SRS REPORT ON UNIVERSITY DEPARTMENT INFORMATION SYSTEM

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PRINCIPLE OF SOFTWARE ENGINEERING

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1 INTRODUCTION

1.1 PURPOSE

The main objective of our product is to maintain information about students, instructors and other activities like student registration details, courses are taken, related grade sheets and pending backlogs. In addition to this, our projects also give options for the research works in a Department and equipment purchased and expenditure on them. This document describes the information of different modules like Students, Instructors, Examination, Admission, Courses. The purpose of this document is to retrieve and analyze the ideas that define the product and requirements that the user needs. This document describes the details of our product, its parameter, and its goals. This SRS document describes the target, audience, user interface of product and Software/Hardware requirements of our product. This document also describes the problem we have faced during the designing and implementation of the product and also describes how we have solved this problem and make our product more efficient. The management system saves the human power and time cost to perform the same task. The data in the database can be saved for a long time and can be used for different purposes in the future. In management systems, there is a minor chance of losing the data. This document also defines how customers and users see our product and understand the functionality of the product. This document will help the developers/designers in case of maintenance of the software product.

1.2 INTENDED AUDIENCE AND READING SUGGESTIONS

This project is a prototype for the university department information system and it is restricted within the college premises. This has been implemented under the guidance of college professors. This project is useful for the university Head, university management team, students, instructors and also the secretary.

1.3 PROJECT SCOPE

The scope of the university department information system is to ease student admission management and to create a convenient way to handle student and university records regarding admission, courses, backlogs, department lab equipment, fees and other banking purposes. We will have a MySQL database system handling these huge amounts of data supporting the entire

university requirements. We hope to build a platform that will not only ease storing the details but also will be a good communication medium between instructors and students.

2 OVERALL DESCRIPTION

2.1 PRODUCT PERSPECTIVE

Admin

- **User Login**- This method is used by the user to login into the system. They are required to enter username and password before they are allowed to enter the system. The username and password will be validated and if invalid credentials are provided the system will reject the user.
- **Creating new users**- Admin will have access to create or remove any user.
- **Handling system Users**- This feature will add the instructors, Student and the Instructor registration is done by the admin.
- **Email Notification**- This feature allows to send notifications to the instructor about adding into the system. This is an email notification. (NodeMailer/SendGrid)

Course Management

- **Registering new courses**- This will allow to add new courses to the system and to change the details which are added with the courses
- **Assigning courses to instructors**- This feature will allow courses to be managed by an instructor. An instructor may have multiple courses to handle.
- **Email Notification**- This feature allows to send notifications to the instructor about adding into the system. This is an email notification. (NodeMailer)
- **SMS Notification**-

Instructor Management

- **Uploading Assignments**- This feature allows instructors and students to upload exams and assignments respectively. This is authenticating based and instructors can upload exams and download them where necessary. Marks will be added later on.
- **Adding Notice**- This feature is allowed to add notice for courses which are already available in the system.

Student Management

- **Accessing Courses**- This method will allow the students to access the courses by providing the correct enrollment key. The student can also be able to download the materials for a given course.
- **Uploading Assignments**- Here the students will be able to upload the answers to the given assignments.

2.2 PRODUCT FEATURES

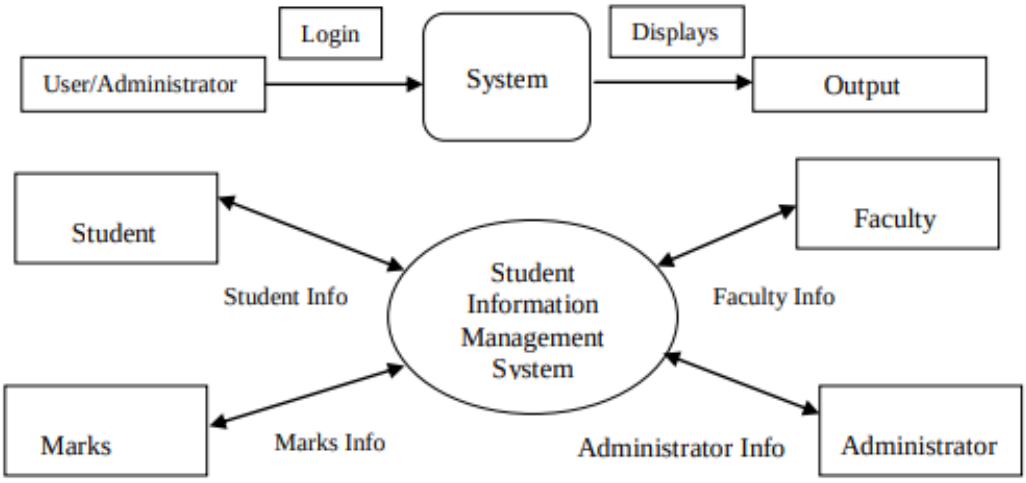

Figure 1: Schematic view of concept

2.3 USER CLASS AND CHARACTERISTICS

Our project is based on a database, which stores and maintains the information of different modules within the system. The advantage of the management system is to avoid entries in hard copies and it saves the burden of hard copies of data. A system is a complete software which is deployed on a server. We have used MySQL for the database. There are three users for this system:-

1. Admin- Have full access to read and write of all modules in management system. Super Admin(the Secretary) creates other Admins. Notification is sent to the new admin via email. Admin can create users and passwords(which can be changed later by the user). Admin also has the privilege to create instructors accounts and their courses.

2. Instructor- Have access limited to write and manage the student's marks, attendance, etc.The instructor has the privilege to assign tasks to students with a due date attached which can be changed if required. Also, instructors can view the assignments sent to them by the students.
3. Students- Have access to their grade sheet and profile details.Students can view their profile and grade sheet and also the tasks assigned to them. Students can submit their assignments but not modify them. Also, strict authorization and authentication are implemented.

2.4 OPERATING ENVIRONMENT

Operating environment required used is:-

- Operating system: Linux
- PHP: 7.1.3 or above
- OpenSSL PHP Extension
- PDO PHP Extension
- Mbstring PHP Extension
- Tokenizer PHP Extension
- XML PHP Extension
- Ctype PHP Extension
- JSON PHP Extension
- BCMath PHP Extension

2.5 DESIGN AND IMPLEMENTATION REQUIREMENTS

- Database: MySQL/MariaDB
- Frontend: Laravel
- Backend: PHP

3 SYSTEM FEATURES

3.1 FUNCTIONAL REQUIREMENTS

User Interfaces

- This method is used by the user to login into the system. They are required to enter username and password before they are allowed to enter the system. The username and password will be validated and if invalid credentials are provided the system will reject the user.
- To Add and Modify details, Add fields to details such as Marks, Attendance and define their respective weightages in the details, save and publish the various data stored in the fields.
- To read the published data, by the student according to the permission of their respective accounts.

Communication Interface

- Network Communication will be based on a request-response paradigm, that is the request to the server from the client and response to the client from the server.

4 EXTERNAL INTERFACE REQUIREMENTS

4.1 USER INTERFACES

UI for University department information system is created using:-

- PHP With Laravel

4.2 HARDWARE INTERFACES

Basic hardwares required for University department information system:-

- i3 processor or above
- Minimum 4GB RAM
- System with Chrome or Mozilla Browser

4.3 SOFTWARE INTERFACES

Following are the software used for the University department information system:-

- **Operating system**- We have chosen Linux operating system for its open-source and command-line facilities
- **Database**-We have used MySQL which is a relational database. 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.
- **PHP**- PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages. The PHP Hypertext Preprocessor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases. PHP is basically used for developing web based software applications.

4.4 COMMUNICATION INTERFACES

This project supports all types of web browsers. We have used an open-source medium and also libraries which use virtual DOM mechanisms which will fast load the interface.

5 NONFUNCTIONAL REQUIREMENTS

5.1 PERFORMANCE REQUIREMENTS

Performance is a key in the design and development of an Application, It is of utmost importance as this requirement will affect the other requirements of the system. The Application is to be designed using PHP and Laravel, a complete open-source stack.

5.2 SAFETY REQUIREMENTS

Hardware interface a. Server-side: 4GB RAM, 20 GB Hard Disk computer with internet connectivity. b. Client-side: Any Personal computer, which can support any X-window or Windows environment with mouse support, is acceptable. The software interfaces
1. Server-side: MySQL is used as a database. PHP is used for validation.
2. Client-side: Laravel+PHP is the software which is used to get the input from the user.

5.3 SECURITY REQUIREMENTS

Security systems need database storage just like many other applications. However, the special requirements of the security market mean that vendors must choose their database partner carefully.

5.4 SOFTWARE QUALITY ATTRIBUTES

- **CORRECTNESS:** The software Administrator should validate the details from time to time for any bugs.
- **MAINTAINABILITY:** The Application is developed using the PHP and Laravel stack, a completely open-source stack that is easy to modify and make updates.
- **USABILITY:** The software should satisfy most of the university basic needs both for instructors, students and the departments as a whole.