Project Synopsis

on

Smart Stream

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IN

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Abstract

Earlier students were facing issues to learn new courses by using multiple web applications Such as Udemy, Coursera etc. or to attend live sessions in the different applications such as Google Meet, Zoom etc. Students always wanted a software in which this all the features are available which will help them to stay committed towards their learning the skills. This proposed web application will provide the students to overcome all the problems faced by them in this web application such as they can be provided with courses here and they also can attend the live sessions. This web application is developed over Spring Boot - a powerful Java framework which is used to develop the stand-alone web applications and can be easily deployed over the web application as it contains all the pre-defined Java frameworks.

1. INTRODUCTION

In this project, we are going to make a web application based on selling courses and hosting live sessions. The online learning is another form of the education which take place over the internet. This is often referred to as e-learning among other terms. However, the is the one of the types of the distance learning which is the umbrella term for the any learning take place over and across the distances not like the traditional classrooms.

In present time it is the most popular means of education present which is growing rapidly which generating many jobs for peoples. Over 92 million students were registered for the online education in the fall of 2021. In years past, instructors had to create their "virtual classrooms" from scratch which was difficult and often led to poor results. Today, an entire industry has emerged to do this for us. A software is utilized by all colleges today. Which allow instructors to design and deliver their courses within a flexible framework that includes a number of different tools to enable learning and communication to occur.

In today's digital world people are getting less habitual to the older learning methods People like to get everything at their figure tips so most of the students are leaning towards the online education which fairly easy to enroll in the course without any extra procedure and paperwork. The pre requisites of the online education are minimum knowledge or no knowledge and people are free to choose from the courses available. As there is less written work to read and to do, most of the part is in the form of the video's which keep the learner interest for the longer time. Unlike traditional education the learner can attend the class according to their comfort either they can join the live lecture or they can watch recorded section later. The notes are also point to point which make it easier to understand it and interactive test are conducted to test the knowledge of the learner. Teacher can hold the live section if they want to instead of providing the recorded section. They can interact with students in the live class thorough the chat, live discussion section, or student can raise a doubt. There is constant support for the technical issues faced by both student

and teachers the classes are under constant moderation of the moderators which make it easier to conduct live classes and problem solving. The moderator had the power to examine the student behavior and the test conducted after the course completion of the course. As the platform support live and static sections teachers got multiple options on a single platform which doesn't make them to use another platform for the different things. The present of the students are maintained by the application itself when they join the class so no extra efforts are need to put for it which give teacher to fully utilize the given time for the class. On the other the things maintained according to the module so is fairly easy to get them according to modules or the units. Students can get the fully summery of their course path on their student dashboard which the course completion in percentage, their present in the class, how many classes has been conducted live, doubt sections taken, notes provided, test or quiz taken, also include the personal information and course eligibility, badges they have got for completion the test which shows the progress done.

Some of the key features of the application are:

Schedule   For posting and viewing deadlines, events, etc.

Announcements   For posting current information to all students.

Syllabus   For creating and posting the course syllabus.

Modules   For publishing and viewing course content in sections.

Assignments   For posting, submitting, and grading student work.

Discussion-Board   For asynchronous discussions, group work, and collaboration

Chat   For real-time, synchronous conversation in written form.

Tests   For authoring and administering exams, quizzes, surveys etc.

2. PROBLEM DOMAIN

In today's fast-paced educational environment, students often struggle to find effective study methods tailored to their individual learning styles. Traditional study approaches may not align with the needs of diverse learners, leading to suboptimal academic outcomes. The project aims to address this gap by developing a personalized, data-driven study platform that offers adaptive learning strategies, real-time feedback, and resource recommendations. By analyzing students' performance data and learning patterns, the platform can suggest customized study plans, practice tests, and collaborative tools to maximize efficiency. The ultimate goal is to empower students to take control of their learning journey, improve their understanding of complex subjects, and achieve better academic results through a more targeted and engaging study experience.

3. SOLUTION DOMAIN

In this project, we will be creating an E-Learning platform – "Smart Stream" integrated along with live session which will help the students to provide online education to develop and learn new skills at home and make interactions between students and tutors easy and more convenient. The proposed system is designed for students so that they can learn various skills at their own pace.

Smart Stream, an E-learning web application is built with Java – Spring Boot & Agile Methodology using different frameworks involved in Java and Agile methodology concepts. Students can attend live seminars as well as video lectures. Agile methodology basically breaks up the project in different parts and to work upon each one alternately as per requirements. In Agile projects, the main project is broken into many parts/ components as per the development requirements so that each component can be constructed.

This project work upon 3 main modules i.e. Administrator module, Tutors Module and Students Module but the project is developed upon certain features integrated upon this website as they are live sessions, courses integration, chat system between tutors and students, complain panel for the students, activity log for the administrator panel.

Software development using the agile technique is flexible and iterative. In order to produce high-quality software that satisfies user needs, it promotes collaboration between the development team and stakeholders. Here is an illustration of an agile design process used to create an online learning application with the features you mentioned:

1. **Define User Stories:**

   ➢ I want to join live sessions to interact with the instructor and other students as a student.

   ➢ As a student, I want to have access to courses and study materials in a single location.

   ➢ I want the opportunity to speak with tutors and ask questions as a student.

   ➢ I want to be able to complain if there are any problems as a student.

   ➢ As an administrator, I want to maintain tabs on everything going on with the platform.

   ➢ As an administrator, I want to have the ability to keep track of and address student issues.

2. **Prioritize User Stories:**

   In order to rank user stories according to priority and urgency, the team should consult with stakeholders. As an illustration, although the functionality for live sessions and course integration are required, the capability for activity logs is optional. Iterative feature development should be done by the team. As an instance, they may begin by creating a basic live session feature and gradually add more features. To monitor progress and handle tasks later, they might utilize an agile board.

3. **Develop Iteratively:**

   The group should iteratively create features. For instance, they may start by creating a basic live session feature and then add more features. To coordinate tasks and measure progress, they might utilize an agile board.

4. **Continuous Testing and Feedback:**

The development team should test new features often and get input from stakeholders. The programmer may be improved using this feedback, and future development can be given higher priority.

5. **Deploy and Maintain:**

The team should deploy the programmer to the production environment once it is complete and keep an eye out for any problems. The programmer should be maintained, and any reported issues should be fixed.

6. **Iterative Improvements:**

The team should continue to gather feedback and make iterative improvements to the software based on user needs and changing requirements.

➤ **Hardware Requirement:**

- Devices   Specification

- Computer   ROM: 512 GB or more

- RAM: minimum 4GB (6 or more for better experience) Operating

- System: Windows 10

- Processor: Intel Core Dual or higher

- Internet Connectivity

➤ **Software Requirement**

- Spring Boot – Java

- HTML5 / CSS3

- JavaScript

- VS Code

- Eclipse IDE - 2022-1

4. SYSTEM DOMAIN

In Smart Stream for the completion of the project we have used following methodologies:

➢ **Java**

- Java is an object-oriented, class-based, general-purpose programming language. Since Sun Microsystems originally made it available in 1995, it has grown to rank among the most popular programming languages worldwide.

- The ability to "write once, run anywhere" is one of Java's core strengths. This implies that any platform with a Java Virtual Machine (JVM) installed may run Java code by compiling it into bytecode.

- Java is renowned for its robustness as it comes with features like type safety, exception handling, and automated memory management (garbage collection). These aspects aid in ensuring the dependability and absence of typical programming faults in Java programs.

- Java is used for a wide variety of applications, including enterprise software, web-based platforms, desktop and mobile apps, and mobile apps. Additionally, it plays a significant role in the creation of Android mobile applications.

- Many open-source libraries and frameworks are available for use with Java, which has a sizable and vibrant developer community. New updates and versions of the language are periodically published to introduce new features and enhance functionality

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➢ **Spring Boot**

- Spring Boot is a well-liked Java framework for creating web applications. With a focus on simplicity and usability, it offers a streamlined and effective method for creating online applications.

- Reducing the time and effort needed to start up and setup a new project is one of Spring Boot's primary benefits. It has a lot of pre-built parts and configurations that are simple to alter to fit the needs of a certain project.

- Various technologies, such as web applications, RESTful services, batch processing, and more, are supported by Spring Boot. It also interfaces with other spring projects, such Spring Data and Spring Security, without any issues.

- Support for embedded servers, which enables developers to package their programs as self-contained executable JAR files, is another crucial aspect of Spring Boot. Without the need for complicated deployment parameters, this makes it simple to deploy and execute programs in any environment.

- Spring Boot has a sizable and vibrant developer community, and there are numerous open-source tools and libraries available for use. Additionally, a wide variety of third-party tools and services support it, making it a popular option for creating scalable sites.

➢ **HTML5**

- The most recent version of HTML (Hypertext Markup Language), which is used to organize and present content on the web, is HTML5. Since its debut in 2014, it has evolved into the industry standard for web development.

- HTML5's capability to handle multimedia material, such audio and video, without the requirement for third-party plugins is one of its important characteristics. Because of this, creating rich, interactive online applications has become simpler and the user experience has substantially enhanced.

- Additionally, HTML5 comes with new markup tags and attributes that make it simpler to create intricate layouts and designs, like responsive web design that adjusts to various screen sizes and devices.

- HTML5's support for offline storage and web workers, which allow web applications to function even when the user is not connected to the internet, is another crucial feature. The usability and functionality of web apps have been significantly improved as a result.

- Additionally, HTML5 offers improved accessibility support, making it simpler to produce web content that is usable by people with disabilities. This has aided in promoting inclusivity and ensuring that all users, regardless of their ability, can access and enjoy web material.

➢ **CSS3**

- The most recent version of the CSS standard, known as CSS3 (Cascading Style Sheets 3), is used to style and layout web pages. Since its 1999 debut, it has undergone a number of modifications and enhancements.

- Support for responsive design, which enables web pages to adjust to various screen sizes and devices, is one of CSS3's core features. Media queries and flexible layout approaches are used to achieve this.

- CSS3 also adds additional selectors and attributes, such support for multiple backgrounds, border-radius, and text-shadow, which make it simpler to style and manage web content.

- The capability for animation and transitions provided by CSS3 allows web designers to construct dynamic and interactive user interfaces without the usage of cumbersome JavaScript code.

- CSS3 also offers new features like @font-face and web fonts that increase support for typography. As a result, there is now a much wider selection of typefaces accessible for usage on the web, which makes it simpler to produce stunning and understandable writing.

➢ **JavaScript**

- JavaScript is a dynamic, interpreted, high-level programming language that is mostly employed in client-side scripting for websites. Netscape Communications Corporation initially presented it in 1995.

- JavaScript's capability to dynamically change the content and functionality of web pages makes it one of its primary characteristics and enables a more engaging and responsive user experience. The creation of online games and animations also frequently makes use of it.

- JavaScript is a versatile language that supports a wide range of programming paradigms, including object-oriented, functional, and imperative programming. This makes it a popular choice for a variety of applications, from simple scripting to complex web applications.

- JavaScript also supports asynchronous programming, which enables web developers to run numerous processes concurrently without delaying the main thread. This is a crucial feature. This may significantly increase the responsiveness and speed of web apps.

- There is a sizable and vibrant community of JavaScript developers, and there are several open-source tools and frameworks that may be used. jQuery, React, and AngularJS are some of the most well-liked libraries and frameworks that offer effective tools for creating intricate and scalable online applications.

5. **APPLICATION DOMAIN**

The Smart Stream has the following applications:

- **E-Learning Platform:**

Using the application's online classes, study guides, homework assignments, and mock exams, students will be able to acquire and hone new abilities. The platform will be handy for students to learn at their own speed because it will be accessible from anywhere.

- **Live Session Facility:**

The programmer will include a live session capability that enables users to communicate in real time with tutors and other users. Learning will become more interesting and participatory thanks to this feature.

- **Real Time Chat :**

The programmer will provide the facility of real time chat for interacting with teachers and colleagues for better understanding and clearing their doubts .Students will be able to demonstrate their abilities and expertise to potential employers in this way.

- **User-Friendly UI:**

The application will feature an intuitive user interface (UI) that makes it simple for students to use and navigate. This will increase the application's use and dependability, which will appeal to students more.

- **Convenient Learning:**

Students will be able to study and hone new abilities from the comfort of their homes with the aid of the application. They will have the freedom to access the courses whenever and whenever they choose and to learn at their own speed.

Overall, the initiative will provide a unique and practical method of learning while bridging the gap between students and teachers. It will provide students with a one-stop shop for improving their abilities and knowledge.

6. **EXPECTED OUTCOME**

Results of Smart Stream include:

- **Convenience**: Because the platform is online, students may study without leaving their homes and without having to make a trip to a real classroom.

- **Flexibility**: The platform enables learners to proceed at their own speed, giving them the freedom to fit their coursework around other obligations like job or family.

- **Enhanced Interactivity:** The live sessions function gives students the chance to speak with instructors and ask questions in real time, resulting in a more interesting and involved educational experience.

- **Customizable Learning:** The platform provides a range of courses so that students may select one that best suits their requirements and interests.

- **Easily Accessible Study Materials:** The platform provides a variety of study resources such as assignments and mock examinations, which may be utilized to reinforce learning. User-Friendly: Students are more likely to be satisfied with the platform as a whole thanks to the platform's user-friendly UI, which makes it simple for them to browse and access the learning resources.

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