**Atharva College Of Engineering**

**Requirements Specification e-Learning Software**

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1. Introduction

This section describes the enterprise, software system functional and nonfunctional requirements for the eLearning software product that is planned for product development in the near future.

The purpose of this documentation is to define the requirements gathering process used to help various developers, administrators and beta testers in understanding the system. The purpose of this software requirements specification is also to verify that all the specifications are correct and are verified. This document also serves to ensure that the software is traceable throughout its software development life cycle.

1.1 Audience:

This SRS would be used by the following people

* Developers: The developers would use this document to implement the functionalities and to ensure traceability of the software.
* Testers: The testers would use this document to know the interfaces and to test the software accordingly.
* Users: The users would use this document to verify if the requirements specified satisfy their needs.

1.2 User Roles:

1.2.1 Instructor

This role enables the user to offer courses, set quizzes, assign grades to students for courses he is offering.

1.2.2 Student

This role enables the user to register for courses, answer quizzes, view lectures/grades.

1.2.3 Admin

This role enables the user to manage users (create, edit and delete) besides performing other administrative tasks such as monitoring the system operation, editing system configuration etc.

2. Description

2.1 System Features

The set of features has been categorized based on the entity that the feature deals with - courses, quizzes etc. Every requirement is a numbered subsection that has as part of the sub-section heading, the role needed to use this feature.

2.2 Administrative Features

The system will come with a default administrator account whose password can be set during

installation (similar to the root account on UNIX).

2.2.1 Obtaining User Accounts - All

Potential users will be able to request for and obtain \user accounts" on the system. A valid

email account is a prerequisite to obtain an account. A request for the user account will be

registered and be available to the administrator for processing when he logs on. Any user with an administrator role can handle user account requests.

2.2.2 Creating User Accounts - Admin

Administrators will be allowed to create users and assign one or more roles. A request to create a user needs to be available only if there are requests pending. The creation of a user should close the pending request for creation. The creation will result in the user login and password to be emailed to the user at the mentioned user's email account.

2.2.3 Resetting Passwords and Editing Roles - Admin

Administrators can edit user details and change the password of the user. They can also remove or add roles to the account. Any change made should result in an email being sent to the user.

2.2.4 Logging In - All

The system will allow users to login with a password if they already possess a valid account on the system. An invalid password will signal an error. The system will protect password user information and ensure that it will not be viewable by others except the administrator.

2.2.5 Editing Account Information - All

Users can edit information themselves and change the password once logged in. Any changes that are saved in the system will be confirmed and an email sent to the user’s email account.

3. Course Creation, Modification and Deletion

3.1 Course Creation - Instructor

Instructors can set up new courses in the system. A course consists of a name given by the

instructor, a code assigned by the system that is dependent on the department that the instructor is associated with, a syllabus and a grading policy section that specifies the number of quizzes and assignments that form part of the course evaluation and a set of prerequisite courses (if any). There is also an explicitly identified cut-off point (say a lecture number) beyond which the student cannot drop the course. A course can also be explicitly disabled for registration. Creating the course initially enables or open it for registration. Courses are composed of a set of lectures, quizzes and assignments.

3.2 Displaying Enabled Courses - Instructor, Student

The system will display list of courses ordered (both enabled for registration and disabled) /

registered for if the user has logged in as a instructor or student respectively. The system will

display the details of a course to the user, when he clicks on a specific course. Details specified to the instructor include the list of current registrants for the course.

3.3 Modifying Course Details – Instructor

If authorized, the user can modify details of the course or delete the course from the system. In case there have been any registrations for the course even if complete, a course can merely be disabled for registration but NOT deleted from the system.

4. Course Registration and Adjustment

4.1 Registering for a Course - Student

A student is allowed to register for a course that is open for registration. This is done by browsing the list of courses available for registration for which the student satis\_es the prerequisites. A course can be selected from this list and registered for. A successful registration results in an email being sent to the student who can then begin viewing lectures.

4.2 Dropping a Course - Student

As long as the student has not passed the adjustment point, he can drop the course from the list of registered courses. The system does not need to maintain a history of add/drop activities.

5. Lectures

5.1 Uploading Lectures - Instructor

The instructor for the course can upload lectures for a given course. At the time of upload, an ordering must be specified by the instructor which says what lectures, assignments and quizzes comes before this lecture can be viewed. This ordering can be modified provided a student having already viewed this lecture will not violate the changed ordering.

5.2 Viewing Lectures - Student

Students can view the set of lectures associated with the course including the status of each one (viewed or not). They can then choose to view any lecture that is available for viewing based on their progress in the course. The lecture would then be streamed to the student. For optimization purposes, the lecture media \_les may be downloadable onto the client's desktop with the appropriate protections that will prevent unauthorized viewing or distribution of the lecture material.

6. Quizzing

6.1 Setting a Quiz - Instructor

The system will enable an instructor to set a quiz, along with specifying quiz parameters like type of quiz, duration, total marks, prerequisites for taking the quiz and number of attempts allowed. There is also an ordering imposed on quizzes relative to other quizzes, lectures and assignments. A quiz is a set of multiple choice questions. Setting a quiz would imply the instructor also needs to indicate the correct choice for automated evaluation.

6.2 Modifying and Deleting a Quiz - Instructor

The system will enable instructor to modify or delete any quiz for a course that he is offering, provided no student has attempted the quiz by then.

6.3 Taking a Quiz - Student

The system will enable a student to take a quiz, if he satisfies all the prerequisites for the quiz. The list of quizzes that he is enabled to take for a particular course will appear on the client display from which a quiz can be selected for answering. The system will evaluate responses to the quiz questions online. The system will display results at the end of the quiz, along with correct answers, for all the answers marked incorrect.

6.4 Retaking a quiz - Student

The system will allow a student to reappear for a quiz, in case the connection is lost when the quiz is in progress.

6.5 Student History and Grades

The system will store history related to a student like: scores secured by the student in quizzes he has previously taken, the time when he took the quizzes, details of previous attempts of quiz.

6.6 Viewing History of Courses Taken - Student

The system will enable a student to view his history and grades for the courses for which he is registered.

6.7 Assigning and Viewing Grades for a course - Instructor

The system will enable a instructor to view grades of all students who have registered for any of his courses and also assign grades to the students.

7. Requirements

7.1 Streaming Requirements

7.1.1 Synchronization

Supporting streaming synched with a PowerPoint presentation that unfurls as the streaming happens in time.

7.1.2 Resolution

The software will provide multiple resolutions depending on the speed on the connection from client to server.

7.2 Non Functional Requirements

7.2.1 Installation

The client installable will be available on the internet. It will be a complete install (i.e. with no prerequisites). Incremental updates will be available through web start.

7.2.2 Platform

The system will be developed on Linux platform and will be entirely open source. The system needs to work out of the box on Suse and Redhat desktop and server side versions of Linux.

8. Performance

The system will have excellent performance thanks to Linux.

8.1 Response times

No operation (defined as a single request/reply) other than streaming of the lecture material will have a response time of more than 5 seconds.

8.2 Concurrent Users

The system shall support up to 200 concurrent users with 20 concurrent streaming requests for lecture viewing.

8.3 Error Messages

Every error shall have an appropriate error message. The set of these messages shall be externalized into which is read upon start up.

8.4 Constraints

8.4.1 Client requirements

The application is expected to have a rich client that will require significant compute resources. The minimum client configuration will be a P4, 2.0 GHz will 512M of RAM and 40GB storage.

8.5 Connectivity

The client will have to stay connected with the server via a reasonable bandwidth link for the duration of its interaction. Client will be provided with multiple options to select appropriate resolution according to the capacity of the link with which he is connected to server.

9. GOALS:

E-learning aims to reach a wider target audience by engaging learners who have difficulty attending conventional classroom training because they are:

* Geographically dispersed with limited time and/or resources to travel;
* Busy with work or family commitments which do not allow them to attend courses on specific dates with a fixed schedule;
* Located in conflict and post-conflict areas and restricted in their mobility because of security reasons;
* Limited from participating in classroom sessions because of cultural or religious beliefs;
* Facing difficulties with real-time communication (e.g. foreign language learners or very shy learners).
* E-learning can offer effective instructional methods, such as practising with associated feedback, combining collaboration activities with self-paced study, personalizing learning paths based on learners’ needs and using simulation and games.
* Further, all learners receive the same quality of instruction because there is no dependence on a specific instructor.

10. WHEN TO USE E-LEARNING?

* When there is a significant amount of content to be delivered to a large number of learners;
* Learners come from geographically dispersed locations;
* Learners have limited mobility;
* Learners have limited daily time to devote to learning;
* Learners do not have effective listening and reading skills;
* Learners have at least basic computer and Internet skills;
* Learners are required to develop homogeneous background knowledge on the topic;
* Learners are highly motivated to learn and appreciate proceeding at their own pace;
* Content must be reused for different learners’ groups in the future;
* The course addresses long-term rather than training needs short-term.

11. DIFFICULTIES FACED IN E-LEARNING

11.1 Learner-Centred Content:

E-learning curricula should be relevant and specific to learners needs, roles and responsibilities in professional life. Skills, knowledge and information should be provided to this end.

11.2 Granularity:

E-learning content should be segmented to facilitate assimilation of new knowledge and to allow flexible scheduling of time for learning.

11.3 Engaging content:

Instructional methods and techniques should be used creatively for engaging and motivating learning experience.

11.4 Interactivity:

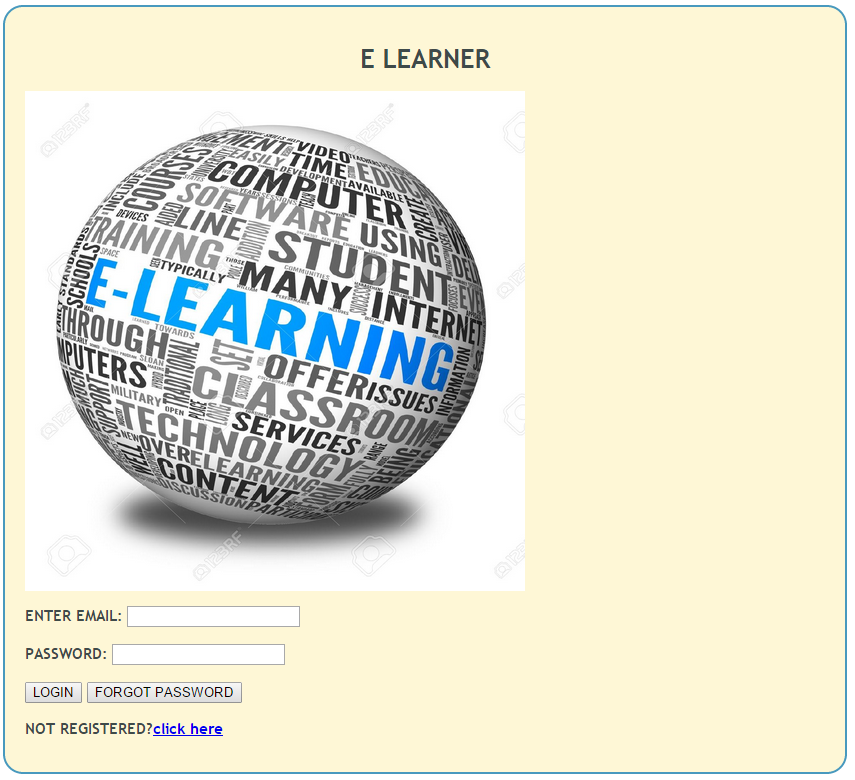
Frequent learner interaction is needed to sustain attention and promote learning.

11.5 Personalization:

Self-paced courses should be customizable to reflect learners’ interests and needs; in courses, tutors and facilitators should be able to follow the learners’ progress and performance individually.

12. Forms:

12.1 Login form



1.0 Login Form

12.2 Registration form

