UCS1617 - Mini Project

Online Course Management System

SOFTWARE REQUIREMENTS SPECIFICATION

Version 1.2

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Introduction

Managing course registrations, monitoring of students' performance in each course and generating reports at colleges and universities are being done manually and majorly on paper. The student needs to check an information brochure, choose a course, and needs to physically go to the course registrar of the college to enroll in it. The registrar needs to ensure that the student is eligible to take up the courses they have chosen, and then enroll them in those courses by updating their database. Now, the professor needs to keep track of all his students using registers and also has to use separate software to keep track of grades of the students taking up their courses. This is time-consuming, cumbersome and hard to maintain in the long-term.

This Online Course Management System aims to solve this by bringing the entire process online, eliminating physical involvement in the process as well as remove the need for a lot of paper work. The system will allow The professors will be able to set the syllabus, lesson plan and other details such as eligibility. They will be able to post announcements, create & collect assignments and provide resources for the course. They can also grade students and generate reports. The students will be able to register for courses offered by the university professors. They will be able to access the course resources, submit assignments and monitor their progress in each course they take up. They will also be able to discuss and clarify doubts in a public forum created for each course.

1.1 Purpose

The purpose of Software Requirements Specification (SRS) document is to describe the external behavior of the Online Course Management System. Requirements Specification defines and describes the operations, interfaces, performance, and quality assurance requirements of the Online Course Management System. The document also describes the nonfunctional requirements such as the user interfaces. It also describes the design constraints that are to be considered when the system is to be designed, and other factors necessary to provide a complete and comprehensive description of the requirements for the software. The Software Requirements Specification (SRS) captures the complete software requirements for the system.

1.2 Scope

The Online Course Management System provides students the ability to register for courses online as well as monitor their performance in assignments and tests of the courses they have registered for. It allows professors an easy way to manage all the classes that they handle, and have a clear idea of how their students in each course and class are performing, using automatically created reports. The system is supposed to have the following features:

1. The system allows Students, Professors and a System Administrator to logon to the system all day long.
2. The professors of the university will be able to create and manage courses.
3. They can set the syllabus, lesson plan and other details such as eligibility during creation.
4. They will be able to post announcements, create & collect assignments and provide resources for the course.
5. They will be able to assign grades for students for the assignments, and also for tests that may be conducted offline.
6. They will be able to generate a report for any course they are managing at any point of time.
7. The students will be able to register for courses offered by the university professors.
8. They will be able to access the course resources, submit assignments and monitor their progress in each course they take up.
9. They will be able to discuss and clarify doubts in a public forum created for each course.

The features that are described in this document are used in the future phases of the software development cycle. The features described here meet the needs of all the users. The success criteria for the system is based in the level up to which the features described in this document are implemented in the system.

1.3 Overview

The SRS will provide a detailed description of the Online Course Management System. This document will provide the outline of the requirements, overview of the characteristics and constraints of the system.

1.3.1 Section 2: Overall Description

This section of the SRS will provide an overall description of the product with items such as Product Perspective, Product Functions, User Characteristics, Constraints, Assumptions & Dependencies and Requirements.

1.3.2 Section 3: External Interface Requirements

This section of the SRS will provide descriptions of all interfaces involved in with the system. It details all the User Interfaces that will be provided by the system, the Hardware and Software Interfaces that are going to be used by the system, as well as the communication interfaces required for the functioning of the system.

1.3.3 Section 4: Specific Requirements

This section of SRS contains all the software requirements mentioned in section 2 in detail, sufficient enough to enable designers to design the system to satisfy the requirements and testers to test if the System satisfies those requirements.

Overall Description

2.1 Product perspective

The Online Course Management System that facilitates the management of courses in a university.

The professors of the university will be able to create and manage courses. They can set the syllabus, lesson plan and other details such as eligibility during creation. They will be able to post announcements, create & collect assignments and provide resources for the course. They can also grade students and generate reports.

The students will be able to register for courses offered by the university professors. They will be able to access the course resources, submit assignments and monitor their progress in each course they take up. They will also be able to discuss and clarify doubts in a public forum created for each course.

2.2 Product Functions

The Online Course Management System acts as an interface between the Students and the Professors, with minor human monitoring by the system administrator.

The major functions of The Online Course Registration System include:

1. Professors should be able to create, manage and monitor multiple courses courses that they have offered.
2. Professors should be able to post announcements, create & collect assignments and provide resources for the course.
3. Professors should also be able to grade students and generate reports.
4. Students should be able to register & monitor their performance and manage courses that they have registered for.

5. Students should be able to access the course resources, submit assignments and monitor their progress in each course they take up.

6. Students should be able to discuss and clarify doubts the public forum of the course.

2.3 User Characteristics

The users of the system are students and the professors of the university. The students & professors are assumed to have basic knowledge of the computers and Internet browsing.

2.4 Operating Environment

The Online Course Management System will be implemented as a WebApp, which can be accessed using any internet browser that is up-to-date and supports the HTML5, CSS3 and JS6. It is therefore platform-independent, and can be run on any Operating System that has support from any major Web Browser such as Google Chrome, Firefox, Opera, Microsoft Edge etc.

2.5 Constraints

- The applicants require a computer with a working internet connection to access the Online Course Management System, access course content, submit assignments etc.

- The system must be up to date and support HTML5, CSS3 and JS6 in order for the website to render as intended and be used without any hassle.

2.6 Assumptions And Dependencies

- The users have sufficient knowledge of computers.

- The users know the English language, as the user interface will be entirely in English.

- The users have sufficient knowledge of using Google Drive Storage, since that will be used for submission of assignments.

External Interface Requirements

3.1 User Interfaces

3.1.1 Professor

1. Registration page: All new users need to register themselves to the System using their official mail ID
2. Login page: All users must login before they can use the system
3. Created Courses Page: Displays all courses created by the professor
4. Course Creation Page: Lets the professor create a new course
5. Course Dashboard: Gives and overview of the course and lets the professor add course resources
6. Assignments page: Displays all assignments and allows to create a new assignment
7. Assignment Grading page: Displays all submissions to the chosen assignment and lets the professor grade them
8. Course Forum page: Displays all forum posts made for that course and allows to make a new post

3.1.2 Student

1. Registration page: All new users need to register themselves to the System using their official mail ID
2. Login page: All users must login before they can use the system
3. Enrolled Courses Page: Displays all courses currently taken up by the student
4. Available Courses: Displays all available courses that the student can take up, and allows them to register for them.

5. Course Dashboard: Gives and overview and resources of the course

6. Assignments page: Displays all assignments given for the course and lets the student to make submissions. It also displays the assignments submitted already, and their grade if graded by the professor.

7. Course Forum page: Displays all forum posts made for that course and allows to make a new post

3.2 Hardware Interfaces

The Online Course Management System will be implemented as a WebApp that can be run on Web Browsers.

Any computer that can run an up-to-date browser with support for HTML5, CSS3 and JS6 will be able to use the system.

3.3 Software Interfaces

The Online Course Reservation is a full-stack WebApp which will be built using the following Tech Stack:

- Front-End: React Framework with JavaScript
- Back-End: Flask Micro Web Framework with Python
- Database: MongoDB Atlas deployed on Amazon Web Services

3.4 Communication Interfaces

The Online Course Management System will be using MongoDB Atlas service with the Amazon Web Services Cloud Platform for all database requirements.

The system will communicate with the Cloud based database for all CRUD operations that will be performed during the usage of the system.

Specific Requirements

4.1 Functionality

4.1.1 Login Capabilities

The System shall provide Login capabilities for the Students, Professors and the System Administrator at all times.

4.1.2 Specifically for Students

- Register for any course that has seats available.
- Unenroll from any course that the student has enrolled in.
- Make assignment submissions and review grades given.
- Make forum posts for all courses registered for.

4.1.3 Specifically for Professors

- Create a new course at any time.
- Delete any created course at any time.
- Create a new assignment for any created course.
- Grade assignment submissions.
- Make forum posts for all created courses.

Appendix: Glossary

- **React**: React is an open-source, front end, JavaScript library for building user interfaces or UI components. It is maintained by Facebook and a community of individual developers and companies. React can be used as a base in the development of single-page or mobile applications.
- **Flask**: Flask is a micro web framework written in Python that is designed to support the development of web applications including web services, web resources, and web APIs. Web frameworks provide a standard way to build and deploy web applications on the World Wide Web.
- **MongoDB**: MongoDB is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with optional schemas. MongoDB is developed by MongoDB Inc. and licensed under the Server Side Public License.
- **Amazon Web Services**: Amazon Web Services is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.
- **JSON**: JSON is an open standard file format, and data interchange format, that uses human-readable text to store and transmit data objects consisting of attribute–value pairs and array data types.
- **API**: An Application Programming Interface is an interface that defines interactions between multiple software applications or mixed hardware-software intermediaries. types.
- **UI**: A User Interface is the space where interactions between humans and machines occur.