



Department of Information and Communication Technology

Faculty of Technology

University of Ruhuna

Database Management Systems Practicum

Database Management Systems Practicum ICT 1222

Group 04

Group Members:

TG/2022/1354 - L A M C Wijesinghe

TG/2022/1342 - J M P B W Jayasundara

TG/2022/1344 - M R Sandaruwan

TG/2022/1345 - W A N A Perera

Contents

1	Introduction.....
1.1	Purpose
1.2	Scope
1.3	overview
2	Overall Description
2.1	System Objectives
2.2	System Functions
2.3	User Classes and Characteristics
2.4	Operating Environment
2.5	Design and Implementation Constraints
3	Specific Requirements
3.1	Functional Requirement
3.1.1	Admin
3.1.2	Dean
3.1.2	Lecturer
3.1.3	Technical Officer
3.1.4	Students
3.1.5	Non-Functional Requirements
4	Performance Requirements
4.1	Security Requirements
4.2	Usability Requirements
4.3	Compatibility:
5	External Interface Requirements
6.	Additional Requirement
6.1	Accessibility
6.2	Internationalization
6.3	Documentation

1 Introduction

1.1 Purpose

This Software Requirement Specification document defines the necessary requirement for the accessibility of TechSys, a Student Management System which was implemented for the Faculty of Technology. TechSys will assist the administrative staff, faculty members and student in managing academic activities, records efficiently. With the integration of Database Management System, TechSys will enable a secure storage, easy retrieval and efficient management of data related to students, courses, assessments, exams and faculty members.

1.2 Scope

The TechSys will encompass the following functionalities:

- Student management (admission and enrolment)
- Course management (creation, modification, and deletion)
- Attendance tracking and reporting
- Marks recording and grading
- Results calculation and generation
- User management (admin, dean, lecturer, technical officer, student)

1.3 overview

TechSys will be a command-line interface application built exclusively on a MySQL database architecture. It will provide a straightforward and efficient environment for faculty members, students and administrators to access and manage information directly from CLI commands. TechSys will ensure ease of use and functionality for tasks such as course management, student registration, information tracking all while leveraging capabilities of MySQL for efficient data management.

.

2 Overall Description

2.1 System Objectives

The primary objectives of the TechSys are to:

- Streamline administrative processes.
- Improve efficiency and accuracy of data management.
- Provide a centralized platform for accessing student information.
- Facilitate communication between faculty and students.

2.2 System Functions

Student Management:

- Add, edit, and delete student records
- Track student enrolment and withdrawal

Course Management:

- Create, modify, and delete course details
- Assign lecturers to courses
- Manage course schedules and timetables

Attendance Management:

- Record student attendance for each course
- Generate attendance reports
- Calculate attendance percentages and eligibility

Mark Management:

- Record marks for various assessments (quizzes, assignments, exams)
- Calculate final grades and GPAs
- Generate mark sheets and grade reports

User Management:

- Create, modify, and delete user accounts
- Assign appropriate permissions to different user roles

2.3 User Classes and Characteristics

- Admin: Full access to all functionalities with privileges to grant permissions.
- Dean: Full access without the ability to grant permissions.
- Lecturer: Access to manage marks and course-related data.
- Technical Officer: Read, write, and update permissions for attendance-related data.
- Student: Read-only access to their own attendance and marks.

2.4 Operating Environment

Database Server: MySQL

Operating Systems

- Windows
- Linux
- MacOS

2.5 Design and Implementation Constraints

Data Security: Passwords must be hashed; sensitive data must be protected.

Compliance: The system must comply with data protection regulations.

Performance: The system must handle concurrent access and large volumes of data efficiently

3 Specific Requirements

3.1 Functional Requirement

3.1.1 Admin

The Admin in the Student Management System (TechMS) is responsible for system-wide management, including user and data management. The functional requirements for the admin role include:

- Create, update, and delete user accounts for administrators, lecturers, technical officers, and students.
- Reset passwords and manage account access and permissions.
- Grant and revoke privileges to different user roles (Dean, Lecturer, Technical Officer, Student).

3.1.2 Dean

The Dean's role in the TechSys involves oversight and strategic management of academic programs and faculty. The functional requirements for the Dean role include:

- Review and approve new academic programs, courses, or changes to the curriculum.
- Develop, update, and enforce academic policies and standards.
- Monitor the quality and effectiveness of existing academic programs and courses.

3.1.3 Lecturer

Lecturers in the TechSys are responsible for managing their courses and interacting with students. The functional requirements for the Lecturer role include:

Access and manage course information, including course syllabi, schedules, and materials.

Assign and update course content, such as lectures, assignments, and readings.

Enter and update student marks for assessments and exams.

3.1.4 Technical Officer

The Technical Officer in the TechSys is responsible for maintaining the technical infrastructure and providing support. The functional requirements for the Technical Officer role include:

- Administer and maintain the TechSys database and related systems.
- Ensure system availability, performance, and reliability.
- Update the student attendance
- Provide technical support and assistance to system users, including administrators, faculty, and students.

3.1.5 Students

Students in the TechSys have access to information related to their academic progress and course registration. The functional requirements for the student role include:

- Log in securely to the system using personal credentials.
- Check and view their attendance records for each course
- Access and view their courses, exam marks and exam dates.

4 Non-Functional Requirements

4.1 Performance Requirements

- The system must handle multiple concurrent users and large data volumes efficiently.
- System should quickly load to users.
- Fast respond time

4.2 Security Requirements

- User passwords must be securely hashed.
- Access to sensitive data must be restricted based on user roles.
- Robust security measures to protect sensitive data

4.3 Usability Requirements

- Easy-to-learn and user-friendly interface
- Clear documentation and training materials

4.4 Compatibility

- Compatible with various operating systems and browsers

5 External Interface Requirements

- User Interface: Command Line Interface
- Database: MySQL

6 Additional Requirement

6.1 Accessibility

Ensure the system is accessible to all authorized users, regardless of their technical proficiency or physical abilities.

6.2 Internationalization

Consider supporting multiple languages and cultural settings.

6.3 Documentation

User Manual: Documentation for end-users on how to use the system.

Technical Documentation: Detailed technical documentation for system maintenance and development

References

- MySQL Documentation
- <http://teclms.ruh.ac.lk/>
- <https://paravi.ruh.ac.lk/tecmis/>

