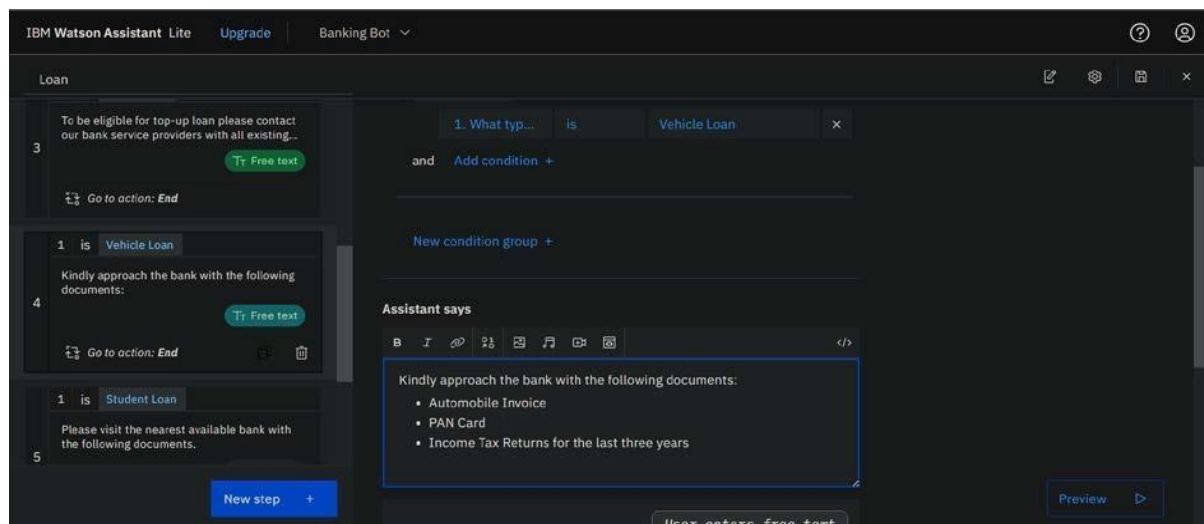
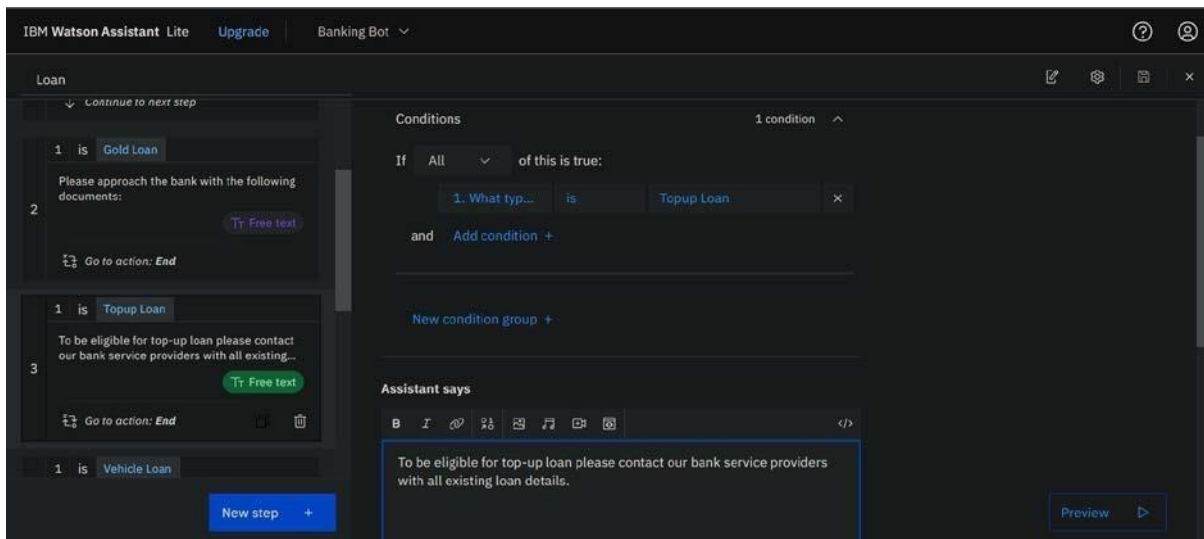
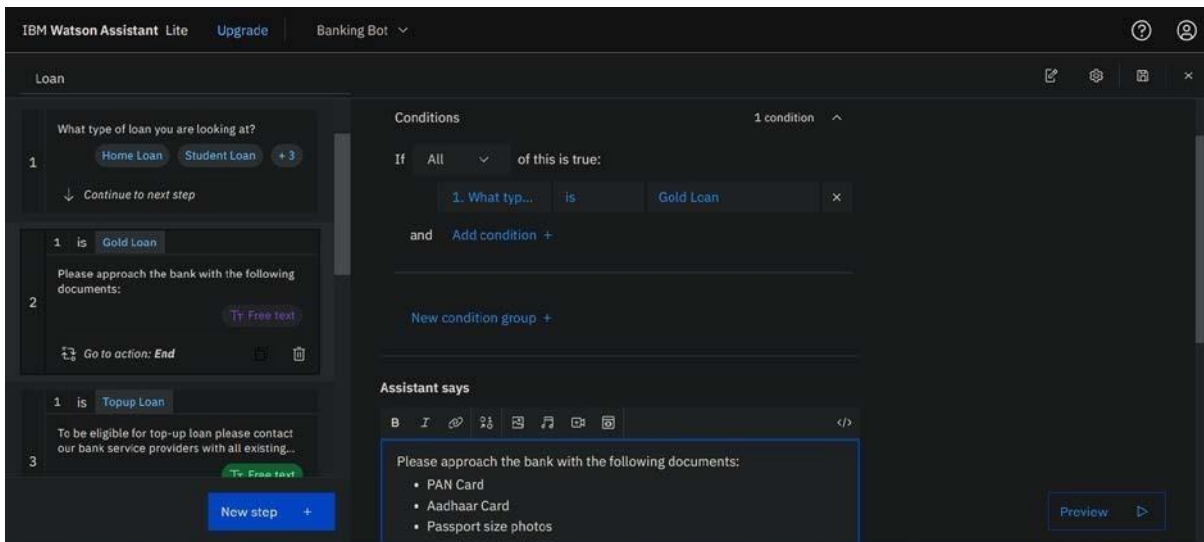
1. Income tax returns of proprietor for last 3 years
2. Company Agreement
3. Pan card

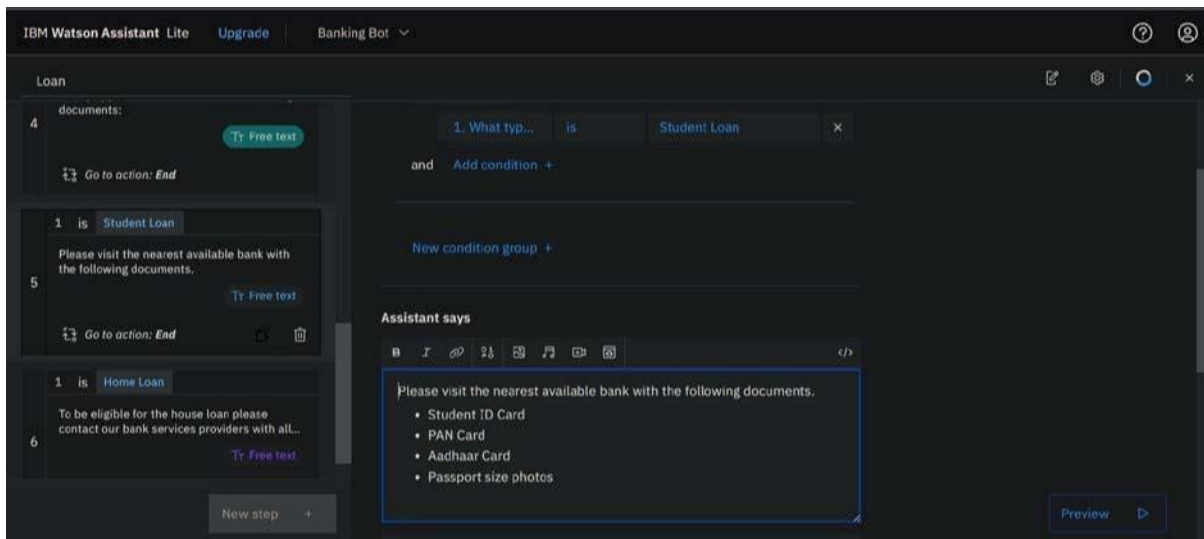
User enters free text

7.1 Project Development - Delivery of Sprint – 2

Creating Loan Account Actions:







Preview

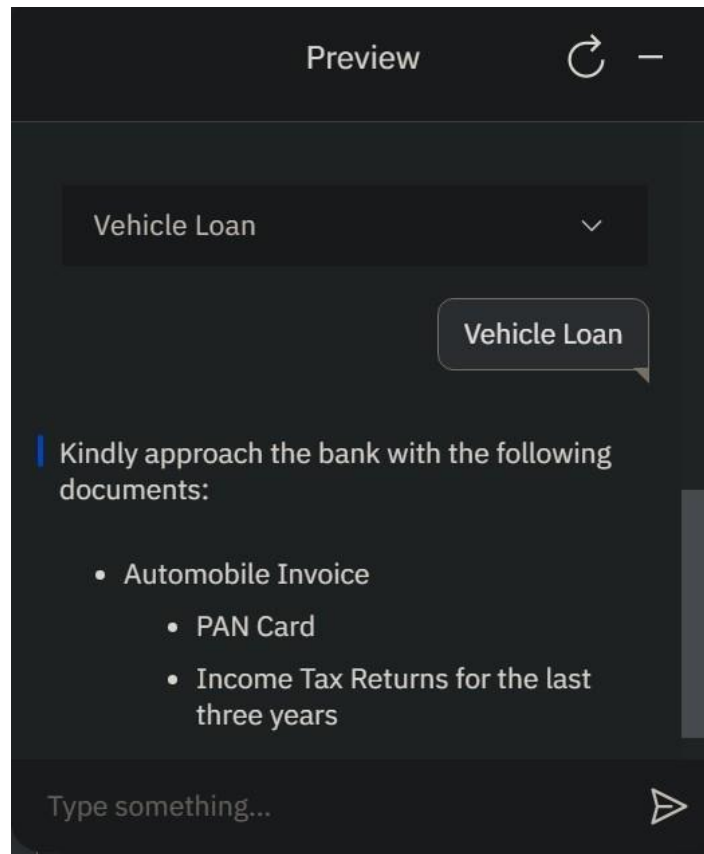
Welcome to IBM Bank. Good to see you!

How can I help you?

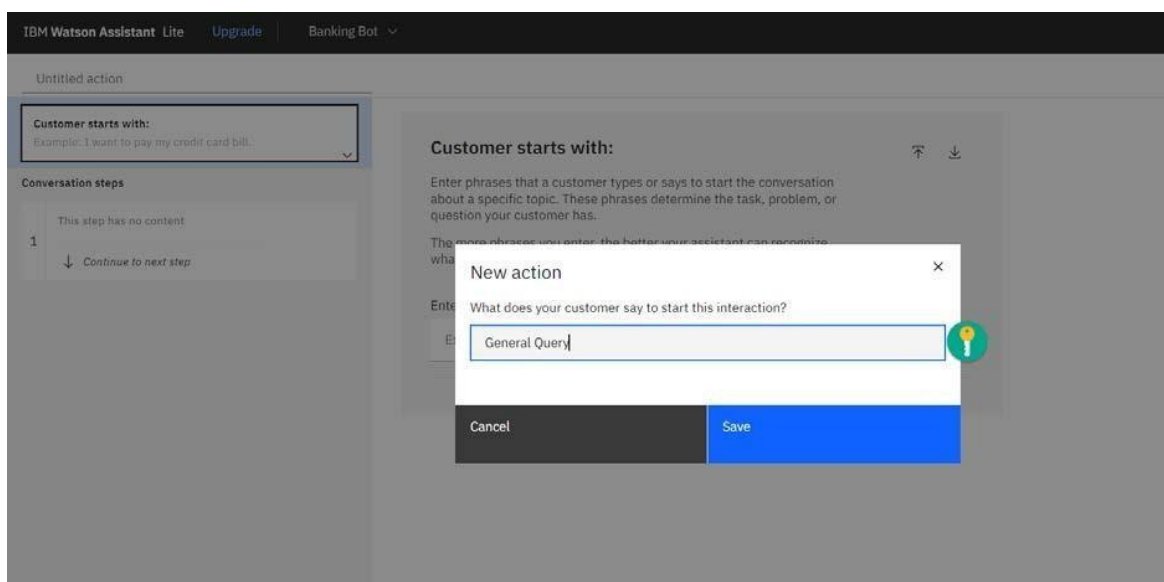
Loan Account

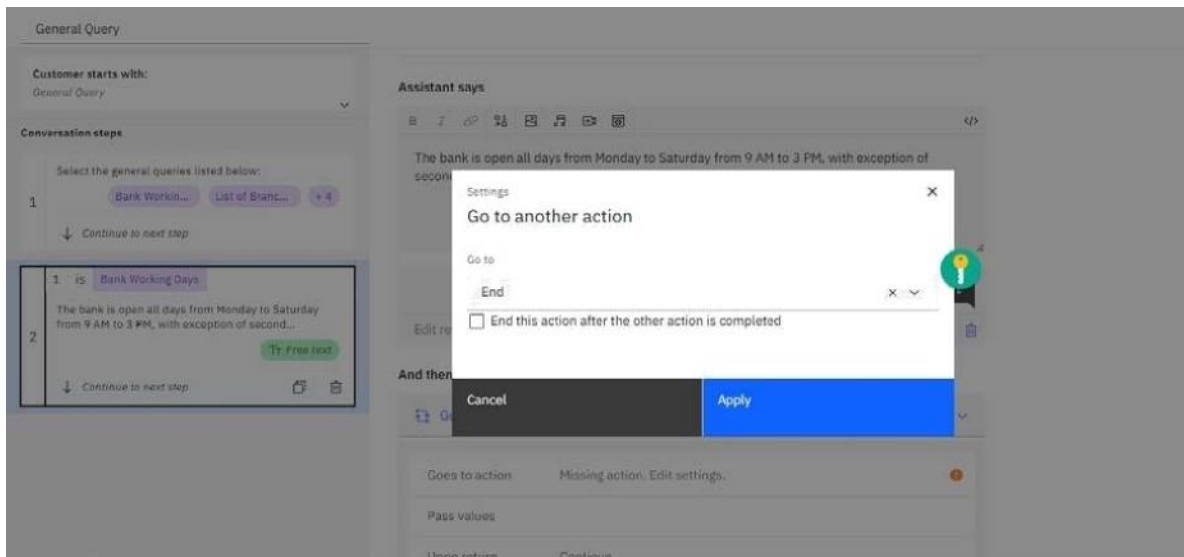
Loan Account

What type of loan are you looking at?



Creating General Query Action:





General Query

Customer starts with:
General Query

Conversation steps

Select the general queries listed below:

1 Currency Con... CIBIL + 4

Continue to next step

1 is Bank Working Days

The bank is open all days from Monday to Saturday from 9 AM to 3 PM, with exception of second...

2 Free text

Go to action: End

1 is List of Branches

ADYAR,ALWARPET,ANNA NAGAR,AYANAVARAM,ASHOK NAGAR,EGMORE,RAMAPURAM,KK...

3 Free text

Go to action: End

New step +

Step 3 is taken with conditions

Conditions 1 condition

If All of this is true:

1. Select the genera... is List of Branches

and Add condition +

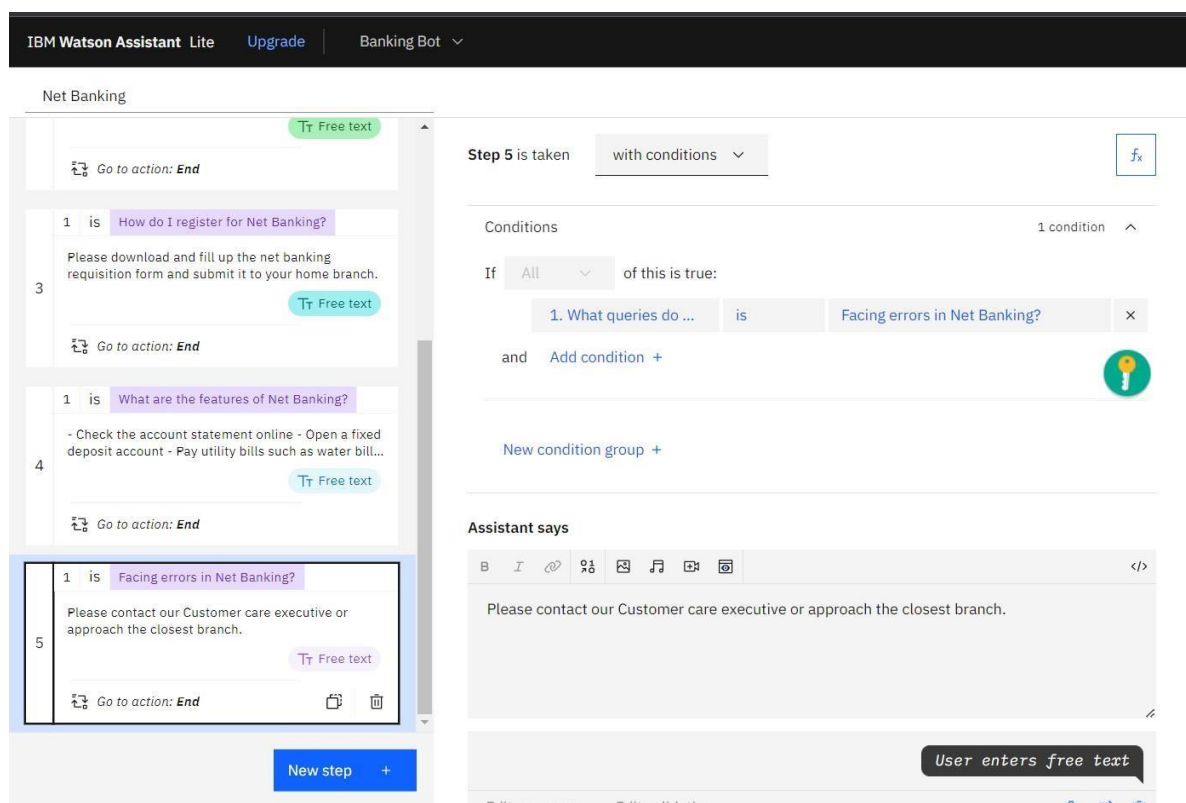
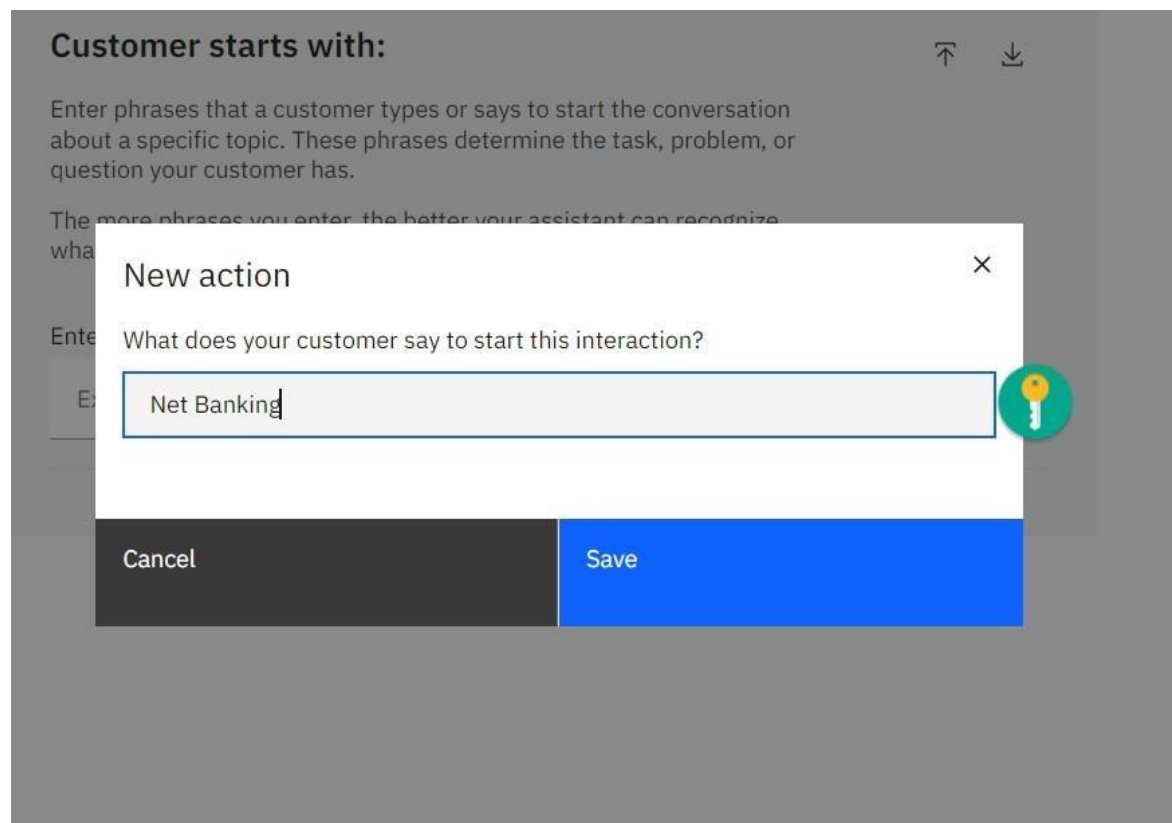
New condition group +

Assistant says

ADYAR,ALWARPET,ANNA NAGAR,AYANAVARAM,ASHOK NAGAR,EGMORE,RAMAPURAM,KK NAGAR,KARAPAKKAM,KOYAMBEDU,WEST MAMBALAM

User enters free text

Creating Netbanking Action:



Net Banking

Customer starts with: Net Banking

Conversation steps

What queries do you have regarding Net banking?

1 What is Net B... How do I regi... + 2

Continue to next step

1 is What is Net Banking?

The facility offered by the bank allows customers to use banking services over the internet. Customers ne...

2 Free text

Go to action: End

1 is How do I register for Net Banking?

Please download and fill up the net banking requisition form and submit it to your home branch.

3 Free text

Go to action: End

New step +

Step 3 is taken with conditions

Conditions 1 condition

If All of this is true:

1. What queries do ... is How do I register for Net Banking?

and Add condition +

New condition group +

Assistant says

Please download and fill up the net banking requisition form and submit it to your home branch.

User enters free text

Current

Customer starts with: Current

Conversation steps

What is your's company type?

1 Proprietorship Partnership

Continue to next step

1 is Proprietorship

Please take the following documents and approach the closest branch:
 1. Income tax returns of...

2 Free text

Go to action: End

1 is Partnership

Please take the following documents and approach the closest branch:
 1. Income tax returns of...

3 Free text

Continue to next step

1. What is your's company type? is Partnership

and Add condition +

New condition group +

Assistant says

Please take the following

1. Income tax returns
2. Company Agreement
3. Pan card for both

Go to another action

Go to End

End this action after the other action is completed

Cancel Apply

And then

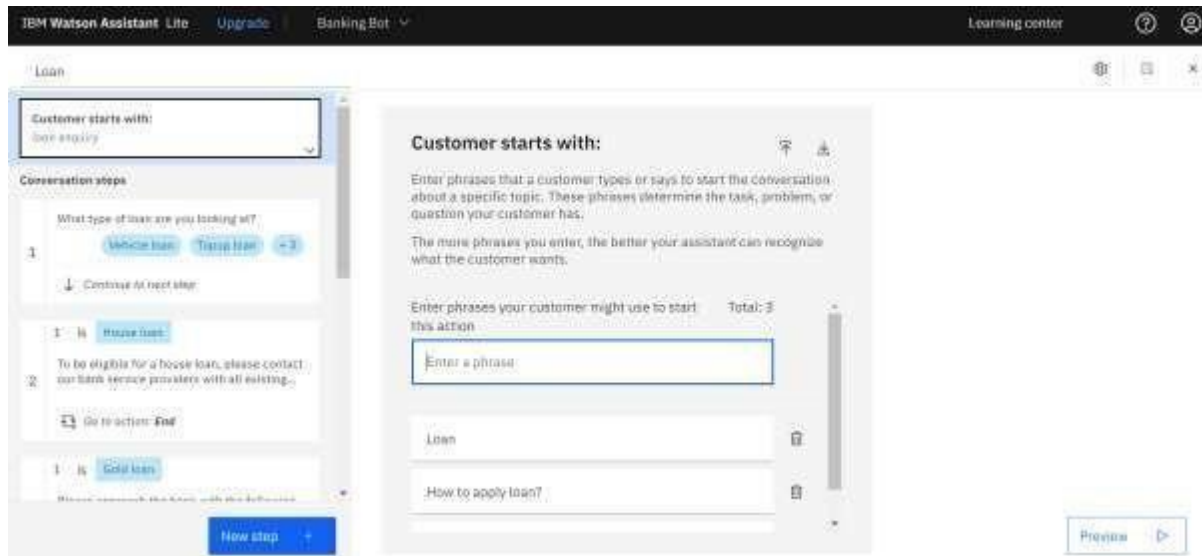
Go to another action

Goes to action Missing action. Edit settings.

7.1 Project Development - Delivery of Sprint – 3

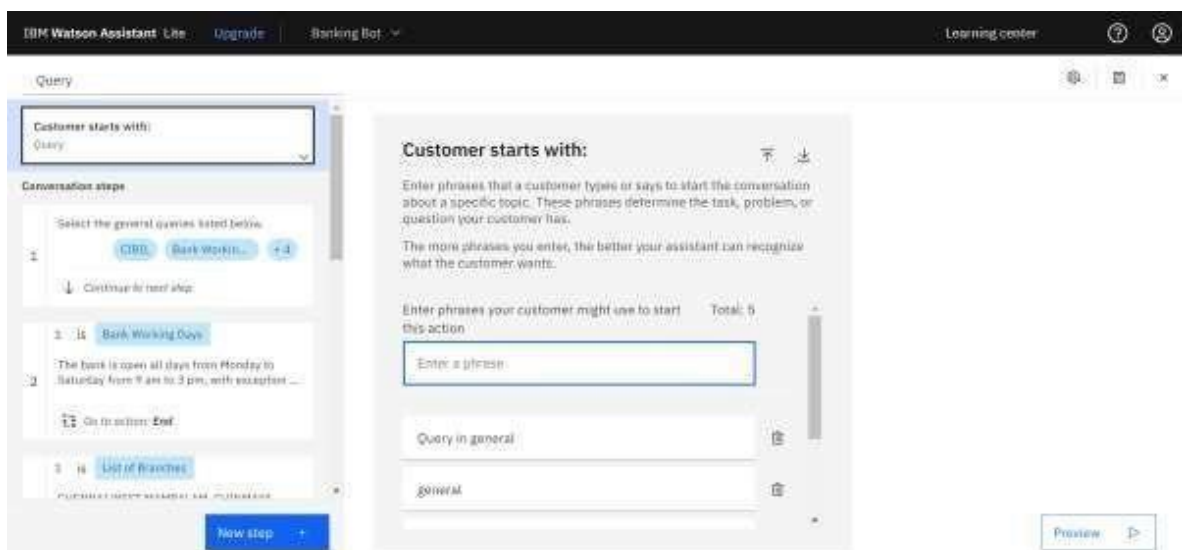
Creating Loan Account Action

Loan action is created with the necessary steps.



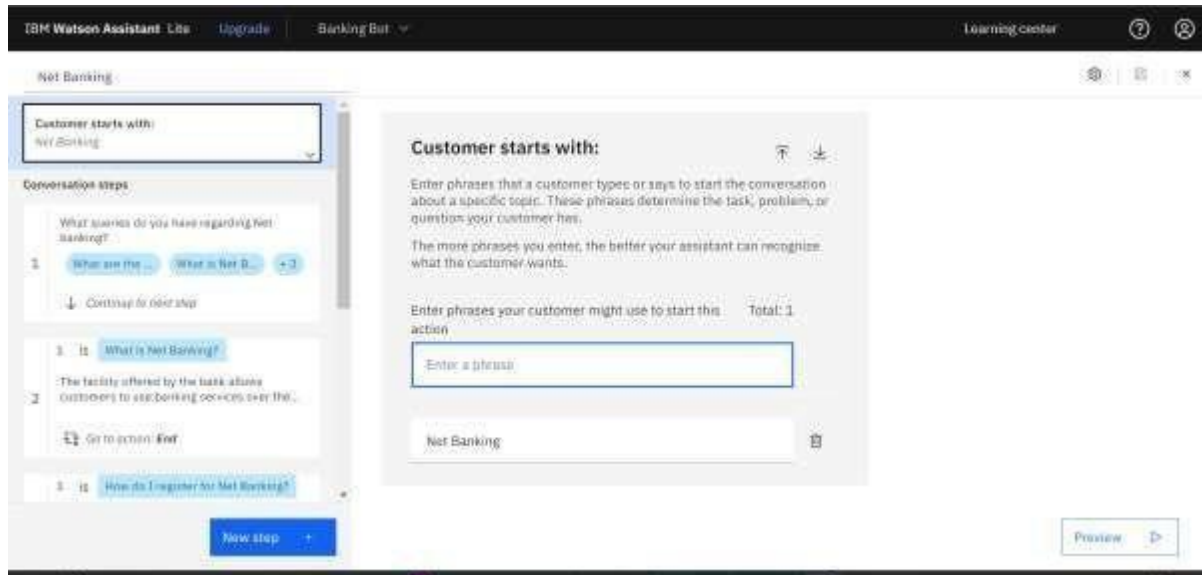
Creating General Query Action

General query action is created with the necessary steps.



Creating NetBanking Action

Net banking action is created with the necessary steps.



In addition to this greeting ,end greeting ,index and end actions are also created.

Name	Last edited	Status
Current	2 days ago	✓
Index	2 days ago	✓
Register	3 days ago	✓
Greeting	2 days ago	✓
End Greeting	2 days ago	✓

New action +

Name	Last edited	Status	
Net Banking	3 minutes ago	<div></div>	<div></div>
End	2 days ago	<div></div>	<div></div>
Loan	2 days ago	<div></div>	<div></div>
Query	a few seconds ago	<div></div>	<div></div>
Savings	16 minutes ago	<div></div>	<div></div>
Current	2 days ago	<div></div>	<div></div>

Items per page: 50

Showing 1-10 of 10 actions

1

1 of 1 pages

7.1 Project Development - Delivery of Sprint – 4

Creating Assistant & Integrate With Flask Web Page

You will be creating a banking bot in this activity that has 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.
- With the help of this bot, you can get all the required details related to banking.

Let us build our flask application which will be running in our local browser with a user interface.

In the flask application, users will interact with the chatbot, and based on the user queries they will get the outcomes.

Build Python Code

1. Importing Libraries

The first step is usually importing the libraries that will be needed in the program.

```
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).

2 . Creating our flask application and loading

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

- **Routing to the Html Page**

Here, the declared construct or 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 webserver is opened in the browser, the HTML page will be rendered.

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

Main Function

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

This is used to run the application in localhost.

Build HTML Code

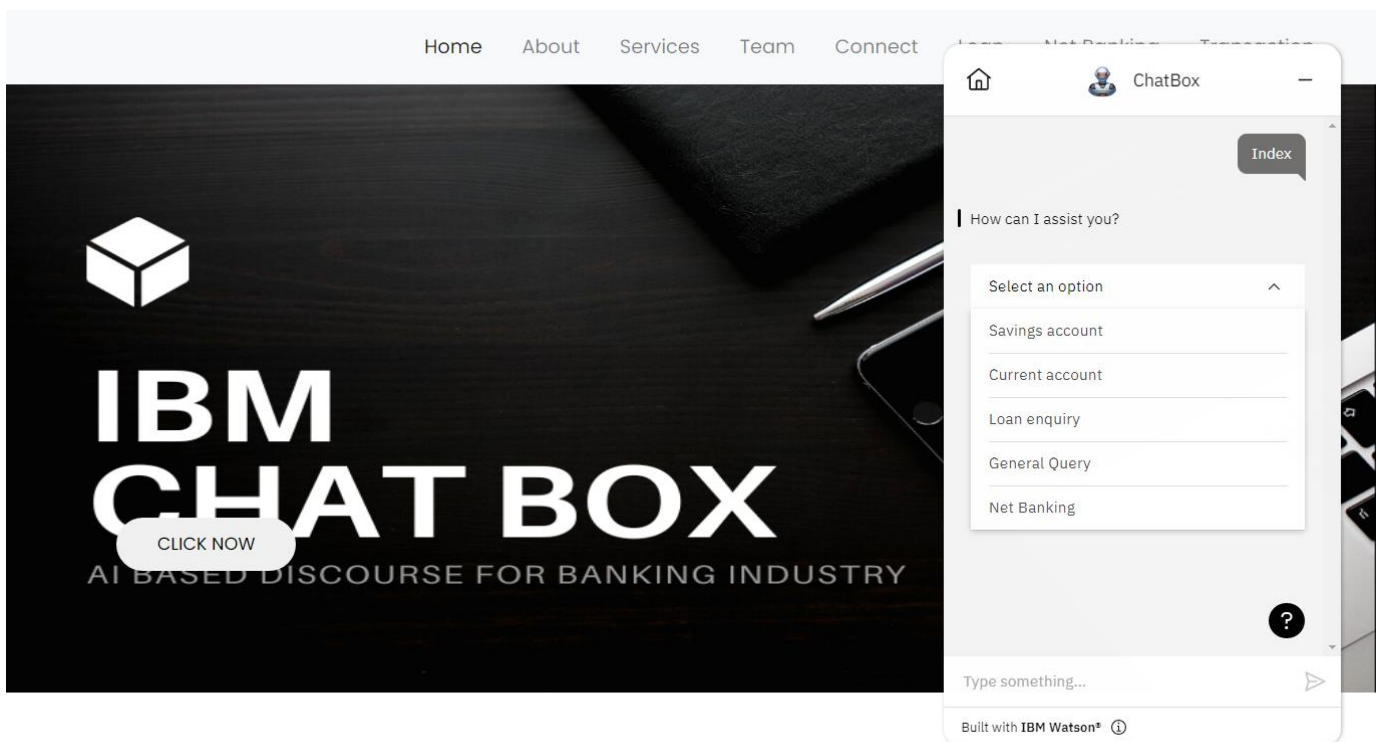
- We use HTML to create the front-end part of the webpage.
- Here, we have created 1 HTMLpage-Chatbot.html
- Chatbot.html displays the home page which integrates with Watson Assistant.
- A simple HTML page is created. Auto-generated source code from IBM Watson Assistants is copied and pasted inside the body tag

Run The Application

Run the application

- Open the anaconda prompt from the start menu.
- Navigate to the folder where your app.py resides.
- Now type the “pythonapp.py” command.
- It will show the localhost where your app is running on_
<http://127.0.0.1.5000/>
- Copy that localhost URL and open that URL in the browser. It does navigate me to where you can view your webpage.

Then it will run on localhost:5000



CHAPTER-8 CONCLUSION

The financial products and services of banks do not differ in the eyes of a customer and thus the customer does not see a value in choosing a specific bank. During this unspecified phase the risk that the customer base might switch to another bank is high. Swedbank already stated that the company is concerned about new digital competitors, which provide additional value through financial services for customers. The usage of artificial intelligence technologies provides an opportunity for banks to stay competitive by differentiating themselves while at the same time save costs. Online channels are increasingly becoming the preferred way for customers to communicate with their banking institutes. The current experience of communicating through a chatbot could be enhanced by the utilisation of advanced robo advisory services. Sven Magg (2017) pointed out that large progress in AI is expected within the processing of natural voice input. Customer service and advisory could be done utilising a voiced AI based system, which is able to recognize and answer via natural communication. In an ideal scenario, the system could recognise the phone number of the client greet by his or her name.

Multiple privacy and security concerns exist among customers. AI system are required to process large amounts of data in order to function properly. With data sets available online the risk for data theft or data exploitation increases. Additionally, the lawmaking process is lacking behind the technological progress with the consequence that existing regulations are not addressing all legal aspects of innovative digital technologies, such as AI assistants. This grey area might lead to uncertainty, which in return could restrain the innovative progress. Within the decision making process AI systems have both strong opportunities and challenges. On one hand computer systems are not vulnerable to emotional influences or selfish motivations, thus their decisions are

solely based on logical reasoning. On the other hand computer systems operate as they are programmed. This means, that there is a risk that private interests of third parties can be deceived into the software making the computer system biased. Within this matter artificial neural networks provide a security by design approach, due to naturally running within a black box, in which the internal processes are not easily revealed (Sven Magg, 2017).

CHAPTER-9 REFERENCES

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DRIVE LINK :

https://drive.google.com/file/d/1IYF2hm50iWo9j9lCn8kZajQhLCtVQth9/view?usp=share_link

GITHUB LINK : <https://github.com/IBM-EPBL/IBM-Project-33765-1660226593>

TEAM ID: PNT2022TMID10388

TEAM DETAILS:

1. KISHORE P
2. IMRAN KHAN S
3. IRFAN RAHIM Z
4. KAVIARASAN R