Exp No: 02	TITLE: SRS DOCUMENT	Date:30-03-2022

2. Identify the various requirements development activities like Elicitation, Analysis,

Specification and Verification for the given Scenario, develop an SRS document.

LEARNING MANAGEMENT SYSTEM

1. INTRODUCTION

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1. INTRODUCTION

Developing a Virtual Classroom System to promote a greater count of students to splurge into the field of Education. It integrates the benefits of a physical classroom with the convenience of a 'no-physical-bar' Virtual Classroom System, minus the commuting hazards and expenses. It will usher in the immense flexibility and sophistication in the existing learning platform structures, with the perfect blend of synchronous and asynchronous interaction. It provides a means of collaborative learning for the students.

There are basically 4 types of users:

- Student
- Faculty
- College Management
- Administrator

1.1 DOCUMENT CONVENTIONS:

We describe what features are in the scope of the software and what are not in the scope of the software to be developed.

- Manage all the account details such as user name, phone number, email addresses, websites etc.
- User can post files in virtual class.
- Teachers can start live streaming in any time.
- Students can view assignment marks and report cards.
- Graphical representation of analysis should be shown.
- Teachers can send invitation on their accounts.
- Users can utilize various applications such as chatting, latest news, due assignments etc.
- Quiz can be conducted by the teacher.
- Teacher can assign assignments.
- Students should upload their work in due section.

1.2 REQUIREMENTS ELICITATION TECHNIQUE

Requirements Elicitation is all about obtaining information from stakeholders. In other words, once the business analysis has communicated with stakeholders for understanding their requirements, it can be described as elicitation. It can also be described as a requirement gathering. Requirement elicitation can be done by communicating with stakeholders directly or by doing some research, experiments. The activities can be planned, unplanned, or both. Planned activities include workshops, experiments.

- **Stakeholder Analysis**

Stakeholders can include team members, customers, any individual who is impacted by the project or it can be a supplier.

- **Document Analysis**

This technique is used to gather business information by reviewing/examining the available materials that describe the business environment. This analysis is

helpful to validate the implementation of current solutions and is also helpful in understanding the business need.

- **Feedback Analysis**

New systems have users' feedback mechanism. The use of users' feedback is very important and considered as one of the powerful tools of crowdsourcing-based approach. Conversely current approaches don't use feedback analysis in its techniques

- **Focus Group**

By using a focus group, you can get information about a product, service from a group. The Focus group includes subject matter experts.

- **Prototyping**

Prototyping is used to identify missing or unspecified requirements. In this technique, frequent demos are given to the client by creating the prototypes so that client can get an idea of how the product will look like.

- **Joint Application Development /Requirement Workshops**

This technique is more process-oriented and formal as compared to other techniques. These are structured meetings involving end-users, PMs, SMEs. This is used to define, clarify, and complete requirements.

- **Quality considerations**

Quality standards are well established in current approaches, however in crowdsourcing-based approach quality standards are not followed because of the involvement of crowd in requirements elicitation process.

- **Users' feedback**

There must be lots of feedback from interactivity between eLearning participants in the different forms of social collaborations that support LMS. Feedbacks can be on the LMS itself, course and its material, or the instructor and management. What important in this paper is the feedback on LMS and its tools.

1.3 PURPOSE

The document specifies the software requirement specification for Virtual Classroom System. The software requirement specification document is prepared for certain class of audiences which is comprised of professional and experts. It is prepared in a manner which will help the professionals, managers and experts to build an effective Virtual Classroom System.

1.4 PROJECT SCOPE

VCS (Virtual Classroom System) aims to promote a greater count of students to splurge into the field of Education. It integrates the benefits of a physical classroom with the convenience of a 'no-physical-bar' Virtual

Classroom System, minus the commuting hazards and expenses.

The benefits of having VCS is that student can attend lectures as per their convenience. They can appear for exams, view progress reports and participate in extra-curricular activities online. Faculties can evaluate test sheets, schedule test and perform related activities online.

2. OVERALL DESCRIPTION

2.1. PRODUCT PERSPECTIVE

- The web pages (XHTML/JSP) are present to provide the user interface on customer client side.
- Communication between customer and server is provided through HTTP/HTTPS protocols.
- The client software is to produce the user interface on system user client side and for this TCP/IP protocols are used.
- On the server-side web server is for EJB and database server is for storing the information.

2.2. PRODUCT FEATURES

Product contains following features:

- Online White Board
- Screen sharing
- Live streaming
- Polls and survey
- Server-side recording
- Insights & analytics
- Media Player
- Session Templates

2.3.USER CLASSES AND CHARACTERISTICS

Users of the VCS can be any person who is interested in having online lectures, meeting or even a conversation.

USERS: Student, Faculty, Management

STUDENT: Each student can participate lectures by sending a request to the lecturer through the side. They can view the white board and the presentations real-time while listening to the lecture. They also can interact with the lectures and the other students without interrupting the lectures and also can participate online exams the lecturer has given.

FACULTY: As faculties, they can distribute their lectures real-time without staying in a class room but having all the features in a class room. A software white board is provided to demonstrate the lectures. The documentations/presentations can be distributed prior to the lecture. Lecturer can interact with the students by answering their questions. Lecturer can also conduct an exam by storing a set of questions.

MANAGEMENT: Management is responsible for maintaining the financial details of the users registered for various courses, they have the responsibility of introducing new courses, maintaining the existing courses, address any problems which the users are facing regarding any faculty or course.

2.4 OPERATING ENVIRONMENT

Client: Web Browser, OS (any).

Web Server: WAS, Operating System (any).

Data Base Server: DB2, OS (any).

Development End: WSAD, DB2, Rational Application Developer.

Communication Interface:

- Client on Internet will be using HTTP/HTTPS protocol.
- Client on Intranet will be using TCP/IP protocol.

3. PROJECT REQUIREMENT

3.1 FUNCTIONAL REQUIREMENT

- Students can choose courses, attend lectures, take exams, view their attendance records, progress reports etc. as per their convenience.
- Attend lectures either at the scheduled time or on request view lecture at a later time.
- Upload and download of various assignments, college notices, student's notices, journals, videos.
- Real time collaboration users via chat rooms, shard and interactive whiteboards.
- One-to-many, many-to-one and many-to-many information sharing.
- Asynchronous communication in the form of E-mails, discussion boards that enable communication to occur at "convenient-times" that suit student schedules and are not accessed at prearranged times.

3.2.NON-FUNCTIONAL REQUIREMENTS

RELIABILITY: The video quality should be clear and good. The audio could be heard well. The video and audio of lectures should be synchronized well.

RESPONSIVENESS: Less response time should be there so that students and faculty should feel good while using this virtual classroom system.

SCALIBILITY: Number of users supported in the class will mainly depend on the server load, server processing capacity and its memory. It should scale maximum number of users.

3.3. USER REQUIREMENTS

User requirements are typically written when discussing the use cases for a project

- Gmail account
- Applicant tracking
- Allow candidate to update profile
- Candidate self-portal service
- Searchable Candidate Database
- Reports
- AI based profile matching
- Discussion room
- End to end communication
- Common portal

3.4. SYSTEM REQUIREMENTS

System requirements include software and hardware requirements.

Software requirements are:

- It should contain microphone to speak.
- It should have a decent pixel camera.

Minimum System Requirements:

- Internet Browsers: Firefox 58.0+, Google Chrome 65.0+
- Internet Connection: Broadband connection with 500+kbps
- Browser Support: HTML5 compatible

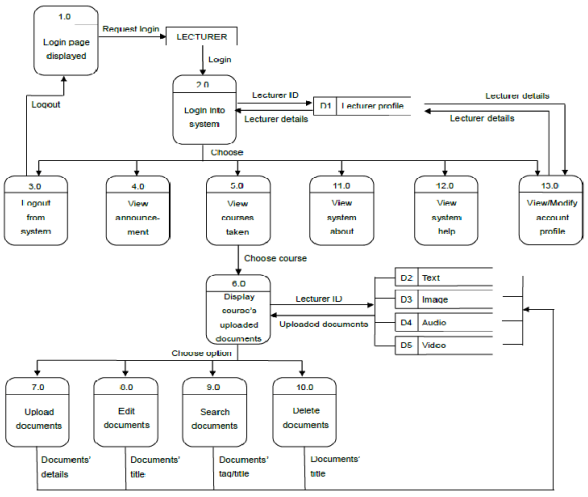
Hardware requirements are:

- Processor: 500MHz or faster
- RAM: 128MB or more
- Video Card: 128MB of view memory.

4. REQUIREMENT VALIDATION TECHNIQUES

4.1. PROTOTYPING

We utilized generic data model and synchronous collaboration to implement prototyping development for e-learning. We achieve the prototyping via the approach of generic data model in the data structure for storage. The generic data model allows adaptability, extensibility and reusability of data-base structure in the e-learning system. In general, forms and attributes in the system cannot be modified because the data structure or the schema is often predetermined in the design phase, so as the system is generally hard coded to suit the predetermined static data structure.



4.2. TESTCASE DESIGN

Once expectations are clearly defined, your QA testing team can perform test cases focused upon the user experience of the instructor. Your test cases should focus on:

- The intuitiveness of the instructor dashboard
- The ease of adding, updating and removing modules

- The success of loading course materials easily and without errors
- The ability to load large media files (such as podcasts, PDFs and videos) without file breakage
- The capability of reviewing analytics and pulling reports

QA testers should also develop test cases around the user experience for the learner. The test cases should be around:

- The intuitiveness of the learner dashboard
- The consistency of module structure and design
- The ease of accessing course materials, including reading materials, tasks and assignments
- The accessibility of the LMS for all types of learners

  - Security testing to ensure data integrity during LMS integration
  - Performance Testing to ensure responsiveness and stability under a rigorous workload.

4.3. SECURITY ISSUES

- **Antivirus Software**

  Install antivirus software and set to automatic updates.

- **Application Patches**

  Install critical application patches. When available, enable automatic update functionality. Cyber Security enforces patching of critical patches.

- **Authentication**

  Encrypt passwords when authenticating; do not transmit passwords

- **Logging**

  Log to the central logging serves.

- **Passwords**

  Passwords used to login to class must meet one of the approved password requirement templates.

  1. Template 1
     (1) Minimum 14 characters.
     (2) Strong on the strength.
     (3) Change every year.

  2. Template 2

     (a) Minimum 8 characters.
     (b) 1 lowercase letter.
     (c) 1 uppercase letter.
     (d) 1 number.
     (e) 1 special character.
     (f) Change every year.

REFERENCES

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