### Name**: Bhavya Bhaskar** Registration Number: **22BCE7958** Project Title: **Chatbot for Simple Question**

### **Project Description:**

The goal is to create a rule-based chatbot using Python that can respond to a fixed set of predefined questions. This chatbot does not require any complex machine learning models or training but relies on string matching and conditional logic to generate accurate responses.

### **Algorithm**

Below is a structured algorithm that outlines the inputs, processing steps, conditions, loops, and expected outputs:

#### **Step 1: Start**

* Begin the chatbot program.

#### **Step 2: Import Required Libraries**

import random # for selecting random responses  
import re # for optional pattern matching (if required)

**Step 3: Initialize Predefined Questions and Responses**

* Define a dictionary with keys as trigger phrases and values as a list of possible responses.

responses = {  
 "hi": ["Hello!", "Hi there!", "Greetings!"],  
 "how are you": ["I'm good, thank you!", "Doing well!", "All systems operational!"],  
 "what is your name": ["I am a chatbot created by students.", "Call me ChatSimple."],  
 "bye": ["Goodbye!", "See you later!", "Have a great day!"]  
}

#### **Step 4: Take User Input**

* Use a loop to continuously prompt the user for input.

while True:  
 user\_input = input("You: ").lower()

#### **Step 5: Check for Exit Condition**

* If the user inputs "exit" or "bye", break the loop and end the chatbot.

if user\_input in ["exit", "bye"]:  
 print("Chatbot: Bye!")  
 break

**Step 6: Preprocess Input**

* Convert to lowercase and remove unnecessary characters (optional using regex).
* This step makes matching more accurate.

user\_input = re.sub(r'[^\w\s]', '', user\_input)

#### **Step 7: Match Input Against Predefined Keys**

* Iterate over keys in the responses dictionary.
* If a keyword is found in the input, return a random response from the list.

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response\_found = False  
for key in responses:  
 if key in user\_input:  
 print("Chatbot:", random.choice(responses[key]))  
 response\_found = True  
 break

#### **Step 8: Default Response**

* If no match is found, display a fallback message.

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if not response\_found:  
 print("Chatbot: I'm not sure how to answer that. Can you ask something else?")

#### **Step 9: Repeat**

* Loop back to Step 4.

### **Inputs**

* Text input from the user (e.g., "Hi", "What is your name?", "Bye")

### **Outputs**

* Corresponding chatbot responses based on matching keyword(s)

### **Conditions and Loops**

* **Condition**: If user input matches a key in the response dictionary
* **Loop**: while True loop for continuous conversation until termination keyword
* **Exit Condition**: When user types “exit” or “bye”