



Ministry Regulation Q&A System

Software Requirements Specification

Authors

Iyed Mouhoub
Hamza Abdelaziz Dia
Mohammed El Amine Kichah
Ahmed Elamine Mouchaal
Islam Mohamed Eldera

Group 4

March 8, 2025

Contents

1	Introduction	2
1.1	Purpose	2
1.2	Scope	2
1.3	Definitions, Acronyms, and Abbreviations	2
1.4	References	2
1.5	Overview	2
2	Overall Description	2
2.1	Product Perspective	2
2.2	Product Functions	3
2.3	User Characteristics	3
2.4	Constraints	3
2.5	Assumptions and Dependencies	3
3	Specific Requirements	3
3.1	Functional Requirements	3
3.1.1	Document Ingestion	3
3.1.2	Question Answering	4
3.1.3	Chatbot Interface	4
3.2	Non-Functional Requirements	4
3.2.1	Performance	4
3.2.2	Accuracy	4
3.2.3	Scalability	4
3.2.4	Maintainability	4
3.2.5	Usability	4
3.2.6	Reliability	4
4	Use Cases	5
4.1	Use Case 1: User Asks a Regulation Question	5
4.2	Use Case 2: No Relevant Information Found	5
5	Appendices	5
5.1	Glossary	5

1 Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) is to define the requirements for the Ministry Regulation Q&A System, an intelligent question-answering platform designed to provide accessible and accurate information about Ministry regulations in Arabic to students, teachers, and the general public.

1.2 Scope

The Ministry Regulation Q&A System will feature a backend for processing Arabic ministry regulation documents and a frontend chatbot interface for user interaction. Utilizing Retrieval-Augmented Generation (RAG) techniques, the system will answer user queries in Arabic based on official documents from 2024. The initial prototype, due by April 16, 2024, will demonstrate core functionalities, with potential future expansions to additional years and platforms.

1.3 Definitions, Acronyms, and Abbreviations

- **RAG:** Retrieval-Augmented Generation, a method combining information retrieval and answer generation.
- **Ministry Regulations:** Official documents detailing Ministry rules and procedures.
- **Chatbot:** A text-based interface for user-system interaction.

1.4 References

- Project Description: “Ministry Regulation Q&A System (Arabic Language) - Project Overview” by Abdelhakim Cheriet.

1.5 Overview

This SRS is organized as follows: Section 2 provides an overall description, Section 3 details specific requirements, Section 4 presents use cases, and Section 5 includes appendices.

2 Overall Description

2.1 Product Perspective

The system is a standalone tool to enhance access to Ministry regulations, with potential for future integration with other platforms.

2.2 Product Functions

- Ingest and process Arabic ministry regulation documents from 2024.
- Index documents for efficient retrieval.
- Enable users to ask questions in Arabic via a chatbot.
- Generate accurate Arabic answers using RAG techniques.

2.3 User Characteristics

- **Students:** Seeking regulatory information for education.
- **Teachers:** Accessing regulations for teaching or administration.
- **General Public:** Requiring regulatory details for personal use.

Users are assumed to have basic computer literacy and Arabic proficiency.

2.4 Constraints

- Prototype deadline: April 16, 2024.
- Limited to 2024 documents for the prototype.
- Must support Arabic with right-to-left layout.
- Must use RAG techniques.

2.5 Assumptions and Dependencies

- Documents are available in PDF or DOCX formats.
- Only textual content is processed (no images or tables).
- Users access the system via web browsers.
- Arabic NLP and RAG tools are available.

3 Specific Requirements

3.1 Functional Requirements

3.1.1 Document Ingestion

- The system shall accept PDF and DOCX ministry regulation documents.
- The system shall extract text from these documents.
- The system shall index the text for retrieval.

3.1.2 Question Answering

- The system shall accept Arabic questions via the chatbot.
- The system shall use a RAG pipeline to:
 - Retrieve relevant document passages.
 - Generate concise Arabic answers.
- The system shall return answers to the chatbot.

3.1.3 Chatbot Interface

- The chatbot shall provide an Arabic text input field.
- The chatbot shall display conversation history in Arabic.
- The interface shall support right-to-left Arabic script.
- The chatbot shall be web-accessible.

3.2 Non-Functional Requirements

3.2.1 Performance

- The system shall respond to queries within 5 seconds.

3.2.2 Accuracy

- Answers shall be factually correct and document-based.

3.2.3 Scalability

- The system shall handle up to 100 concurrent users.
- The system shall support up to 1000 documents.

3.2.4 Maintainability

- The system shall use modular, documented code.

3.2.5 Usability

- The chatbot shall be intuitive for basic computer users.

3.2.6 Reliability

- The system shall be available 99% of operational time.

4 Use Cases

4.1 Use Case 1: User Asks a Regulation Question

- **Actor:** User
- **Precondition:** Documents are ingested and indexed.
- **Flow:**
 0. User accesses the web-based chatbot.
 0. User types a question in arabic
 0. System processes the question with RAG.
 0. System displays an answer in Arabic.
- **Postcondition:** User receives an answer.

4.2 Use Case 2: No Relevant Information Found

- **Actor:** User
- **Precondition:** Documents are ingested and indexed.
- **Flow:**
 0. User accesses the chatbot.
 0. User types an unrelated Arabic question.
 0. System processes and finds no relevant data.
 0. System expresses his inability to find an answer.
- **Postcondition:** User is informed of no answer.

5 Appendices

5.1 Glossary

- **RAG:** Retrieval-Augmented Generation.
- **Ministry Regulations:** Official Ministry documents.
- **Chatbot:** Text-based conversational tool.