Aim: Develop Software Requirement Specification (SRS) document in IEEE format for the project.

1. Introduction:

1.1 Purpose: The "E-learning Management System" has been developed to override the problems prevailing in the practicing manual system. This software is supported to eliminate and in some cases reduce the hardships faced by this existing system. Moreover, this system is designed for the particular need of the company to carry out operations in a smooth and effective manner.

1.2 Document Conventions:

Term	Definition
User	Someone who interacts with the mobile phone application or the web interface.
Admin/Administrator	The system administrator who is given specific permission for managing and controlling the system
Tasks	Basically the assignments, experiments and quizzes that students need to submit for their academics.
Points	These are the scores or marks alloted to students for their specific tasks which inturn can be used to evaluate their academic performance.
Manifest	A file with basic data about an application that helps the platform run properly.

1.3 Intended Audience: users of this project will be students, teachers, and administrators**.**

1.4 Project Scope: It may help to collect perfect management in detail. In a very short time, the collection will be obvious, simple and sensible. It will help a person to know the management of the past year perfectly and vividly. It also helps in current all works relative to E-learning Management System. It will be also reduced the cost of collecting the management & collection procedure will go on smoothly.

Our project aims at Business process automation, i.e. we have tried to computerize various processes of E-learning Management System.

- In a computer system, the person has to fill the various forms & a number of copies of the forms can be easily generated at a time.
- In a computer system, it is not necessary to create the manifest but we can directly print it, which saves our time.
- To assist the staff in capturing the effort spent on their respective working areas.
- To utilize resources in an efficient manner by increasing their productivity through automation.
- The system generates types of information that can be used for various purposes.
- To satisfy the user requirement
- Be easy to understand by the user and operator

1.5 References:

1. M. R. M. Veeramanickam and M. Mohanapriya, "Research paper on E-Learning application design features: Using cloud computing & software engineering approach," 2016 International Conference on Information Communication and Embedded Systems (ICICES), Chennai, India, 2016, pp. 1-6, doi: 10.1109/ICICES.2016.7518886.

2. Overall Description:

2.1 Product Perspective: This system will consist of two parts, a mobile application and a web portal. So the students can use the mobile interface or the web interface to keep track of upcoming assignments, quizzes, scores, etc. Similarly, the teachers can use the application to post assignments, quizzes, and allot scores to students and also keep track of their academic performance of their class and domain. Administrators will generally maintain the web server and the database.

The database will be used to hold the data posted by students and generated by teachers. So the mobile app and web interface both will obtain data from a database server that will be managed by the webserver which is controlled by the administrator

2.2 Product Functions:

Functionalities of E-Learning Management System:

- It tracks the information of Student, Class and its academic performance.
- Manages the Class details, Quiz details, Assignment details.
- Increases the Efficiency of managing the assignments and students.
- Editing, Adding, and Updating of records is improved which results in proper resource management.
- Provides searching facilities based on various factors such as assignment, subject, teacher, quiz, etc.

2.3 User classes and Characteristics:

So there will be three types of users with this e-learning ecosystem:

1. Students: students basically use the application to keep track of their assignments, experiment, and project submissions. Apart from this application also provides the study material to the students provided by the teacher according to the curriculum set by the administrator.

2. Teachers: teachers will use the application to keep track of the academic performance of their class and provide them with study material. To organize weekly quizzes and tests and to maintain their score.

3. Administrator: they will basically set up the curriculum for teachers and students and will look after everything runs smoothly.

2.4 Operating environment: The application runs in the latest version of Chrome or Firefox browser on Windows, Linux, and Mac. Also, there will be a mobile application for users which runs on android as well as IoS.

2.5 Design and Implementation constraints:

The Internet connection is also a constraint for the application. Since the application fetches data from the database over the Internet, it is crucial that there is an Internet connection for the application to function.

Both the web portal and the mobile application will be constrained by the capacity of the database. Since the database is shared between both applications it may be forced to queue incoming requests and therefore increase the time it takes to fetch data.

3. External Interface Requirements:

3.1 User Interfaces: The application GUI provides menus, toolbars, buttons, panes, containers, grids allowing for easy control by a keyboard and a mouse and the mobile application will have suitable views for the user to navigate.

3.2 Hardware interfaces: Since neither the mobile application nor the web portal has any designated hardware, it does not have any direct hardware interfaces.

3.3 Software interfaces: For the web interface: a browser will be used and for mobile, the user needs to download the application.

3.4 Communication interfaces: The feedback interface will also be provided on the mobile application and web interface which in turn will provide an email notification to the administrator so that they can look into the matter

4. System features:

4.1 Access rights:

To Students:

1. They will be able to submit the assignments, experiments in pdf format which are assigned to them by their respective subject teachers.
2. Submitting the quiz posted by their respective subject teacher.
3. Students can ask doubts to their teachers in the doubts forum.

To Teachers

1. They will be posting assignments, experiments, and quizzes.
2. They will be able to provide scores and feedback to students.
3. They can keep track of the academic performance of their students.

To Administrators:

1. They will be maintaining the discrepancies in the database server.
2. They will be Maintaining the webserver and will solve the user's queries.

5. Non-functional requirements

5.1 Performance requirements: The system must be interactive and the delays involved must be less. So in every action-response of the system, there are no immediate delays. In the case of opening windows forms, popping error messages, and saving the settings or sessions there is a delay much below 2 seconds, In case of opening databases, sorting questions, and evaluation there are no delays, and the operation is performed in less than 2 seconds for opening, sorting, computing, posting > 95% of the files. Also when connecting to the server the delay is based on editing on the distance of the 2 systems and the configuration between them so there is a high probability that there will be or not a successful connection in less than 20 seconds for sake of good communication.

5.2 Security requirements: The main security concern is for users' accounts hence proper login mechanism is implemented used to avoid hacking. Also, the webserver Maintainance checks are scheduled weekly and to clear all the discrepancies in the database server to minimize the security problems.

5.3 Software quality attribute: If the internet service gets disrupted while sending information to the server, the information can be sent again for verification. As the system is easy to handle and navigates in the most expected way with no delays. In that case, the system program reacts accordingly and transverses quickly between its states.

6. Future scope:

- We will host the platform on online servers to make it accessible worldwide
- Integrate multiple load balancers to distribute loads of the system
- Create the master and slave database structure to reduce the overload of the database queries
- Implement the backup mechanism for taking backup of codebase and database on the regular basis on different servers

The above-mentioned points are the enhancements that can be done to increase the applicability and usage of this project. Here we can maintain the records of Assignment and Student. Also, as it can be seen that nowadays the players are versatile. i.e. so there is

a scope for introducing a method to maintain the E-learning Management System. Enhancements can be done to maintain all the Assignments, students, quizzes.