

AI BASED DISCOURSE FOR BANKING INDUSTRY

INTRODUCTION:

Overview:

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- ⑩ 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.
- ⑩ 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.
- ⑩ 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 Salesforce. This results in a potential growth rate of 118% which indicates the demand in the industry.

- ⑩ 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.

LITERATURE SURVEY:

Existing Problem:

- ⑩ This paper [1] presents the use of the RASA framework for building smart context-remembering chatbots, it also describes how Rasa NLU works and

how its performance is elevated by using intent recognition and entity extraction. It also compares the accuracies of entity extraction using Rasa NLU and a NN, results show Rasa NLU performs better to extract entities when whole sentences are provided as compared to neural networks which require segmented inputs. This paper discusses Rasa by implementing a chatbot related to the finance domain, using which the users can inquire about stock-related information.

- ⑩ RASA NLU can introduce a vital component in intelligent chatbot systems. We can compose the system to extract the entity after intent recognition. This can be further improved for complicated sentences and more entities.
- ⑩ This paper [2] briefly discusses advancements in the field of AI and how this has led to major shifts in some organizations about how they operate. It further mentions how the banking industry has moved to use chatbots for providing an interface to customers so that they can have an assistant throughout the day for service. This paper also gauges the ability of current chatbots to provide all the services that a user needs.
- ⑩ It includes several strategies for managing dialogue in the banking and finance industry based on ontology. Although further use of AI can make the chatbot not only respond to questions but also self-learning to improve itself in more stages, improving user service quality and also reducing human load.

Proposed solution:

- ⑩ 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.

- ⑩ 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.
- ⑩ 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
- ⑩ 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.
- ⑩ AI chatbots in banking is providing a better customer experience.
- ⑩ 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:

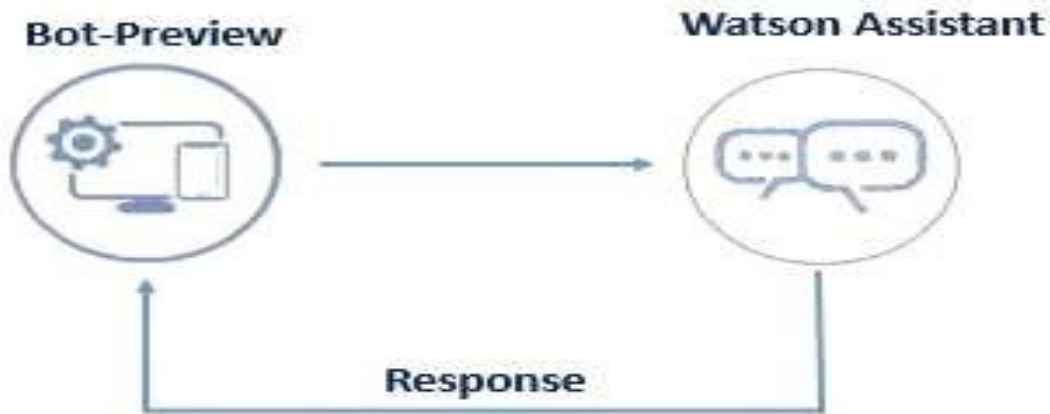
Services Used:

r IBM Watson Assistant

Watson Assistant



Block diagram:



Hardware / Software designing:

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

Softwares:

- Visual studio code
- IBM Watson studio

Packages:

- Flask

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 & DISADVANTAGES:

Advantages:

- Υ Round-the-clock service.
- Υ Brand Consistency.
- Υ Increased Productivity.
- Υ Reduced Staffing Needs.
- Υ Consistent Response Rate and Availability.

- γ Helps with Fraud Prevention.
- γ Chats can be saved.
- γ Lower costs.

Disadvantages:

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

APPLICATIONS:

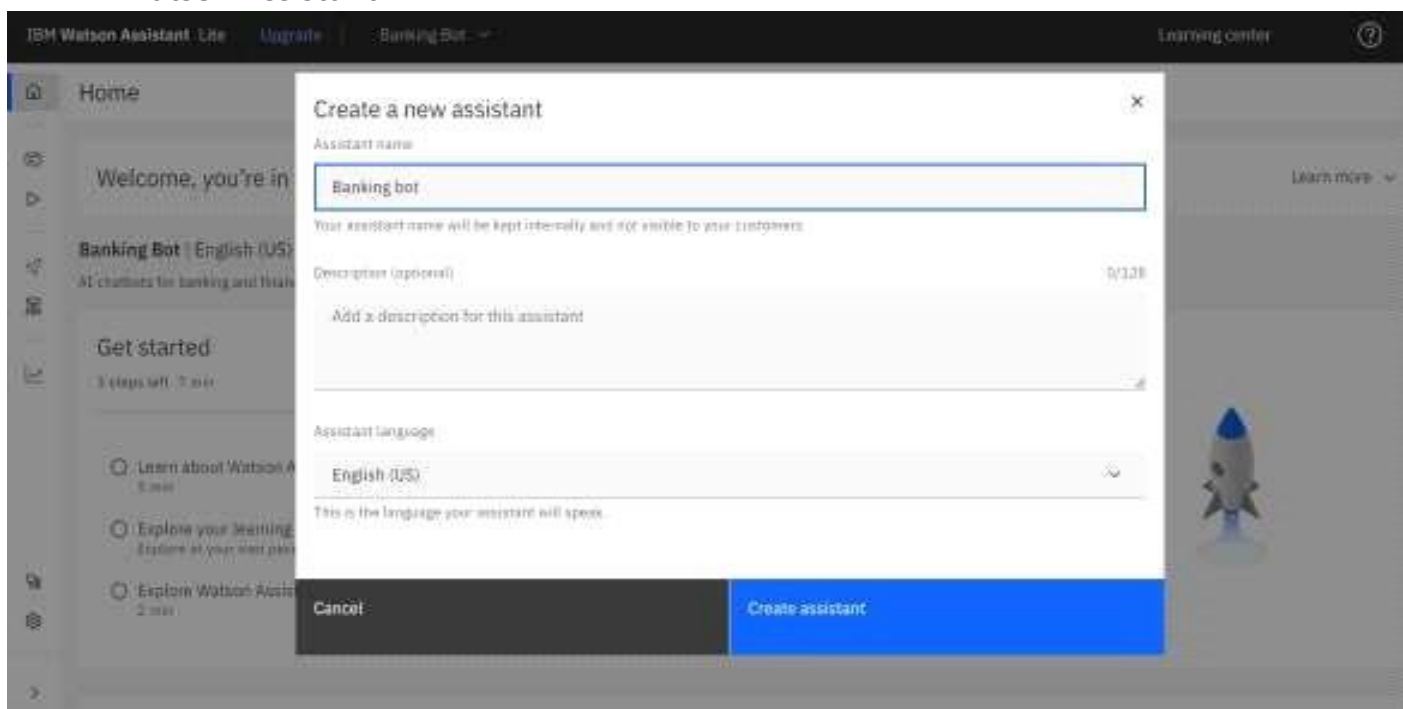
- γ Banking chatbots have all the data to predict the spending habits of customers and help them keep their finances on track.

APPENDIX:

Create IBM Service

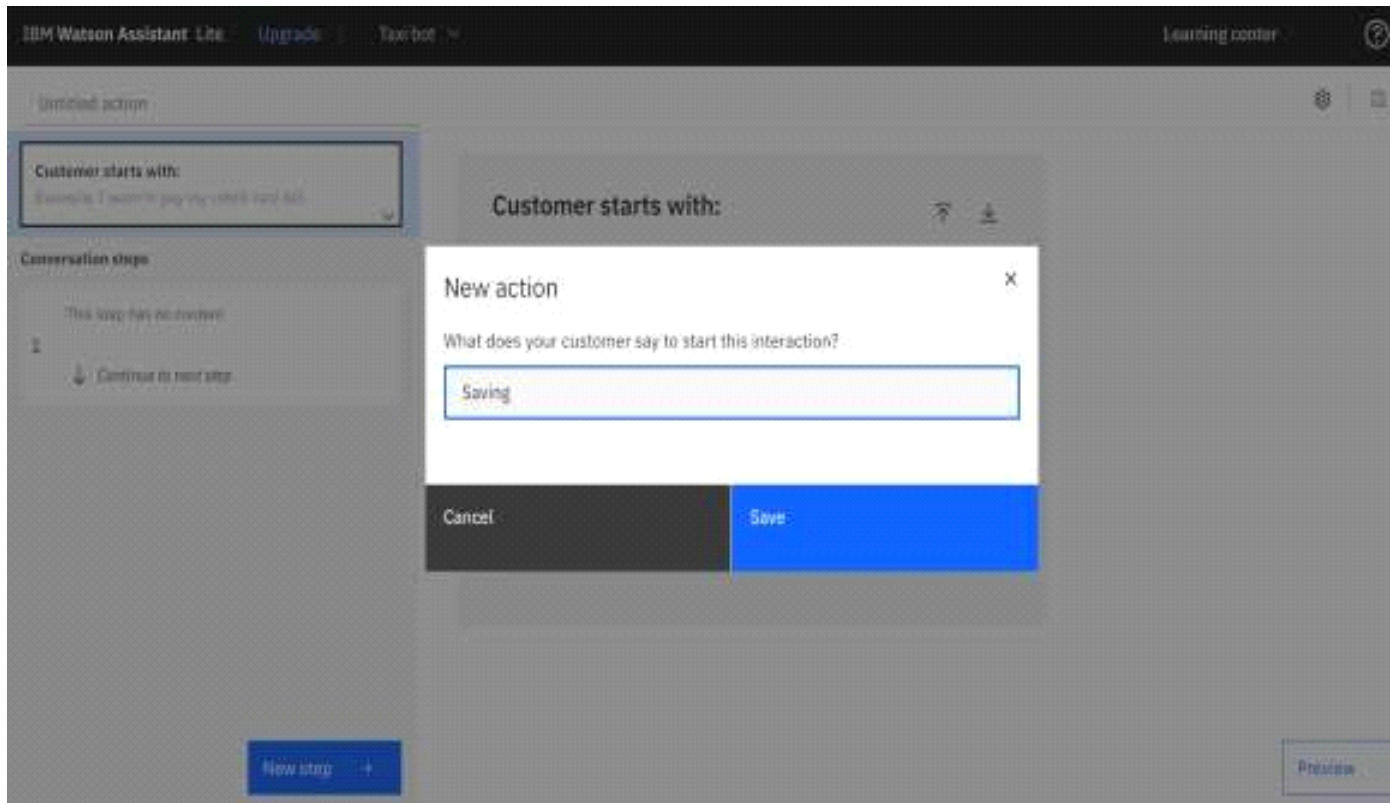
In this activity, you will be creating the Necessary IBM service. The following are the service that you have to create.

- γ Watson Assistant

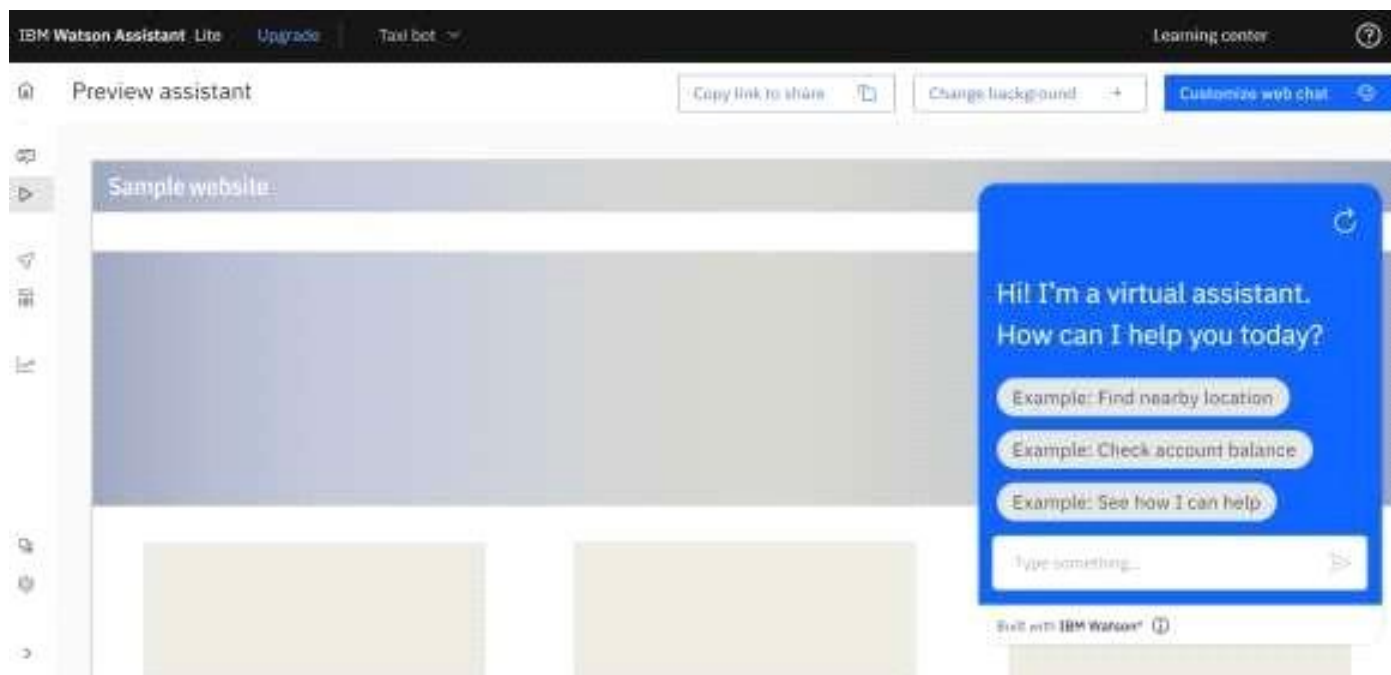
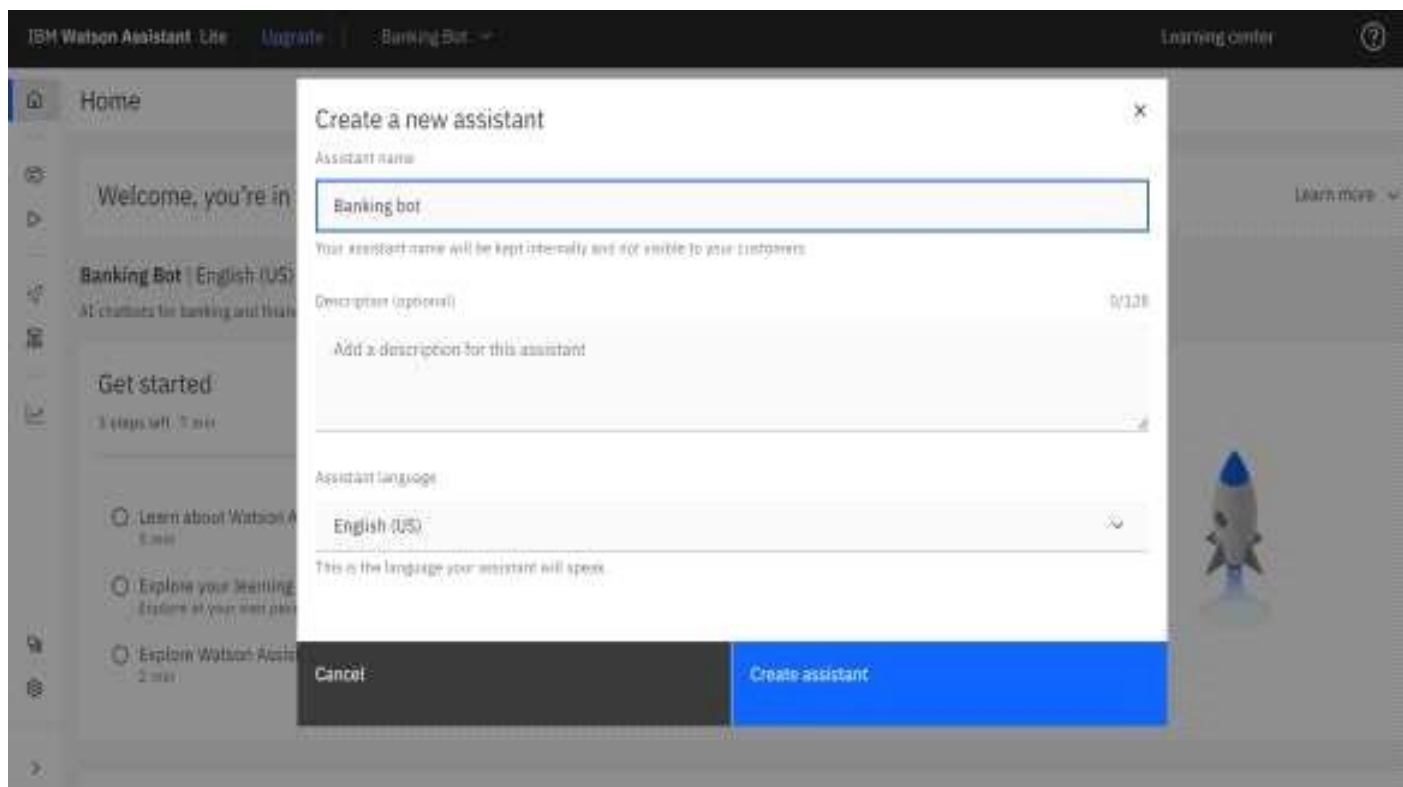


Creating Skills & Assistant For Chatbot

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

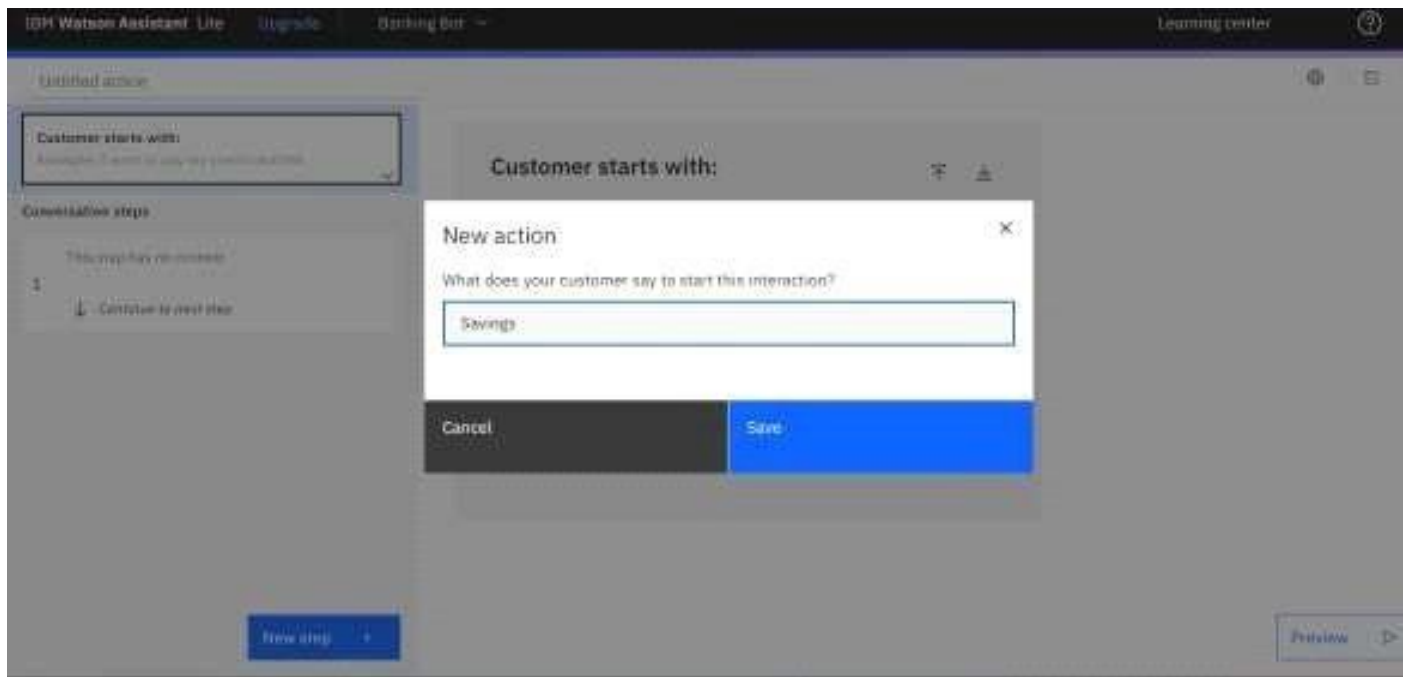


A default template chatbot is created. Need to add actions.

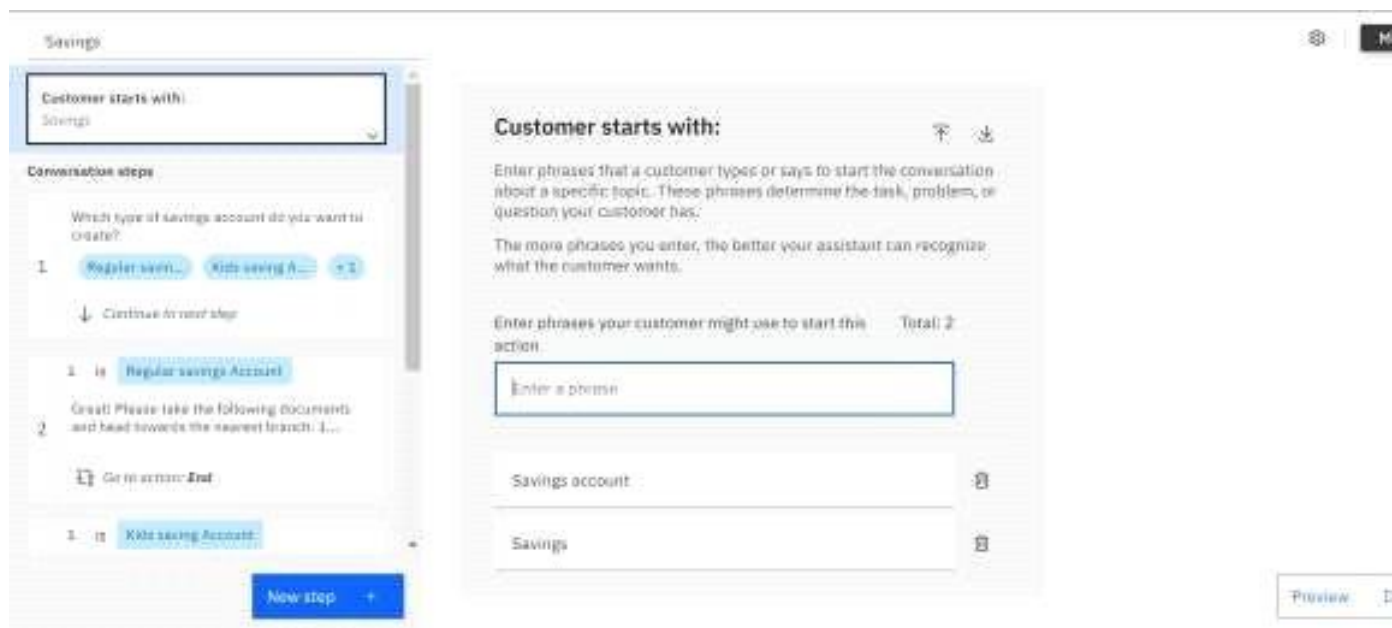


Creating Saving Account Action

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

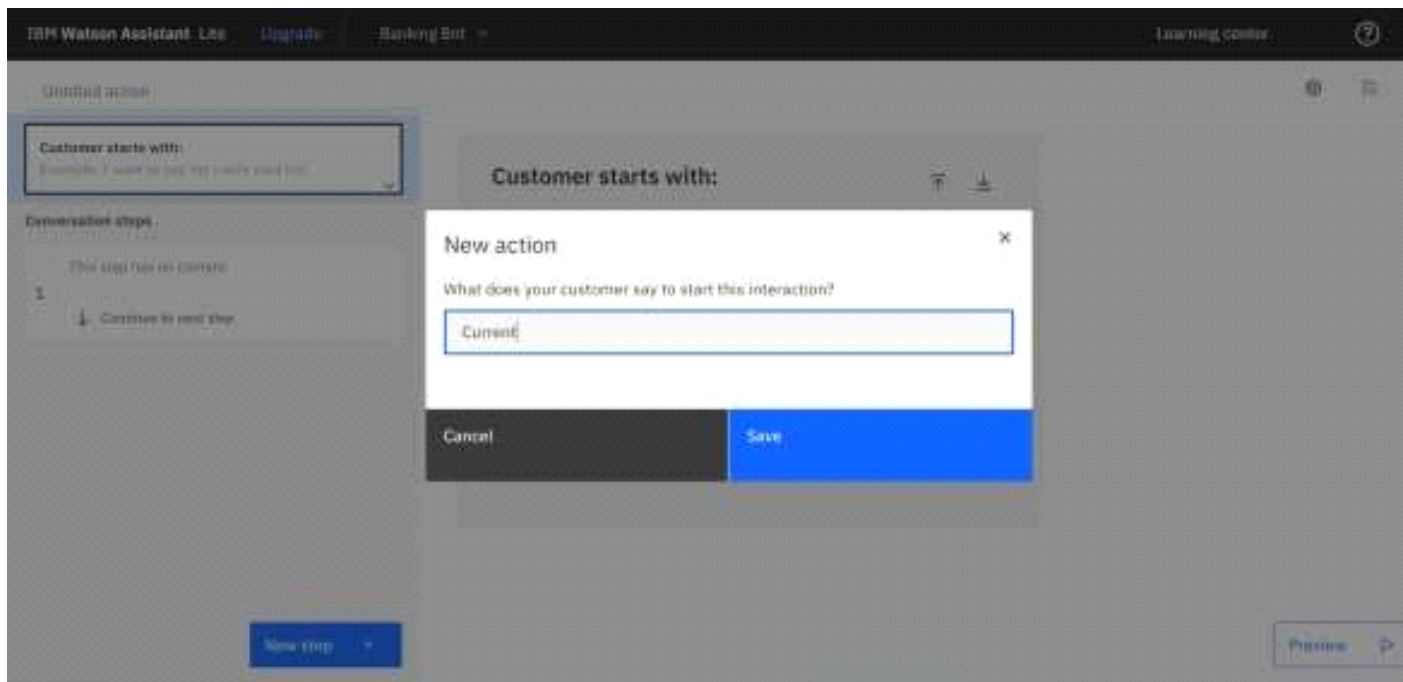


Add steps in savings action.

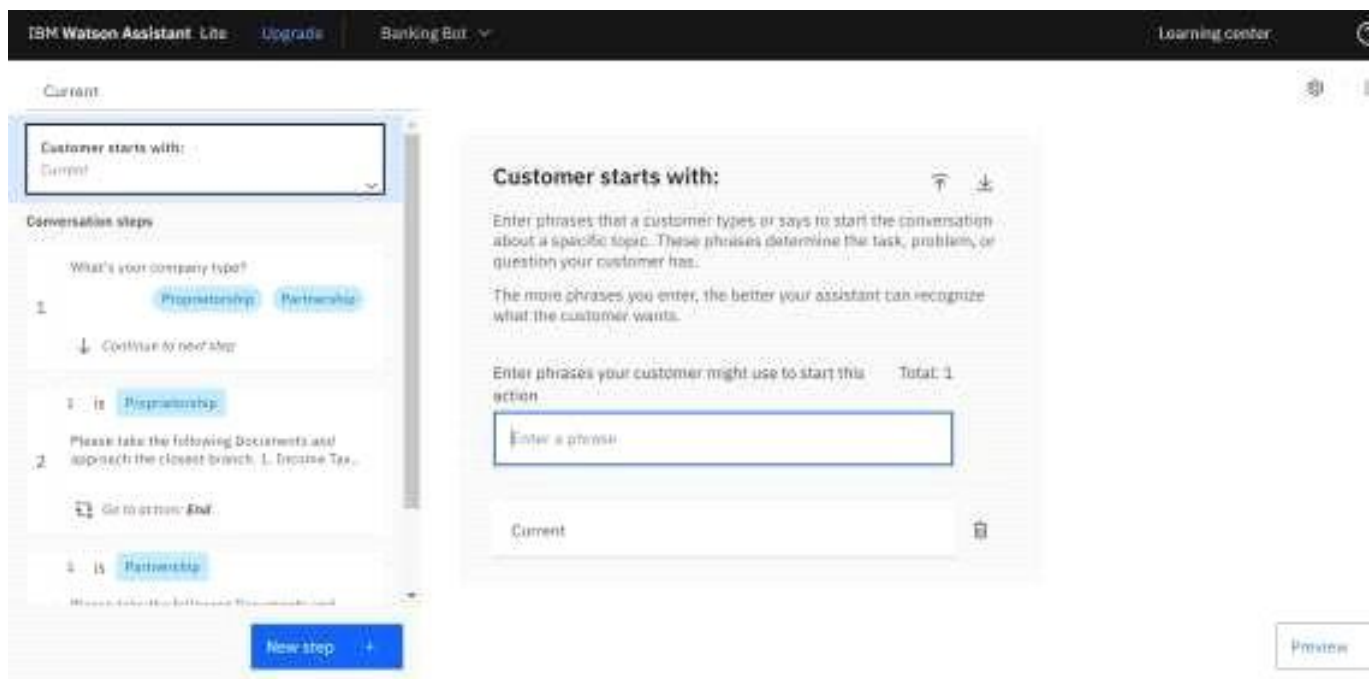


Creating Current Account Action

Create a new **Action** Current for the current account action.

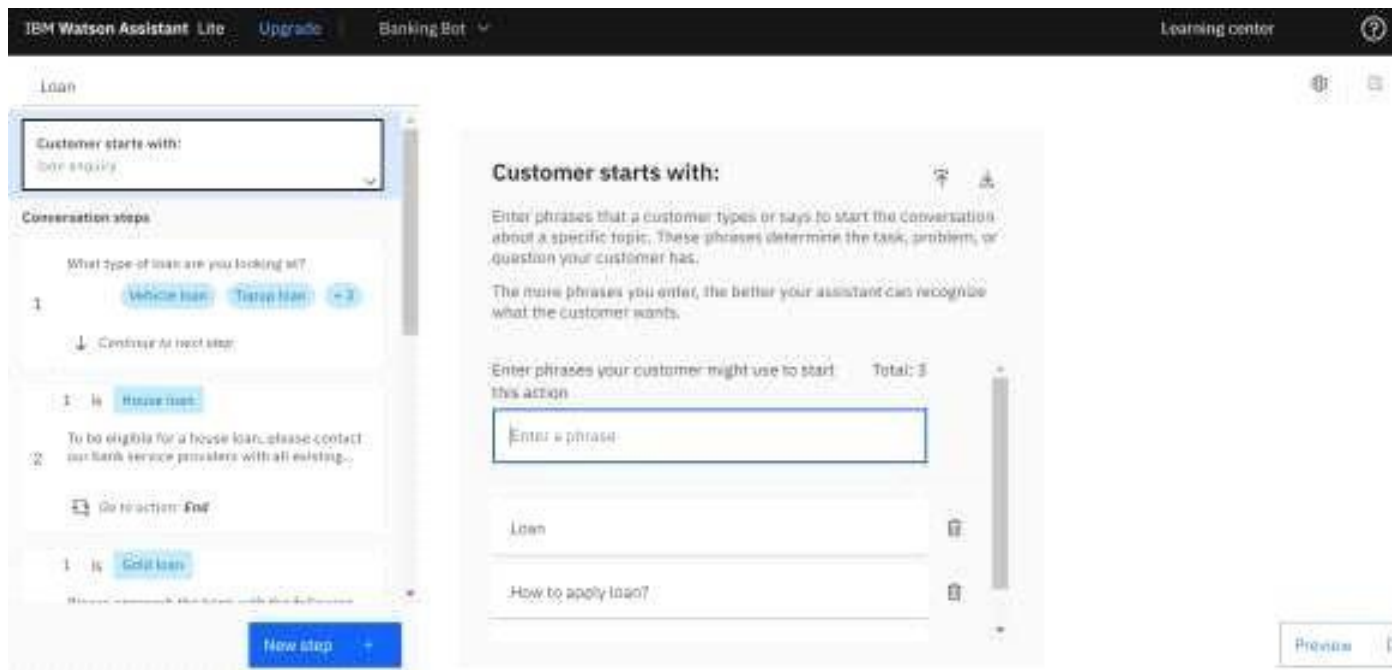


Add steps in current action.



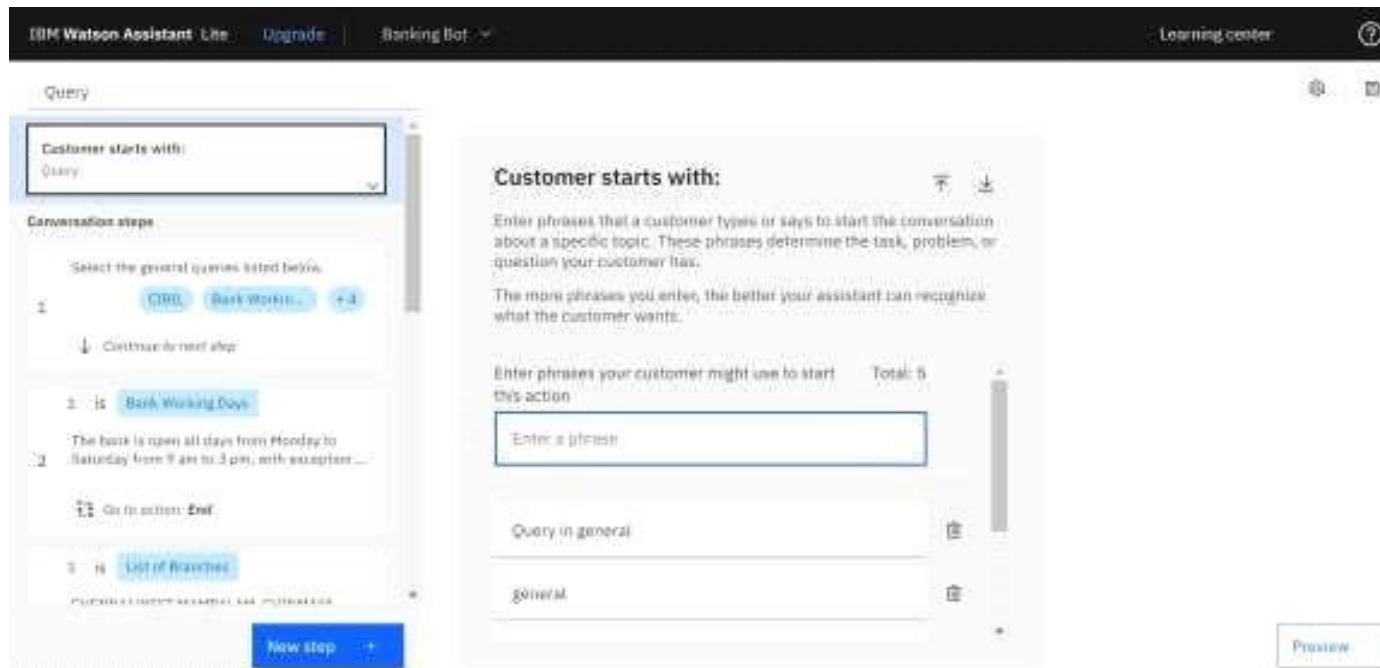
Creating Loan Account Action

Loan action is created with the necessary steps.



Creating General Query Action

General query action is created with the necessary steps.



Creating Net Banking Action

Net banking action is created with the necessary steps.

IBM Watson Assistant

Libs

Upgrade

Banking Bot

Learning center

Net Banking

Customer starts with:

Net Banking

Conversation steps

What queries do you have regarding net banking?

1

What are the ...

What is Net B...

+3

Continue to next step

2

What is Net Banking?

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

Go to action: End

3

How do I register for Net Banking?

New step

Customer starts with:

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

Enter phrases your customer might use to start this action

Total: 1

Enter a phrase

Net Banking

Preview



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

Search

Up

New action

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			
End	2 days ago			
Loan	2 days ago			
Query	a few seconds ago			
Savings	16 minutes ago			
Current	2 days ago			
Items per page: 50 Showing 1–10 of 10 actions				1 1 of 1 pages

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__)
```

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')
```

Main Function

This is used to run the application in localhost.

```
if __name__ == '__main__':  
    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 anaconda prompt from the start menu.
- Navigate to the folder where your app.py resides.
- Now type the "python app.py" command.
- It will show the local host 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 web page.

Source Code:

```
<html>
  <head>
    <title>
      chatbot for bank
    </title>
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@4.0.0/dist/css/bootstrap.min.css"
integrity="sha384-
Gn5384xqQ1aowXA+058RXPxPg6fy4IWvTNh0E263XmFcJlSAwiGgFAW/dAiS6JXm"
crossorigin="anonymous">
    <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
    <link rel="stylesheet" href="style.css">

  </head>
  <body>
    <script>
      window.watsonAssistantChatOptions = {
        integrationID: "8d325c4b-c3b5-44cc-801f-d98da9e670b4", // The ID of
this integration.
        region: "us-south", // The region your integration is hosted in.
        serviceInstanceID: "bdb353f8-5ba4-492a-94c1-64f2a5633c5b", // 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>

    <div class="banner">
      <div class="navbar">
        
        <ul>
          <li><a href="about.html">Home</a></li>
          <li><a href="home.html">Form</a></li>
          <li><a href="services.html">About</a></li>
          <li><a href="faq.html">Samples</a></li>
        </ul>
      </div>
    </div>
  </body>
</html>
```

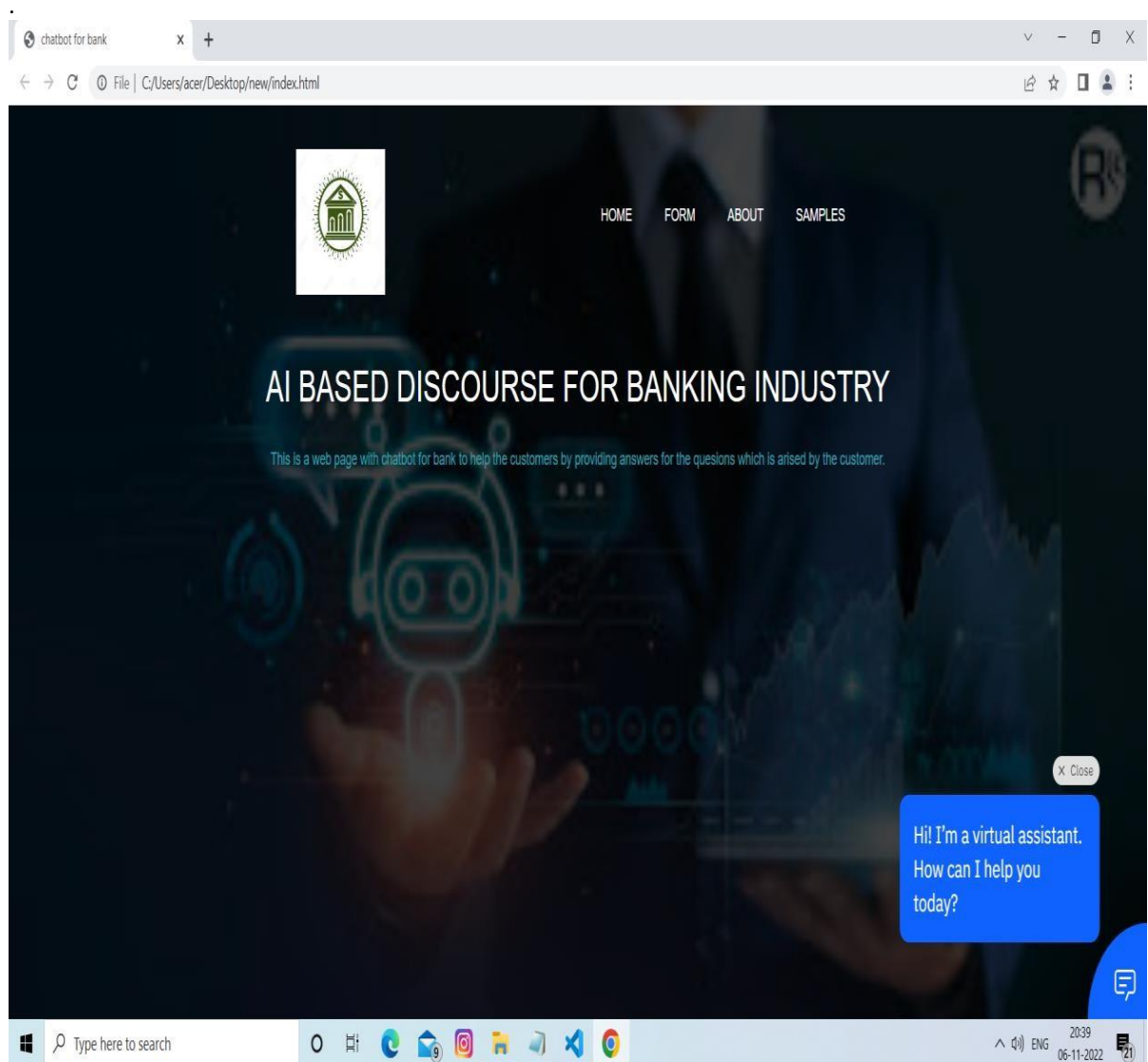
```

    </div>

    <div>
        <h1 class="para">AI BASED DISCOURSE FOR BANKING INDUSTRY</h1>
        <P class="pages"> This is a web page with chatbot for bank to help the
customers by providing answers for the quesions which is arised by the
customer.</P>
    </div>
</div>
</body>
</html>


```

OUTPUT:



chatbot for bank

File | C:/Users/acer/Desktop/new/index.html



HOMEFORMABOUTSAMPLES

AI BASED DISCOURSE FOR BANKING INDUSTRY

This is a web page with chatbot for bank to help the customers by providing answers for the questions which is arised by the cus

Hi! I'm a virtual assistant. How can I help you today?

greeting


Index

End

Type something...

Built with IBM Watson®

Type here to search



2039

ENG

06-11-2022

21

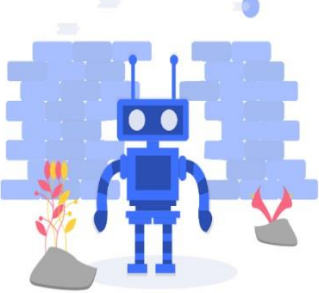
services.html

Chatbot Pricing plans - Collect.c...Cards - BootstrapHow To Create a Card with CSSwww.google.com

File | C:/Users/acer/Desktop/new/services.html

What is an automated chatbot?


An automated chatbot is the easiest way to communicate with your website visitors.



0 human involvement

Collect data with zero human involvement. Never worry about losing customers again.

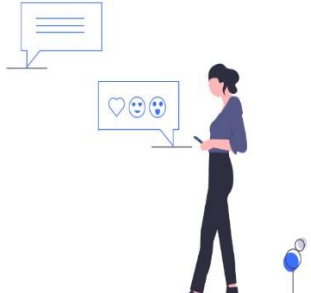
Last updated 3 mins ago



Easy to Setup

Use drag and drop templates to build the chatbot and add to your website in seconds.

Last updated 3 mins ago




Highly Interactive

Delight your visitors with our handcrafted question templates, GIFs and videos.

Last updated 3 mins ago


Type here to search



20:33

ENG

06-11-2022



SAMPLES OF CHATBOT



REFERENCE:

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