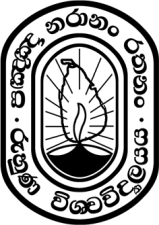
**ICT1222 - Database Management Systems Practicum Mini Project**



**Department of Information and Communication Technology**

**Faculty of Technology**

**University of Ruhuna**

**Database Management Systems Practicum**

**ICT 1222**

**Assignment 02 – Mini Project**

**Group 08**

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1. **Introduction**

1.1 Purpose

The purpose of creating a document is to define the functional and non-functional requirements for the development of the TECLMS-TECMIS.This document will serve as a guide for the development team

1.2 Scope of Management System

The TECLMS-TECMIS system helps manage student registration, enrollment, course information, grades, attendance and medical submissions. It will have different access levels for admin, Dean, Lecture, Technical officer, and student

Each user has specific which are:

* Keeping student records up to date
* Managing course information
* Handling academic record
* Organizing and maintaining data
* Managing faculty and staff information
* Handling finances and budgets

1. **System Overview**

This system overview gives stakeholders a clear understanding of the TECLMS-TECMIS system, including its purpose, main features, and security considerations. It provides a basic summary before going into more detailed project documentation

2.1 Overall Description

The TECLMS-TECMIS database management system is a complete software solution made to manage student data at Ruhuna University. The project’s goal is to simplify and automate various administrative and academic tasks, helping the university offer better education and services to its students

2.2 Product features

* + CGPA/SGPA check.
  + Payable details check
  + Student academic details check
  + Staff basic details check
  + Staff academic details check
  + Student log-in functionality.
  + View student basic details.
  + View student last log-in time.
  + Department basic details
  + Course basic details check
  + Student attendance check
  + Staff attendance check
  + Notice check
  + Centralized data administration
  + Data querying regarding to the status within the organization.

2.3 Product Function

There are five common features of the TECLMS-TECMIS Student Management system those are:

1. Admin

* Create, update, and delete user account for administration, lectures and stuff members
* Reset password and manage accounts access
* Add, edit and delete student record
* Update course information, including course schedules
* Manage academic records, including grades, transcript, and attendance

1. Dean

* Review and approve new academic programs, courses, or curriculum changes.
* Monitor and assess the quality and effectiveness of the existing academic program
* Manage faculty and staff assignments and workload
* Develop, update, and enforce academic policies and standards.

1. Lecture

* Access and manage the course information, including course syllabi, schedules, and materials
* View student’s enrollment and student’s activities
* Communicate with student about missing assignments, poor attendance, or grades that need improvement
* Provide feedback to the dean on student performance and course effectiveness
* Update marks as required and manage special cases

1. Technical officer

* Maintain TECLMS-TECMIS database management system
* Ensure system availability and reliability
* Attendance data entry updated
* Enter data related to students who have submitted medical certificates
* Provide lecturers with accurate attendance records to help them determine student eligibility for exams.

1. Student

* View Continuous assessment marks and final exams marks
* View overall grades and GPA for each course and semester
* View attendance summary for each course
* Check eligibility for final exams based on the attendance and CA marks
* View medical status if submitted, including its effect on attendance and marks.
* Receive notifications from lecturers, deans, or the admin regarding class updates, exam schedules, or changes in attendance status.

2.4 User Characteristics

The system will be used by:

* Admins with technical knowledge of the database.
* Faculty members (Dean, Lecturers) with moderate computing skills.
* Technical Officers with specific roles in managing attendance.
* Students who will access results and attendance.

**3.Function Requirements**

3.1 User Management

User management in the TECLMS-TECMIS student management system refers to the processes involved in managing user accounts and permissions for different system roles, such as student, lecturers, administrators and technical officers.

* Create, update and delete user accounts for different roles.
* Allow password resets and account recovery features for all users.
* Store and manage user profiles with personal and academic information.
* Monitor user activity logs to track login attempts, profile changes, and system access history.
* Provide access levels based on user roles, with permissions customized for each role.

3.2 Attendance Management

Attendance Management in the TECLMS-TECMIS Student Management System focuses on tracking and managing student attendance in courses. This system helps ensure accurate attendance tracking and supports both academic performance and eligibility decisions.

* Lecturers can mark student attendance directly in the system for each class or session.
* Enable automatic data import from biometric or card-based attendance systems.
* Allow bulk attendance data entry for larger classes or exam sessions.
* Provide students with real-time access to their attendance summary.
* Generate detailed attendance reports for lectures, students and administrators with filtering option by date, course or student group.

3.3 Mark Management

Mark management refers to the system or process used by educators or institutions to record, track, and evaluate a student’s academic performance based on their grades or scores. It involves collecting student marks from various assessments, calculating overall grades, and generating reports. This system is often digital, allowing automated calculations and easier data access for both teachers and students.

* Lecturers can enter, update, and mange continuous assessments marks and final exam grades within the system.
* Manage grading workflows for group assessments, individual assignments, and exams.
* Allow lecturers to modify or grades with justification, subject to admin approval.
* Track deadlines for grade submissions and provide notification to lecturers.

3.4 Result Management

Result management is the process of collecting, processing, and disseminating the outcomes of assessments, typically in an academic or testing environment. It involves compiling the results of exams, assignments, or evaluations, calculating final scores or grades, and generating reports for students, teachers, and administrators. Modern systems often leverage software to automate and streamline these processes.

* Automatically calculate final grades by aggregating continuous assessments, exam results, and attendance.
* Generate academic transcripts for students, showing course results, GPA, and overall performance.
* Provide admin and lecturers with data analytics tools to analyze student performance trends over time.
* Allow students to submit grade appeals within the system, with tracking and feedback from faculty or admin.
* Generate pass/fail reports and course completion statistics for academic review.
* Allow students to request and download their transcripts in PDF format.

3.5 Medical Record

Medical record management refers to the process of creating, organizing, storing, and maintaining patients' health information. This includes records of diagnoses, treatments, medical histories, lab results, prescriptions, and other healthcare-related data. Ensures the accuracy, confidentiality, and accessibility of patient information, enabling healthcare providers to deliver better care.

* Allow students to submit medical certificates or documentation through the system.
* Provide admin and technical officers with tools to verify and process medical records.
* Provide admin and technical officers with tools to verify and process medical records.
* Automatically adjust attendance records based on approved medical certificates.
* Enable students to view the status and effect of their submitted medical certificates on attendance and grades.
* Generate reports on medical certificate submissions and their impact on student academic performance for admin and faculty.

**4.Non-Functional Requirements**

The non-functional requirements for the TECLMS-TECMIS database management system include important aspects like security, performance, maintainability and reliability.

4.1 Performance

* The system should answer user questions quickly and handle tasks efficiently.
* It should be able to grow to support more users, courses and data without slowing down.
* The system should manage at least 100 transactions at time.

4.2 Reliability

* Make sure the data stays correct and reliable, even if the system fails or crashes
* Regularly save copies of the data and set up a plan to recover it in case something goes wrong.

4.3 Security

* Keep student data safe from unauthorized access by using encryption and access controls.
* Use role-based access control (RBAC) to limit who can see sensitive data based on their job roles.
* Keep detailed logs of user activities and changes to data for security and compliance.

4.4 Usability

* Make sure the user interface is easy to use and friendly for everyone, including people with disabilities.
* Offer training materials to help users learn how to use the system effectively.
* Ensure the system meets accessibility standards to support users with disabilities.

**5. Conclusion**

In conclusion, the TECLMS-TECMIS system is designed to enhance the management of student data and streamline administrative processes at the University of Ruhuna. By implementing robust features for user management, attendance tracking, mark management, result processing, and medical record handling, the system aims to provide a comprehensive solution that meets the diverse needs of students, faculty, and administrative staff.

This document outlines the functional and non-functional requirements essential for the development of the system, serving as a roadmap for the development team. By adhering to these requirements, the TECLMS-TECMIS system will improve efficiency, ensure data accuracy, and promote a positive user experience. Ultimately, this system will contribute to better academic outcomes and enhance the overall quality of education at the university.