Software Requirements Specification

for

E-Learning Web App

Version 1.0

Prepared by :

Arjun Kumar (16IT108)
Uttam Kumar (16IT250)
Sulabh Tembhurkar (16IT245)

Dept. of Information Technology

Date: 17/01/2019

Table of Contents

Revision History

Name	Date	Reason For Changes	Version
brainIgniter	17/01/19	Implemented The Initial Concept	v1.0
brainIgniter	24/01/19	Added Live Code Editor	v1.1

1. Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of the E-Learning Tutorial Web System. 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. This document is intended for both the stakeholders and the developers of the system and will be proposed to the IT Dept., NITK Surathkal for its approval.

1.2 Intended Audience and Reading Suggestions

The document is intended for developers, project managers, users, testers, guiding staff and documentation writers. All the readers can find required specification of the system in document. The developers can find information of their interest in the requirements. The users, testers and staff can see features section for related information.

1.3 Product Scope

This software system will be a E-Learning Tutorial Web System for all the interested users of society. This system will be designed to maximize the user's productivity by providing different methods to learn a concept of respective subject, which would otherwise have to be performed looked for all over the Internet. By maximizing the user's learning efficiency and production the system will meet the user's needs while remaining easy to understand and use.

More specifically, this system is designed to allow an user to manage and communicate with an admin or other user for any related post and admin to publish articles on some given topic to website. The software will facilitate communication between admins, reviewers, and the users via comment or requesting messages. The user will also be provided with a platform to implement a concept which he/she learned. User can post any article through admin. The system also contains a relational database containing a list of admins, users and articles.

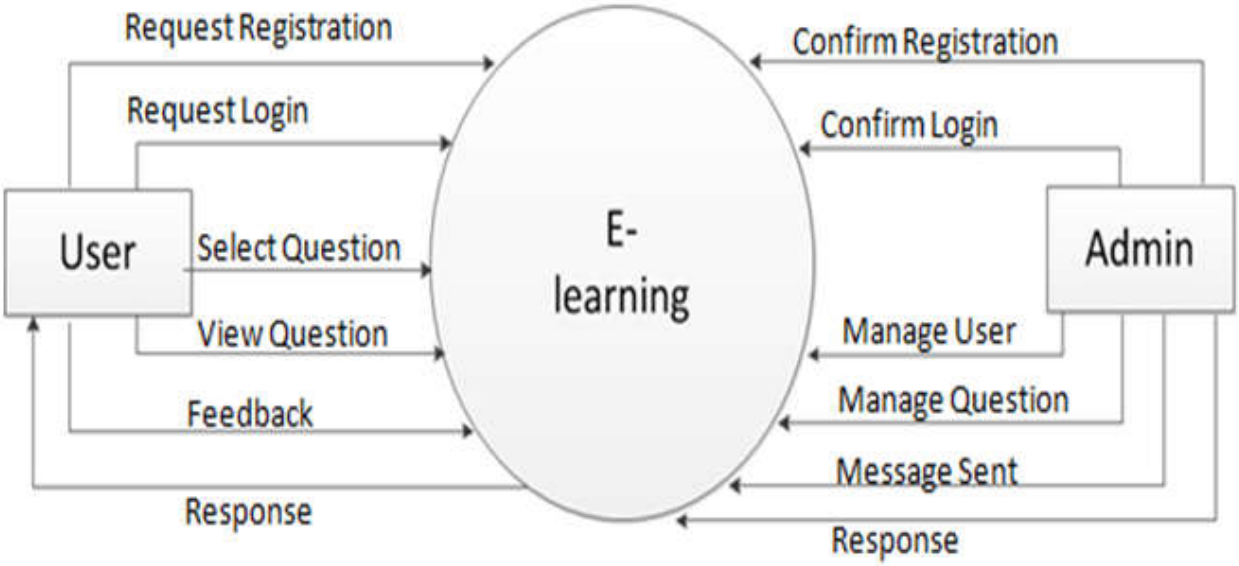
1.4 References

1. IEEE. *IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.* IEEE Computer Society, 1998.
2. https://en.wikipedia.org/wiki/Software_requirements_specification
3. *Wiegers, Karl; Beatty, Joy (2013). Software Requirements, Third Edition. Microsoft Press. ISBN 9780735679665.*

2. Overall Description

2.1 Product Perspective

This documentation is of E-Learning tutorial website. The system is a self-contained product. This product is made while keeping in mind about the usefulness and complexity to work on the product. It is made very simple and easy so that every user can work on it without facing any difficulty. The user can manage the posts of the system by coordinating with the admin. A user can also view posts of other users and look up for what concept is needed.



2.2 Product Functions

The product has various major functions, some of them are as specified:

1. Articles are provided on concepts of various subjects, which are editable.
2. User can request for certain specific article.
3. Concepts can be implemented on a provided platform.

2.3 User Classes and Characteristics

The user and developer is expected to be Internet literate and be able to use a search engine and other Internet facilities. The frequency of use is not a matter of concern. Anyone interested in learning some concepts effectively can use this product. The product is basic web interface with good user interface, so technical expertise does not matter for using it.

The user is also expected to be Computer literate and to be able to use button, pull-down menus, and similar tools. User can be any high school or above student or a developer.

2.4 Operating Environment

The product can be used in any operating system of computer on a web browser. It is also usable on browsers of mobile set or tablet. The versions need not be necessarily latest, but recommended.

2.5 Design and Implementation Constraints

The designed system is a simple to use product. The developers can use and modify full product with ease. There are some requirements which are stated below.

The product is designed on Code Igniter platform. PHP, JavaScript, HTML and CSS are scripting languages used. Bootstrap is necessary external API. The web system is also dependent on other web system, so there rules and policies may affect the working of product. YouTube is the software used for video lecture streaming. SQLite is database used.

2.6 User Documentation

The user documentation can be found inside the product on 'How to use' section.

2.7 Assumptions and Dependencies

The system has some dependencies on other web systems. The video is streamed via YouTube and coding platform is taken from TutorialsPoint. This are stated on the assumption that the dependent web systems are working properly.

3. External Interface Requirements

3.1 User Interfaces

The product works on a web browser. For the user interface to work properly, browser should be commendable with Bootstrap and web scripting, designing and styling languages such as PHP,JS,CSS,HTML etc. Rest all the functionality depends on the browser and computer being used.

The User Interface section defines the way the various stakeholders interact with the System. All screens will be developed to work on a PC/Laptop. Error messages will appear at the bottom and shall be self descriptive - The maximum size of error messages will be 80 Characters. Buttons will be used to make the navigation simpler. In order to increase Usability of screens, Patient Registration and Consultation Requests screens will have bigger font size to aid Elderly people.

3.2 Hardware Interfaces

The System shall be deployed on any browser. All the stakeholders are supposed to log-in into the E-Learning tutorial website where there will be options to operate the system. Hardware Requirements for stakeholders:

- Pentium 4 processor or higher
- Approximately 100 MB of free harddrive space
- Minimum 128 MB RAM
- Minimum 1GB database space
- Minimum 2GB RAM

3.3 Software Interfaces

The System is self contained and no data is supposed to be given as input to any third party. User and admin are supposed to log-into the system to access the website, so are the testers. Software Requirements for Hosting:

- CodeIgniter
- Xampp
- Browser (Google Chrome, Mozilla Firefox, Safari etc.)
- Operating System supporting the above browsers.

3.4 Communications Interfaces

The System will be available on local engine as a URL and will be operational using standard web-browsers (Safari, Google Chrome and firefox). Users, admins and others will connect through a secured encrypted connection over internet (https://). Since the data communicated over internet is confidential it is imperative that encrypted protocols are used to prevent data leakages. There is functionality provided in the system for communicating with admin through messages.

4. System Features

- **Personnel authorised accounts**
  - All the user have their own personal account which are verified by admin.
  - User actions:
    - Log In
    - Sign Up
  - The user has to sign up to create a new account. Later, they can log in in their account to use the system.
  - The system can not be used by any unauthorised person.

- **Article posting**
  - Only the admin is allowed to post any article on the system.
  - actions
    - publishing an article
    - user can request for an article
    - removal of articles
    - updating/modifying the article
  - The user can send any article to admin through message and after reviewing, the article is posted.
  - The admin can also update or delete any article based on its validity on latest date.
  - The articles can also contain video lectures with them.

- **Code implementation**
  - A platform is provided to perform coding and checking whether the implementation is correct or not.
  - user actions
    - implement any program/concept
    - run the program
    - choose preferable language
    - check for errors
  - The coding platform has various options for supportable languages.
  - The user can write in preferable language and validate the implementation.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

At the peak, system should be able to scale to 10,000+ users (Learners) concurrently. Further, since the system needs to be designed for 24/7 operations, hence the availability should be high - 99.999%.

The system data shall be backed up every night (full back-up) with a cycle of 30 days. This essentially means that there will be a provision to rollback by a month. Post back-up everyday the back-up shall be restored on a dummy production system to ensure completeness and correctness of back-up. Post that the dummy production database shall be purged.

5.2 Security Requirements

As the user's data is highly confidential and private care would be taken to ensure that the confidentiality is maintained. Only authorized members i.e. admins will have the access to user profiles and their requests. Since there are no published external interfaces, there is no risk envisaged at the moment in terms of unwarranted data cascade.

5.3 Software Quality Attributes

The Key Software Quality Attributes are Availability, Reliability and Usability. As the system is expected to be 24/7 - High availability is very important. Also, since the major transaction i.e. concept learning and posting has classified data/ information of the user, the system needs to be highly reliable. Lastly, the system is likely to be used by all age users, hence the screens have to be designed for Usability.

6. Summary

This document details the software requirement specification for the product E-Learning Tutorial Web System- An integrated e-learning system for users trying to learn concepts of provided courses. The document is divided into 5 sections. In the first section, the document describes the purpose of the document, scope of the product, conventions, and intended audience. Second section gives a detailed description of the product. It depicts the product perspective, product functions and characteristics. Operating environment is also illustrated. Design and implementation constraints are also explained along with key assumptions and dependencies. Third section describes all the interfaces in details including user interfaces, hardware interfaces, software interfaces and communication interfaces. Fourth section describes all system features and the functional requirement of the system. Functional features are shown in the document using a standard convention so as to make the requirement traceable. Fifth section describes non-functional requirements of the system. It includes performance requirement, security requirement, software quality attributes. This all is summarized here.