

PROJECT REPORT

AI BASED DISCOURSE FOR BANKING INDUSTRY

Team ID: PNT2022TMID50675

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INTRODUCTION

Overview:

- Industries are forced to evolve and update their practices due to technological advances and the contemporary market. The banking sector is one of the most developed sectors and is always looking for the latest technological solutions that improve its efficiency.
- Net banking websites are complex and involve navigating through a lot of pages to find the information you need. Bank staff undergoes a lot of stressful situations when communicating with clients directly. Such situations can be avoided gracefully by using chatbots.
- Only 32% of companies in the finance industry currently use AI chatbots, and 37% are planning to start using them within 18 months said a report from Sales force. This results in a potential growth rate of 118% which indicates the demand in the industry.
- A smart chatbot takes a query from the user in natural language and gives the appropriate response for the same. This paper aims to discuss the relevance of chatbots in the banking sector and explore how chatbots can be implemented using natural language processing techniques that can be used in the banking industry.

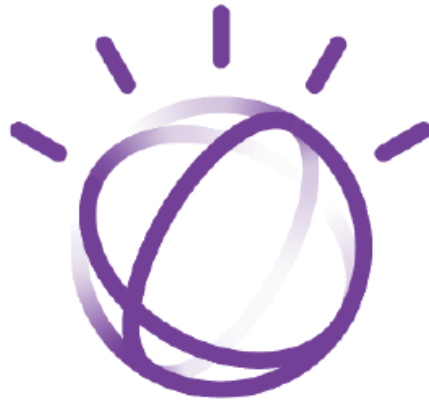
Proposed solution:

- The solution to the problem is Artificial intelligence in the banking sector makes banks efficient, trustworthy, helpful, and more understanding. It is strengthening the competitive edge of modern banks in this digital era. The growing impact of AI in banking sector minimizes operational costs improves customer support and process automation.
- Nearly 40% to 50% of financial and banking service providers are using AI in their processes to harness the power of next-generation AI capabilities. The companies believe that AI is the future of banking sector which can perform a range of banking operations in faster, easier, and more secure ways.
- AI banking Chatbots help customers in many ways. AI-based chatbot service for financial industry is one of the significant use cases of AI in banking sector. AI chatbots in banking are modernizing the way how businesses provide services to their customers.
- AI chatbots in the banking industry can assist customers 24*7 and give accurate responses to their queries. These chatbots provide a personalized experience to users.
- AI chatbots in banking is providing a better customer experience.
- Hence, AI chatbots for banking and finance operations let banks attract customer attention, optimize service quality, and expand the brand mark in the market.

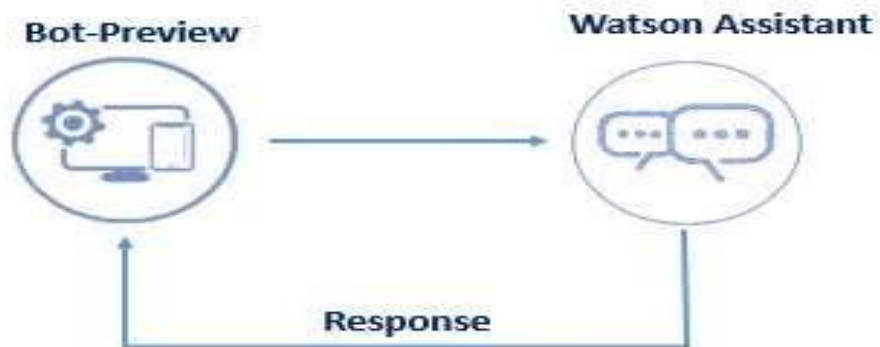
THEORETICAL ANALYSIS:

Services Used:

IBM Watson Assistant



Block diagram:




Hardware / Software designing:

To complete this project, you should have the following software and packages.

Software:

 IBM Watson Assistant

 Python Flask

 Visual Studio

FLOWCHART:

To accomplish the above task, you must complete the below activities and tasks:

- ❖ Create IBM Services.
- ❖ Creating skills & Assistant for Chatbot.
- ❖ Creating Savings account action.
- ❖ Creating Current account action.
- ❖ Creating Loan account action.
- ❖ Creating a general query action.
- ❖ Creating a Net banking action.
- ❖ Create HTML web page.
- ❖ Integrate the Watson Chatbot with web page.

ADVANTAGES

- ❖ The growing impact of AI in banking sector
 - Minimizes operational costs.
 - Improves customer support.
 - Process automation.
- ❖ The companies believe that AI is the future of banking sector which can perform a range of banking operations such as,
 - Faster response
 - Time saving
 - More secure.
- ❖ AI chatbots in the banking industry can assist customers
 - 24*7 give accurate responses to their queries.
 - These chatbots provide a personalized experience to users.

Disadvantages:

- Questions must be programmed beforehand.
- Impersonal
- Must keep information up-to-date.
- Technology issues.
- Needs additional measures to protect identities.

Application:

Banking chatbots have all the data to predict the spending habits of customers and help them keep their finances on track.

APPENDIX:

Create IBM Service

In this activity, you will be creating the Necessary IBM service. The following are the service that you have to create.

Create a Watson Assistant

The screenshot shows the IBM Cloud Catalog page for Watson Assistant. The page is titled "Watson Assistant" and includes a description: "Watson Assistant lets you build conversational interfaces into any application, device, or channel." The "Create" tab is selected, and the "Select a location" dropdown is set to "Sydney (au-syd)". The "Select a pricing plan" section shows a table with the "Lite" plan selected, which is free. The table lists features such as "World-class conversational AI with Watson", "Make your website assistant your own with Webchat", and "Bootstrap your assistant by using some of our prebuilt content". The "Summary" panel on the right shows the plan details: "Watson Assistant", "Location: Sydney", "Plan: Lite", "Service name: Watson Assistant-me", and "Resource group: Default". There are buttons for "Create" and "Add to estimate".

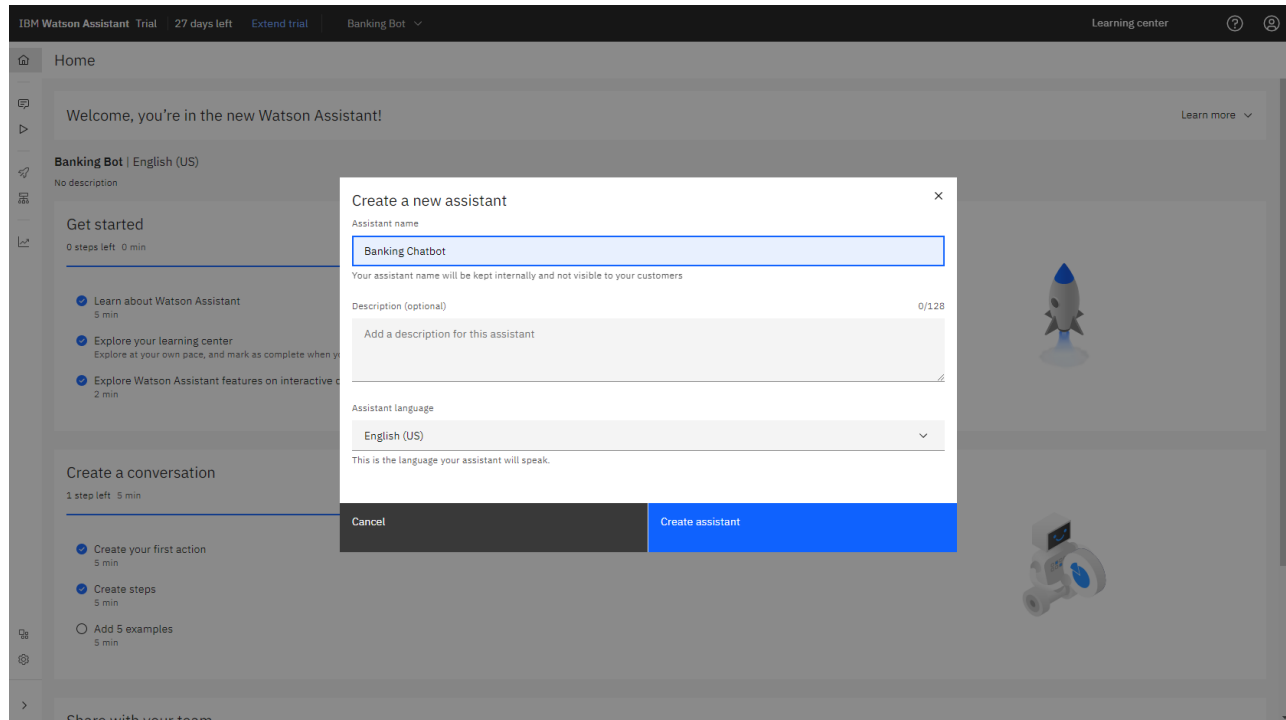
Plan	Features	Pricing
Lite	Everything you need to get started, free for as long as you need it Up to 1,000 unique monthly active users (MAUs) chatting with your assistant Up to 10,000 messages per month --- Features --- - World-class conversational AI with Watson - Make your website assistant your own with Webchat - deploy Webchat in minutes, or use our fully extensible architecture - Bootstrap your assistant by using some of our prebuilt content - Connect to any application or database with a prebuilt integration, or build your own custom integration on top of API endpoints - Create engaging user interactions using images, buttons, and more - Analyze and enhance your assistant with our analytics dashboard - Take comfort knowing your assistant is reliably hosted on IBM Public Cloud --- Limits --- Up to 5 Skills (Dialog, Action, Search) 7 days of usage analytics Session inactivity timeout 5 minutes Services are deleted after 30 days of inactivity	Free

The screenshot shows the IBM Cloud Resource list page for Watson Assistant-me. The page is titled "Watson Assistant-me" and includes a status indicator "Active" and a link to "Add tags". The "Manage" tab is selected, and the "Start by launching the tool" section shows buttons for "Launch Watson Assistant", "Getting started tutorial", and "API reference". The "Credentials" section shows the API key and URL. The "Plan" section shows the "Lite" plan and an "Upgrade" button.

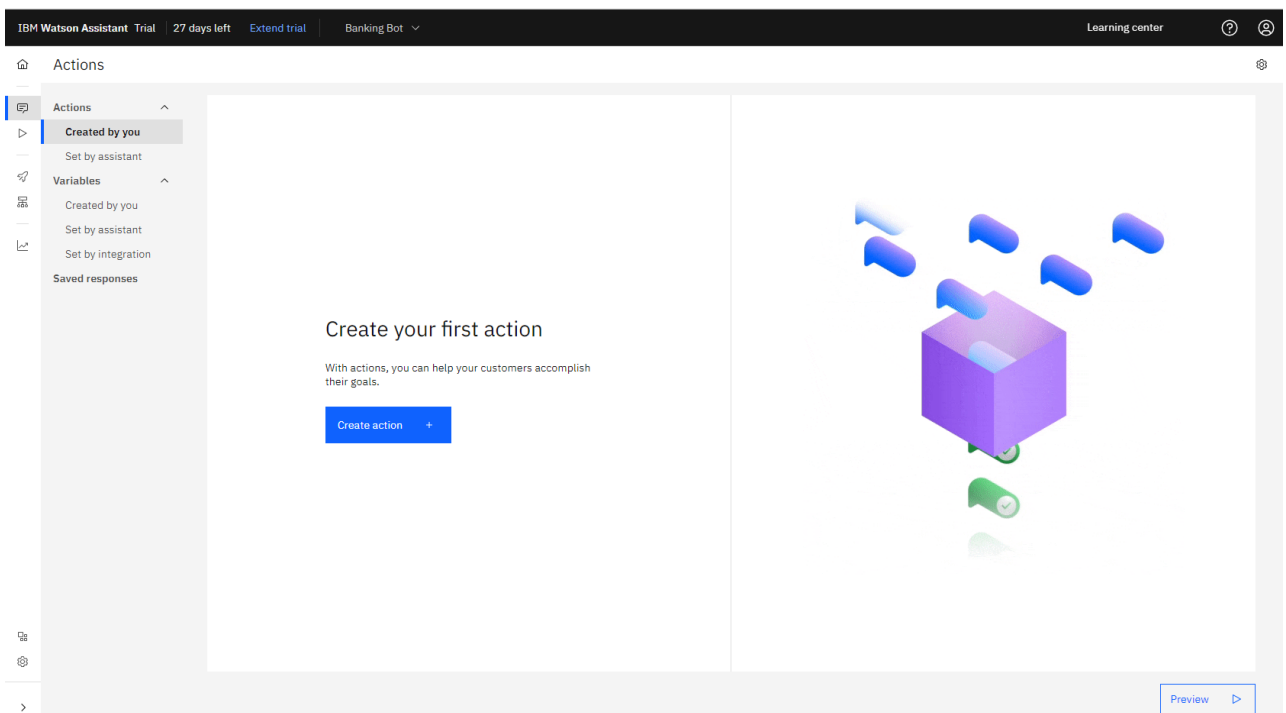
Plan
Lite

Creating Skills & Assistant For Chatbot

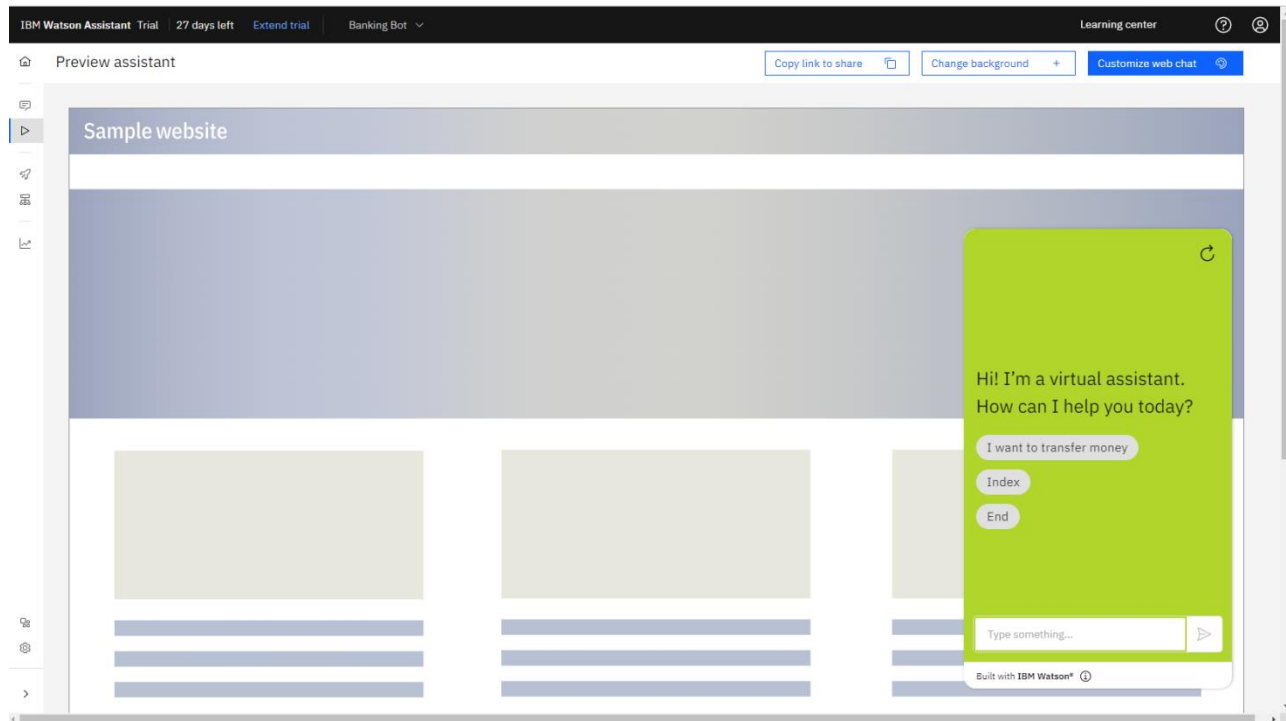
Skills are nothing but actions and steps. Steps are the subset of actions where conversations are built and Assistant is used to integrate skills.



A default template chatbot is created. Need to add actions.

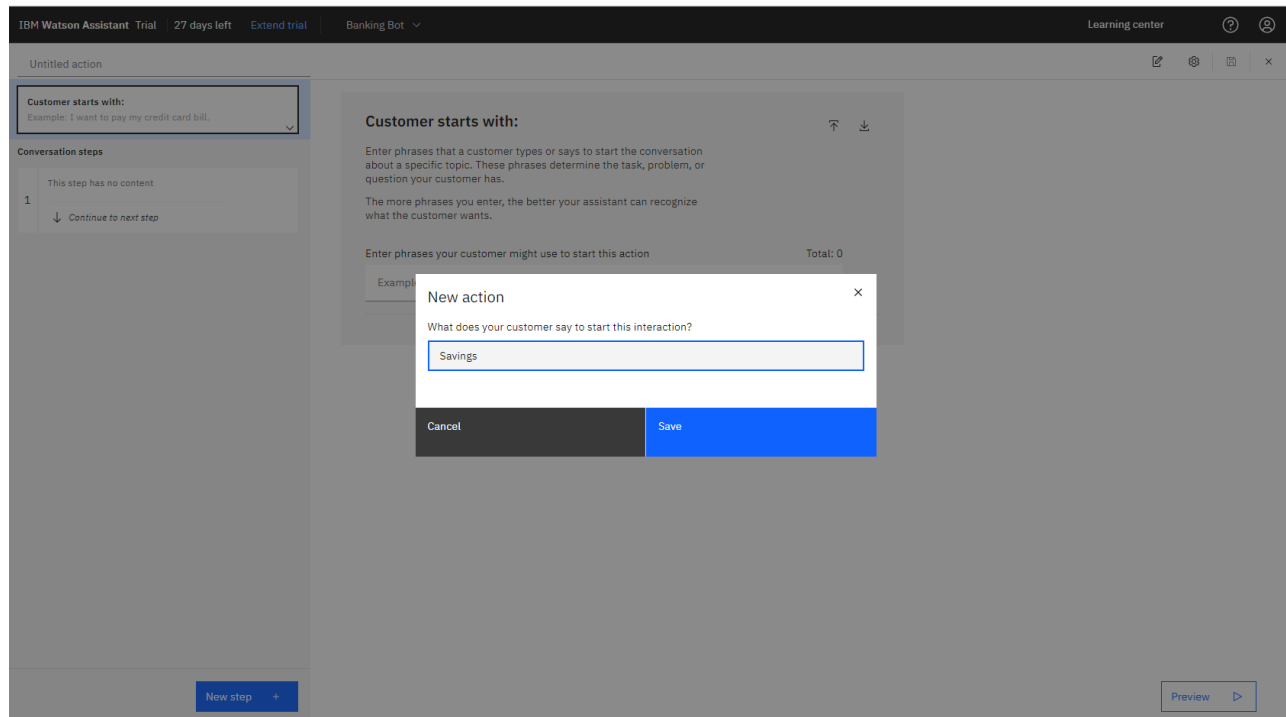


Preview Chatbot

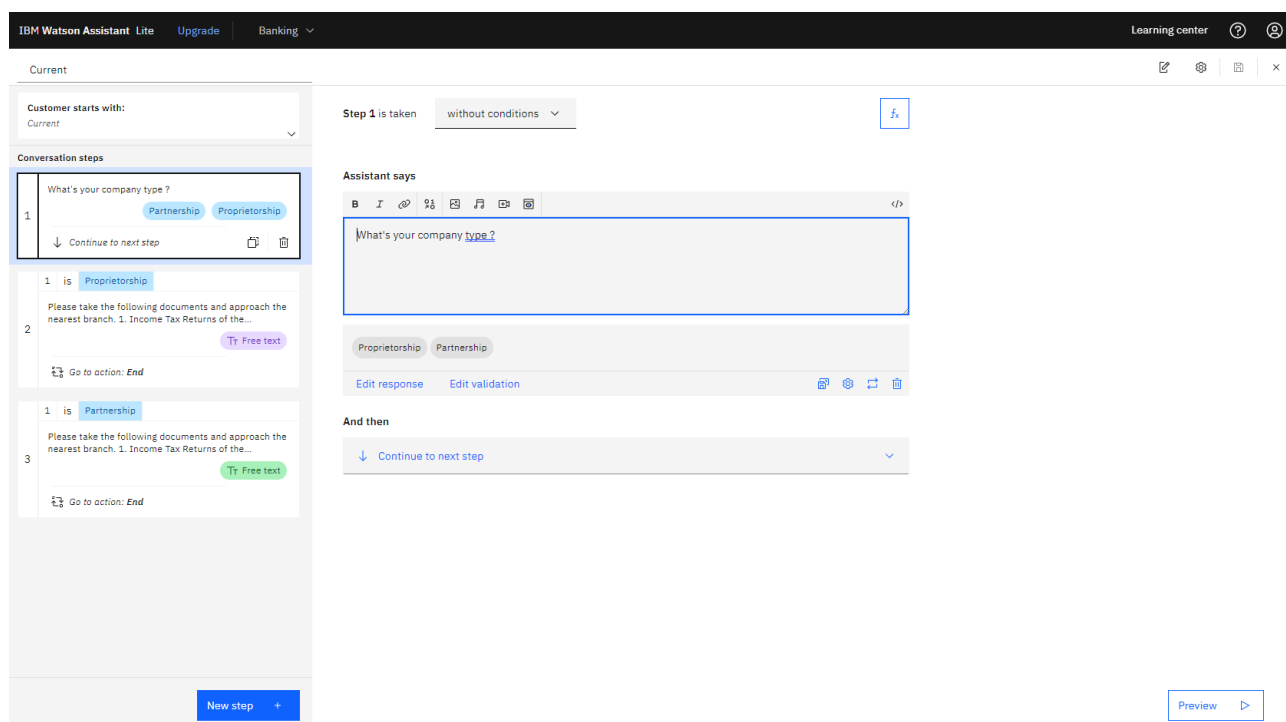


Creating Saving Account Action

Create a saving account in IBM Watson. Create new Saving Action.

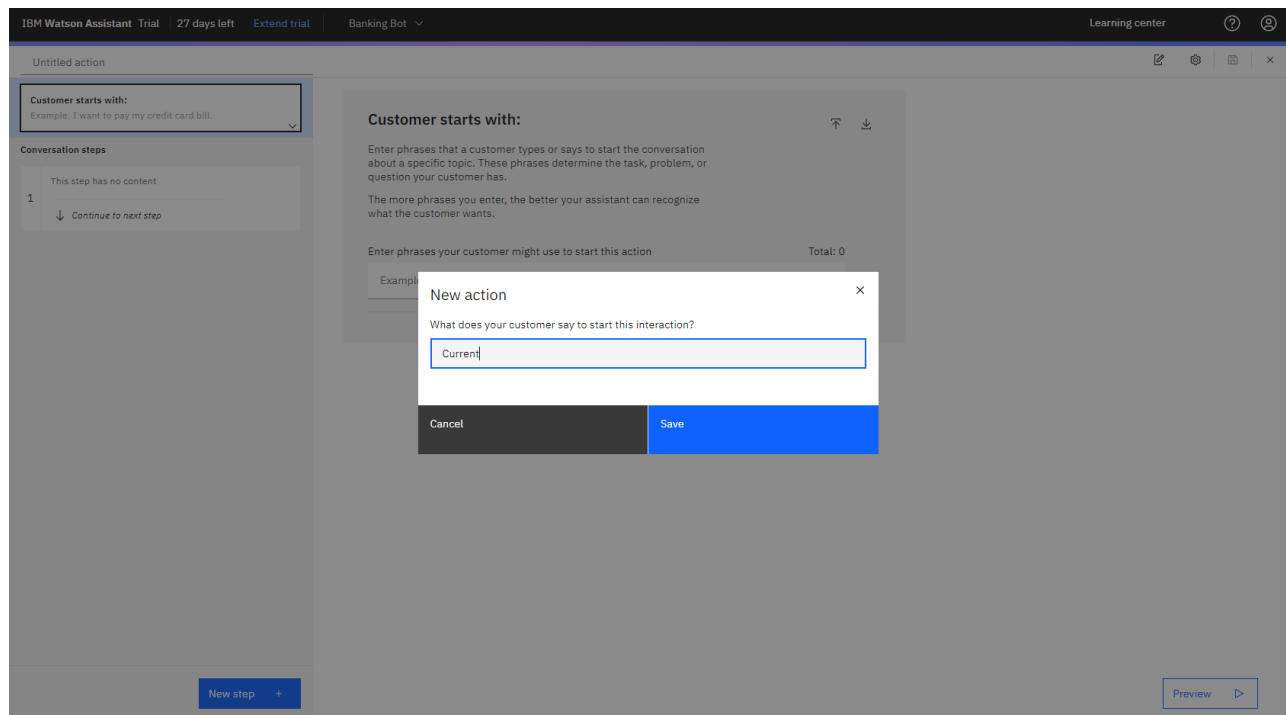


Add steps in savings action.

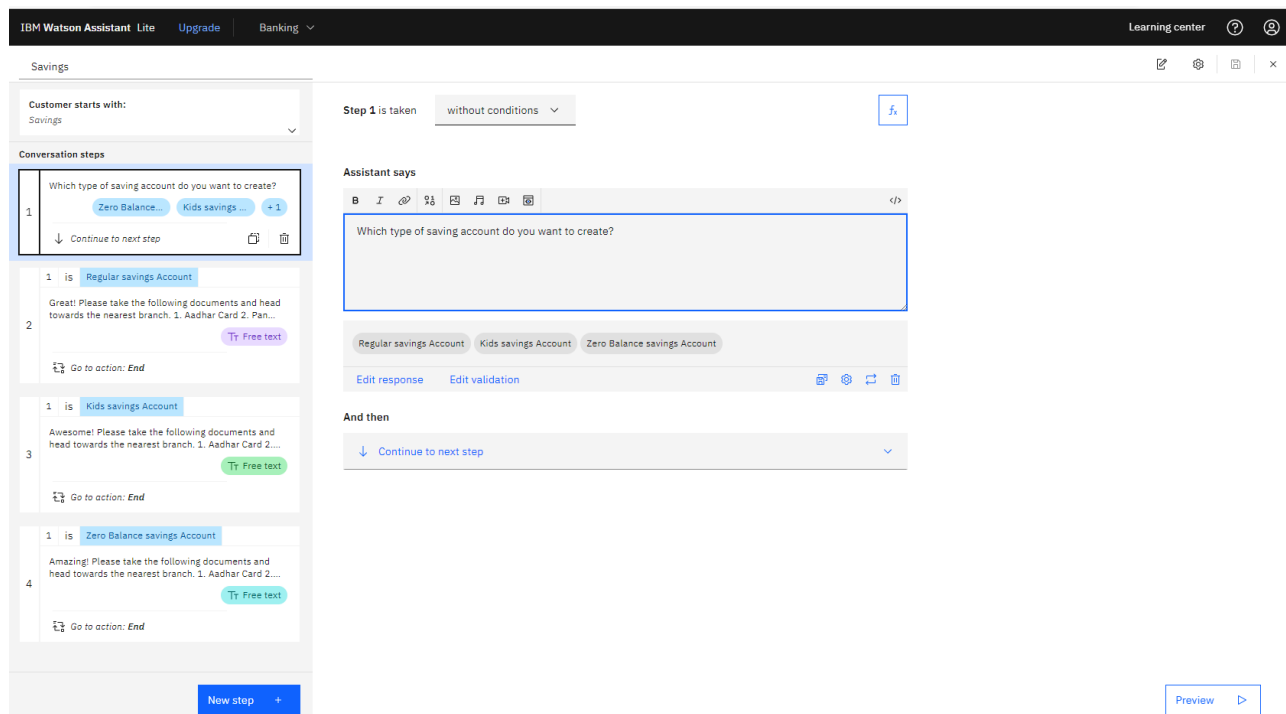


Creating Current Account Action

Create a Current account in IBM Watson. Create new Current Action.

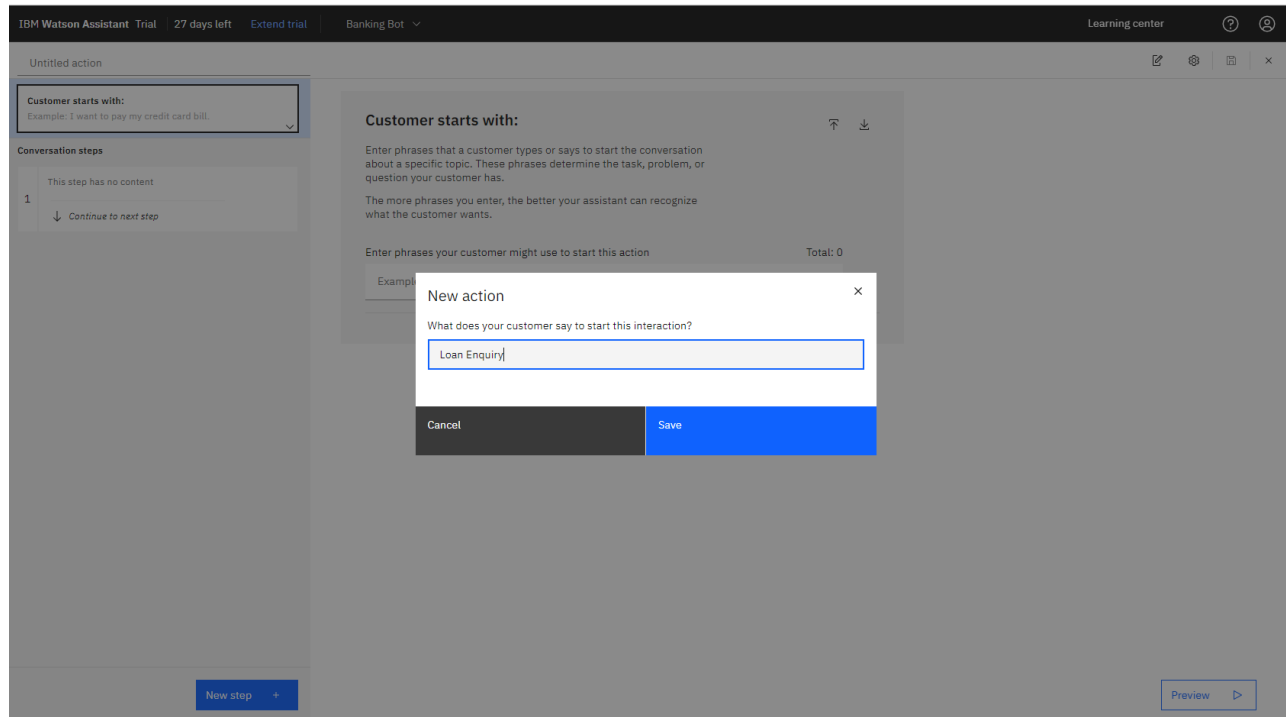


Add steps in Current action.

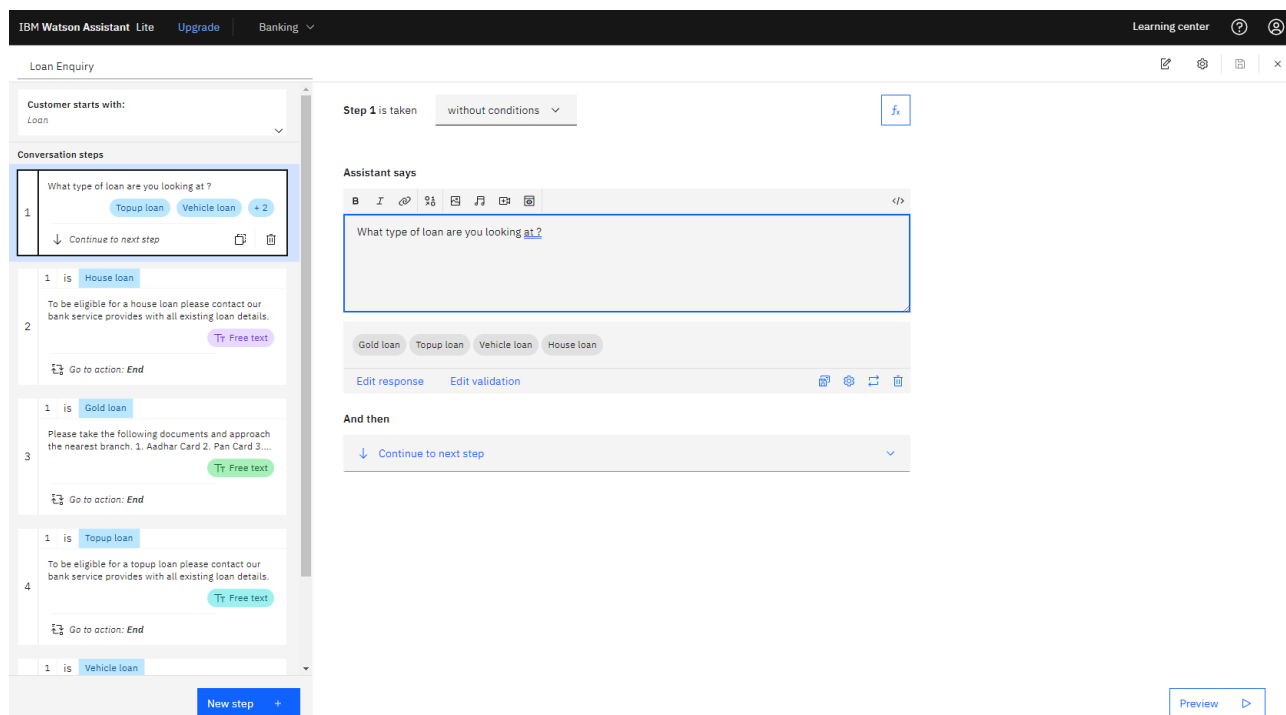


Create Loan Enquiry Action.

Create a Loan Enquiry account in IBM Watson. Create new Loan Enquiry Action.

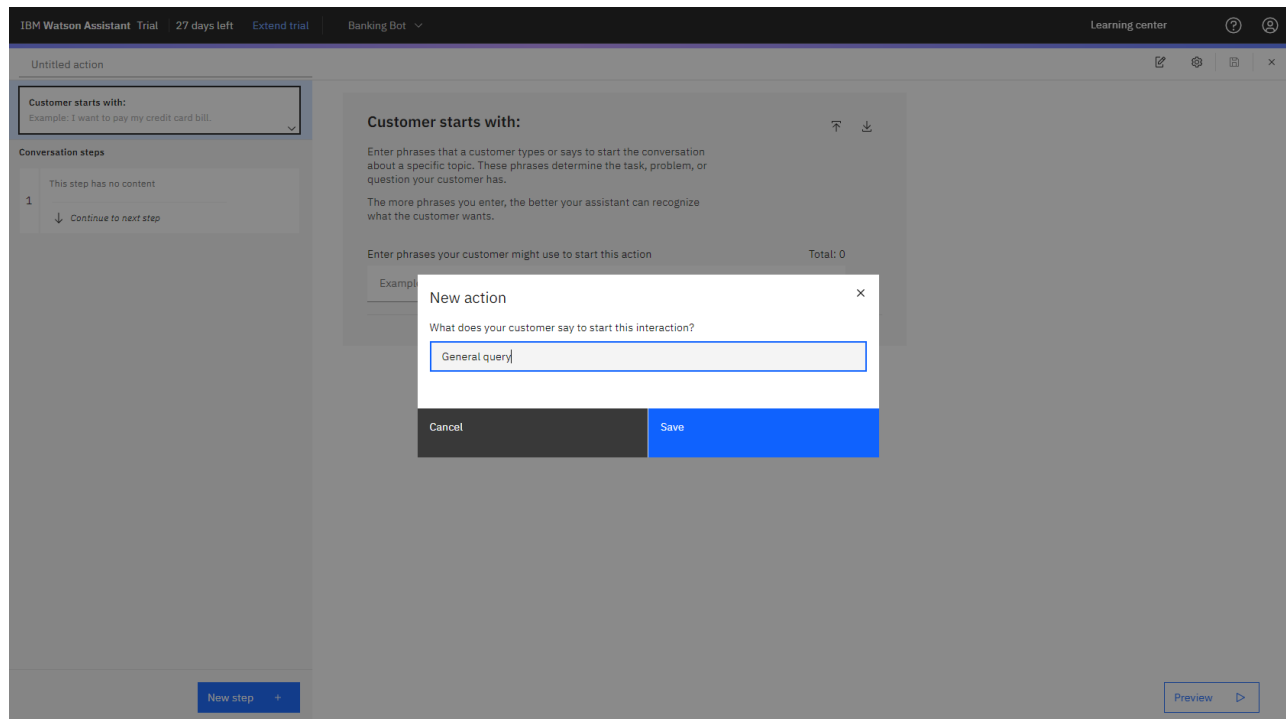


Loan Enquiry action is created with the necessary steps.

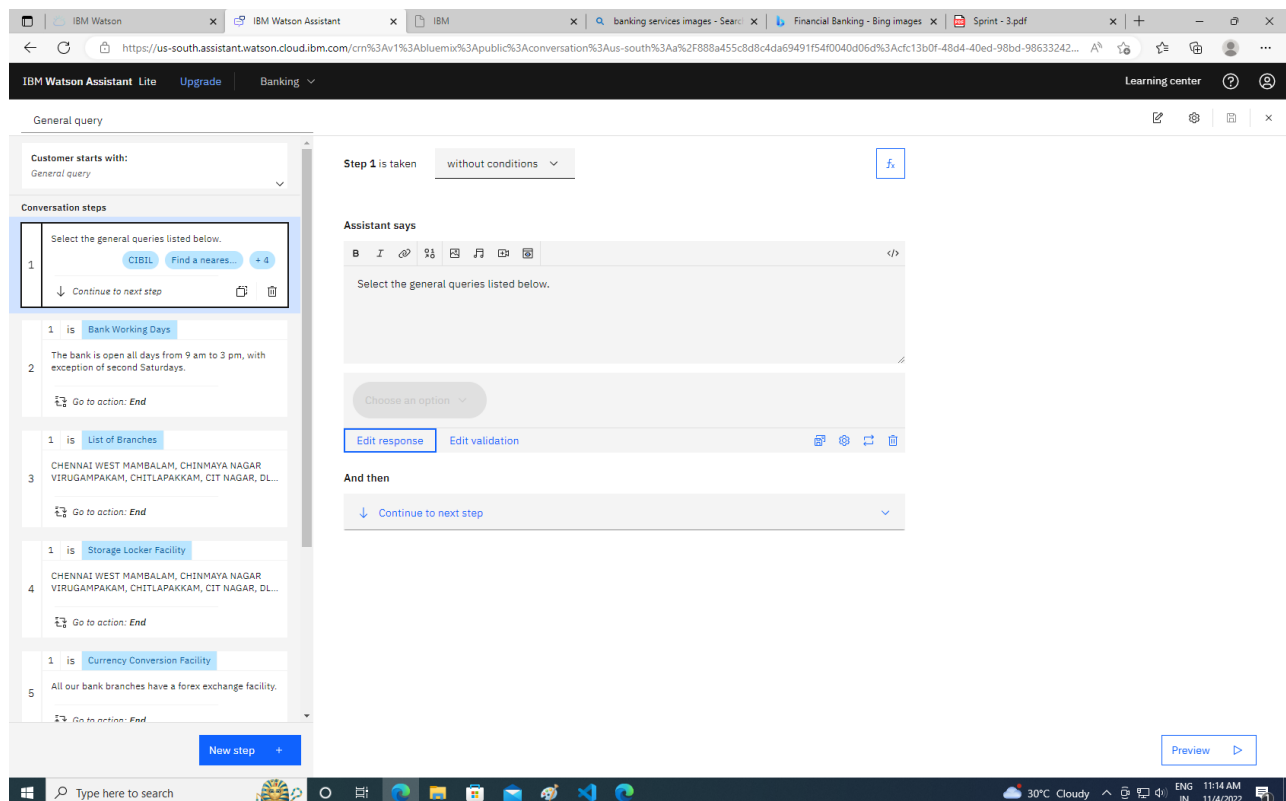


Create a General Query Action

Create a General Query account in IBM Watson. Create General Query Action.

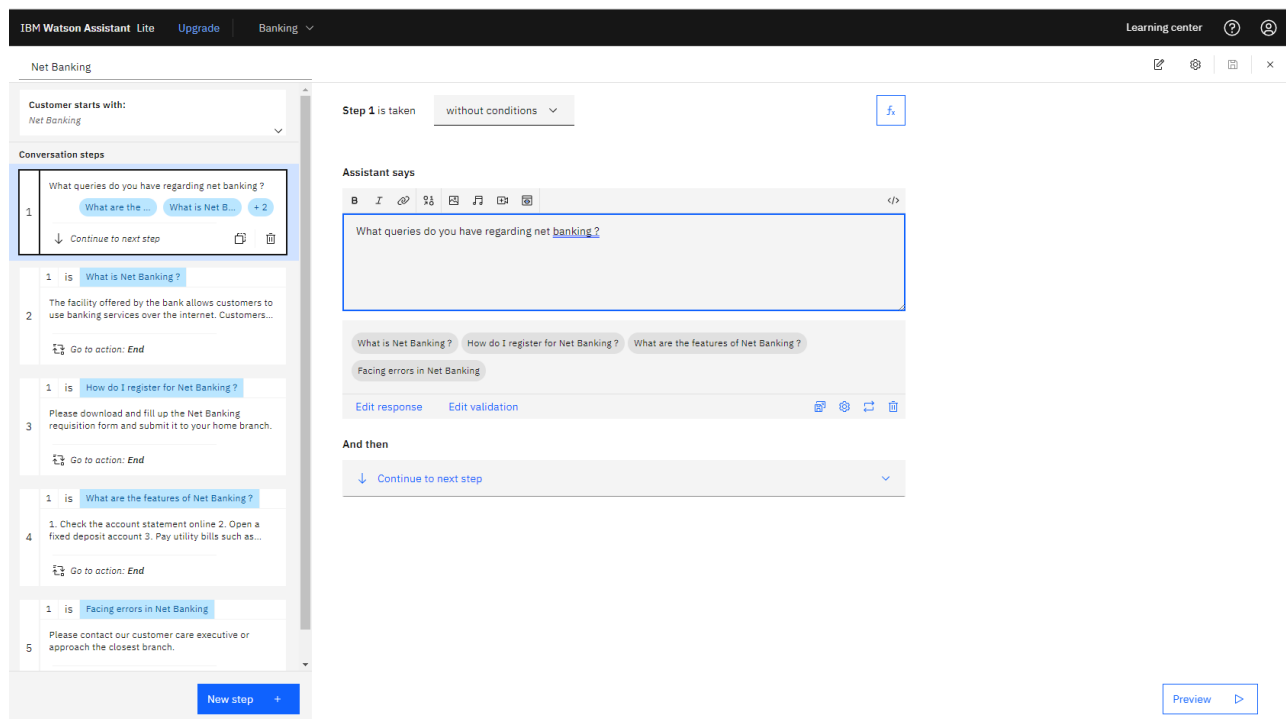
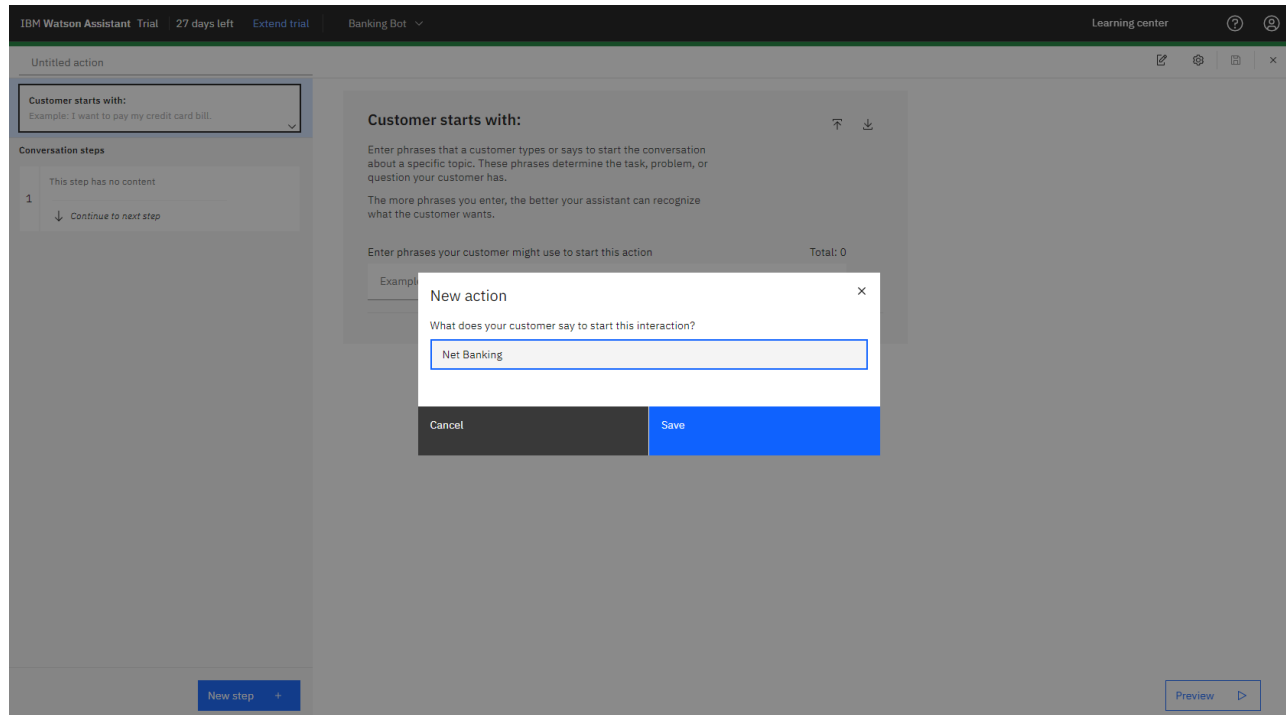


General query action is created with the necessary steps.

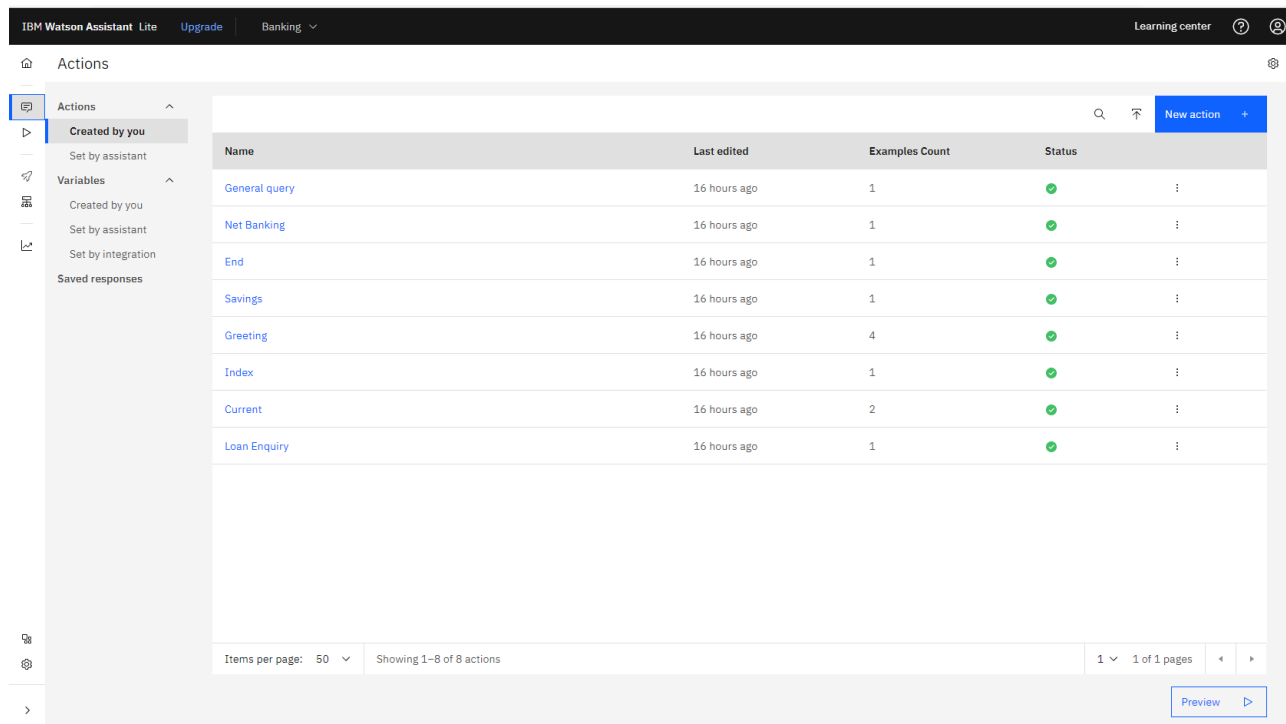


Creating Net Banking Action

Net banking action is created with the necessary steps.



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



Name	Last edited	Examples Count	Status
General query	16 hours ago	1	Success
Net Banking	16 hours ago	1	Success
End	16 hours ago	1	Success
Savings	16 hours ago	1	Success
Greeting	16 hours ago	4	Success
Index	16 hours ago	1	Success
Current	16 hours ago	2	Success
Loan Enquiry	16 hours ago	1	Success

Creating Assistant & Integrate With Flask Web Page

You will be creating a banking bot in this activity that has the following capabilities

1. The Bot should be able to guide a customer to create a bank account.
2. The Bot should be able to answer loan queries.
3. The Bot should be able to answer general banking queries.
4. The Bot should be able to answer queries regarding net banking.
5. 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__)  
app=Flask(__name__,template_folder='template')
```

3: 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')
```

4:Main Function

This is used to run the application in localhost.

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

Build HTML Code

- ❖ We use HTML to create the front-end part of the web page.
- ❖ Here, we have created 1 HTML page-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

- ❖ Open the Visual studio from the start menu.
- ❖ Open the Project code folder in Visual studio.
- ❖ Open the HTML code.
- ❖ Add the Watson assistant web chat Banking Chatbot in HTML code.
- ❖ Run the code in Web app (chrome or Edge).

Source Code:

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">

  <title>Banking Bot</title>
  <meta content="" name="description">
  <meta content="" name="keywords">

  <!-- Favicons -->
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">
```



```

<!-- Google Fonts -->
<link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i
,700,700i|Raleway:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,40
0,400i,500,500i,600,600i,700,700i" rel="stylesheet">

<!-- Vendor CSS Files -->
<link href="./assets/vendor/aos/aos.css" rel="stylesheet">
<link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
<link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
<link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
<link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
<link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
<link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">

<!-- Template Main CSS File -->
<link href="assets/css/style.css" rel="stylesheet">
</head>

<body>
<script>
    window.watsonAssistantChatOptions = {
        integrationID: "cd12cff4-d24e-4a1e-a41a-a69b8eaf5fdb", // The ID of this
integration.
        region: "us-south", // The region your integration is hosted in.
        serviceInstanceID: "cfc13b0f-48d4-40ed-98bd-9863324211c8", // 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>
<!-- ===== Header ===== -->
<header id="header" class="fixed-top ">
    <div class="container d-flex align-items-center justify-content-lg-between">

        <h1 class="logo me-auto me-lg-0"><a href="index.html">Chat
Bot<span></span></a></h1>
        <!-- Uncomment below if you prefer to use an image logo -->

    <nav id="navbar" class="navbar order-last order-lg-0">

```

```

        <ul>
            <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
        </ul>
        <i class="bi bi-list mobile-nav-toggle"></i>
    </nav><!-- .navbar -->

</div>
</header><!-- End Header -->

<!-- ===== Hero Section ===== -->
<section id="hero" class="d-flex align-items-center justify-content-center">
    <div class="container" data-aos="fade-up">

        <div class="d-flex align-items-center justify-content-center" data-
aos="fade-up" data-aos-delay="150">
            <div class="col-xl-6 col-lg-8">
                <h1>AI Based Discourse for Banking Industry</span></h1>
            </div>
        </div>

        <div class="row gy-4 mt-5 justify-content-center" data-aos="zoom-in" data-
aos-delay="250">
            <div class="col-xl-2 col-md-4">
                <div class="icon-box">
                    <i class="ri-store-line"></i>
                    <h3><a href="">Savings</a></h3>
                </div>
            </div>
            <div class="col-xl-2 col-md-4">
                <div class="icon-box">
                    <i class="ri-bar-chart-box-line"></i>
                    <h3><a href="">Current</a></h3>
                </div>
            </div>
            <div class="col-xl-2 col-md-4">
                <div class="icon-box">
                    <i class="ri-calendar-todo-line"></i>
                    <h3><a href="">Loan Enquiry </a></h3>
                </div>
            </div>
            <div class="col-xl-2 col-md-4">
                <div class="icon-box">
                    <i class="ri-paint-brush-line"></i>
                    <h3><a href="">General query</a></h3>
                </div>
            </div>
            <div class="col-xl-2 col-md-4">
                <div class="icon-box">
                    <i class="ri-database-2-line"></i>

```

```
        <h3><a href="">Net Banking</a></h3>
      </div>
    </div>
  </div>

</div>
</section><!-- End Hero -->

<div id="preloader"></div>
<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i class="bi bi-arrow-up-short"></i></a>

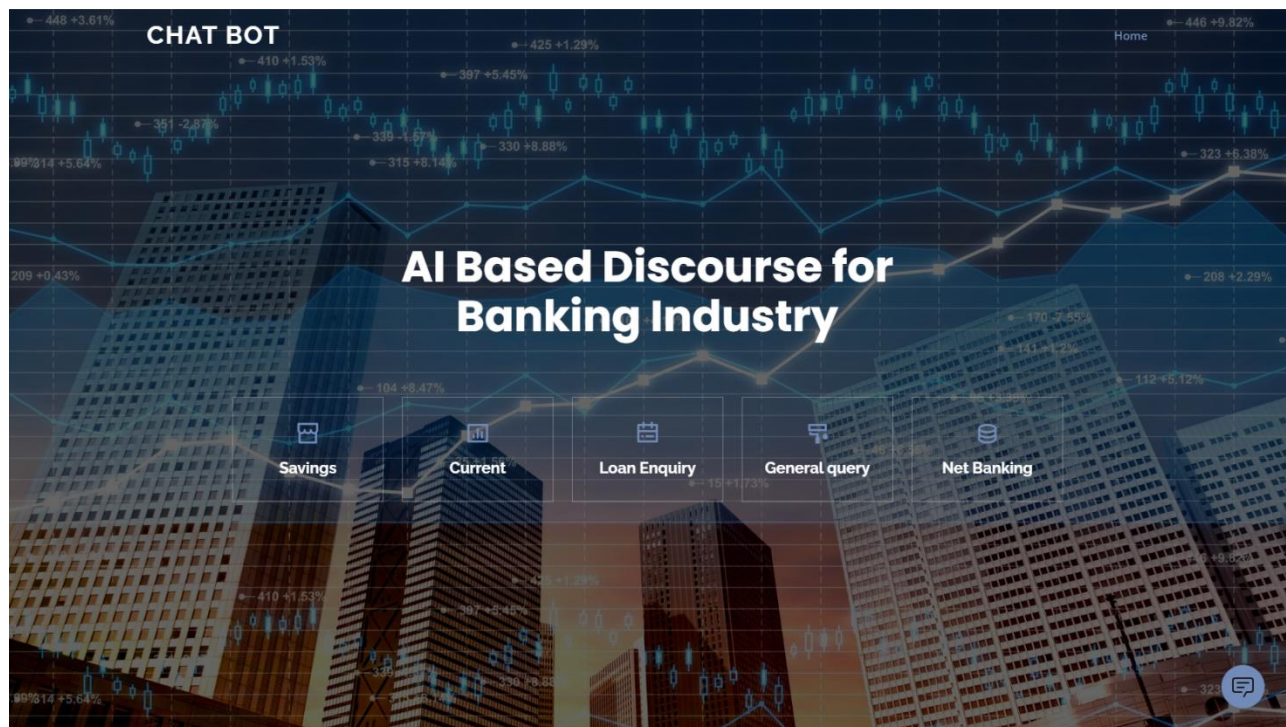
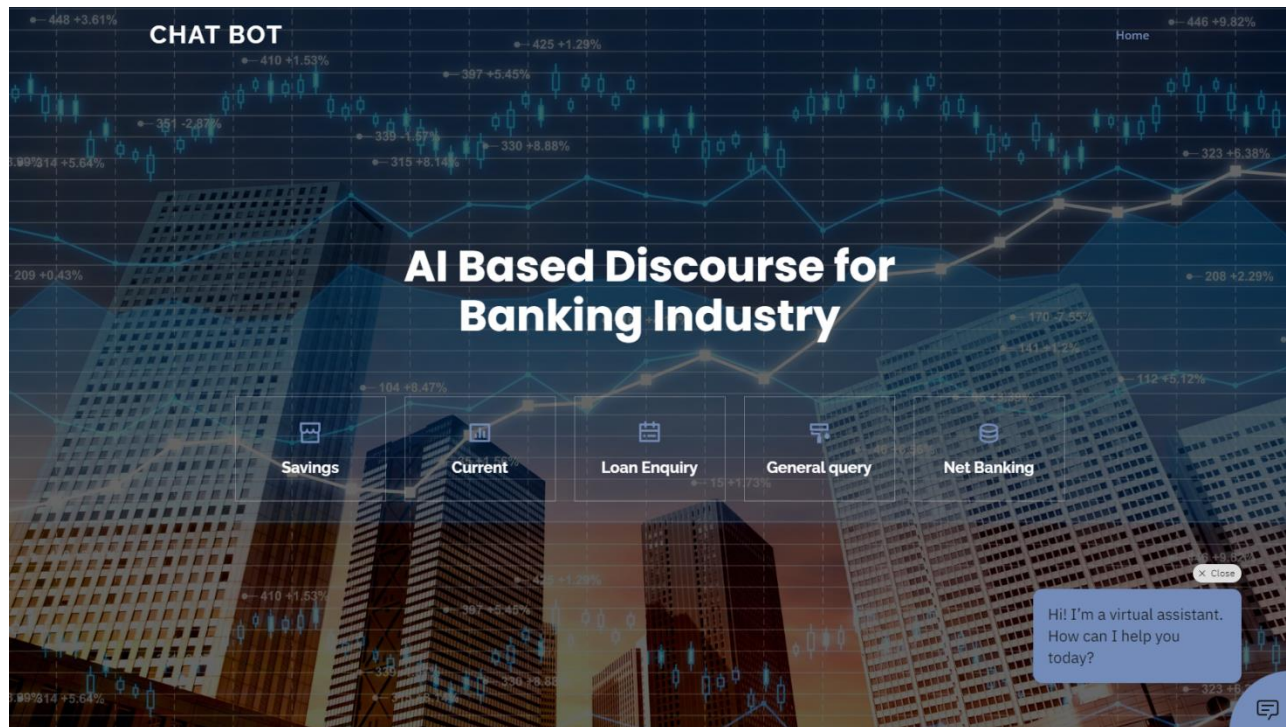
<!-- Vendor JS Files -->
<script src="assets/vendor/purecounter/purecounter_vanilla.js"></script>
<script src="assets/vendor/aos/aos.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>

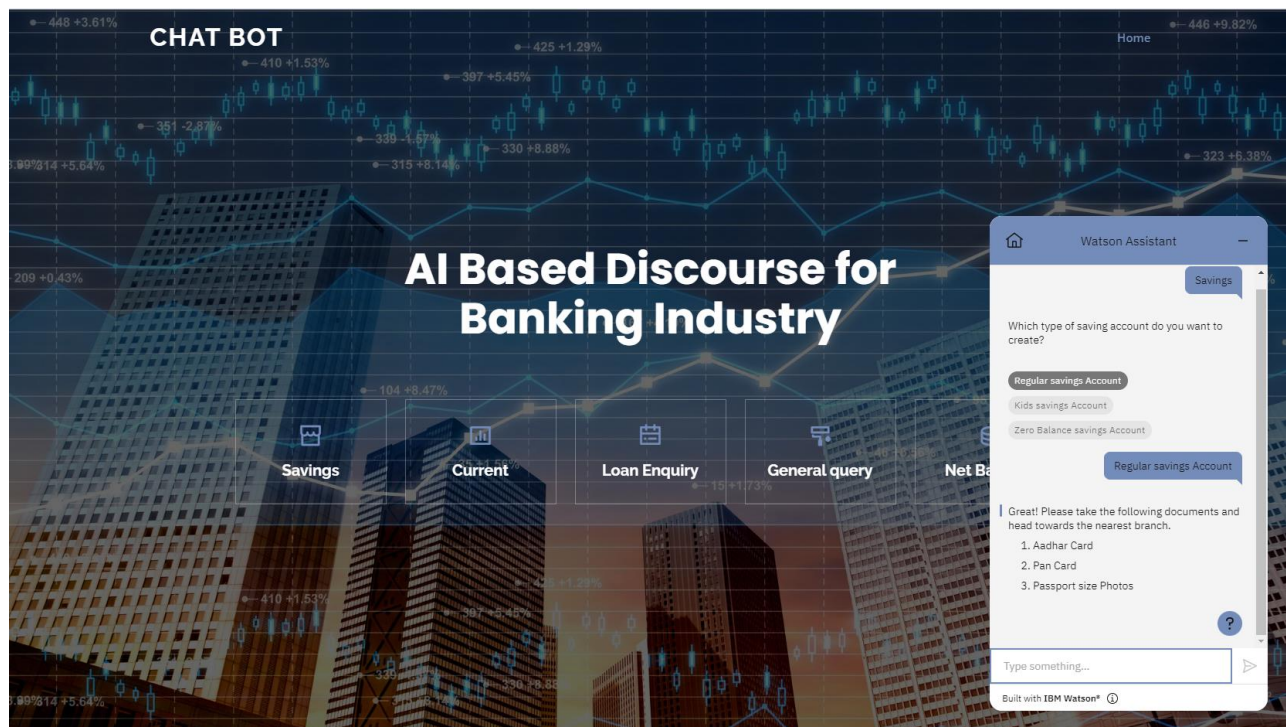
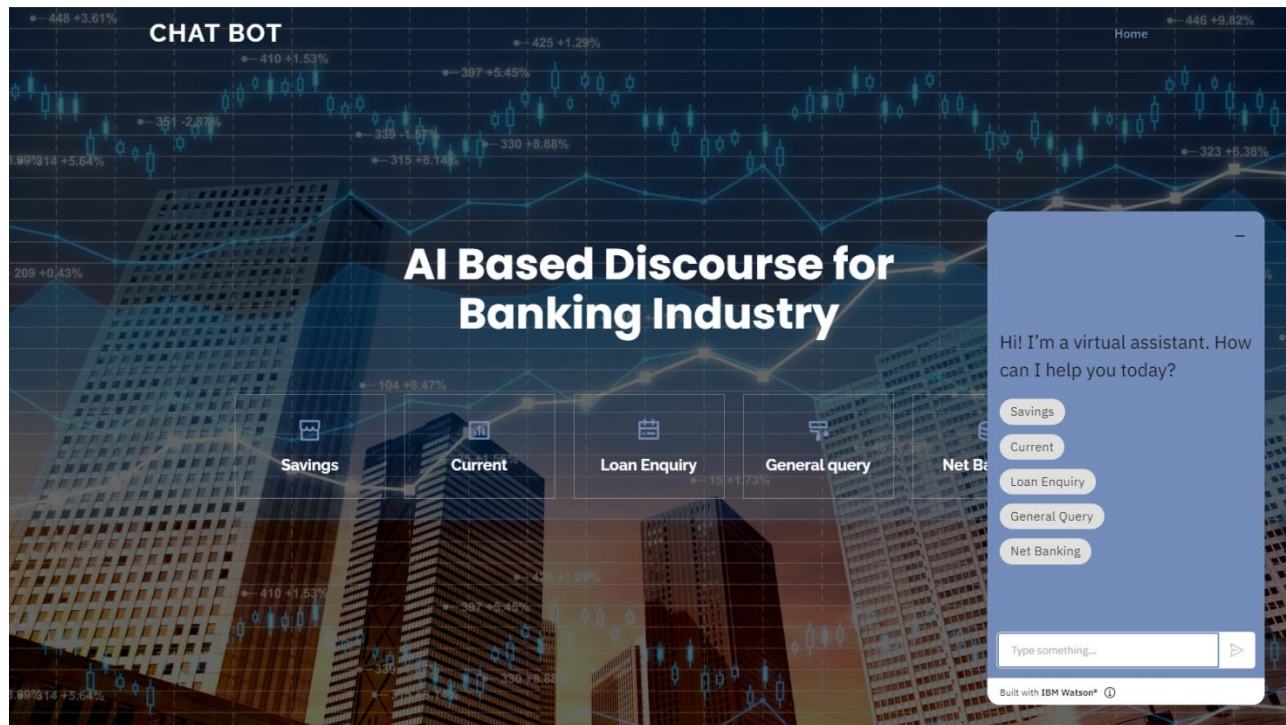
<!-- Template Main JS File -->
<script src="assets/js/main.js"></script>

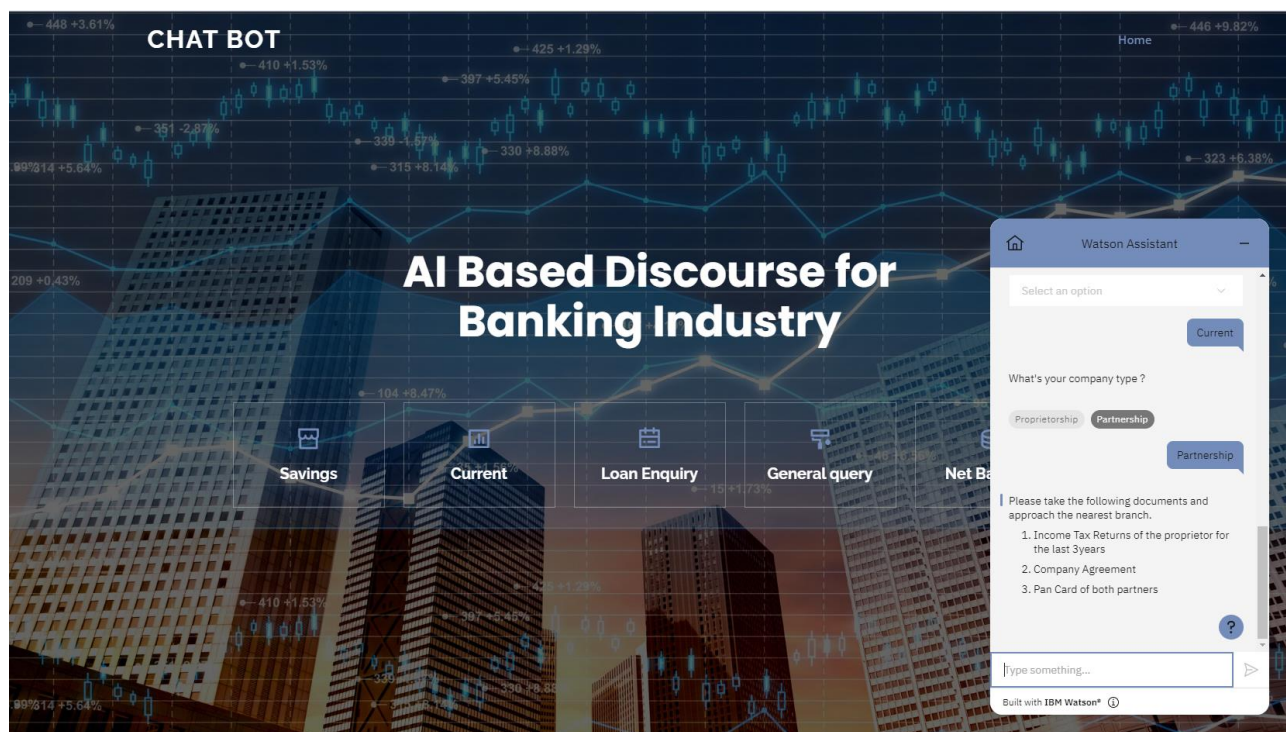
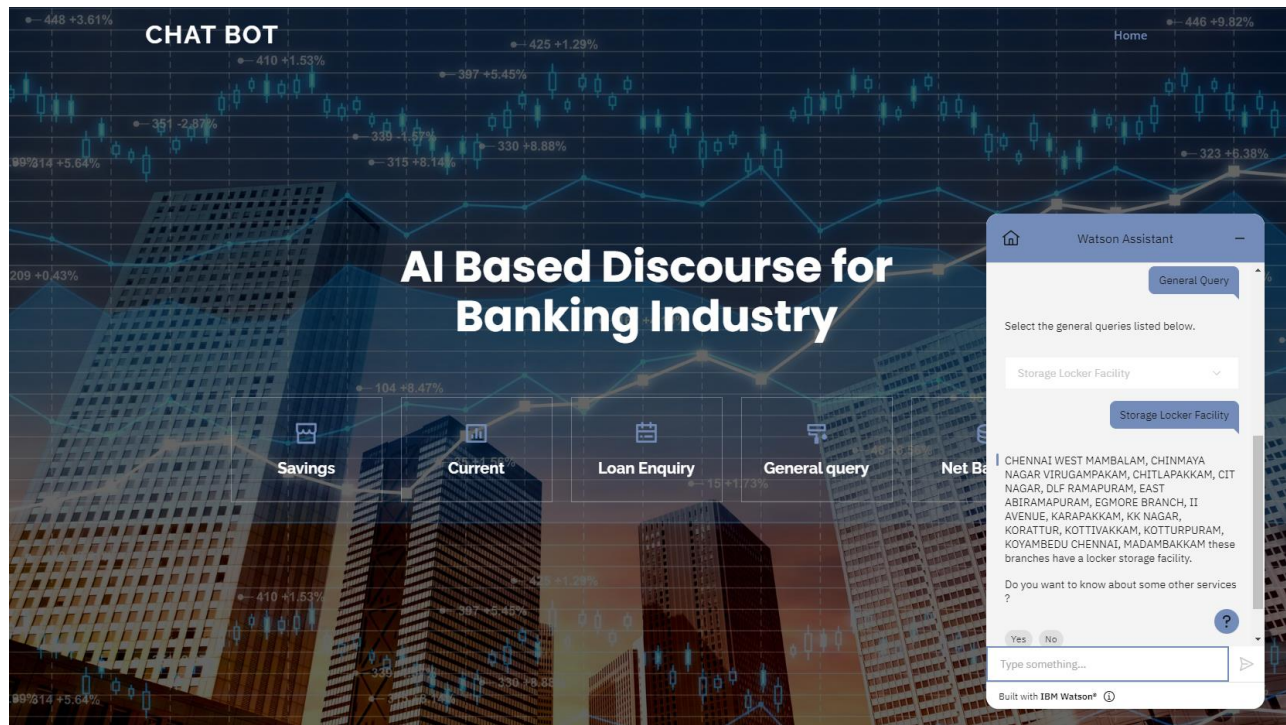
</body>

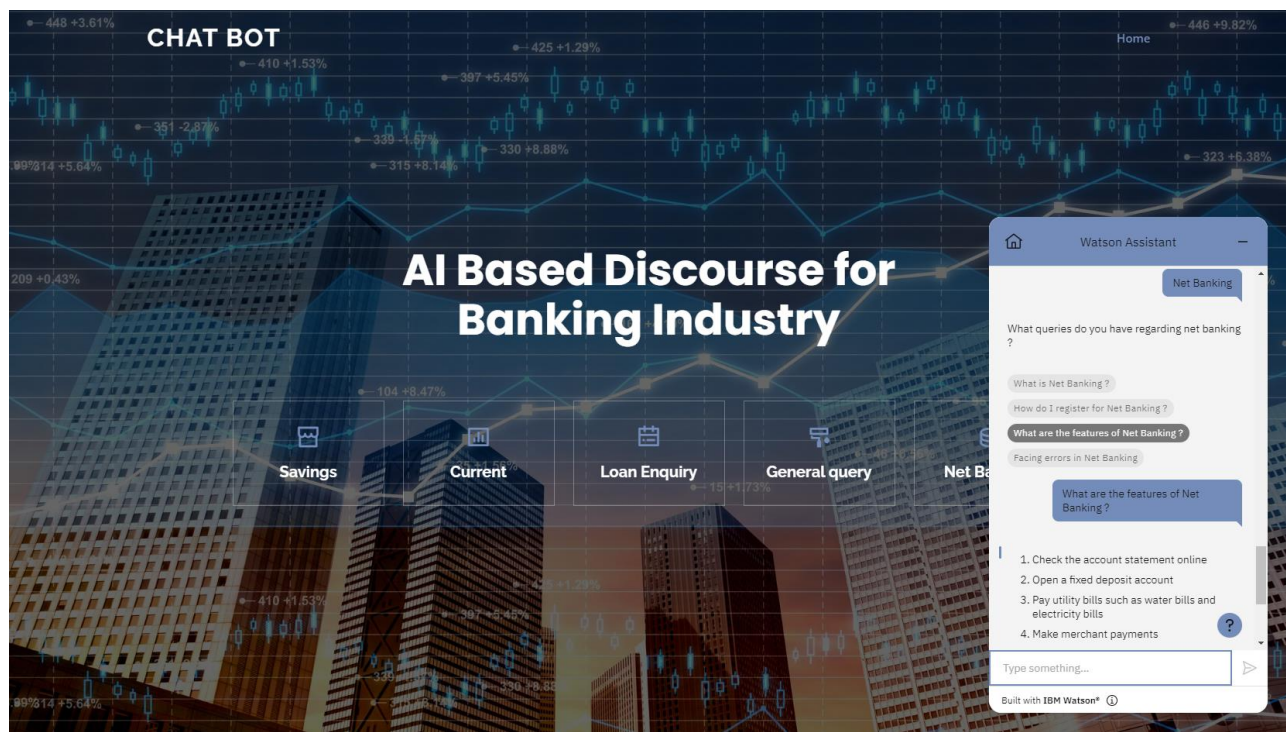
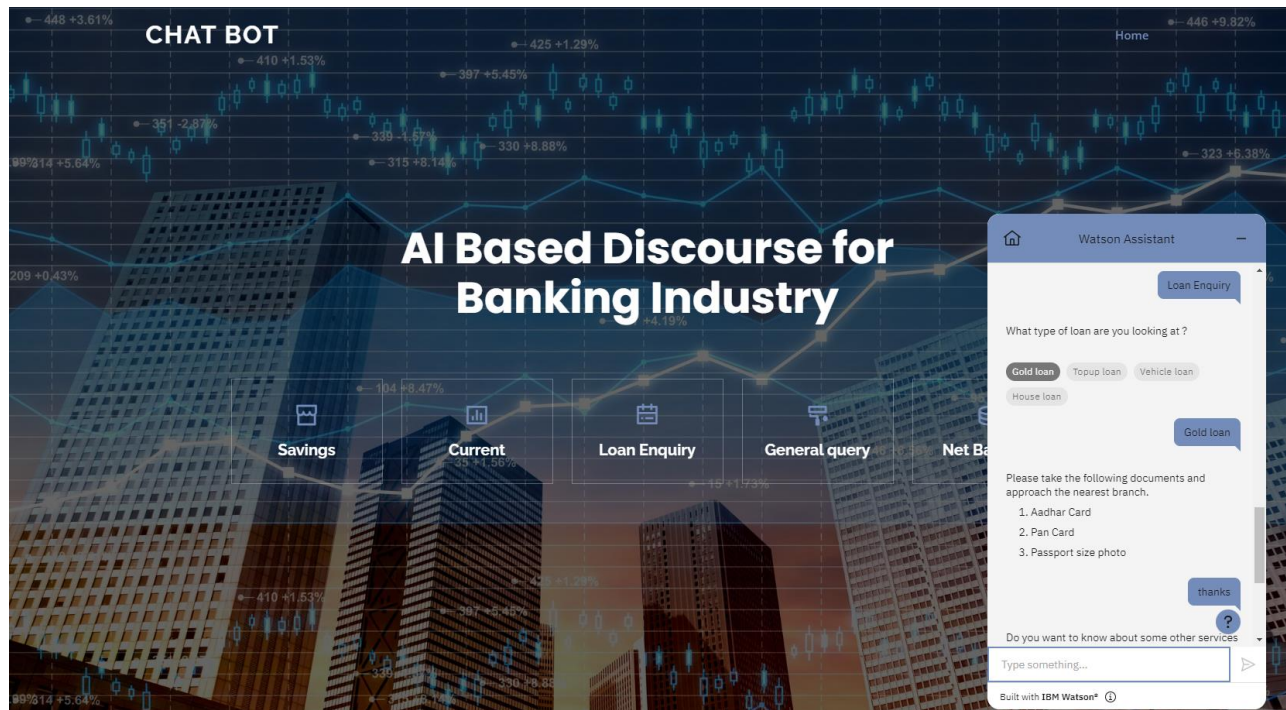
</html>
```

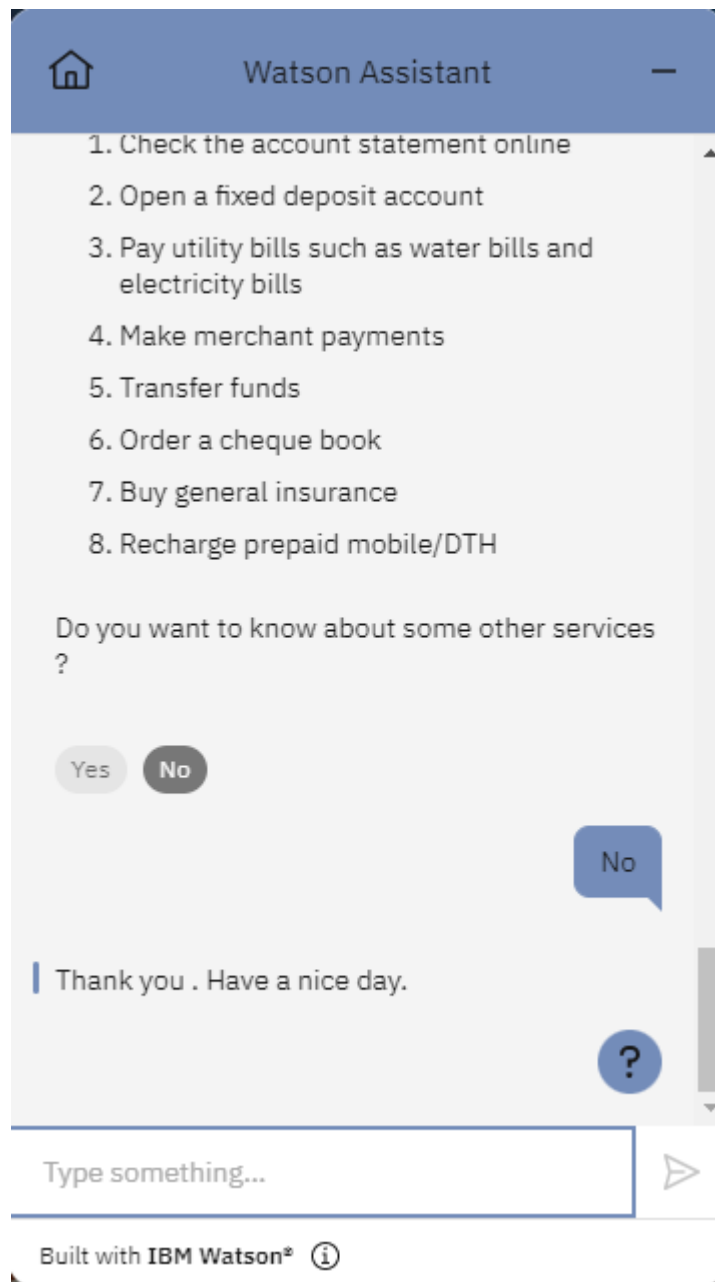
OUTPUT:











PREVIEW OF BANKING CHATBOT:

shorturl.at/efM36

REFERENCE:

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