Library Chatbot with Sentiment Analysis - Documentation

# 1. Introduction

This Python chatbot simulates a library assistant that can answer common library-related queries and analyze the sentiment of user input. It utilizes NLTK's pattern matching for dialogue and the VADER sentiment analyzer for sentiment classification.

# 2. Libraries Used

- nltk: For natural language processing and chatbot framework.  
- SentimentIntensityAnalyzer: For classifying user sentiment as Positive, Negative, or Neutral.

# 3. Chatbot Rules

Predefined patterns using regular expressions respond to questions about:  
- Library hours  
- Book availability  
- Borrowing policies  
- Membership  
- Study spaces  
- Digital resources  
- Fines  
- Events  
- Printing services  
- Contact info  
- Greetings and goodbyes

# 4. Sentiment Analysis Feature

If the user types 'Sentiment', the chatbot asks for a sentence and performs sentiment analysis using the VADER lexicon. It returns whether the sentiment is Positive, Negative, or Neutral based on the compound score.

# 5. Chat Loop

The chatbot runs in a loop, accepting user input. Based on the input:  
- If 'exit' is typed, it ends the session.  
- If 'sentiment' is typed, it performs sentiment analysis.  
- Otherwise, it attempts to respond to queries using the predefined pattern-response pairs.

# 6. Conclusion

This simple chatbot enhances user interaction for library information and can also gauge user sentiment, providing a more engaging experience.

# 7. Output

The output of this chatbot named as Lib. Chatbot overview is given below:

