

Software Requirements Specification

for

JU Exam Office Management System

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Revision History

Revision	Date	Author(s)	Description
1.0	25.09.2016	A.Sandu	Chapter 1 - Introduction
2.0	10.12.2015		Explaining different sortings
3.0	05.01.2016		Kleine Änderungen
4.0	10.01.2016		Finale Version

Chapter 1

Introduction

1.1 Purpose

The purpose of this project is to develop an **online-based examination management system** that streamlines the entire exam process. This system encompasses various functionalities, including:

- User authentication,
- Exam scheduling,
- Exam registration,
- Management of exam materials,
- Result creation,
- Teacher remuneration, and more.

The system aims to provide a **user-friendly and efficient platform** for the following users:

- Exam Controllers,
- Exam Officers,
- Faculty Members, and
- Students.

The main goal of the project is to create a **hassle-free digitalized system** that saves time and effort for all stakeholders involved. By simplifying and automating various processes, the system enhances overall efficiency and effectiveness in managing and participating in exams.

1.2 Intended Audience

1.2.1 Exam Office Representative

The **Exam Office Representative** has comprehensive control over the exam office system. They are responsible for:

- Publishing exam results,

- Providing registration forms for student exam enrollment,
- Posting the defined exam schedules on the website's homepage.

Additionally, the Exam Office Representative:

- Oversees teacher remuneration,
- Distributes exam materials,
- Monitors the attendance of both students and teachers.

The Exam Office Representative holds **full authority** over the system's operations, ensuring that all exam-related activities are efficiently managed.

1.2.2 Department

The **Department** is responsible for managing the exam committees for specific exams. Their responsibilities include:

- Assigning members to the exam committees for each exam,
- Appointing one of the committee members as the **Chairman** of the exam committee,
- Organizing exam committees within their respective discipline,
- Ensuring that all exams are conducted in accordance with university regulations.

1.2.3 Teacher

Teachers are responsible for:

- Submitting in-course and final exam marks to the designated exam committee chair,
- If appointed as the exam committee chairman, compiling and submitting the final marks to the Exam Office Representative.

Teachers may also interact with the system to track exam-related tasks assigned to them.

1.2.4 Student

Students can:

- Register for exams,
- Collect certificates and grade sheets,
- View their individual results once logged into the system.

Students can also track their upcoming exams and review exam-related details through their accounts.

1.2.5 Developers

Developers use this SRS document to understand the system's functional and non-functional requirements. They are responsible for:

- Implementing the system according to these specifications,
- Ensuring the system meets the needs of all users.

1.2.6 Testers/QA Team

The **Testers/QA Team** ensures that the system:

- Meets the specified requirements,
- Functions as expected and is free from defects.

They will validate the system's performance, usability, and reliability through a structured testing process.

1.3 Intended Use

The system is designed to serve as an **efficient, centralized platform** for managing all aspects of exam administration within **Jahangirnagar University (JU)**.

By automating and simplifying various processes, the platform aims to:

- Save time and effort for administrators, faculty, and students,
- Ensure accuracy and consistency across all exam-related activities.

This solution enhances the overall efficiency of the JU examination management, allowing stakeholders to focus on **delivering quality education**.

1.4 Product Scope

The **Exam Office Management System** is a comprehensive software solution designed to streamline and automate various exam-related activities within an educational institution. The system aims to:

- Efficiently manage exam schedules,
- Track student attendance,
- Facilitate result publication,
- Provide special accommodations for physically disabled and sick students,
- Handle student applications for marksheets and certificates.

1.4.1 Purpose

The primary purpose of the product is to improve the **accuracy, efficiency, and transparency** of exam-related processes. The software serves as a centralized platform for the exam office to manage multiple tasks, including:

- Creating and publishing exam schedules,
- Handling student results,
- Approving special accommodations,

Additionally, it provides students with a seamless interface to:

- Access their results,
- Apply for marksheets and certificates,
- Register for upcoming exams.

1.4.2 Benefits

- **Increased Efficiency:** Automation of administrative tasks, such as result processing and exam schedule management, reduces manual errors and saves time.
- **Improved Accessibility:** Students can access and manage their exam-related activities from a single platform, including applications for special services like scribes and sickbeds.
- **Transparency and Accountability:** The system ensures accurate result reporting, fair exam management, and real-time access to information, fostering trust between the exam office and students.
- **Data Security:** The system securely handles sensitive student data and provides role-based access to ensure privacy and security.

1.4.3 Objectives

- To automate and centralize exam management processes.
- To reduce manual errors and improve data accuracy.
- To provide students with easy access to their results, certificates, and marksheets.
- To ensure timely publication of exam schedules and results.
- To streamline the process of approving special accommodations for students in need.

1.4.4 Goals

The software aligns with the institution's broader goals of:

- Enhancing operational efficiency,
- Improving the student experience,
- Ensuring data security.

By automating exam processes, the institution can allocate resources more effectively, reduce administrative workload, and focus on providing quality education.

1.5 Risk Definition

The following risks have been identified for the Exam Office Management System:

1.5.1 Exam Registration for a Particular Semester or Year

Analysis: Incomplete understanding of registration workflows; missed edge cases.

Design: Poor UI and data validation; registration errors.

Implementation: System performance issues; security vulnerabilities.

1.5.2 Publishing Exam Schedule by the Exam Office

Analysis: Miscommunication with departments; missing holidays.

Design: Inefficient scheduling algorithm; inflexibility for updates.

Implementation: Bugs in scheduling tools; system crashes during data updates.

1.5.3 Publishing Results

Analysis: Undefined review process; no mechanism for contesting results.

Design: Scalability issues; inadequate security.

Implementation: Calculation errors; slow performance during peak access.

1.5.4 Viewing the Published Results

Analysis: Misinterpretation of detail level; unclear navigation.

Design: Non-intuitive UI; slow result retrieval.

Implementation: Query errors; downtime during heavy traffic.

1.5.5 Applying for Marksheet

Analysis: Misunderstanding the application process.

Design: Poor UI for document submission.

Implementation: Processing failures; lack of document validation.

1.5.6 Applying for Certificates

Analysis: Unclear certificate types and processing times.

Design: Poor workflow design leading to confusion.

Implementation: Errors in certificate generation; delays in tracking.

1.5.7 Managing Exam Materials

Analysis: Incomplete capture of material types and workflows.

Design: Poor material management and access control.

Implementation: Data loss during uploads; version control errors.

1.5.8 Preparing Exam Calendar

Analysis: Missing input from departments; overlooked dependencies.

Design: Rigid calendar design; inefficient scheduling algorithms.

Implementation: Bugs in scheduling; failure to notify about changes.

1.5.9 Approval Applications for Physically Disabled and Sick Students

Analysis: Misunderstanding the approval process.

Design: Complicated application process; poor system integration.

Implementation: Approval delays; incorrect processing of applications.

1.5.10 Tracking Teachers' and Students' Attendance During Exams

Analysis: Incomplete tracking process definition; overlooked edge cases.

Design: Faulty check-in system; lack of data validation.

Implementation: System failures; inaccurate attendance reporting.

1.5.11 Managing Answer Scripts for Exams

Analysis: Incomplete understanding of script tracking; missing lifecycle details.

Design: Poor physical script tracking; weak grading system integration.

Implementation: Errors in script tracking; delays in digital script processing.

1.5.12 Teachers' Billing for Exam-Related Tasks

Analysis: Incomplete billing criteria; missed exceptions.

Design: Inaccurate billing calculations; lack of transparency.

Implementation: Billing errors; missed payments due to task tracking issues.

Chapter 2

Overall Description

2.1 User Classes and Characteristics

2.1.1 Exam Office Representative (Exam Controller)

Characteristics: The Exam Controller holds the highest level of authority within the system. They have full control over all operations and are responsible for:

- Managing user roles and permissions,
- Overseeing the entire exam management process,
- Ensuring smooth operation and compliance with institutional policies.

2.1.2 Department

Characteristics: The Department manages departmental exam processes and is responsible for:

- Coordinating with exam committees, teachers, and students,
- Submitting exam-related documents such as syllabi and question papers,
- Tracking and managing departmental student progress,
- Facilitating communication between teachers, students, and the exam office.

2.1.3 Teacher

Characteristics: Teachers ensure smooth exam execution and are involved in:

- Reviewing and approving exam schedules, question papers, and marking schemes,
- Managing and overseeing grading and result finalization,
- Addressing and resolving any examination-related disputes or issues.

2.1.4 Students

Characteristics: Students use the system primarily for academic purposes and are responsible for:

- Online exam registration, including browsing available exams, selecting desired subjects, and completing the registration process,
- Accessing their exam results through the system, making it a comprehensive tool for managing their academic journey.

2.2 User Needs

2.3 Operating Environment

2.3.1 Hardware Platform

- **Desktops/Laptops:** Intel Core i3 processor or equivalent capacity, 4GB RAM, 128GB SSD or higher.
- **Mobile Devices/Tablets:** Android (running Android 8.0 or above), iOS (iPhone 6S or above).

2.3.2 Software Components and Applications

- **Google Chrome:** Latest Stable Version
- **Microsoft Edge:** Latest Stable Version
- **Mozilla Firefox:** Latest Stable Version
- **Safari:** Latest Stable Version

2.3.3 Operating Systems

- **Windows:** Windows 10 (64-bit), Windows 11 (64-bit)
- **Linux:** Ubuntu 22.04 LTS / CentOS 8
- **macOS:** 12+
- **Mobile:** iOS 13 or above, Android 8.0 or above

2.3.4 Database Compatibility

- **MySQL:** 8.0
- **PostgreSQL:** 13
- **MongoDB:** Version 4

2.3.5 Network Environment

- Reliable high-speed internet connectivity for remote access.

2.4 Constraints

2.4.1 Budget and Resource Constraints

- Limited budget for acquiring and maintaining infrastructure, such as servers and databases.
- Constraints on human resources available for development, testing, and maintenance.
- Restrictions on licensing costs for any third-party tools or software components.

2.4.2 Time Constraints

- The system must be operational before the next exam cycle.
- Deadlines for features such as registration, schedule publishing, and result announcements must align with academic timelines.
- Limited time available for testing and bug-fixing phases due to tight academic schedules.

2.4.3 Integration with Existing Systems

- Must integrate seamlessly with existing university systems, including student information systems, finance, and attendance tracking.
- Compatibility with existing authentication and access control systems is necessary to ensure secure data exchange.

2.4.4 Data Security and Privacy Constraints

- Must comply with data privacy regulations such as FERPA and GDPR.
- Ensure security for sensitive data, including student records, exam materials, and results, through encryption and secure access controls.

2.4.5 Scalability and Performance Constraints

- The system should be scalable to handle a large number of users during peak times, such as exam registration and result publication.
- Ensure minimal downtime, particularly during critical periods like exam registration and result viewing.

2.4.6 User Accessibility Constraints

- The system must be accessible to all students, including those with physical disabilities, and comply with accessibility standards.
- Provide mobile-friendly and cross-platform access to accommodate various user devices and preferences.

2.5 Assumptions

The following assumptions are made regarding the use and operation of the exam office system:

1. Users, including the exam office representative, department, students, and teachers, will not be able to access the system without an active internet connection.
2. All users are expected to possess basic computer literacy and have access to the internet.
3. It is assumed that users will know how to connect to the internet and navigate to the system's website.
4. The system will undergo thorough testing and quality assurance processes to ensure functionality, reliability, and security.
5. Users are expected to adhere to ethical standards and maintain academic integrity while using the system for exam-related activities.
6. It is assumed that the exam office representative, department, and teachers will promptly update the system's database to reflect any necessary changes for conducting exam-related tasks.
7. Students are expected to regularly check the system for published exam schedules and results.
8. Teachers are assumed to submit exam marks to the exam committee chairman in a timely manner, who will forward them to the exam office representative for further processing.
9. The exam office representative is responsible for tracking all registered examinees and ensuring that the database is regularly updated and maintained.

Chapter 3

Requirements

3.1 Functional Requirements

3.2 Non Functional Requirements

Appendices

Appendix A

Glossary