### **📄 Document Title: Legal Chatbot Documentation**

#### **1. Project Overview**

**LegalBot** is a simple command-line-based chatbot designed to answer basic legal questions using a predefined FAQ dataset. It employs Natural Language Processing (NLP) techniques and cosine similarity to match user queries with relevant answers.

#### **2. File Structure**

* legal\_chatbot.py – Main Python script for chatbot logic.
* legal\_faq.json – JSON file containing predefined legal questions and answers.

#### **3. Key Libraries Used**

| **Library** | **Purpose** |
| --- | --- |
| nltk | Text preprocessing: tokenization, lemmatization |
| string | Remove punctuation |
| sklearn.feature\_extraction.text.TfidfVectorizer | Convert text to TF-IDF vectors |
| sklearn.metrics.pairwise.cosine\_similarity | Compute similarity between user input and known questions |
| json | Load FAQ data |

#### **4. Functional Workflow**

1. **Preprocessing**
   * Lowercase conversion
   * Punctuation removal
   * Tokenization and lemmatization
   * Implemented in the clean\_text(text) function.
2. **FAQ Loading**
   * Reads legal\_faq.json containing questions and answers.
3. **Vectorization**
   * Preprocessed questions are transformed into TF-IDF vectors.
4. **Similarity Matching**
   * The user input is cleaned and vectorized.
   * Cosine similarity is computed with existing questions.
   * If the similarity is above a threshold (0.3), return the most relevant answer.
5. **Chat Loop**
   * Keeps accepting user input until 'exit' is typed.

#### **5. Example JSON Structure**

json

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{

"questions": [

"What is the process to file an FIR?",

"How can I get a marriage certificate?"

],

"answers": [

"To file an FIR, you need to go to the nearest police station...",

"You can obtain a marriage certificate from the local registrar..."

]

}

#### **6. How to Run**

1. Ensure you have Python 3 installed.
2. Install required libraries if not already present:  
   pip install nltk scikit-learn
3. Place legal\_chatbot.py and legal\_faq.json in the same directory.
4. Run the script:  
   python legal\_chatbot.py

#### **7. Example Conversation**

LegalBot: Hello! I can answer your basic legal questions. Type 'exit' to quit.

You: How to file an FIR?

LegalBot: To file an FIR, you need to go to the nearest police station...

#### **8. Limitations**

* Not capable of answering queries not covered in the FAQ file.
* Limited to exact or closely matched phrasing.
* No real-time legal advice or professional assistance.

#### **9. Future Enhancements**

* Add named entity recognition (NER) to improve query understanding.
* Use embeddings like Sentence Transformers for better semantic matching.
* Deploy as a web service using Flask or FastAPI.