**Assignment 5**

**System Analysis Report: Generative AI Q&A-Search System**

1. Introduction: This project aims to develop a generative AI system that facilitates content searches, question-answering, and retrieval of information from the organization's proprietary documents. The system will leverage advanced generative AI techniques such as Retrieval Augmented Generation (RAG) and Sentence Transformer to provide accurate and contextual responses to user queries.

2. Problem Statement: The primary problem addressed by this project is the efficient retrieval of information from the organization's vast repository of documents. Employees often struggle to find relevant information quickly, leading to decreased productivity and efficiency. By developing a generative AI Q&A-search system, we aim to streamline the information retrieval process and empower users to access relevant data effortlessly.

3. System Requirements Analysis:

* Business Requirements:
  + Improve productivity by enabling quick and accurate information retrieval.
  + Enhance decision-making processes by providing timely access to relevant data.
  + Ensure the security and confidentiality of proprietary documents.
* Technical Requirements:
  + Integration with Google Cloud Platform (GCP): Vertex AI services for development and deployment.
  + Utilization of generative AI techniques such as RAG and Sentence Transformer for question-answering.
  + Efficient storage and retrieval of document embeddings using vector databases.
* Data Requirements:
  + Access to a diverse set of proprietary documents for training and testing the AI model.
  + Annotation and labeling of documents to facilitate supervised learning tasks.
  + Continuous updating of document embeddings to ensure relevance and accuracy.

4. Feasibility Analysis:

* Technical Feasibility:
  + The project is technically feasible given the availability of advanced AI tools and cloud infrastructure.
  + Technical risks include model performance degradation over time and challenges in optimizing search algorithms for large document repositories.
* Business Feasibility:
  + The project is expected to provide significant business value by improving information accessibility and employee productivity.
  + Financial risks include potential cost overruns due to extensive usage of cloud resources and unexpected delays in development.
* Operation Feasibility:
  + The system is expected to be used effectively by the organization, given its user-friendly interface and integration with existing workflows.
  + Risks include resistance to change among employees and the need for comprehensive training and support during deployment.

5. Project Management:

* Timeline:

**Phase 1: Requirements Gathering and Data Collection (1 month)**

Data Scientist: 1

Project Manager: 1

**Phase 2: Model Development and Testing (1 months)**

Data Scientist: 2

**Phase 3: Integration with GCP Vertex AI Services (1 month)**

Cloud Architect/Software Developer: 1

**Phase 4: Deployment and User Training (1 month)**

Support Specialist/Technical Trainer: 1

6. Conclusion: This project presents significant challenges but offers immense potential in enhancing information accessibility and decision-making within the organization. With proper planning, collaboration, and resource allocation, we are confident in delivering a robust and effective generative AI Q&A-search system that meets the needs of our stakeholders and contributes to the organization's success.