ICT2132 – Object Oriented Programming Practicum
LEVEL II (SEMESTER I) – Mini Project

TECMIS – Project Report.

Group Number: G08

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1. Introduction and Background.

Overview

Java is an object-oriented, concurrent, general-purpose, class-based programming language that was created with the goal of having as few implementation dependencies as feasible. It is designed to enable "write once, run anywhere" (WORA), which prevents the need to recompile code in order to run it on other platforms. Typically, Java programs are compiled to byte code (class file) that can run on any JVM, regardless of the architecture of the computer. With an estimated 10 million users as of 2012, Java is one of the most widely used programming languages, especially for client-server web applications . James Gosling created Java at Sun Microsystems, which later merged into Oracle Corporation, and made it available as a core programming language in 1995.

The Teaching and Learning Management System (TALMS) is a web-based application that is designed to provide an efficient and user-friendly platform for the faculty of technology to manage various aspects of teaching and learning. The system is developed using Java and MySQL, and it offers a range of features that allow the faculty to manage user profiles, course details, student marks, attendance, notices, timetables, and medical records. The system is designed to cater to the needs of different users, including admins, lecturers, technical officers, and students.

JavaFX.

A software platform called JavaFX is used to develop and distribute desktop applications as well as rich web apps that can work on a range of devices. JavaFX is compatible with desktop PCs, web browsers running Microsoft Windows, Linux, and macOS, as well as iOS and Android-powered mobile devices.

JavaFX application is divided hierarchically into three main components known as Stage, Scene and nodes. We need to import javafx.application. class in every JavaFX application. This provides the following life cycle methods for JavaFX application.

- public void int()

- public abstract void start(Stage primary Stage)
- public void stop()

2. System Requirements.

The TECMIS is developed to meet the following requirements:

- User Profiles: The system should allow admins to create and maintain user profiles for different types of users, including lecturers, technical officers, and students.

- Course Details: The system should allow admins to create and maintain course details, including course materials, schedules, and assessments.

- Student Marks: The system should allow lecturers to upload and manage student marks for different types of exams.

- Student Attendance: The system should allow technical officers to manage and maintain student attendance records for different subjects.

- Notices: The system should allow admins to create and maintain notices related to courses, schedules, and other events.

- Timetables: The system should allow admins and technical officers to create and maintain timetables for different subjects and courses.

- Medicals: The system should allow technical officers to manage and maintain medical records for students.

3. User Roles and Permissions.

The TECMIS offers different user roles and permissions, as follows:

- Admin: The admin user has full access to all features and functionalities of the system. The admin can create and maintain user profiles, courses, notices, and timetables.

- Lecturer: The lecturer user can update their profile, modify course materials, and upload student marks. The lecturer can also view student details, eligibility, attendance, medical records, and notices.

- Technical Officer: The technical officer user can update their profile, manage student attendance, and maintain medical records. The technical officer can also view notices and timetables.

- Student: The student user can update their contact details and profile picture. The student can view their attendance, medical records, course details, grades, GPA, timetables, and notices.

4. System Requirements.

The system was developed using Java programming language and the following tools and technologies:

Java Development Kit (JDK)
IntelliJ Environment (IDE)
MySQL Database Management System
JavaFX User Interface (UI) framework
Scene builder

5. System Features.

The Java Teaching and Learning Management System has the following features:

- User authentication and authorization
- Course creation and management
- Course enrollment and management
- Course content creation and management
- Course assignment creation and submission
- Course quiz creation and submission
- Course discussion forum
- User profile management
- System Implementation

The system was implemented using Java programming language and the JavaFX UI framework. The Eclipse IDE was used for coding, and the MySQL database was used for data storage and retrieval.

6. System Testing.

The system was tested using unit testing and integration testing techniques. The unit testing was done on individual modules of the system, while the integration testing was done on the system as a whole. The testing was done to ensure that the system meets the requirements and works as expected.

7. Conclusion.

The Java Teaching and Learning Management System is a mini project that was developed to manage teaching and learning activities in an educational institution. The system provides features such as user authentication, course creation and management, course enrollment and management, course content creation and management, course assignment creation and submission, course quiz creation and submission, course discussion forum, and user profile

management. The system was developed using Java programming language and the JavaFX UI framework, and the MySQL database was used for data storage and retrieval.