IJSE

BSc (Hons) in Computer Science via GDSE

Module Code ITS1066

Professional Software Project in IT

STUDENT MANAGEMENT SYSTEM

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BATCH 63

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List of Abbreviation

IJSE	- Institute of Java & Software Engineering
IT	- Information Technology
SE	- Software Engineer
QAE	- Quality Assurance Engineer
SD	- Software Developer
BCS	- British Computer Society
HR	- Human Resource
GDSE	- Graduate Diploma in Software Engineering
CMJD	- Comprehensive Master Java Developer
DEP	- Direct Entry Program
RWAD	- Rapid Web Application Developer

1.0   Introduction to Business

1.1   The nature of the business

IJSE is the only software engineering institute in Sri Lanka with more than 16 years of excellence, contributing more than 6000 highly capable software engineers to the IT industry. With decades of our experience, guaranteeing IT jobs for the younger generation, IJSE has paved the path for them to achieve countless possibilities for the competent guidance of Mr.Prasad Waduge (CEO) and Mr.Niroth Samarawickrama (Senior Lecturer/Training Director), IJSE has thrived to excellence becoming the only Software Engineering Education facilitators in Sri Lanka. With competent training panels rich in professional experiences from well-reputed companies, it's guaranteed that students are exposed to the latest technologies and concepts ensuring their foothold in the IT industry.

Mainly IJSE has 4 main Courses: CMJD, GDSE, RMAD, and DEP. About 250 students are currently enrolled.

- Extremely important documents can be easily damaged, lost, misplaced, or stolen at this institution because of the file-based work procedure.

- Due to the volume of data and paper materials required to locate staff and students, it is challenging to communicate notifications to them.

- It is challenging to lose crucial knowledge and teamwork during a fire or natural disaster.

- All employees' and trainees' attendance are recorded regularly in this institute using file bases inventory.

1.2   Current System and Process

Currently in this business, their activity such as student enrollments and student grading systems are processed by the employees in the institute manually.

- Process of Candidates Inquiry Registration

Students can enroll in one of the courses. The candidate should complete an IQ test provided by the institute. Before the registration process Counselor gets the student a few details and gives the exam date for the IQ test. According to students' test marks, the candidate can get admission to a course. This whole process is recorded by the counselor using a paper-based file system.

IJSE
Institute of Software Engineering

INQUIRY SHEET

Inquiry Number	:	....
Date	:	....
Counsellor	:	....

PERSONAL DETAILS

Full Name																			
Address																			
Telephone	Home									Mobile									
E-Mail										Gender		Male				Female		
School																			
Higher Edu. Qua.	Master			Degree			Diploma		A/L		O/L			Other					
Results	O/L	A	B	C	S	F	English		Maths		A/L		Stream		A	B	C	S	F
How do you get to know about IJSE																			

COURSE APPLIED FOR

GDSE	Graduate Diploma in Software Engineering	
CMJD	Comprehensive Master Java Developer	
DEP	Direct Entry Program	
RMAD	Rapid Mobile Application Development	

PARENT / GUARDIAN DETAILS

Parent/Guardian Name																			
Relationship																			
Contact Number	Mobile 1									Mobile 2									
Designation																			

OFFICE USE ONLY

Requested Batch	
Special Comments	

Figure 1.2.1 - Inquiry Form

● Process of Students Registration

After completing the IQ test Candidates get admission to register for a new course. When a new batch of students gets enrolled for a new academic intake, it is required to complete a set of application forms with the students' details and hand in the duly filled application forms to the counselor. Enrollment information of the students is kept in box files and stored.

Figure 1.2.2 - Registration Form

PROFESSIONAL QUALIFICATION

Qualification	Awarding Institute	Date of Award	Specialization (if any)

PARENT / GUARDIAN DETAILS

Name of Parent Guardian		
Telephone	Mobile 1	Mobile 2
E-Mail		
Designation		
Working Place		
Address		

NECESSARY DOCUMENTS FOR FULL TIME STUDENTS

Please check that your application is complete and that you have enclosed all the relevant documents.

- 3 Passport Size Coloured Photographs ☐
- Copy of NIC ☐
- Copies of Academic Certificates (O/L & AL) ☐

DECLARATION

I certify that the information provided above are correct.

Signature :   Date :

OFFICE USE ONLY

Requested Batch	
IQ Test Marks	
Special Comments	
Data Entered By	
Signature	

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Figure 1.2.3 - Registration Form

- Students' Payment Handling Process

The enrollment fee and the course fee must be paid by the students at the conclusion of the registration process. Students receive an invoice from the institution after making payments. Each record is saved in a file in the institute's file storage. Also, an Official receipt is given by the institute when payment is made

Figure 1.2.4 - Official Receipt

- Process of Students Grading System

The academic division of the institute oversees the grading of students. A student coordinator entered the grades of pupils in a file.

- Notification System

Currently The institutes' notice board contains all of the notices. Some students failed to notice fresh notifications when they should have.

Overall, the institute uses a manual file system with paper for all of its activities.
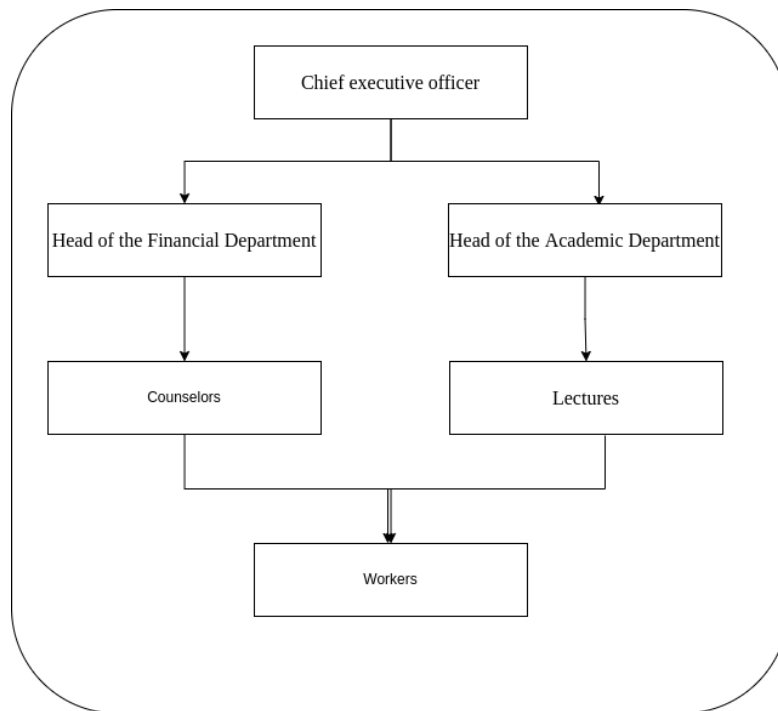
1.3   Employee Structure

Figure 1.3.1

2.0   Overview of the proposed solution

2.1   Requirements of the System

2.1.1 Functional Requirements

1. Candidates Inquiry Registration

- Students' counselors should be able to register a new candidate.
- Students' counselors should be able to view current courses.
- Students' counselors should be able to update current candidates' details.
- Counselors should be able to give an IQ Exam date to the candidate.
- Counselors should be able to give an IQ Exam timetable.

2. Students' Registration

- Counselors should be able to enroll new students by providing the details of the new students.
- Counselors should be able to search and view the details of the enrolled students.
- Counselors should be able to update the details of the registered students.
- Generate e-mail notifications upon successful registration of the students.

3. Students' Payments Handling

The purpose of this module is to handle students' payments and serve as a monitoring tool for the payments made by students. Further, this module would function as a notification system that links with the students' payments. The following functions can be performed through this module.

- Counselors should be able to insert payment records of candidates into the system.
- Counselors should be able to insert registration and course fee payment records of Students into the system.
- Counselors should be able to view Students' payment records.

4. Send Emails To Students

- Counselors should be able to send emails to students and candidates.
- Academic Instructors should be able to send emails to students.

5. Manage Students Records

- Counselors should manage students' and candidates' details.

- Academics should manage students' and candidates' details.

- Academic Instructors should be able to view students' parent details.

- Academic Instructors should be able to manage students' Reports.

6. Notifications via emails

- System users should be able to send notifications via emails.

2.1.2 Non-Functional Requirements of the System

The definition of a non-functional requirement is that it essentially specifies how the system should behave and that it is a constraint upon the behavior of the system. One could also think of non-functional requirements as quality attributes of a system. Non-functional requirements cover all the remaining requirements which are not covered by the functional requirements. They specify criteria that judge the operation of a system, rather than specific behaviors.

The following section explains the non-functional requirements that should be focused on when implementing the proposed Students Management System.

- Accuracy

Since the proposed system intends to deal with marks and grades that the students have obtained for the examinations, that information should be accurate and trustworthy. Also, the notifications that would be generated from the payments handling and attendance handling modules should be accurate and up-to-date.

- Security

Since the system contains sensitive information such as fees payments made by students and marks and grades those the students have obtained for examinations, securing such information will be one of the major non-functional requirements that should be focused on. Only authorized people should be able to access the system using user names and passwords. A mechanism for encrypting the passwords should also be implemented in order to secure the user accounts that are registered in the system. Proper access privileges should be defined for the different user roles.

- Reliability

Availability of the system and system uptime should be maintained up to the maximum level that is agreed upon with the client.

- User-friendliness

Overall functionalities of the system should be implemented in a way that is easy to learn and easy to use for all the user levels who take benefits of the system.

- Maintainability

3.0 Advantages of the solution

1. More accuracy than the manual system.

Integrating and unifying software systems reduces the risk of using inaccurate data. A single point of view will allow businesses to work from one perspective and eliminate conflicting data values.

2. Simplified decision-making.

Obtaining one complete view by integrating software systems simplifies the decision-making process. It removes the need to move between different applications to get to data that may influence decisions.

3. Improved data security.

Managing the security of data within one unified system application is much easier than managing multiple systems of data. By integrating the management, backup, and administration, tasks are simplified.

4. Time-saving.

As we know "Time is Money". By using this software solution, the extra hours of the organization can be saved. Uploading new data in the software and updating the data can be done very easily. This is achieved by automating the usual time-consuming tasks like attendance management, communication, etc. Administrators can also save time through the efficient use of modules.

4.0 Use case diagram

A Use case diagram can summarize the details of the system's users (also known as actors) and their interactions with the system. An effective use case diagram can help the team discuss and represent:

- Scenarios in which your system or application interacts with people, organizations, or external systems.
- Goals that the system or application helps those entities (actors) achieve.
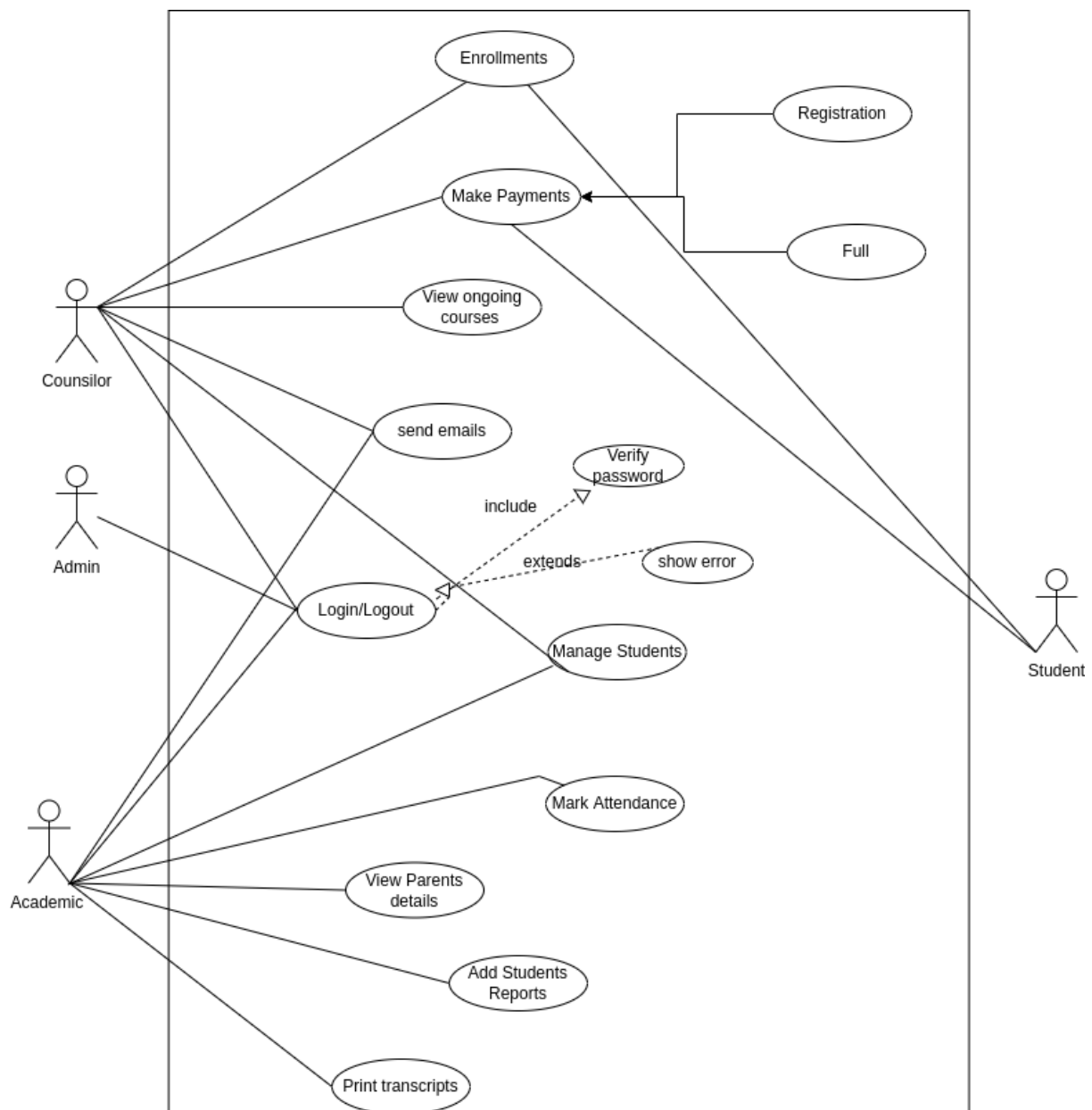- The scope of your system.

Figure 4.1 Use Case Diagram

5.0 Entity relationship diagram (ERD)

Designing a good database model that conveniently helps to achieve the functional requirements of the system is one of the major tasks in the Design phase. There are two main database design objectives that are expected to be achieved in a good database model.

        1) Data redundancy elimination

        2) Ensuring data integrity and accuracy

Normalization is the database design approach that can be applied to achieve the above-mentioned objectives. The normalization process comprises several stages and every stage has different goals to be achieved.
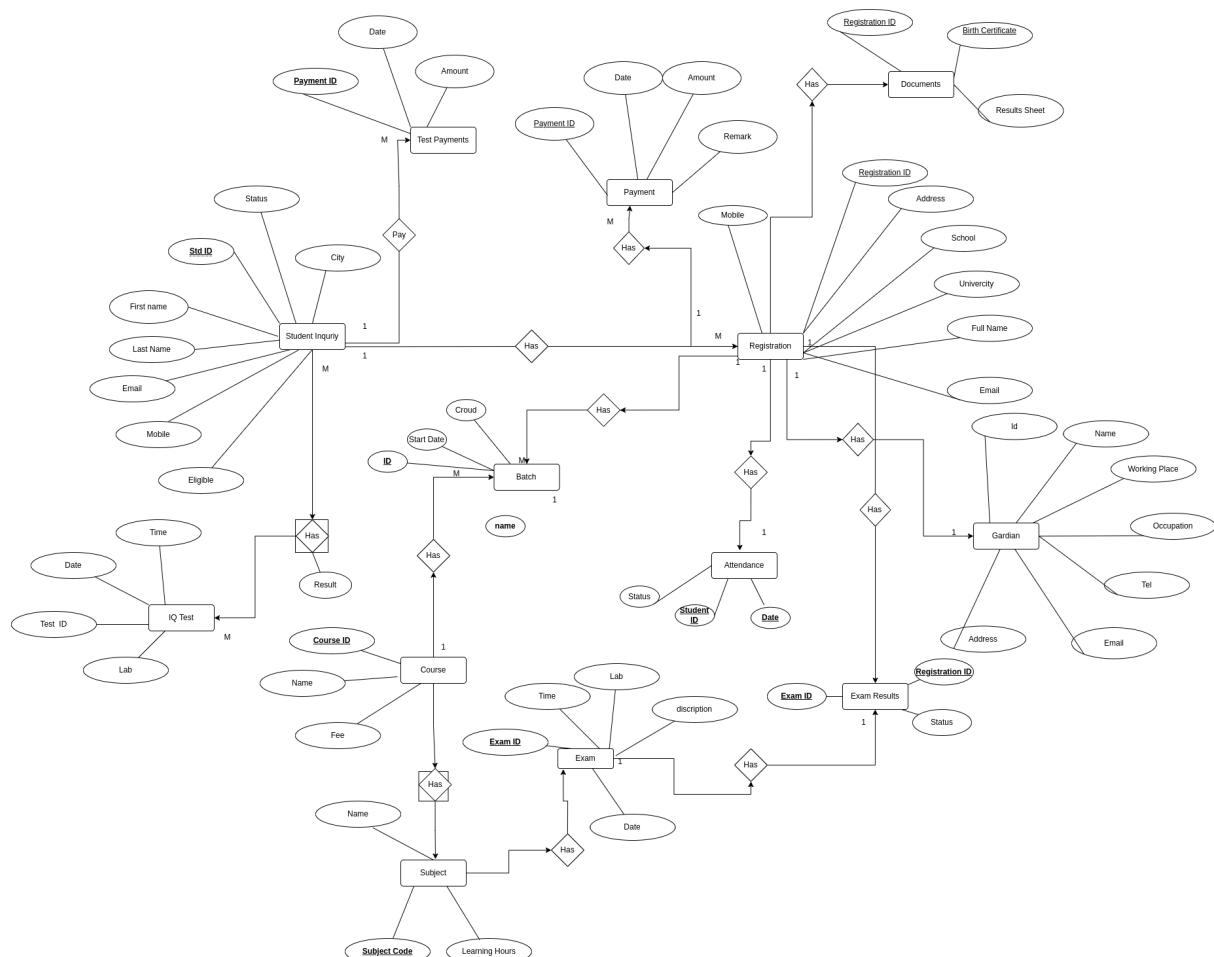

Figure 5.1 - Entity Relationship Diagram

6.0   System Development Tools and Technologies

6.1 IntelliJ IDEA 2022.2.2 (Ultimate Edition)

IntelliJ IDEA 2022.2.2 (Ultimate Edition) is used as the IDE for project implementation. All front-end and back-end implementation tasks.

Build #IU-222.4167.29, built on September 13,2022.

6.2 MySQL

MySQL is an open-source relational database management system. Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language.

6.3 Gloun SceneBuilder 8.5.0

Scene Builder is free and open-source but is backed by Gluon. Commercial support offerings are available, including training and custom consultancy services.

6.4 Jaspersoft Studio Community

Jaspersoft Community is an open-source reporting solution for designing and delivering pixel-perfect reports to businesses and customers.

7.0   System Documentation

The minimum hardware requirements have been explained in below.

Hardware	Minimum Requirement
Processor	2.50 GHz Processor
Memory	2 GB RAM
Hard Disk	40 GB
Display	1366 * 768 Resolution compatible monitor recommended
Printer	Inkjet Printer or LaserJet Printer

Figure 7.1 hardware requirements

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