Part 2 Documentation: Business QA Bot

1. Introduction

Part 2 of the Business QA Bot project focuses on implementing an interactive user interface (UI) that allows users to upload business-related documents, ask questions, and view generated responses. This documentation outlines how users can interact with the system: uploading business files, submitting questions, and viewing responses. Additionally, it covers the implementation of the Streamlit application, the user interaction flow, and backend enhancements for better performance.

2. User Interface with Streamlit

The user interface is created using **Streamlit**, which simplifies building interactive web applications. The interface allows users to upload business documents, ask relevant questions, and view responses that the bot generates based on the uploaded content.

2.2 Streamlit Overview

Streamlit enables quick and easy development of web applications for data science and machine learning projects. It’s well-suited for this Business QA Bot, providing a smooth and interactive interface for users to upload business documents and ask questions.

2.3 Application Structure

The core elements of the interface are:

- **File Uploader**: Users upload business documents (PDFs) that contain the data they want to query.

- **Query Input Field**: A text input field where users can enter business-related questions based on the uploaded document.
- **Answer Display**: The bot returns an answer generated using the business document and displays the relevant document segments alongside the answer.

2.4 Detailed Flow

1. **PDF Upload**:
   - Users upload a PDF containing business-related content (reports, statements, policies, etc.).
   - After uploading, the text is extracted from the PDF using the `extract_text_from_pdf` function.
   - The extracted text is divided into smaller, more manageable chunks using `chunk_document`.
2. **Embedding Generation and Upsertion**:
   - The chunks of business documents are encoded into vector embeddings using the `SentenceTransformer` model.
   - These embeddings are upserted into a **Pinecone index**, which makes querying fast and accurate when a user submits a question.
3. **Query Processing**:
   - Users input their business-related questions, and the bot retrieves relevant document sections from Pinecone based on the query's similarity to document chunks.
   - Using Cohere's generative model, the bot provides answers related to the business content in the document.

3. Enhancements to the Business Document Processing Pipeline

3.1 Business Document Extraction and Chunking

The business documents are first parsed using `PyPDF2`, and the text is extracted for further processing. The text is chunked into smaller sections, which improves retrieval accuracy when responding to questions. This chunking ensures the bot can focus on specific areas of the document while generating responses.

3.2 Embedding Generation

Using the `SentenceTransformer` model, vector embeddings are generated for each chunk of the document. These embeddings are then stored in the **Pinecone index** for easy retrieval. The model captures the semantic meaning of each chunk, which is essential for answering questions accurately.

3.3 Efficient Upserting

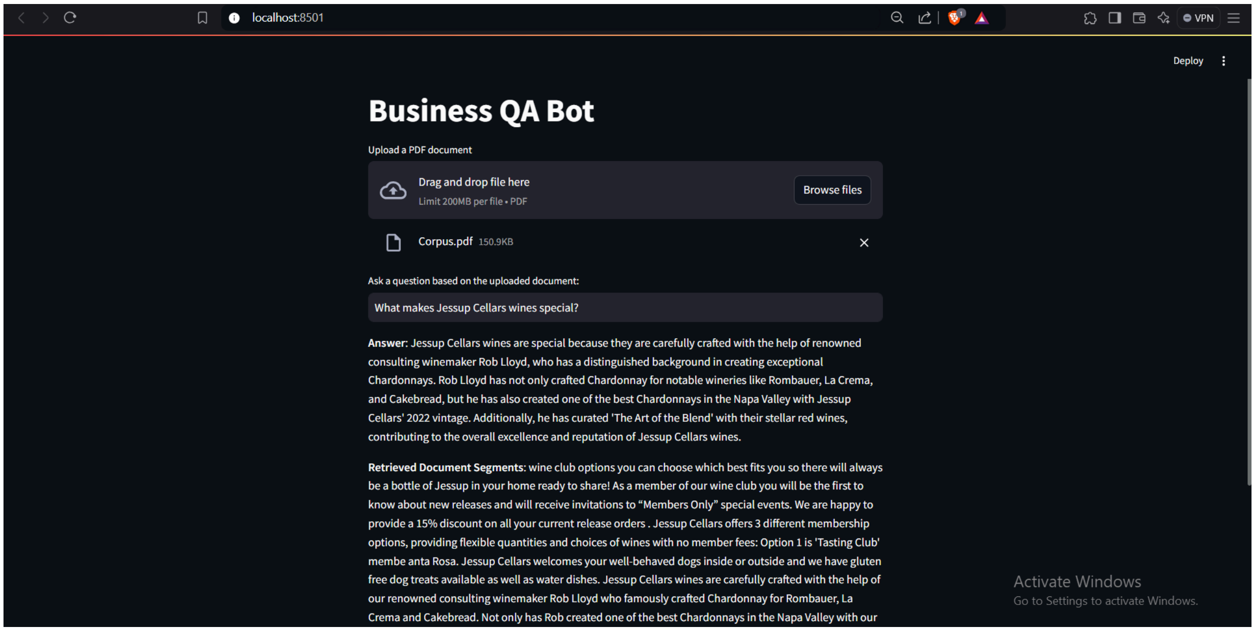
The extracted document embeddings and associated business text are upserted into the **Pinecone index**. This process ensures fast and relevant retrieval of business information when the user submits a query. Pinecone's indexing capabilities allow for high-dimensional search, making it well-suited for this Business QA use case.

4. User Interaction Flow

The user flow is simple and intuitive for interacting with the **Business QA Bot**:

1. **Upload a Business Document**:
    - Users start by uploading a PDF file containing business-related information.
    - The system processes the document, extracts the text, and prepares it for retrieval.
2. **Ask a Business-Related Question**:
    - Users enter their questions in the text input field provided.
    - The bot processes the query and retrieves the most relevant segments from the uploaded business document.
3. **Receive an Answer**:

- ○ The bot generates an answer using the retrieved business document information.
- ○ The answer, along with relevant document sections, is displayed to the user, ensuring transparency and context.



Business QA Bot

Upload a PDF document

Corpus.pdf 150.9KB

Ask a question based on the uploaded document:

What makes Jessup Cellars wines special?

Answer: Jessup Cellars wines are special because they are carefully crafted with the help of renowned consulting winemaker Rob Lloyd, who has a distinguished background in creating exceptional Chardonnays. Rob Lloyd has not only crafted Chardonnay for notable wineries like Rombauer, La Crema, and Cakebread, but he has also created one of the best Chardonnays in the Napa Valley with Jessup Cellars' 2022 vintage. Additionally, he has curated 'The Art of the Blend' with their stellar red wines, contributing to the overall excellence and reputation of Jessup Cellars wines.

Retrieved Document Segments: wine club options you can choose which best fits you so there will always be a bottle of Jessup in your home ready to share! As a member of our wine club you will be the first to know about new releases and will receive invitations to “Members Only” special events. We are happy to provide a 15% discount on all your current release orders . Jessup Cellars offers 3 different membership options, providing flexible quantities and choices of wines with no member fees: Option 1 is 'Tasting Club' membe anta Rosa. Jessup Cellars welcomes your well-behaved dogs inside or outside and we have gluten free dog treats available as well as water dishes. Jessup Cellars wines are carefully crafted with the help of our renowned consulting winemaker Rob Lloyd who famously crafted Chardonnay for Rombauer, La Crema and Cakebread. Not only has Rob created one of the best Chardonnays in the Napa Valley with our

5. Conclusion

In Part 2 of the **Business QA Bot** project, I successfully implemented an interactive user interface using **Streamlit**. This interface allows users to upload business-related documents, ask relevant questions, and receive detailed answers. The enhancements made to the backend ensure accurate and efficient retrieval of business information, contributing to a smooth user experience. This system is ideal for businesses looking for rapid and insightful answers from large volumes of data.