Project Title: Chatbot for Booking Flights Using BERT Embeddings   
  
1. Overview: Using BERT Embeddings, the Flight Booking Chatbot is an intelligent system that helps users search and book flights according to their preferences. The chatbot can interpret natural language input and recommend flights based on user interests by utilizing BERT (Bidirectional Encoder Representations from Transformers) embeddings.

2. Goal: The primary goal of this project is to create a chatbot that can comprehend user inquiries about airline reservations and suggest appropriate flights based on a range of factors, including source and destination locations, favored airlines, length of trip, and financial limits.

3. Approach:  
Data Preprocessing: To establish a single text representation for each aircraft, the source and destination cities are combined, whitespace is removed, and text is converted to lowercase.

BERT Embeddings: A pre-trained BERT model is used to create BERT embeddings for the text representation of each flight. These embeddings provide the flight information's semantic meaning in a dense vector representation.

User Interaction: A command-line interface is used by the chatbot to communicate with users. Natural language queries can be entered by users, including requests for flight recommendations, criteria for choosing flights, and airline preferences.

Recommendation Algorithm: Upon receiving a user question, the chatbot uses cosine similarity to determine how similar the user-input embedding is to the embeddings of every aircraft in the dataset.

Filtering: To further hone the flight recommendations, the chatbot offers filtering options such airline, duration of travel, and pricing range.

4. Execution: Python is the programming language used to implement the project in the Google Colab environment.  
Pandas, Numpy, Scikit-Learn, Torch, and Transformers are some of the libraries used for recommendation algorithms, data manipulation, and creating BERT embeddings.  
The chatbot is programmed to run indefinitely, taking in information from users until they decide to end the conversation.

5. Outcomes: Using the input criteria, the chatbot effectively analyzes user inquiries and recommends flights that are relevant to them.  
Natural language instructions allow users to engage with the chatbot, which makes the interface simple to use and intuitive.  
BERT embeddings' effective implementation allows recommendations to be generated rapidly, even for enormous datasets.

6. Conclusion: Using BERT Embeddings in the Flight Booking Chatbot shows how natural language processing methods and deep learning models may be used to create intelligent conversational systems. The chatbot's ability to comprehend user inquiries and offer tailored flight recommendations through the use of BERT embeddings improves user experience and streamlines the booking process.  
  
7. Future Range:  
Integration with external APIs: To offer real-time flight information and booking functionality, the chatbot can be improved by integrating with external flight booking APIs. Multi-turn dialogue: By putting in place a multi-turn dialogue system, the chatbot would be able to participate in more intricate exchanges, like answering follow-up queries and offering more details.