Software Requirements Specification Document

Version 1.0

Online Student Cell (OSC)

In IEEE Format

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1.0 Introduction

1.1. Purpose of this document

The purpose of this document is to provide detailed description of our project. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. It defines how our client, team members and audience see the product and its functionality.

1.2. Scope of the Development Project

The goal is to develop Online Student Cell which will serve as a powerful tool for students to resolve all major queries through online portal. The system also contains a relational database. All this data that's being accessed will be stored in a central repository (database server) and will also be replicated onto a backup database server on a daily basis so that cases of data loss are minimized in case of events such as power failure or link failure.

Software must be able to perform following tasks:

1. **Identify and Validate User**: It must be able to authenticate the user by matching the ID no. and the password against the values stored in database.

2. **Allow student to submit request:** It must allow the user to submit the request for issue of lost/damage ID card, issue of certificates such as Transcript, CGPA card, view fee details, pending mess bills, register hostel complaints, view training and scholarship related notices, etc.

3. **Record user's Transactions:** It must be able to record details of each user transaction in corresponding database table. Thus for each user request, two write operations will be performed: one into the central repository and other into the backup database server.

4. **Determine access privileges:** The web application must be able to determine whether a particular user has been denied access the access to the portal in case of wrong password or too many wrong password attempts.

Initially we plan to implement these functionalities for CSED Third year with an intend audience of 200 people as a part of Pilot Phase. Once the pilot phase is successful we plan to implement it for all the students and further integrate it with existing web kiosk system of Thapar University. We further plan to implement it in payment of mess bill and other dues of hostel. The scope of this system is not just limited to the TU campus only as the same mechanism can be reused in other campuses as well.

1.3. Glossary

Term	Definition
OSC	A simple system to be developed to automate student's requests and queries within TU campus
Backup Server	Server to secondary storage of data
Central Repository	Main storage location of data
Database	Collection of all the information monitored by this system.
User	Student, Hostel, Academic Dept., Accounts Dept., CILP

1.4. References

[1] IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.

1.5. Overview of Document

The next chapter, the Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, Requirements Specification section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

2. Overall Description

2.1 Product Perspective

- The product will run as a component of the existing web kiosk system. The product requires use of a LAN/WLAN connectivity and a functional computer.

- Here the student will login using his/her enrollment number and password, upon logging in student will be provided with various services such as apply for new id card, view fee details, view pending mess bill and payment history, get all certificates such as Transcript, Rank Card, etc., register hostel complaints, upload hostel allotment documents, etc.

- Upon logging in, the **Login Module** will authenticate the user by matching the Enrollment No. and the password against the values stored in the central database server.

- Depending on the operation requested by the user **Service Module** will thus process the request and display the appropriate message back to the display screen by passing the message to the Display Module.

- In addition, a **Central database server** and a **Backup database server** will also be used in order to read/write data onto the repository. The central database server will periodically update the Backup database server so that in case of server failure it can restore the data by retrieving the records stored in the Backup database server's tables.

- The login module and the service modules will not access the database at the same time as first a user has to be authenticated, following which the requests can be processed.

2.2 Product Functions

The product should be able to perform the following operations:

1. It must be able to authenticate the user by matching the Enrollment no. and the password against the values stored in the database.
2. It must be able to check the pending/completed request status by querying the database server.
3. For one service request two operations will be performed: one into the central repository and other into the backup database server.
4. The web-app must be able to update the access privileges for a particular user and the administrator can only modify the privileges.
5. The application must be able to determine whether a particular user has been denied access due to invalid id/password or too many unsuccessful login attempts

2.3 User Characteristics

The goal is to design web application for 5 different users. These user types are listed below as follows:

1. Student
2. Hostel
3. Academic Dept.
4. Accounts Dept.
5. CILP

The aim is to develop an application that should be easy to use for all types of users including the System Administrator.

Thus while developing the application one can assume that each user type has the following characteristics:

- The user should be familiar with the working of a Computer.
- In order to use the system it is not required that a user be aware of the internal working of the system but he/she is expected to know what happens when a service is requested.

2.4 General Constraints, Assumptions and Dependencies

The following list presents the constraints, assumptions, dependencies or guidelines that are imposed

- The product must have a user friendly interface that is simple enough for all types of users to understand.
- Response time for loading the application and for processing a request should be no longer than five seconds.
- A general knowledge of basic computer skills and of basic online system is required to use the product.
- The central database server and backup database servers should be updated regularly. This updating and replication of data from central database server to the backup database server can introduce additional fluency in the working of the system.
- The replication of data from central to the backup server has to be there.

2.5 Apportioning of requirements

The System is to be implemented in the following three phases:

i.   **Pilot Phase:** The System will be implemented initially for CSED Third year for 200 students
ii. **Expansion of the system to other areas:** In the future we can have a single system for students serving different purposes like applying for new id card, get certificates, view mess bill and fee detail history, etc.

Here the same functionalities will be implemented in each phase; the only difference will be the number of transactions being carried out and the scale of implementation.

3. Specific Requirements

3.1 External Interface Requirements

The following list presents the external interface requirements:

3.1.1 Interface:

A. Hardware:

- ❖ RAM : 256 MB
- ❖ LAN/WLAN Connectivity
- ❖ Processor : Pentium(R)Dual-core CPU

B. Software:

- ❖ Operating System : OS Independent
- ❖ Web Browser

3.1.2 User Interface:

The software provides simple graphical interface for the user performing the required tasks.

- Allows to login and verify the authenticity of the user.
- Allows to access desired service and generates the request number.
- Allows to add the services student's account stored in the server database.

3.2 Detailed Description of Functional Requirements

Table 1 shows a template that we'll be using to describe functional requirements for three types of users: college management, shopkeeper, customer as one can easily deduce the functional requirements for other user types with this template.

Table 1: Template for describing functional requirements

Purpose	A description of the functional requirements and its reasons
Inputs	What are the inputs; in what form will they arrive; from what sources can the inputs come; what are the legal domains of each input.
Processing	Describes the outcome rather than the implementation; includes any validity checks on the data, exact timing of operation (if needed), how to handle unexpected or abnormal situations
Outputs	The form, shape, destination and volume of output; output timing; range of parameters in the output; unit of measure of the output; process by which output is stored or destroyed; process for handling error message produced as output.

3.2.1 Functional Requirements for Student Welcome Screen

Table 2 gives the functional requirements for Student Welcome Screen.

Table 2: Functional Requirements for Customer Welcome Screen

Purpose	This screen is integrated with kiosk of the University. This screen provides information specific to each student upon the successful login in the kiosk.
Inputs	A student can view a page of information by choosing from one of the options given on the screen.
Processing	The system responds to selections by displaying a page containing the pre-defined text requested information.
Outputs	Output consists of a screen of information specific to a student. It show the services demanded by the student between a specific period of time and status of each service request. It also shows the notices and announcements of concern to the student

3.2.3 Functional Requirements for Account's and Academic Dept. welcome Screen

Table 3 gives the functional requirements for Account's and Academic Dept. Welcome Screen.

Table 3: Functional Requirements for Account's and Academic Dept. Welcome Screen

Purpose	This screen provides information of the all the students who have requested a particular service.
Inputs	A user can view a page of information by choosing from one of the options given on the screen.
Processing	The system verifies if request is authentic and generates a request number.
Outputs	If the request is valid, the student's details are displayed which are retrieved from the server database. The user enters the requests made by the student, generates request number and probable request completion date and submits into the database.

3.2.4 Functional Requirements for Hostel welcome Screen

Table 4 gives the functional requirements for Hostel Welcome Screen.

Table 4: Functional Requirements for Hostel Welcome Screen

Purpose	This screen provides information of the all the students who have registered a complaint or has uploaded the documents.
Inputs	A user can view a page of information by choosing from one of the options given on the screen.
Processing	The system verifies if complaint is authentic and generates a complaint number.
Outputs	If the complaint is valid, the student's details are displayed which are retrieved from the server database. The user enters the complaints made by the student, probable complaint resolution date and submits into the database.

3.3 Performance Requirements

- Responses to queries shall take no longer than 5 seconds to load onto the screen after the user submits the query.
- The system shall display confirmation messages to users within 5 seconds after the user submits information to the system.

3.4 Quality Attributes

- The product is targeted towards 5 types of users: Student, Account's Dept., Academic Dept. Hostel and CILP. The product must load quickly and work well on a variety of terminals. It must also tolerate wide variety of input possibilities from a user, such as incorrect responses or unforeseen keystrokes.
- If the connection between the user and the system is broken prior to the query being confirmed or cancelled, System shall enable the user to recover an incomplete query.

3.5 Other Requirements

None at this time

4. User Stories

- As a student , I need an academic portal so that I can request for documents from the academic department.
- As a student, I need an academic portal so that I can get notified about the different events.
- As a student, I need an academic portal so that I can get the payable amount for the requested documents.
- As a student, I need a hostel portal so that I can request for the allotment of the room.
- As a student, I need a hostel portal so that I can view the details of my hostel mess bill.
- As an admin, I want an admin page so that I can update the details of the students.
- As an admin, I want an admin page so that I can assign access privileges to different users.
- As a developer, I need an authentication system so that the system is able to validate different users.
- As an admin, I need a e-messaging system so that I can notify the students about their requested services.
- As a student, I need a e-messaging system so that I can be notified about my requested services.
- As an accountant, I need all the student records so that I can manage incoming requests.
- As an issuing officer, I need all the student service requests so that I can resolve them.
- As a hostel representative, I need all the pending student complaints and hostel allotment documents.

5. Change History

2016	Version 1.0 – Initial Release

6. Document Approvers

SRS for Online Student Cell is approved by:

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(Name)

Designation

Date: