**TITLE:** CodTech IT Solutions Internship - Task Documentation: CHATBOT WITH RULE-BASED RESPONSES

**INTERN INFORMATION:**

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**INTRODUCTION**

The rule-based chatbot program presented here is a simple implementation designed to interact with users through predefined rules. The chatbot responds to user inputs by matching them against predefined patterns using regular expressions. Based on the matched patterns, the chatbot generates appropriate responses. This program serves as a foundational example for understanding natural language processing and conversation flow in chatbot development  
This program implements a simple rule-based chatbot using Python. The chatbot interacts with users through a command-line interface, responding to their inputs based on predefined rules. It utilizes the **re** module for pattern matching to identify user queries such as greetings ("hi" or "hello") and farewells ("bye" or "goodbye"). When a recognized query is inputted, the chatbot provides appropriate responses accordingly. The main function orchestrates the conversation loop, allowing users to interact with the chatbot until they choose to exit by typing "exit". This program serves as a foundational example for understanding natural language processing and conversation flow in chatbot development.Top of Form

**Implementation**

1. **generate\_response(user\_input):**
   * This function takes the user's input as a parameter and generates a response based on predefined rules.
   * It uses regular expression (**re**) module to search for patterns like "hi", "hello", "bye", or "goodbye" in the user input.
   * If the input matches any of these patterns, the chatbot responds accordingly.
   * Otherwise, it returns a default response indicating that it didn't understand the input.
2. **main():**
   * This is the main function that runs the chatbot.
   * It displays a welcome message and instructions for the user.
   * It continuously prompts the user for input until the user types 'exit' to end the conversation.
   * For each user input, it calls **generate\_response()** to get the chatbot's response and prints it.

**CODE EXPLAINATION**

Certainly! Here's a brief explanation of the provided code:

1. \*\*Imports\*\*:

- The code begins with importing the `re` module, which is used for working with regular expressions.

2. \*\*Function Definitions\*\*:

- `generate\_response(user\_input)`: This function takes user input as a parameter and generates a response based on predefined rules.

- It uses regular expressions (`re.search`) to match patterns such as "hi" or "hello" and "bye" or "goodbye" in the user input, regardless of case.

- If a match is found, it returns a corresponding response. Otherwise, it returns a default response for unrecognized input.

- `main()`: This is the main function of the program.

- It prints a welcome message and instructions for the user.

- It continuously prompts the user for input until the user types "exit".

- For each input, it generates a response using the `generate\_response()` function and prints it.

3. \*\*Execution\*\*:

- The `if \_\_name\_\_ == "\_\_main\_\_":` block ensures that the `main()` function is executed when the script is run directly.

4. \*\*Summary\*\*:

- This program implements a simple rule-based chatbot.

- It responds to user input based on predefined patterns using regular expressions.

- The chatbot acknowledges greetings and farewells and asks for clarification if the input is not recognized.

**USAGE**

1. **Starting the Chatbot:**
   * Run the program by executing the Python script.
   * You'll be greeted with a welcome message and instructions to begin typing your queries.
2. **Interacting with the Chatbot:**
   * Type your queries or messages to the chatbot as prompted.
   * The chatbot will analyze your input and respond accordingly based on the predefined rules.
3. **Exiting the Conversation:**
   * To end the conversation and exit the chatbot, simply type 'exit'.
   * The chatbot will bid farewell and terminate the program.

**CONCLUSION**

This Python program implements a simple rule-based chatbot. It responds to user inputs based on predefined rules using regular expressions for pattern matching.

Here's a brief summary:

* The program starts by importing the **re** module for regular expression matching.
* The **generate\_response** function takes user input as a parameter and generates a response based on predefined rules. It uses regular expressions to match patterns like "hi" or "hello" for greetings, and "bye" or "goodbye" for farewells. If the input doesn't match any predefined patterns, it returns a default response asking the user to rephrase.
* The **main** function serves as the main entry point for the chatbot. It prompts the user to input queries and continuously generates responses until the user types 'exit' to end the conversation.
* When the user types 'exit', the program prints a goodbye message and terminates.

In conclusion, this program demonstrates a basic implementation of a rule-based chatbot using regular expressions to understand and respond to user inputs. It's a simple example that can be expanded upon with more complex rules and functionalities for a variety of applications.

**OUTPUT**



