MINI PROJECT/INTERNSHIP REPORT

Patty - The Chatbot using Java Swing

Submitted By

Name: Devesh

University Roll No.: 1803210048

SUBMITTED TO:
Ms. Babli Balyan
(Asst. Professor)
Department of Computer Science & Engineering
ABES ENGINEERING COLLEGE
GHAZIABAD

DECLARATION

I hereby declare that the Report entitled “Patty - The ChatBot“ is an authentic record of my own work as requirements of Mini Project/Internship during the period from 29/09/21 to 01/11/21 for the award of degree of B.Tech. (Computer Science & Engineering), ABES Engineering College, Ghaziabad..

Devesh
1803210048

Date: 21/12/21

ACKNOWLEDGEMENT

It gives me a great sense of pleasure to present the report of the Project Based Internship 2021 undertaken during B.Tech. IV year.

I also take the opportunity to acknowledge the contribution of team members of Hackerrank for their full support and assistance during the development of the project.

We also do not like to miss the opportunity to acknowledge the motivation of CSE/IT ABESEC to provide us the opportunity to undergo training at Hackerrank.

Name : Devesh
Roll No. : 1803210048
Date : 21/12/21

INTRODUCTION

1. Problem Definition

A chat bot is a software that can start a conversation (or a chat) with a user in normal linguistic language through messaging applications, websites, mobile apps or through the telephone. A chat bot is often described as one of the most advanced and promising expressions of interaction between humans and machines.

2. Motivation

Chatbot applications streamline interactions between people and services, enhancing customer experience. At the same time, they offer companies new opportunities to improve the customers engagement process and operational efficiency by reducing the typical cost of customer service.

To be successful, a chatbot solution should be able to effectively perform both of these tasks. Human support plays a key role here: Regardless of the kind of approach and the platform, human intervention is crucial in configuring, training and optimising the chatbot system.

Java encouraged me to apply all those knowledge to build something productive. This chatbot is a result of all those practical work which I did and the knowledge which I gained during this semester.

3. Objective of the Project:

Chatbots boost operational efficiency and bring cost savings to businesses while offering convenience and added services to internal employees and external customers. They allow companies to easily resolve many types of customer queries and issues while reducing the need for human interaction.

4. Scope of the Project

Contrary to the popular belief that a chatbot's main benefit is just answering queries and offering customer support, chatbots can provide value-driven, contextual support that can assist businesses significantly. An AI chatbot uses the data to provide a personalised experience to the users

5. Related Previous Work

1) Natasha on Hike Messenger - Natasha works somewhat similar to Siri or google now. When you send a message or give an input. They recognise certain keywords from your input and match them with their library and based on those keywords they produce some combination of words which could answer your question.

2) Google assistant - Google Assistant is a virtual assistant that can engage in two-way conversations. Initially it appeared only on the Google Home smart speaker but is now available on Android devices as well an iOS application.

6. Requirements -

Software :

a) Any operating system capable of running java compiler (Mac OS Catalina/BigSur or Windows XP/7/8/10 or later)

b) Java compiler (java 15.0.1 2020-10-20 or later)

c) Any code editor (Sublime Text 3/ Visual Studio Code etc)

Hardware :

a) Processor - (intel i3 10th gen for better thread handling)

b) Ram/Main memory (2 GB DDR4)

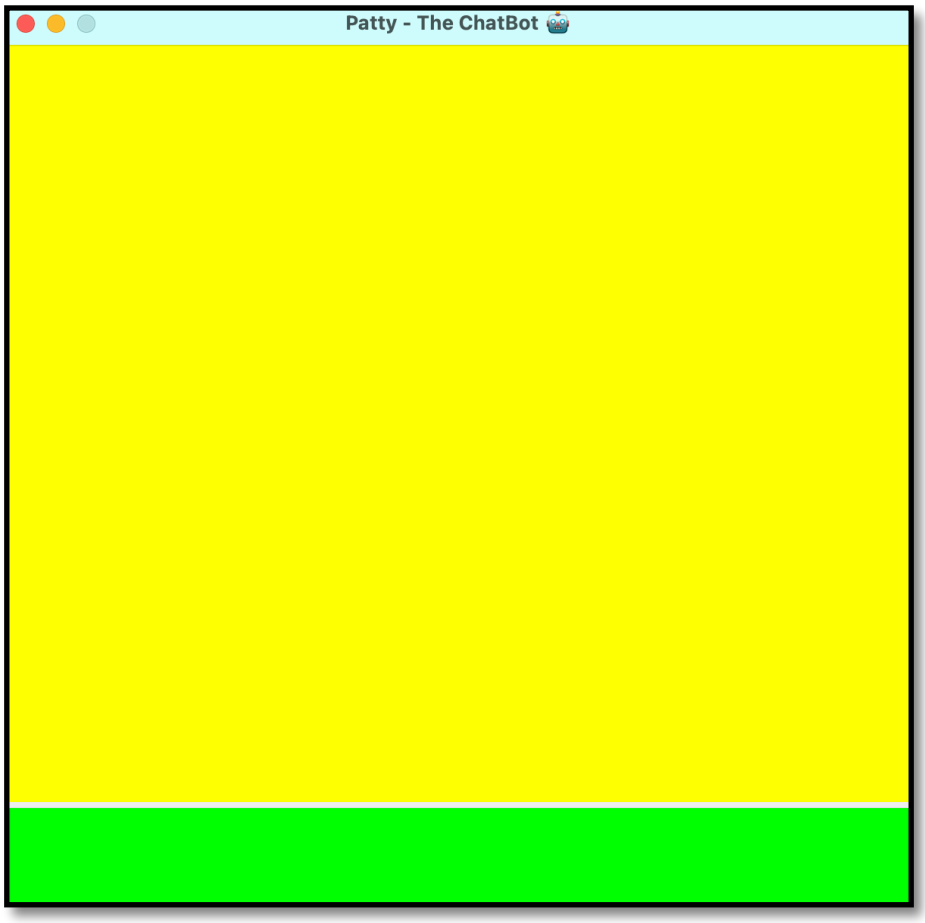
c) Storage/ Secondary memory - 10GB

PROPOSED METHODOLOGY

- Design/Interface

The chatbot user interface is implemented with the help of **Java Swing and AWT**.

Java Swing is a part of Java Foundation Classes (JFC) that is *used to create window-based applications*. It is built on the top of AWT (Abstract Windowing Toolkit) API and entirely written in java.
Unlike AWT, Java Swing provides platform-independent and lightweight components.
The javax.swing package provides classes for java swing API such as JButton, JTextField, JTextArea, JRadioButton, JCheckbox, JMenu, JColorChooser etc.



- Source Code

```
import java.awt.*;
import javax.swing.*;
import java.awt.event.*;

public class chatBot
{
   private JTextArea chatArea = new JTextArea();
   private JTextField chatBox = new JTextField();

   public chatBot()
   {
      JFrame frame = new JFrame();          // frame object for JFrame
      frame.setDefaultCloseOperation(1);     // closing the panel
      frame.setVisible(true);               // turns on the visibility
      frame.setResizable(false);             // makes the panel non-resizable
      frame.setLayout(null);
      frame.setSize(600, 600);        // creates panel of width 600, height 600
      frame.setTitle("Patty - The ChatBot 🤖");   // sets the title
      frame.setBackground(Color.cyan);

      frame.add(chatArea);                  // adds chat area
      frame.add(chatBox);                   // adds chat box

      // For text area
      chatArea.setSize(600, 500);
      chatArea.setLocation(0, 0);
      chatArea.setBackground(Color.yellow);

      // For text field
      chatBox.setSize(600, 100);
      chatBox.setLocation(0, 500);
      chatBox.setBackground(Color.green);


      chatBox.addActionListener(new ActionListener()
      {
```

```
        public void actionPerformed(ActionEvent arg0)
        {
            String gText = chatBox.getText().toLowerCase(); // takes user
input and converts the string to lower case
            chatArea.append("You -> " + gText + "\n");      // displays user
message
            chatBox.setText("");                        // clear chat box

            String userMsgLib[][] = {{"hi", "hello", "hey there", "holla"},
// greetings
                                     {"how are you","what's up", "how do you do"},
// questions for well-being
                                     {"you are nice", "you are pretty", "pretty", "nice",
"smart", "intelligent","brilliant", "lovely", "amazing"},  // compliments
                                     {"see ya","bye", "tata", "see you soon", "see you",
"goodbye", "farewell", "take care"},       // goodbyes
                                     {"what's your name", "do you have a name", "what
are you", "what is your name", "name"}};                              //
identification

            boolean flag = false;

            for(int i=0; i<userMsgLib.length; i++)
            {
               for(int j = 0; j<userMsgLib[i].length; j++)
               {
                  if(i == 0 && gText.contains(userMsgLib[i][j]))                //
if input is a greeting and matches library
                  {
                     String reply[] = {"Hi there!", "Oh Hi!", "Hello!"};
                     int idx = (int)(Math.random()*3);
                     bot(reply[idx]);
                     flag = true;
                     break;
                  }
                  else if(i == 1 && gText.contains(userMsgLib[i][j]))           //
if input is a question of well-being & matches user library
                  {
                     String reply[] = {"I am good", "I am fine. Thank you.", "I
am great!"};
```

```
                    int idx = (int)(Math.random()*3);
                    bot(reply[idx]);
                    flag = true;
                    break;
                }
                else if(i == 2 && gText.contains(userMsgLib[i][j]))          //
if input is a compliment & matches user library
                {
                    String reply[] = {"Oh my god! Thanks","Oh thank
you!","Ahem! Ahem! I am blushing!"};
                    int idx = (int)(Math.random()*3);
                    bot(reply[idx]);
                    flag = true;
                    break;
                }
                else if(i == 3 && gText.contains(userMsgLib[i][j]))          //
if input is a farewell & matches user library
                {

                    String reply[] = {"Bye Bye!","Good bye!", "See you
again!","Hasta la vista!"};
                    int idx = (int)(Math.random()*4);
                    bot(reply[idx]);
                    flag = true;
                    break;
                }
                else if(i == 4 && gText.contains(userMsgLib[i][j]))
                {
                    String reply[] = {"I am Patty! A chatbot!", "My name is
Patty. I am a bot", "Myself Patty - the chatbot"};
                    int idx = (int)(Math.random()*reply.length-1);
                    bot(reply[idx]);
                    flag = true;
                    break;
                }
            }
        }


        if(flag == false)
```

```
            {
                int rand = (int)(Math.random()*3);      // generates random
integers [0,2]

                String response[] = {"Sorry what?", "Come again?", "I don't
understand that."};

                bot(response[rand]);
            }
        }
    });
}

private void bot(String string)
{
    chatArea.append("Bot -> " + string + "\n\r");
}

public static void main(String[] args)
{
    new chatBot();
}
}
```

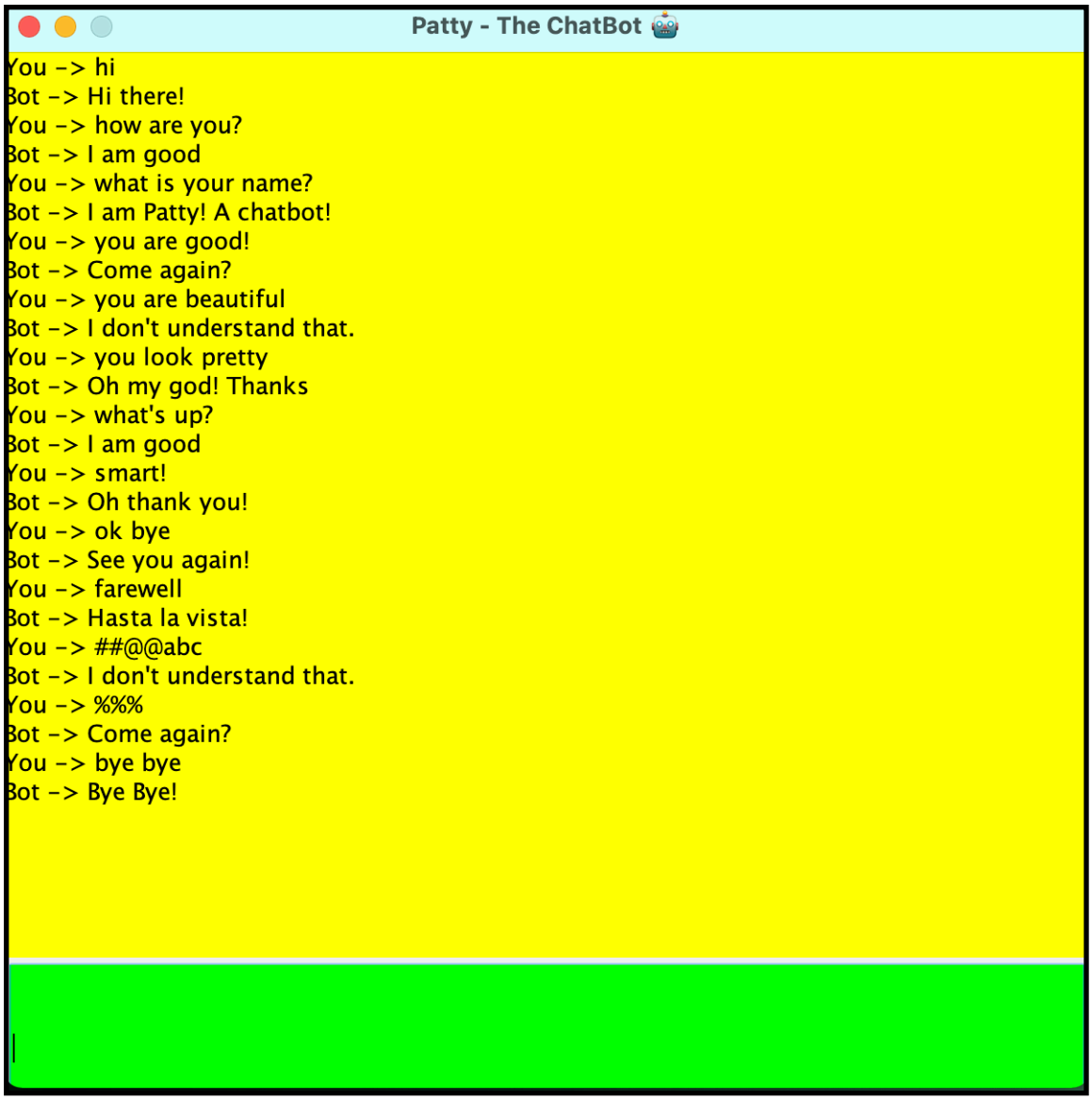
- Principle working

The above source code is based on the principle working of **string/ pattern matching algorithm.**The program is fed with predefined message library in the form of double dimension string array (with messages including greetings/compliments/farewell etc). With the help of **Math.random()** function randomness is created in response to the user and randomly one of the response feed is triggered by the bot.

```
String userMsgLib[][] = {{"hi", "hello", "hey there", "holla"},
                         {"how are you","what's up", "how do you do"},
                         {"you are nice", "you are pretty", "pretty", "nice", "smart", "intelligent","brilliant",
                         {"see ya","bye", "tata", "see you soon", "see you", "goodbye", "farewell", "take care"},
                         {"what's your name", "do you have a name", "what are you", "what is your name", "name"}};
```

Predefined User Input library

- Snapshot


Patty - The ChatBot
You -> hi
Bot -> Hi there!
You -> how are you?
Bot -> I am good
You -> what is your name?
Bot -> I am Patty! A chatbot!
You -> you are good!
Bot -> Come again?
You -> you are beautiful
Bot -> I don't understand that.
You -> you look pretty
Bot -> Oh my god! Thanks
You -> what's up?
Bot -> I am good
You -> smart!
Bot -> Oh thank you!
You -> ok bye
Bot -> See you again!
You -> farewell
Bot -> Hasta la vista!
You -> ##@@abc
Bot -> I don't understand that.
You -> %%%
Bot -> Come again?
You -> bye bye
Bot -> Bye Bye!

CONCLUSION

- Future work

Chatbots have been around for a while now and they have been able to provide buyers with a great experience across all devices. They are also able to offer deep insights about the buyer, which allows businesses to make personalised offers. Chatbots allow people to find whatever information they may need and help them find solutions for their problems.

A brand's credibility and the quality of the customer experience it provides are two essential components of any company wishing to achieve a successful business model.

Major brands across a number of sectors have been ramping up their efforts to create their own chatbot platforms in a bid to keep up with the rapidly changing technological world. The technology sector has seen a huge surge in the development of artificial intelligence and has been working hard to create conversational AI-powered tools that will help their customers navigate through digital content with ease.

Artificial Intelligence-powered chatbots have been proven to be very helpful in the creation of a powerful brand image and will continue to evolve and play a vital role in customer service for all different types of businesses. This is how -

Top 4 Chat-Bot Trends to Watch for in 2021

Chatbots are Now Based on Natural Language Processing(NLP

In an effort to stand out and get into the spotlight, businesses have already started their research on Natural Language Processing (NLP) to understand and send accurate responses to users' inquiries. Here, the ultimate goal is to allow users and Artificial Intelligence is able to communicate naturally and understand complex requests, which means that customer service agents will be able to focus on other tasks while the AI takes care of customers' queries.

Bots for Internal Business Communications

Along with addressing common problems and answering customer queries, chatbots can also be used to communicate with employees and finish HR-related tasks and transactional functions. Chatbots have taken on a number of roles in the modern workplace. From acting as a guide to new employees through company protocols to recording answers for screen questions, to assisting the process of onboarding new employees, chatbots are now taking charge of internal business communications and helping IT desk agents save time and fix more complicated issues.

Voice-Bots are also Set to Help Businesses Enhance Customer Service

Today, customers want to consume information rapidly and are increasingly shifting to voice search given the technological advancements, and hence, now, messaging platforms that have both voice and text-based programs are becoming a preferred method for companies to engage and connect with their target audience

Live Chatbots to Bring a Human Touch

Chatbots are making their way into a number of different sectors and are now ready to communicate with your target market by speaking with them in complete sentences which have a natural and easy-going conversational flow. Some markets that these bots serve include customer service and retail, amongst others.

- References

https://www.codeproject.com/Articles/36106/Chatbot-Tutorial
Author : Gonzales Cenelia

https://botup.com/
Author : Botup Team

https://www.chatbot.com/
Author : Live Chat Inc.

https://stackoverflow.com/questions/1748887/how-to-create-a-smart-chat-bot

Author : General

https://en.wikipedia.org/wiki/Chatbot
Author : Wikipedia - the free encyclopaedia

https://venturebeat.com/
Author : The Future of Work Summit this December 12, 2021

ID: D1049022C759

HackerRank

Certificate

This is to certify that

Devesh .

has successfully cleared the assessment for the skill

Java (Basic)

11 Nov, 2021

Date

Harishankaran K

CTO, HackerRank