General Sir John Kotelawala Defence University Faculty of
Computing Department of Computer Science

Group Project Undertaken in partial fulfilment of the requirement for the BSc Information
Technology Computer Science/ Computer Engineering/ Software Engineering Degree
Intake 35

SYSTEM ANALYSIS REPORT

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Contents

1. Analysing the existing system

The Faculty of Computing at the General Sir John Kotelawala Defence University conducts its end semester examinations biannually. As the Faculty of Computing is comprised of about 250 students, the process of handling examination results from the point of collection of examination paper by the supervisor, to the time that examination results are released to the students can be quite demanding and time consuming. In fact, it has been noted that there is a significant lapse in time between the conclusion of the results and the release of examination results. This delay could cause disruption in the students' lives and may limit students' level of improvement by reducing the time period they have to study for their repeat exams. In addition, there is no way for the lecturers and the department to view a summarized report of a student's examination results.

A significant reason for this time lapse could be certain shortcomings in the current system. Described briefly, the existing system involves the papers being collected and sent to the setter (subject lecturer) and moderator (senior expert) for marking. A detailed mark sheet will be filled manually by both the lecturers. The two detailed marks will be sent to the Head of Department and he will check if there are differences and adjust as necessary. The final marks are sent back to the setter so that he/she can once again fill in the marks return sheet and the comments sheet. Finally, the marks will be sent to the examination department for it to be reviewed by the examination board. The current system is mainly processed using hard photocopies of the four sheets (Detailed Mark Sheet x2, Marks Return Sheet, and Comments Sheet) which is not time effective since the listed sheets must be hand delivered to each relevant person. Thus, it can be noted that the high number of manual processes involved in the system is time consuming and results in the whole process being delayed.

We believe that having a results management system would help to combat these problems. The main aim of this results management system would be to build an efficient and easy to use system that could speed up the process of release of examination results. Thus, we would consider the objectives of the development of such a system to be to facilitate the release of examination in a timelier manner by computerizing as many of the processes possible involved in the computation of examination results and make the procedure easier and more efficient for all users of the system this would mean that the whole process would speed up and examination results could be made available far earlier for the students. In addition, it would reduce the burden on the administrative staff and make it easier for the lecturers to log in their respective results.

We believe that the availability of results at a much earlier date could be a direct factor in improving students' results. It also lets the students know of their capabilities and them standing in the batch. This would encourage and motivate the students to improve on them work by the time the next exam takes places. In conclusion, it can be said that having such a results management system would improve the speed and efficiency of the examination results system and be much to the benefit of everyone in the university, be it the students, lecturers or administrative staff.

2.Data Collection methods

2.1 Data Collection Plan
We are mainly replacing the manual system of the faculty of computing's results management system. As per the information gathered by performing multiple interviews with the respective/relevant lecturers, there seems to be a dilemma in the process of the current manual system. We have also gathered information from reliable sources of other universities.
Our team will also be adding more supportive features that will make data collection and data manipulation more efficient from the respective marker's end.

2.2 Interviews
According to the multiple interviews conducted we had certain doubts that had to be clarified, the reason why we used the interview approach is so that we could get a verbal explanation so that it would be easy for both our team and the interviewee to portray and understand the ideas given by both parties, rather than using a questionnaire approach which wouldn't be as understandable.

What is the scope behind our software?
Since this system is a fragile and sensitive component of the university and considering that the system, we are trying to build is at the development stage, we chose to make the system only focused towards the faculty of computing. For now, our scope is limited with in the department.
Note: As soon as the system has been declared a success then and only then will we broaden the scope towards all faculties of the university.

Who gets to mark the relevant papers?
First and foremost, setter checks the paper and fills the detailed mark sheet, then later on the moderator re-checks the paper and fills another detailed mark sheet.

What is the process behind the current results management system?
The current system is mainly processed using hard photocopies of the four sheets (Detailed Mark Sheet x2, Marks Return Sheet, and Comment Sheet) which is not time effective again since the listed sheets must be hand delivered to each relevant person. Another problem that has been faced to persuade our team to proceed with this project is that lecturers don't get a summarized report of each individual student.
Steps are shown as below.
1. Setter checks the paper and fills the detailed mark sheet.
2. Moderator again checks the paper and fills another detailed mark sheet.
3. Both mark sheets are sent to the HOD.
4. HOD cross checks the two given sheets to see if there is an unacceptable pair of marks.
5. If there is a big difference, then the HOD adjusts the marks as he/she sees fit.

6. The mark sheets (including the mark sheet containing the final marks for each student) are then sent back to the setter for him/her (Setter) to continue to proceed on to the marks return sheet and the comment sheet.
7. Then the marks return sheet and the comment sheet are sent to the examination dept.

Our system is based on issuing end-semester results, calculating the GPA of each student of the Faculty of Computing at General Sir John Kotelawala Defence University and finalizing it at the end of the final semester. This system's purpose is also to further diminish the long-time consumption for lecturers as well as when entering the marks into the database. It will also reduce the amount of paperwork for each lecturer, the time taken to pass-on the said paperwork to the other relevant persons.

What are the additional features we could add into the software?
Providing a summarized report on the performance of each individual student.

Who are the authorised respective individuals for each stage?
Paper marking: Each module's respective setter and moderator.
Semi-Final Grade evaluation: Faculty head of department.
Final Grade evaluation: Setter.

2.2 Direct Observation
As active students of KDU we experience that there seems to be a huge delay in providing the end semester results. We assume that the current result management system lags most of the other universities, and we believe it is due to the lack of computerization of the current system.

2.3 Obstacles faced during the data gathering process and remedies taken
Obstacles:
- Difficulties were arisen when meeting parties for the conducting of the interviews with their tight work schedules.
- All the questions were not answered properly by some participants reluctant to answer the questions due to security reasons.
- The views of multiple interviewees were incompatible.

Remedies:
- Questions were prepared as short as possible by excluding questions which the answers can be found in using a different research technique.
- Participants were given the full freedom to avoid from answering any question if they wish not to involve in the process.

3.Requirement Specification of New System

3.1 Functional Requirements

In our Results Management Web application, we will be providing the following features:

- The web application enables the lecturer (setter and/or the moderator) to enter the results of
students to the detailed mark sheet, marks returned sheet and comments sheet.
- This sheet contains all relevant fields which make the document contain less redundant
fields and substitute certain fields which simply can be generated automatically
- Faster transfer of documents to and from relevant people
- Providing summarized reports for each individual student
- Ability to confirm setter and moderator
- Results can be viewed semester wise, stream wise, class wise or even subject wise
- Graphical view of students' performance
- Allows to generate result of students for different examination and different types of exams
during the year as oral, practical, written, etc.
- Manage the results of the university students and keep a record of results of the students

3.2 Non-Functional Requirements

The non-functional requirements that our system should satisfy are:

- Security: In our web application system unauthorized users cannot access the data and
cannot perform any operation, because the system does not allow them to login. Therefore
security is provided.
- User Interface: The system is designed in such a way that instructions are given clearly to
navigate through the System. Warnings and error messages are provided throughout the
system.
- Scalability: The system supports large amounts of data that can be stored and retrieved.
Hence the system is scalable
- Reliability: Our web application provides students information and some notifications to the
lecturers, that information must be reliable, and the user should be able to depend on those
details.
- Responsiveness: The web application should complete the task according to the given time.

For example, when the lecturer updates a mark in the detailed marks sheet then the Marks

Return Sheet needs to be updated at that time itself.

• Start -up-time: The start-up time of the web application should be minimum in order to

increase the efficiency.

• Efficiency: User can easily access the system and search very fast and accurately.

• Delivery: The entire system is expected to be delivered in one year of time.

3.3 Technical Requirements

Our aim is to create a dedicated web application for our Results Management System. It will be

mainly based on languages such as HTML, CSS, JavaScript. We will be using MYSQL for

database connection. The graphics will be created using Photoshop and JavaScript then it will be

brought to the web pages in order to combine with the languages.

Front end development:

• Java SE 1.8.0_231_b11

• PHP, JavaScript, CSS, HTML

• Java APIS

Back end development:

• MYSQL 8.0.17 community edition (Database)

Server-side development:

• MYSQL server

Description:

• Java SE 8.0.17 – To develop and design applets and programs that runs in web browsers.

(web services)

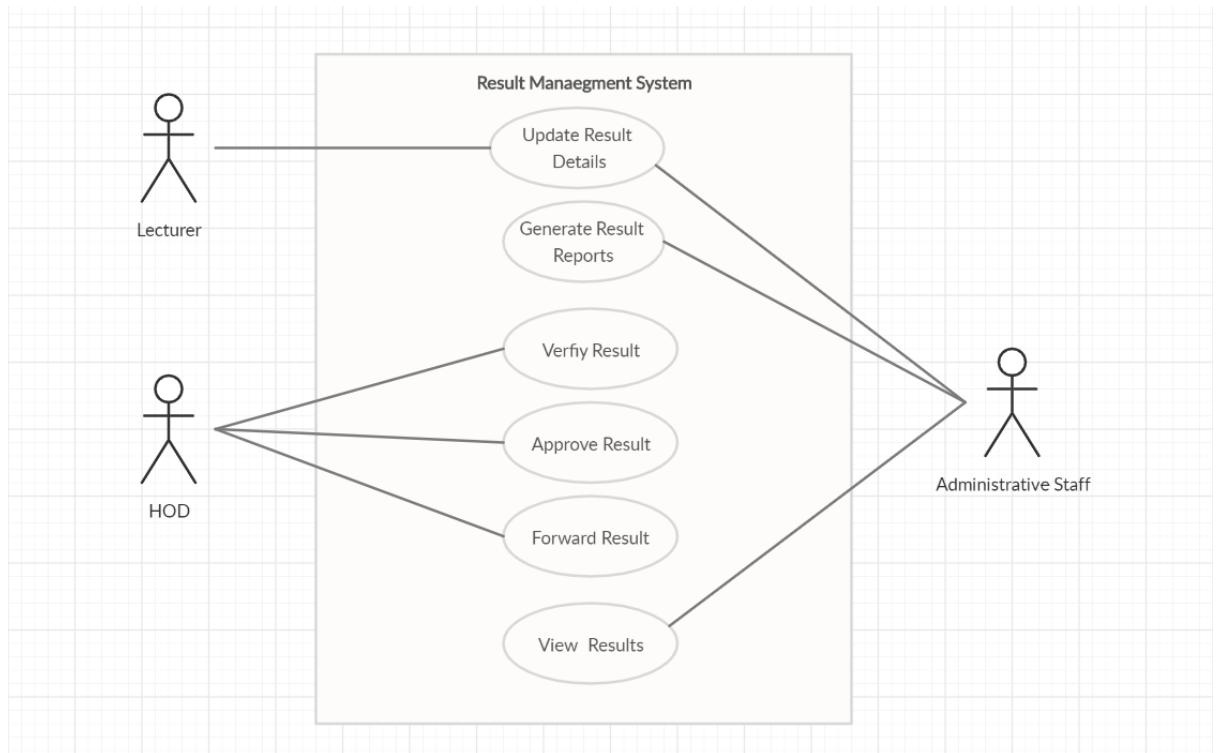• PHP JavaScript, CSS, HTML– To design the website in case the app connects with the

internet.

• MYSQL 8.0.17 community edition – To develop and design the back-end database.

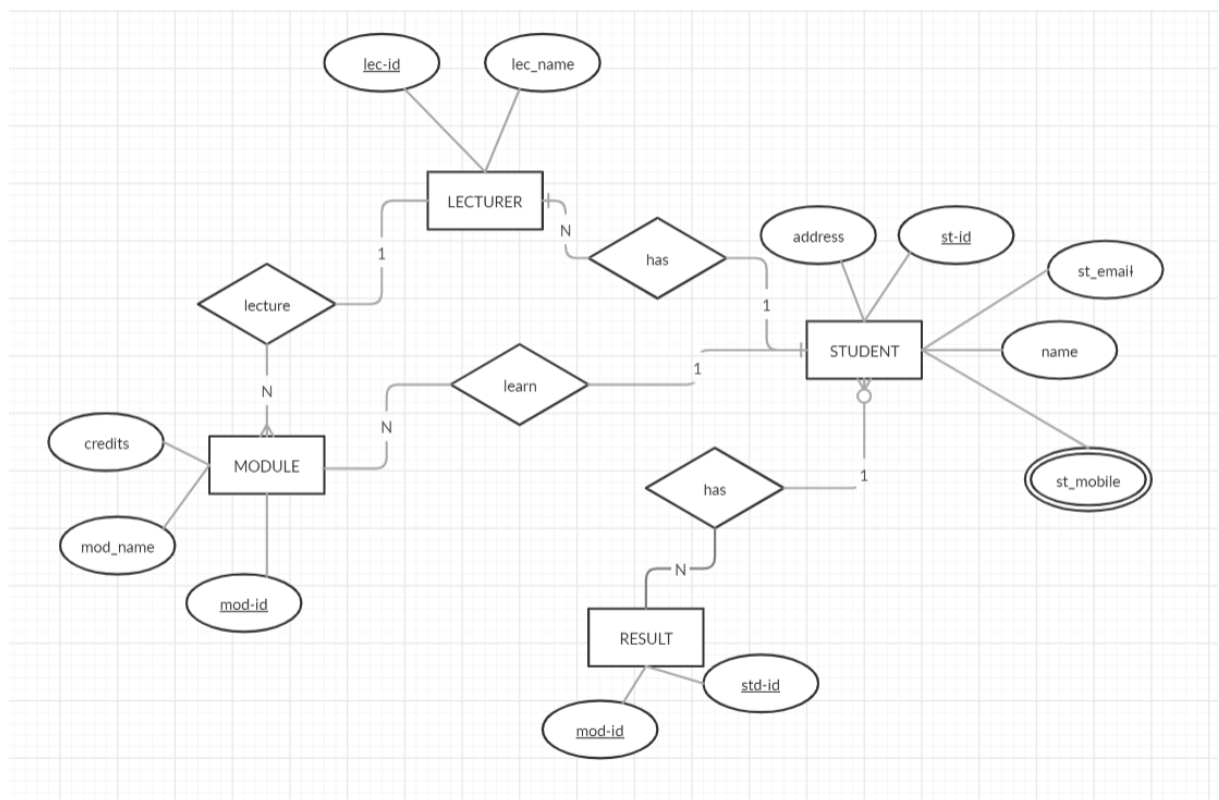Compatible with all front-end platforms and software.

• MYSQL server- To connect front-end and back-end database using data objects passing.

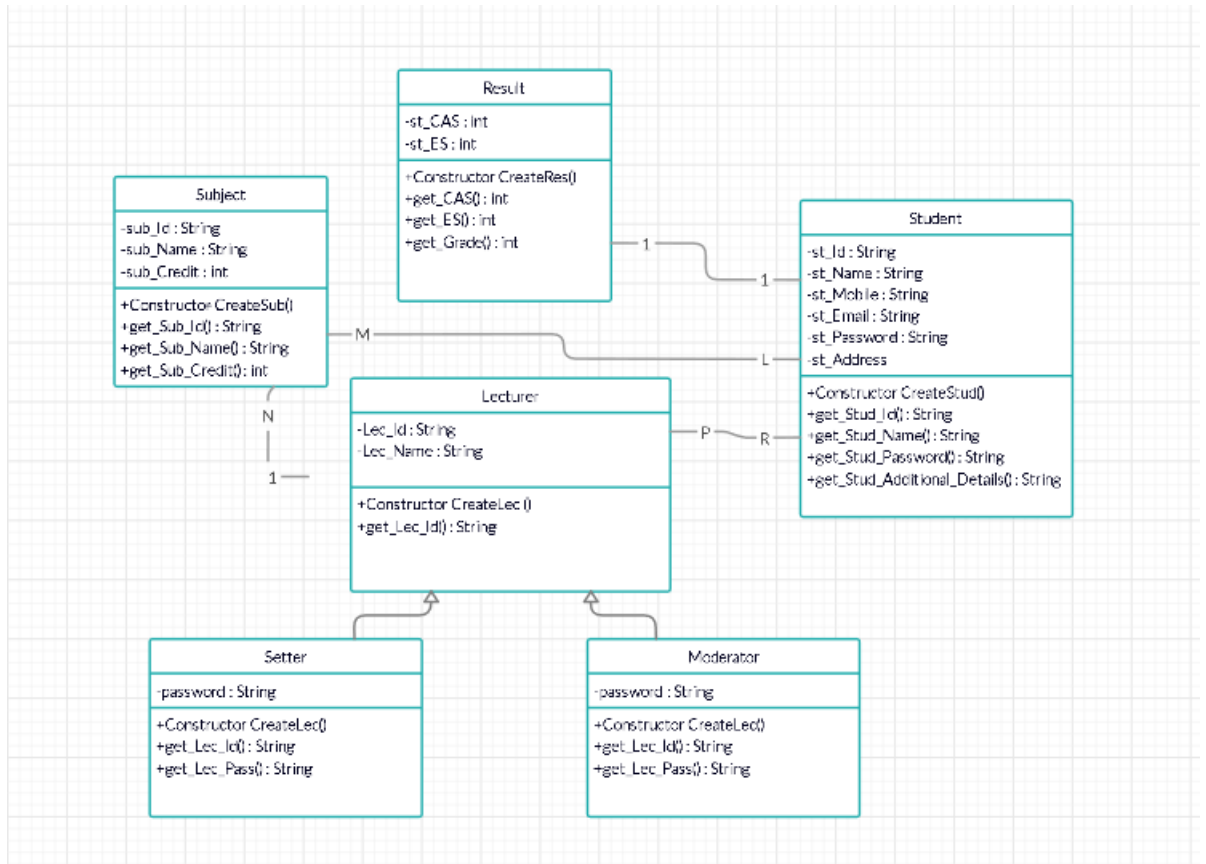## 4.0 UML Modules for New System

Use Case Diagram

ER Diagram

Class Diagram

Sequence Diagram