**Project Title:** FAQ Chatbot using NLP - CodeAlpha AI Internship

**1. Overview:** This project is a chatbot developed as part of the CodeAlpha Artificial Intelligence Internship. It answers frequently asked questions using Natural Language Processing (NLP) techniques. The chatbot is implemented using Python and Flask and leverages NLTK and Scikit-learn libraries for text processing and similarity comparison.

**2. Objective:** To create a chatbot that:

* Reads a list of predefined FAQs from a JSON file
* Preprocesses and vectorizes user input
* Compares input with FAQs using cosine similarity
* Responds with the most relevant answer or a fallback message

**3. Tools & Technologies:**

* Programming Language: Python 3.10+
* Web Framework: Flask
* NLP Library: NLTK
* Machine Learning: Scikit-learn
* Frontend: HTML (Jinja2 template)

**4. Features:**

* NLP preprocessing (lowercasing, punctuation removal, stopword filtering)
* TF-IDF vectorization
* Cosine similarity matching
* Flask-based user interface
* Easy-to-edit FAQ dataset (faqs.json)
* Fully offline, no third-party API dependency

**5. File Structure:**

faq-chatbot/

├── app.py # Main Python script

├── faqs.json # List of FAQs in JSON format

├── requirements.txt # Dependencies for the project

└── templates/

└── index.html # Web UI for chatbot

**6. How it Works:**

* User enters a question in the web interface
* The input is preprocessed (tokenized, cleaned)
* TF-IDF vector is created for the input
* Cosine similarity is calculated between the input and all FAQs
* The most similar FAQ is selected
* If the similarity score is above a threshold (default 0.2), the bot returns the answer; otherwise, it says it doesn't understand

**7. Sample Questions:**

* What is AI?
* What is machine learning?
* What programming languages are used in AI?
* What is NLP?

**8. Installation & Running Instructions:**

# Clone or download the repository

cd faq-chatbot

# Create virtual environment (optional)

python -m venv venv

venv\Scripts\activate # For Windows

# Install dependencies

pip install -r requirements.txt

# Run the app

python app.py

Then open <http://127.0.0.1:5000> in your browser.

**9. Output Screenshot (Optional for Report):** You can insert screenshots of the running chatbot UI here.

**10. Author:** **Anuj Kumar Sharma** Artificial Intelligence Intern @ CodeAlpha

**11. Status:** Task 2 - Completed ✅ Ready for submission to GitHub and LinkedIn.