**Software Requirements Specification**

**for**

**University Department Information System**

**Version 2.0 approved**

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**Revision History**

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| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
| Gurjot and Aditya | **9/3/19** | Initial Version | 1.0 |
| Gurjot and Aditya | **19/3/19** | Updated function requirements and added Use Case Diagram. | 2.0 |

# Introduction

With the rapid advancement of the digital age, people are becoming increasingly dependent on technology to achieve tasks. Due to the large amount of students in the department and the different choices given to them to choose courses, there is a need for automated system to store data regarding students and other aspects of the department.

## Purpose

The main purpose of this software is to automatically manage the students’ information, courses and grades with the help of the department secretary. It also keeps track of the department’s inventory, accounts and research projects.

## Document Conventions

The main headings of this SRS is in font style ‘Times New Roman’ with font size 20 ,the subheadings are written in same font style with size 14 and rest of the text is in “Times New Roman’ with font size 12.

## Intended Audience and Reading Suggestions

The document is intended for the developers, project managers and users. This SRS has described about the information system whose technical description has been given in detail under Overall Description heading.

## Product Scope

All universities have some basic needs such as the department secretary must be able to manage the students’ information and update the department accounts. The Department Secretary should have control over the usage of the university information management system.

This application finally helps to computerize the university department in terms of:

1. Providing platform for storing and managing student details.

2. Managing the department’s inventory, funds and expenditure.

3. Managing the department more economically by automating some of the core functionalities.

## References

1. <https://en.wikipedia.org/wiki/Software_requirements_specification>

2. <https://www.tutorialspoint.com/software_testing_dictionary/software_requirement_specification.htm>l

# Overall Description

## Product Perspective

University Department Information System is a purely independent software and hasn’t been derived from any software. It is a purely self contained software. This software will be able to satisfy some the basic management needs of a university department.

## Product Functions

The main functions of the system are:-

1. To store details of the students, the courses taken by him and his status and grades in the courses.
2. To calculate the CGPA of the students based on the course grades received from the instructors.
3. To keep track of inventories of the Department, such as equipment, their location, furniture etc.
4. To manage and display the department accounts details regarding funds and expenditure.
5. To manage information regarding the
6. To support querying the up-to-date details about every student by inputting his roll number.

## User Classes and Characteristics

The main user classes that comes under this software are Department Secretary ,Student and Instructor.

1. Department Secretary:

He/she manages the information system and is responsible for entering and updating student, account and other important details of the department. He/she can suspend the system at any point of time according to the needs of the department.

2. Student :

A student can login into the system through the username and password provided to him/her and see his/her details including the course grades and grade sheet.

3. Instructor :

A student can login into the system through the username and password provided to him/her and see his/her details like courses, students enrolled in those courses, publications and research projects.

## Operating Environment

Operates on all systems that have Java installed in it. Any system that meets the below basic

configurations should be able to run this software:

• Pentium 233-megahertz (MHz) processor or faster (300 MHz is recommended)

• At least 512 megabytes (MB) of RAM (1024 MB is recommended)

• At least 100 MB of available space on the hard disk.

• At least 256 MB of video memory.

Graphics card is an extra added benefit for software to run smoothly.

No other software qualities are required for the performance of this product.

## Design and Implementation Constraints

The software will be able to run on most of the systems that are having an operating system that can run java applications .It requires Java which is mostly pre installed on any system. Issues may arise if there is any hardware problem such as a broken internet connection.

## Assumptions and Dependencies

Assumes that there is only one department secretary and not more than one. Assumes that the department secretary has access to the internet and an operating system and internet browser that can run java. Assumes that the grades, registration and accounts information would be available to the department secretary for filling into the system.

# External Interface Requirements

## User Interfaces

The user interface is developed on a linux system using the Java programming language. The GUI for all the students, instructors and department secretary is developed using Java. Since this is a basic software keyboard shortcuts are being skipped. The display standards can adjust to even an average system.

The main user interfaces used in this software are:

• Login Screen : This includes an option for selecting user type: student, instructor and Department Secretary and entering username and password.

• Semester Registration : This has options for course registration and student semester registration.

• New Student Registration : This has options for new student registration.

• New Instructor Registration : This has options for new instructor registration.

• Student Details : Interface for displaying relevant student information.

• Inventory Management : Interface for keeping track of the equipment and inventory present in the department.

• Account Management : Interface for keeping track of department accounts.

• Instructor Details: Interface for displaying instructor information.

## Hardware Interfaces

There are no external hardware requirements needed for running this software. The Department Secretary must take care of all the hardware related issues and have a proper internet connection.

## Software Interfaces

This software is a multi user , multi tasking/ threading environment. It enables different users to login at the same time. It uses Java for the frontend programming.

## Communications Interfaces

The users need to have internet access to use the system. There is no intercommunication between users.

# System Features

## New Student Registration

4.1.1 Description and Priority

This functionality should allow the department information system to store information of new students taking admission in the university. This functionality has high priority as it needs to keep track of all the students.

4.1.2 Stimulus/Response Sequences

This function will take place only at the time of a new admission. System will provide a window to enter the details of the new student. The department secretary will enter the details and will obtain the corresponding confirmation from the system.

4.1.3 Functional Requirements

REQ-1: A digital form of the new students registration will be provided to the department secretary . The form would include the following data items- name, home address, roll number, hall, email address, DOB and mobile number . The option to submit form will be given.

REQ-2: On successful registration ,login of the student will be created. Username will be email id and default password will be his DOB. An error message will be displayed if student is already registered or the input is not as per the specified format of the respective fields.

## New Instructor Registration

4.3.1 Description and Priority

This functionality should allow the department information system to store information of new professors. This functionality has high priority.

4.2.2 Stimulus/Response Sequences

This function will take place only at the time of new faculty induction. System will provide a window to enter the details of the new faculty. The department secretary will enter the details and will obtain the corresponding confirmation from the system.

4.2.3 Functional Requirements

REQ-1: A digital form of the new instructor registration will be provided to the department secretary . The form would include the following data items- name, home address, email address, DOB and mobile number . The option to submit form will be given.

REQ-2: On successful registration, login of the faculty will be created. Username will be email id and default password will be his DOB. An error message will be displayed if faculty is already registered or the input is not as per the specified format of the respective fields.

## Semester Registration

4.3.1 Description and Priorityina

This functionality would allow the department secretary to register courses for the current semester and enter the courses which the student has enrolled in the current semester. This functionality has high priority.

4.3.2 Stimulus/Response Sequences

This functionality will be used at the time of semester registration. System will generate a window to register courses for the current semester and enter the details of the courses registered by the student. The department secretary will enter the details and will obtain the corresponding confirmation from the system.

4.3.3 Functional Requirements

REQ-1: A digital form of course registration for the current semester will be provided to the department secretary for fill up. The form would include the following fields: course name , course id, course credits and faculty-in-charge. A confirmation will be provided on success and an error message will be displayed if faculty is not registered.

REQ-2: After registering courses of current semester, a digital form of student semester registration will be provided to the department secretary for fill up. The form would include the following fields: student roll number and course id.

REQ-3: A confirmation will be provided on successfully entering the courses registered and the existing student information in the system would be updated to reflect the same. An error message will be displayed if student if the student roll number is not valid or registered or course id is not valid.

## Student Courses Information

4.4.1 Description and Priority

This functionality should allow the department secretary to view the course details of the student. This functionality has medium priority.

4.4.2 Stimulus/Response Sequences

This functionality will be used when the department secretary desires. System will generate a window to show the details of the courses registered by the student.

4.4.3 Functional Requirements

REQ-1: The window will ask for the student roll number. On entering the roll number the courses completed, ongoing courses and backlog courses will be displayed. If roll number is not valid an error message will be displayed.

## CGPA and SGPA Calculation

4.5.1 Description and Priority

This functionality should allow the department secretary to enter the grades received by the student and calculates SGPA and CGPA of the student. This functionality has high priority.

4.5.2 Stimulus/Response Sequences

System will generate a window to ask for the grades of a student. The department secretary would be able to enter the grades and obtain corresponding confirmation.

4.5.3 Functional Requirements

REQ-1: A window will ask for the student roll number. The D.S. will then input the course id and course grades. If the course grade is already present for the student, it would be overwritten. Confirmation will be shown or error message would be shown if student is not enrolled in the course and in case of invalid roll number.

REQ-2: Based on the grades received in the semester’s courses, the SGPA and CGPA of the student must be calculated and the grade sheet of the student must be generated. The information system must be updated to reflect the same.

## 4.6 Inventory Management

4.6.1 Description and Priority

This functionality should keep track of inventories of the Department, such as equipment, their location, furniture etc. This functionality has low priority.

4.6.2 Stimulus/Response Sequences

This function should be available to the department secretary at all times. A window showing inventory information and options for updating would be available to the department secretary.

4.6.3 Functional Requirements

REQ-1: The department secretary should be able to add new equipment to the inventory by providing equipment name, equipment id, location and count . A confirmation window would be displayed. If equipment name and location are already present, then the count would be overwritten.

REQ-2: If the count of any equipment at a location becomes zero, then that equipment will be removed.

REQ-3: A window should be provided where on entering equipment name and id the locations and their respective count will be displayed.

**4.7 Department Account Management**

4.7.1 Description and Priority

This functionality should keep track of department account and update it. This functionality has medium priority.

4.7.2 Stimulus/Response Sequences

This function should be available to the department secretary at all times. A window for entering the credit and debit details from the account should be available and corresponding confirmation would be obtained.

4.7.3 Functional Requirements

REQ-1: A window for entering debited amount, purpose and date would be available to the secretary on completing which a confirmation is shown. The information system would be updated to reflect the same.

REQ-2: A window for entering credited amount, purpose, account number and the account holder of the transferring account and date would be available to the secretary on completing which a confirmation is shown. The information system would be updated to reflect the same.

REQ-3: The department secretary will be able to enter the start date and end date and get the income and expenditure between those dates(both inclusive). It will also display the current balance of the department account.

**4.8 Research Information**

4.8.1 Description and Priority

This functionality should keep track of research projects running in the department and publications by the faculty members. This function has medium priority.

4.8.2 Stimulus/Response Sequences

This function should be available to the department secretary at all times. A window for updating the current projects or publications by faculties will be provided for fill up and get corresponding confirmation.

4.8.3 Functional Requirements

REQ-1: The department secretary will be able to add the current projects of the department by providing the project name and names of associated faculties and the system should be updated.

REQ-2: There must be an option for the department secretary to delete an existing project.

REQ-3: The department secretary will be able to add publications by providing publication name and the names of corresponding faculty of the department.

## 4.9 Display Student Details

4.9.1 Description and Priority

This functionality will display the details of a student. This functionality has medium priority.

4.9.2 Stimulus/Response Sequences

This function should be available to the department secretary and student at all times. The Department Secretary can access the details of a particular student through his roll number and the student can see his own details

4.9.3 Functional Requirements

REQ-1: The department secretary should enter the student roll number and all details like name, roll number, email address, address, hall name, CGPA and names of the current courses will be shown. On entering an invalid roll number, an appropriate error message would be displayed.

REQ-2: A student can login into the system and see his personal information, grades in the courses and CGPA.

## 4.10 Display Instructor Details

4.10.1 Description and Priority

This functionality will display the details of an instructor. This functionality has medium priority.

4.10.2 Stimulus/Response Sequences

This function should be available to the instructor at all times. A window showing all the details of a particular instructor will be displayed.

4.10.3 Functional Requirements

REQ-1: The information pertaining to the professor which includes the courses he is taking and his projects and publication will be displayed. The professor must login to the system first.

## 4.11 Login

4.11.1 Description and Priority

This functionality will enable the users of the system to access the features of the system. This functionality has high priority.

4.11.2 Stimulus/Response Sequences

This function should be available to all the three users of the system depending on the user type.

4.11.3 Functional Requirements

REQ-1: The user will enter the username ,password and user type to get access to the different features of the system. User Types include student, instructor and Department Secretary. It should authenticate the user and display the appropriate window if credentials are correct else an error message is displayed.

# Other Nonfunctional Requirements

## Performance Requirements

The proposed system will be used as the chief information system for the departments of the university. This software should be able to run in an average configuration system that meets the operating environment requirements listed in section 2.4. It should be a light software as there are no heavy functions in it such as graphics. This software should consume very small amount of RAM and does not make the system lag. The performance can be affected if there are network related issues and very low amount of working memory.

## Safety Requirements

The database may crash at any certain time due to virus or operating system failure. Therefore, it is required to backup the databases.

## Security Requirements

Since only the department secretary is going to use the system, he would be provided with a username and password. A login window would be present and on a successful login he would be able to access the features of the system. The password should be stored in the database as a hash and not in plain text.

## Software Quality Attributes

This software is built on a linux system with Ubuntu operating system and intel core i5 processor clocked at 3.2 GHz with 4 GB RAM . The system which the developer uses needs to have similar attributes. The department secretary can use the software on any OS having the basic requirements listed in section 2.4.

# Other Requirements

The other requirements for this software which are needed for smooth running are:

• The Department Secretary must regularly update the information in the system

• The printers must have no delay time so that functions such as printing grade sheets work smoothly.

**Appendix A: Glossary**

CGPA : Cumulative Grade Point Average

DOB : Date of Birth

DS : Department Secretary

GHz :Gigahertz

GUI : Graphical User Interface

MHz :Megahertz

OS : Operating System

SGPA : Semester Grade Point Average

SRS : Software Requirement Specification

**Appendix B: Use Case Diagram**

