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# Import necessary libraries
import nltk
from nltk.stem import WordNetLemmatizer
from nltk.corpus import stopwords
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.metrics.pairwise import cosine_similarity

# Initialize the lemmatizer and stopwords
lemmatizer = WordNetLemmatizer()
stop_words = set(stopwords.words('english'))

# Define a function for text preprocessing
def preprocess_text(text):
    # Tokenize the text
    tokens = nltk.word_tokenize(text.lower())

    # Remove stopwords and lemmatize the tokens
    preprocessed_tokens = [lemmatizer.lemmatize(token) for token in tokens if
token not in stop_words]

    # Join the preprocessed tokens back into a string
    preprocessed_text = ' '.join(preprocessed_tokens)

    return preprocessed_text

# Define a function for intent recognition
def recognize_intent(user_input):
    # Preprocess the user input
    preprocessed_input = preprocess_text(user_input)

    # Perform intent recognition using a trained model
    # ...
    # Code for intent recognition goes here
    # ...

    # Return the recognized intent
    return intent

# Define a function for generating a response
def generate_response(user_input):
    # Recognize the intent of the user input
    intent = recognize_intent(user_input)

    # Generate a response based on the recognized intent
    # ...
    # Code for response generation goes here
    # ...

    # Return the generated response
    return response

# Define a function for user interaction
def interact():
    print("Chatbot: Hello! How can I assist you today?")

    while True:
        user_input = input("User: ")

        if user_input.lower() == "exit":
            print("Chatbot: Goodbye!")
            break

        response = generate_response(user_input)
        print("Chatbot:", response)

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# Start the chatbot interaction
interact()
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