Department of Information and Communication Technology

Faculty of Technology

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Database Management Systems Practicum

ICT 1222

Assignment 02 - Mini Project

Group 02

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Table of Contents

1. Introduction 3
   1.1 Purpose 3
   1.2 Scope of Management System of TECMIS 3
   1.3 Intended audience and reading suggestions 3
   1.4 Definitions, acronyms and abbreviations 3
2. System overview 4
   2.1 Key features and functionalities 4
   2.2 Goals of the system 4
   2.3 Context diagram 5
3. Functional requirements 6
   3.1 User Roles 6
   3.2 User Authentication 6
   3.3 Student Management 6
   3.4 Course Management 6
   3.5 Grade Management 6
   3.6 Notices and Announcements 6
   3.7 Admin Management 6
   3.8 Reporting 6
4. Non-functional requirements 7
   4.1 Performance 7
   4.2 Security 7
   4.3 Usability 7
   4.4 Reliability 7
   4.5 Maintainability 7
   4.6 Capacity 7
5. Assumptions and dependencies 8

1. Introduction

1.1 Purpose

The purpose of creating a Software Requirement Specification document for a Database Management system in the context of a Student Management System is to clearly define the function and nonfunctional requirements of the system of university. After this, the project will be called TECMIS.

1.2 Scope of Management System of TECMIS

The TECMIS system helps to manage the registration and enrollment of students, course details, student exam results, attendance, medical submission. The system is in the admin, dean, student, lecturers and technical officers. Each of the users has specific authorities in the system. Those are,

- Student registration
- Grade management
- Lecturer and course management
- Communication through notices and announcements
- Administrative control over users and courses

It's important to note that the scope of a TECMIS can vary greatly depending on the educational institution's size, specific needs and technological infrastructure.

1.3 Intended audience and reading suggestions

This document is intended for various stakeholders involved in the development, implementation and use of the TECMIS. It outlines the functional and non-functional requirements that guide the system's design and implementation.

- Admin – manage users and system settings
- Dean – view all the user contents
- Lecturers – use the system for academic purposes
- Technical officers – maintenance of attendance and other technically related contributions
- Student – view all related details and use the system with permissions

1.4 Definitions, acronyms and abbreviations

MIS – Management Information System

SRS – Software Requirements Specification

GPA – Grade Point Average

2. System overview

The TECMIS is a comprehensive platform designed to automate and manage various academic and administrative processes within a university. The system integrates key functions required by students, lecturers and administrative staff, providing a seamless and efficient user experience. It centralizes data related to students, courses, grades and notices, ensuring easy access to real-time information.

Each user type will have specific permissions and access to relevant features based on their role. The system will be web-based, accessible through modern browsers, offering a user-friendly interface.

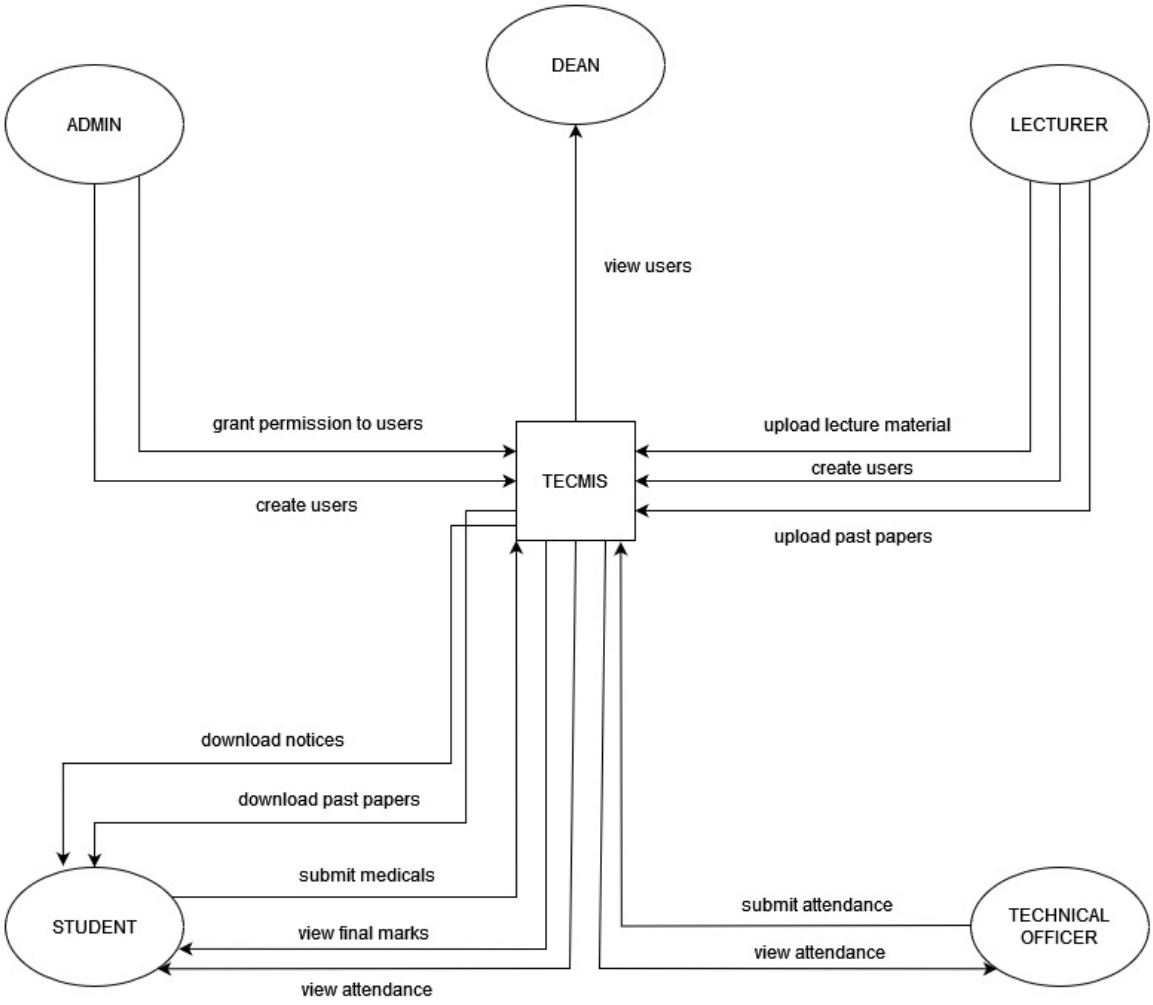
2.1 Key features and functionalities

- Student registration and profile management
  Student can register in the system, manage their personal information, view enrolled courses, track academic progress and view notices
- Course and grade management
  Lecturers can manage courses, post grades and upload notices relevant to their students. Students will have access to their grades and academic performance at any time.
- User management
  Admins have control over user accounts, allowing them to create, update and remove student or lecturer accounts. They can also assign roles and manage system settings.
- Notices and announcements
  Lecturers and admins can post notices or announcements that will be displayed to students. Notices can include course-related updates, university events and other administrative information.
- Role-based access control
  The system ensures that users can only access functionalities relevant to their role, with administrators having the highest level of control.

2.2 Goals of the system

- Efficiency: Automate manual processes such as student enrollment, course registration and grade submission to reduce administrative workload and improve accuracy.
- Accessibility: Provide 24/7 access to students, lecturers and admins through an online portal, ensuring that academic and administrative information is always available.
- Data centralization: Centralize student, course and academic data to eliminate redundancy and provide easy access to all stakeholders.
- Security and privacy: Ensure that all sensitive information (student records, grades, personal information) is securely stored and accessible only to authorized users, complying with data privacy laws.

2.3 Context diagram



3. Functional requirements

3.1 User Roles

The system will have below primary roles:

- Admin: Manages users, courses, and has access to all functionalities
- Dean: Can view all the user interfaces and course details
- Lecturer: Can manage courses, upload grades, and post notices
- Technical officer: Read, write and update attendance related to students
- Student: Can view their profile, grades, notices, and register for courses

3.2 User Authentication

The system shall provide a login functionality for all users. Users will log in using their email and password. Role-based access control will ensure that only relevant sections of the system are available based on user type (student, lecturer, admin, technical officer, dean)

3.3 Student Management

The system allow administrators to add, update, and delete student records. Students shall be able to view and edit their profiles (excluding their GPA and academic details). The system shall maintain academic information for each student, including GPA and enrolled courses.

3.4 Course Management

Lecturers shall have the ability to create and manage courses. The system shall allow students to register for courses at the beginning of each semester. The system shall allow administrators to assign lecturers to courses.

3.5 Grade Management

Lecturers shall be able to upload grades for each course. Students shall be able to view their grades and GPA once they are posted by lecturers.

3.6 Notices and Announcements

Lecturers and admins shall be able to create and post notices. Students shall be able to view notices and announcements relevant to their courses and university life. Notices may contain title, description, date, and optional file attachments.

3.7 Admin Management

Admins shall have full control over managing user accounts (adding, updating, deleting). Admins shall be able to upload or modify notices and handle all system-related settings.

3.8 Reporting

The system shall generate reports based on student grades, enrollment numbers, and other relevant academic metrics. Admins shall be able to generate reports to evaluate academic performance.

4. Non-functional requirements

There are a lot of software requirements included in the non-function requirements of the TECMIS database management system which contains various processes, namely security, performance, usability, maintainability, and reliability

4.1 Performance

- The efficiency and speed at which a system operates are measured by its performance
- The system should provide quick response to user queries and action
- The system should be scalable to accommodate a growing number of users, courses, and data without significant performance degradation
- All pages should load within 3 seconds for users with a 5mbps internet connection

4.2 Security

- All sensitive data (passwords, personal information) shall be stored securely using encryption
- The system shall use role-based access control (RBAC) to ensure only authorized users can access specific functionalities
- Passwords must meet a minimum complexity standard (at least 8 characters, with uppercase, lowercase, numeric, and special characters)

4.3 Usability

- The system shall provide an intuitive and user-friendly interface accessible on desktop and mobile devices
- Provide user training resources to ensure users are proficient in using the system
- Ensure the system complies with accessibility standards (e.g., WCAG) to accommodate users with disabilities

4.4 Reliability

- Reliability is the system's capacity to function steadily and consistently
- Ensure that data remains consistent and accurate even during system failures or crashes
- Regularly back up data and establish disaster recovery procedures to ensure data can be restored in case of system failures
- The system shall automatically back up data daily to prevent data loss

4.5 Maintainability

- The system shall be modular, allowing for easy updates and new feature additions
- A dedicated help desk shall be provided for resolving user issues

4.6 Capacity

- The capacity of a system indicates how much data and user load it can handle
- Data Processing and Storage: The system needs to be efficient to manage and store enormous volumes of data without sacrificing performance
- Concurrent User Support: It should be able to handle multiple users or processes at once without stuttering, ensuring that operations continue even under high demand

5. Assumptions and dependencies

- The university will provide all necessary hardware and infrastructure for the system
- Internet connectivity is assumed for the system to function correctly
- Students and lecturers will be provided with university email accounts for authentication