CSE-310 JAVA PROJECT

TOPIC: CHATBOT

SUBMITTED BY:

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Acknowledgement:

The project could not have completed without support extends to us by Chandani Bhasin she guided us in preparation of the project and every time when we reached with difficulties, she welcomed them which helped us to successfully complete the project. We express our heartfelt gratitude with great pleasure and a sense of obligation to Chandani Bhasin our project in charge for her timely support and supervision.

Introduction:

ChatBot:

Chatbots are computer programs that are designed to interact with users through natural language processing. They are becoming increasingly popular as they provide a convenient and cost-effective way for businesses to engage with customers. This project report will discuss the development of a chatbot using Java programming language.

Project Overview:

The aim of this project is to develop a chatbot that can interact with users and provide relevant information. The chatbot will be designed to answer questions, provide recommendations, and engage with users in a natural and intuitive way.

Features:

The chatbot will be designed with the following features:

Natural Language Processing(NLP):

we've become familiar with chatbots and how beneficial they can be for business owners, employees, and customers alike. Despite what we're used to and how their actions are fairly limited to scripted conversations and responses, the future of chatbots is life-changing, to say the least. The standard usage might not require more than quick answers and simple replies, but it's important to know just how much chatbots are evolving and how Natural Language Processing (NLP) can improve their abilities. This function holds plenty of rewards, really putting the 'chat' in the chatbot.

Machine Learning:

Machine learning chatbots are chatbots that are built using machine learning algorithms. These chatbots are designed to learn from user interactions and improve their responses over time. They use natural language processing (NLP) techniques to understand user queries and provide relevant responses.

Machine learning chatbots can be trained using supervised, unsupervised, or reinforcement learning techniques. In supervised learning, the chatbot is trained on a labeled dataset that includes examples of input-output pairs. In unsupervised learning, the chatbot is trained on an unlabeled dataset and must identify patterns in the data. In reinforcement learning, the chatbot learns by interacting with its environment and receiving feedback in the form of rewards or penalties.

One of the benefits of machine learning chatbots is that they can adapt to changing user needs and preferences over time. As the chatbot interacts with more users and receives more feedback, it can improve its accuracy and provide more personalized responses.

However, building machine learning chatbots can be a complex and time-consuming process, requiring expertise in machine learning algorithms, natural language processing, and data analysis. It is also important to ensure that the chatbot is designed with appropriate safeguards to protect user privacy and prevent bias or discrimination in its responses.

Personalization chatbots:

Personalization chatbots are chatbots that are designed to provide personalized responses to users based on their preferences and past interactions. These chatbots use data about the user, such as their previous chat history, demographic information, and behavioral patterns, to tailor their responses to the user's specific needs.

Personalization chatbots can improve the user experience by providing more relevant and helpful responses. For example, a personalization chatbot for a clothing retailer could recommend items based on the user's past purchases, style preferences, and current trends.

To create effective personalization chatbots, it is important to collect and analyze user data in a responsible and ethical manner. The chatbot should be designed with appropriate safeguards to protect user privacy and ensure that sensitive information is not shared or

misused. It is also important to ensure that the chatbot's recommendations are transparent and explainable, so that users can understand how the chatbot arrived at its suggestions.

There are several approaches to building personalization chatbots, including rule-based systems, collaborative filtering, and machine learning algorithms. Rule-based systems use if-then rules to tailor responses based on specific user inputs. Collaborative filtering uses data from other users with similar preferences to make recommendations. Machine learning algorithms can analyze large datasets to identify patterns and make personalized recommendations based on user data.

Overall, personalization chatbots can provide a more engaging and effective user experience by tailoring responses to the user's specific needs and preferences. However, it is important to balance the benefits of personalization with the need to protect user privacy and ensure that recommendations are transparent and explainable.

Chatbots in Business:

The biggest benefits of chatbots for business are:

Increased customer engagement. Chatbots enjoy a much higher message response rate than emails. The average engagement rate for chatbots is around 10% (measured as the clickthrough rate for all website visitors). For email marketing, it is below 3%.

24/7 availability and real-time support. Almost half of the digital shoppers believe the average response time from customer service should be below 5 minutes. Chatbots are perfect for helping customers in real-time with automated replies that address the majority of customer needs.

Personalized customer experiences. You can easily set up separate chatbots for new customers, returning customers, or shoppers who are abandoning shopping carts. Ecommerce chatbots can automatically recognize customers, offer personalized messages, and even address visitors by their first names.

Automated marketing and sales. Conversational marketing chatbots can be used for social media sales campaigns and lead generation. They improve customer interactions across all stages of your sales funnel.

Increased productivity of customer support teams. According to our 2022 report on chatbot trends, about 73% of customer queries can be resolved within 5 messages or less. Chatbots can ease the burden on support teams by handling common issues on their own.

Reduced operational costs. From a business perspective, chatbots are very cost-effective and have a very good ROI. By 2023, chatbots and virtual shopping assistants are expected to bring about $11 billion annually in cost savings.

Chatbots in Healthcare:

Chatbots are designed to assist patients and avoid issues that may arise during normal business hours, such as waiting on hold for a long time or scheduling appointments that don't fit into their busy schedules. With 24/7 accessibility, patients have instant access to medical assistance whenever they need it.

Provide assistance

From helping a patient manage a chronic condition better to helping patients who are visually or hearing impaired access critical information, chatbots are a revolutionary way of assisting patients efficiently and effectively. They can also be used to determine whether a certain situation is an emergency or not. This allows the patient to be taken care of fast and can be helpful during future doctor's or nurse's appointments.

Reduce care costs

Being able to reduce costs without compromising service and care is hard to navigate. Healthcare chatbots can help patients avoid unnecessary lab tests and other costly treatments. Instead of having to navigate the system themselves and make mistakes that increase costs, patients can let healthcare chatbots guide them through the system more effectively.

Technologies Used:

Java programming language: Java will be used to develop the chatbot's core functionality.

```
java.awt.Color
```

java.awt.Color is a class in the Java programming language that represents a color. It provides methods for creating colors in various ways, including specifying RGB values, HSB values, or a predefined color constant.

```
java.awt.event.ActionEvent;
```

java.awt.event.ActionEvent is a class in the Java AWT (Abstract Window Toolkit) package that represents an action event, which occurs when an action is performed on a component, such as clicking a button or selecting a menu item.

```
java.awt.event.ActionListener;
```

java.awt.event.ActionListener is an interface in the Java AWT (Abstract Window Toolkit) package that defines the method signature for handling action events. An action event is generated when a user interacts with a GUI component that is registered to listen for this type of event.

```
javax.swing.JButton;
```

javax.swing.JButton is a class in the Java Swing package that represents a push button component in a graphical user interface (GUI).

```
javax.swing.JFrame;
```

javax.swing.JFrame is a class in the Java Swing package that represents a top-level window in a graphical user interface (GUI). It provides a container for GUI components and supports features such as resizing, minimizing, maximizing, and closing.

```
javax.swing.JLabel;
```

`javax.swing.JLabel` is a class in the Java Swing package that represents a display area for a short text string or an image. It is commonly used to add descriptive or informative text to a GUI component or to display an icon or image.

```
javax.swing.JTextArea;
```

javax.swing.JTextArea is a class in the Java Swing package that represents a multi-line area for displaying and editing plain text. It is commonly used to allow users to enter or view large amounts of text, such as in a text editor or chat application.

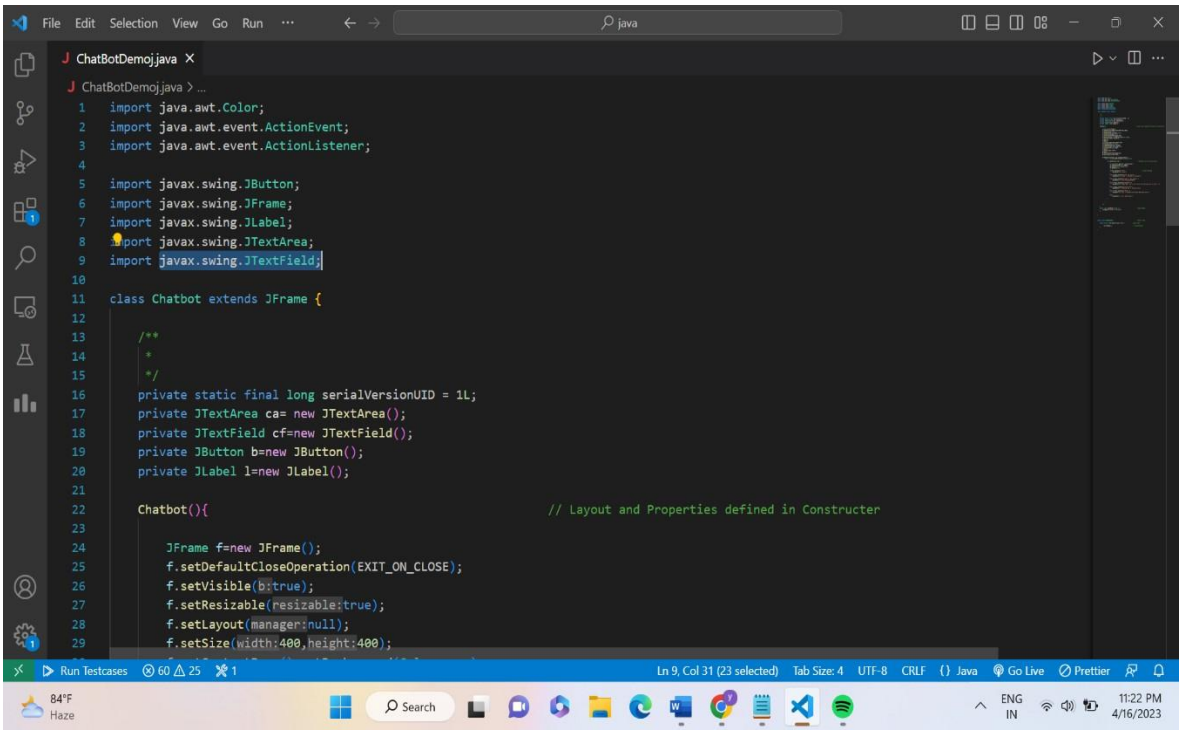
```
javax.swing.JTextField;
```

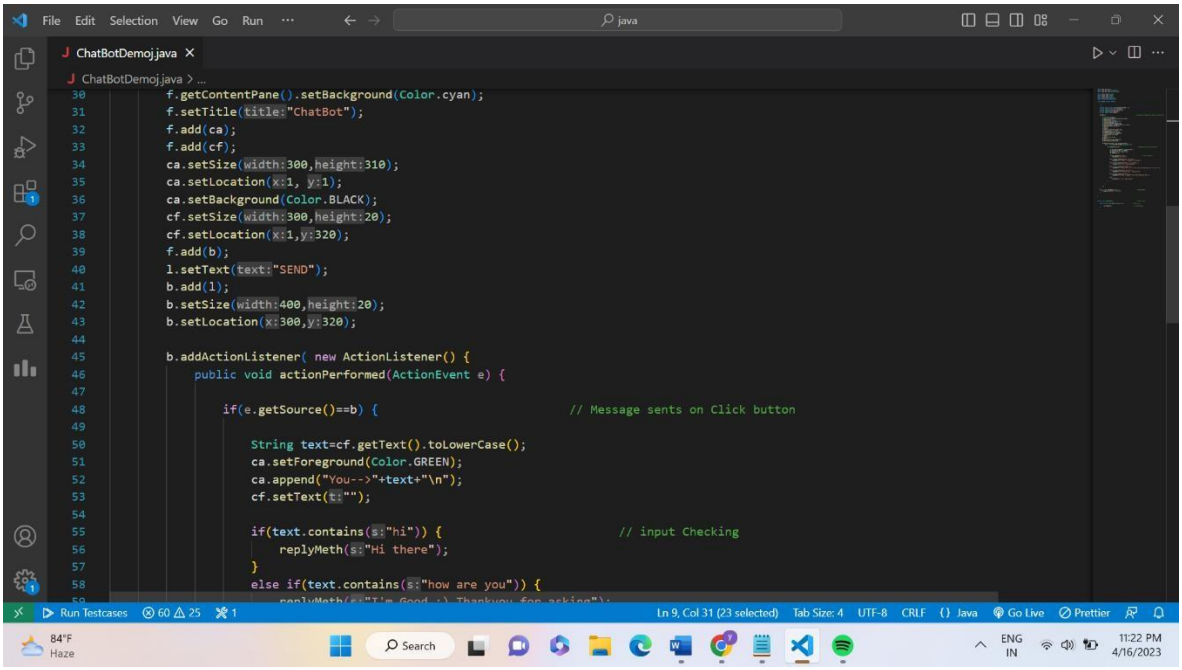
`javax.swing.JTextField` is a class in the Java Swing library that provides a graphical text field component for user input. It is a subclass of `javax.swing.JComponent`, which means it can be added to a Swing container such as a `javax.swing.JPanel` or a `javax.swing.JFrame`.

Conclusion:

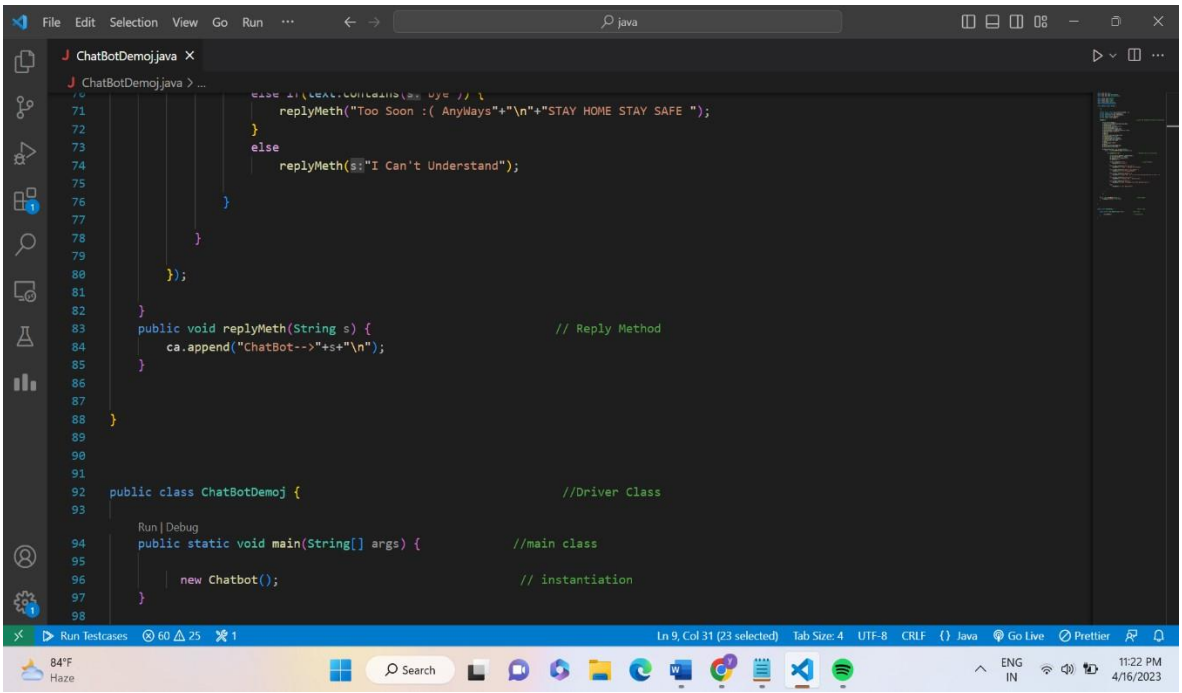
In conclusion, the development of a chatbot using Java programming language is an exciting project that has the potential to revolutionize the way businesses interact with their customers. The chatbot's natural language processing, machine learning, personalization, multi-channel support, and security features will provide an effective and engaging user experience.

Screenshots:

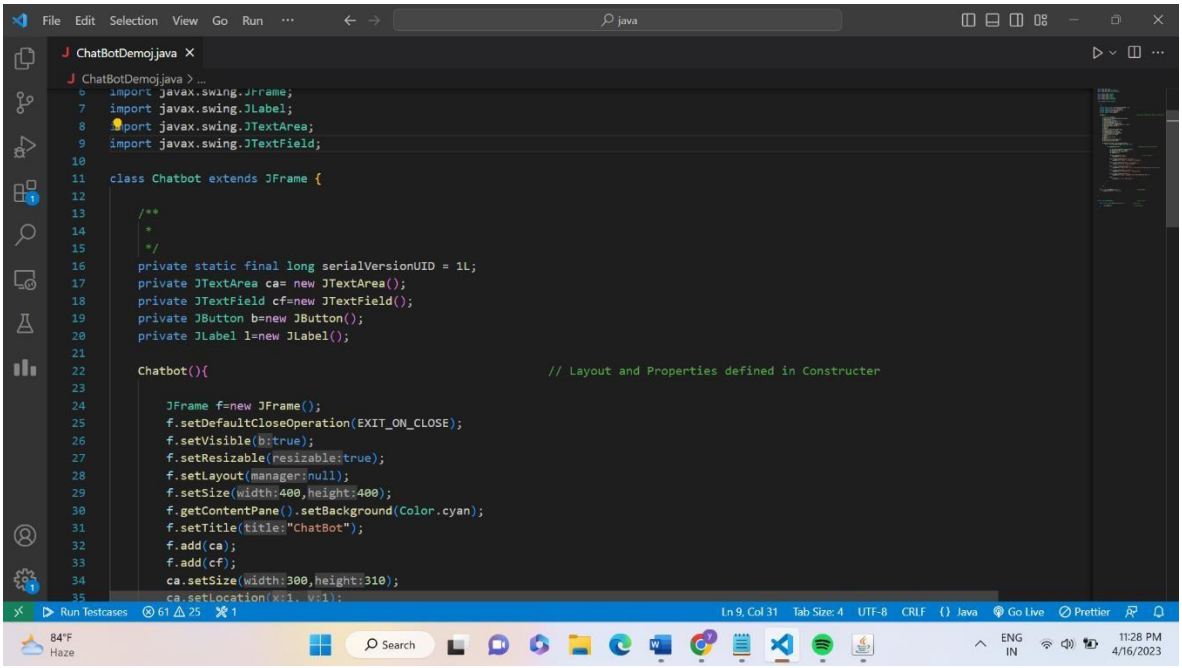




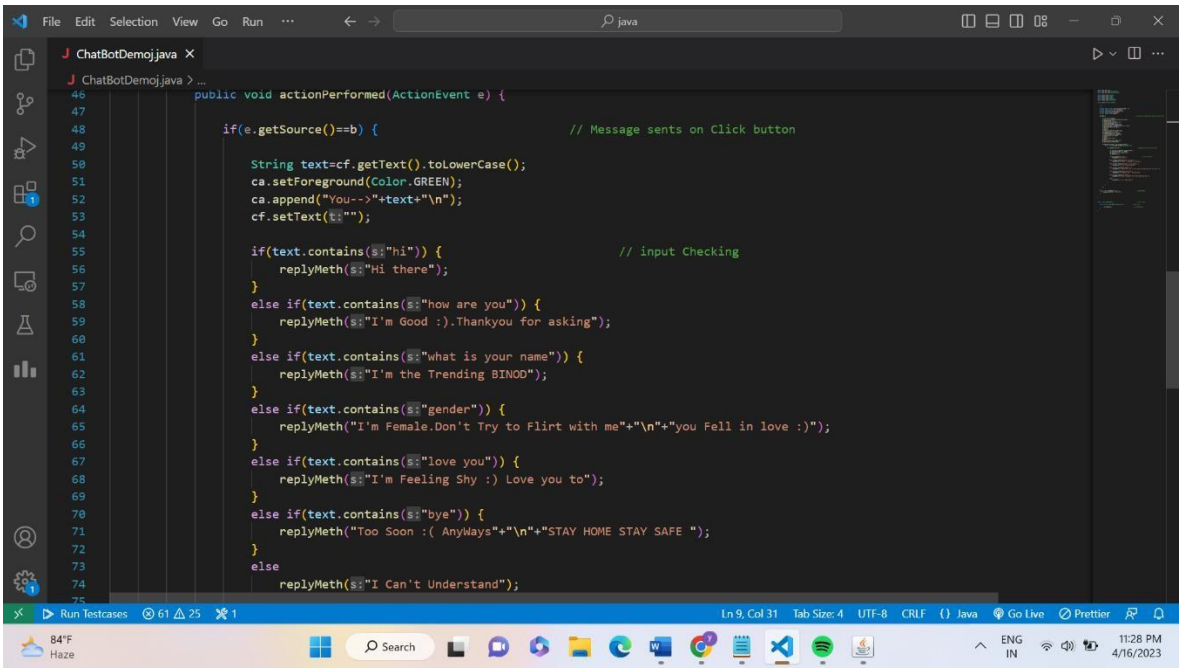
```
        f.getContentPane().setBackground(Color.cyan);
        f.setTitle(title:"ChatBot");
        f.add(ca);
        f.add(cf);
        ca.setSize(width:300,height:310);
        ca.setLocation(x:1, y:1);
        ca.setBackground(Color.BLACK);
        cf.setSize(width:300,height:20);
        cf.setLocation(x:1,y:320);
        f.add(b);
        l.setText(text:"SEND");
        b.add(l);
        b.setSize(width:400,height:20);
        b.setLocation(x:300,y:320);

        b.addActionListener( new ActionListener() {
            public void actionPerformed(ActionEvent e) {

                if(e.getSource()==b) {                          // Message sents on Click button

                    String text=cf.getText().toLowerCase();
                    ca.setForeground(Color.GREEN);
                    ca.append("You-->"+text+"\n");
                    cf.setText(t:"");

                    if(text.contains(s:"hi")) {                         // input Checking
                        replyMeth(s:"Hi there");
                    }
                    else if(text.contains(s:"how are you")) {
```



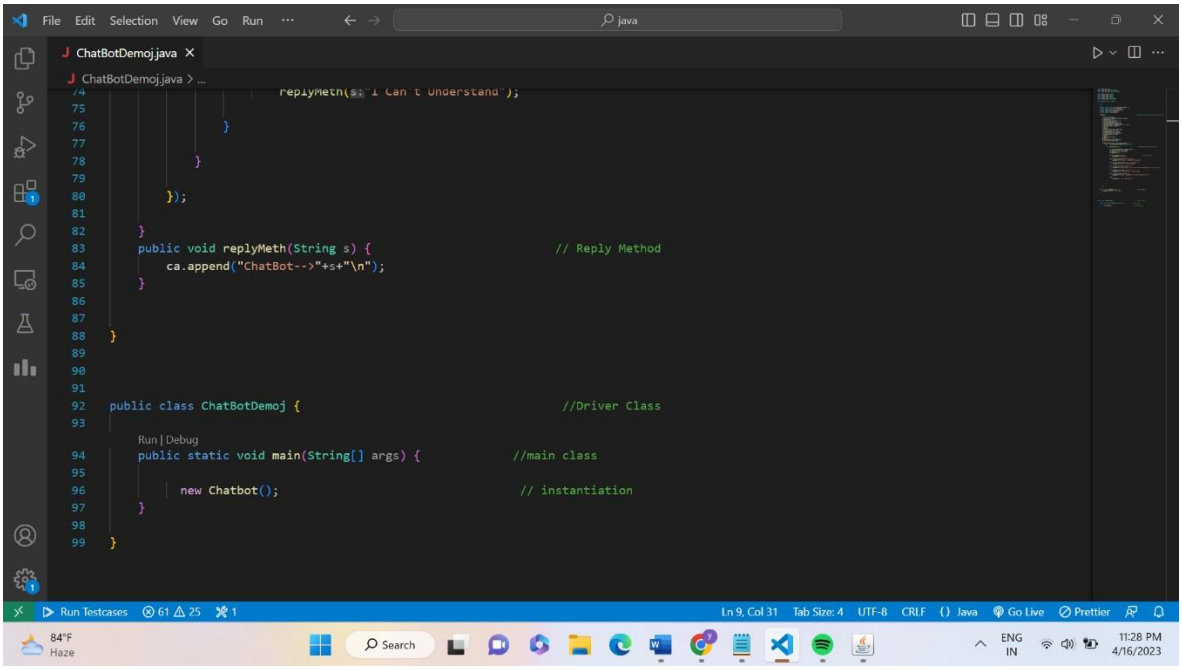
```
                    replyMeth("Too Soon :( AnyWays"+"\n"+"STAY HOME STAY SAFE ");
                }
                else
                    replyMeth(s:"I Can't Understand");

            }

        }

        });

    }
    public void replyMeth(String s) {                       // Reply Method
        ca.append("ChatBot-->"+s+"\n");
    }


}


public class ChatBotDemoj {                                 //Driver Class

    Run | Debug
    public static void main(String[] args) {            //main class

        new Chatbot();                                   // instantiation
    }
```



```java
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextArea;
import javax.swing.JTextField;

class Chatbot extends JFrame {

    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private JTextArea ca= new JTextArea();
    private JTextField cf=new JTextField();
    private JButton b=new JButton();
    private JLabel l=new JLabel();

    Chatbot(){                                          // Layout and Properties defined in Constructer

        JFrame f=new JFrame();
        f.setDefaultCloseOperation(EXIT_ON_CLOSE);
        f.setVisible(b:true);
        f.setResizable(resizable:true);
        f.setLayout(manager:null);
        f.setSize(width:400,height:400);
        f.getContentPane().setBackground(Color.cyan);
        f.setTitle(title:"ChatBot");
        f.add(ca);
        f.add(cf);
        ca.setSize(width:300,height:310);
        ca.setLocation(x:1, y:1);
```



```java
            public void actionPerformed(ActionEvent e) {

                if(e.getSource()==b) {                          // Message sents on Click button

                    String text=cf.getText().toLowerCase();
                    ca.setForeground(Color.GREEN);
                    ca.append("You-->"+text+"\n");
                    cf.setText(t:"");

                    if(text.contains(s:"hi")) {                         // input Checking
                        replyMeth(s:"Hi there");
                    }
                    else if(text.contains(s:"how are you")) {
                        replyMeth(s:"I'm Good :).Thankyou for asking");
                    }
                    else if(text.contains(s:"what is your name")) {
                        replyMeth(s:"I'm the Trending BINOD");
                    }
                    else if(text.contains(s:"gender")) {
                        replyMeth("I'm Female.Don't Try to Flirt with me"+"\n"+"you Fell in love :)");
                    }
                    else if(text.contains(s:"love you")) {
                        replyMeth(s:"I'm Feeling Shy :) Love you to");
                    }
                    else if(text.contains(s:"bye")) {
                        replyMeth("Too Soon :( AnyWays"+"\n"+"STAY HOME STAY SAFE ");
                    }
                    else
                        replyMeth(s:"I Can't Understand");
```



```
                    replyMeth(s: "I can't Understand");
                }
            }
        });
    }
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    Run | Debug
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}
```

Codes:

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import javax.swing.JButton;
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import javax.swing.JTextArea;
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class Chatbot extends JFrame {

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```
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JTextField();
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private JLabel l=new JLabel();

    Chatbot(){                                                  // Layout
and Properties defined in
Constructer

        JFrame f=new JFrame();
        f.setDefaultCloseOperation(EXIT_ON_CLOSE);
f.setVisible(true);
        f.setResizable(true);
        f.setLayout(null);
        f.setSize(400,400);
        f.getContentPane().setBackground(Color.cyan);
        f.setTitle("ChatBot");
        f.add(ca);
        f.add(cf);
ca.setSize(300,310);
ca.setLocation(1, 1);
ca.setBackground(Color.BLACK);
cf.setSize(300,20);
cf.setLocation(1,320);
f.add(b);
        l.setText("SEND");
        b.add(l);
        b.setSize(400,20);
        b.setLocation(300,320);

        b.addActionListener( new ActionListener() {
public void actionPerformed(ActionEvent e) {

               if(e.getSource()==b) {                           //
Message sents on Click button

                   String text=cf.getText().toLowerCase();
ca.setForeground(Color.GREEN);                    ca.append("You-
->"+text+"\n");                   cf.setText("");

                   if(text.contains("hi")) {
// input Checking                          replyMeth("Hi there");
                   }
                   else if(text.contains("how are you")) {
                       replyMeth("I'm Good :).Thankyou for asking");
}
```

```
                    else   if(text.contains("what   is   your   name"))   {
replyMeth("I'm the Trending BINOD");
                    }
                    else        if(text.contains("gender"))        {
replyMeth("I'm Female.Don't Try to Flirt with me"+"\n"+"you Fell in
love :)");
                    }
                    else if(text.contains("love you")) {
replyMeth("I'm Feeling Shy :) Love you to");
                    }
                    else          if(text.contains("bye"))          {
replyMeth("Too Soon :( AnyWays"+"\n"+"STAY HOME STAY SAFE ");
                    }                    else
replyMeth("I Can't Understand");

                }

            }

        });

}
    public void replyMeth(String s) {                          // Reply
Method
        ca.append("ChatBot-->"+s+"\n");
    }


}


public class ChatBotDemoj {                                   //Driver
Class
    public static void main(String[] args) {             //main class

          new Chatbot();                                       //
instantiation
    }

}
```

GITHUB LINK:-
https://github.com/Swaraj468/chatbot.git

Thank You