Software Documentation on E-LEARNING SYSTEM (COURSE REPOSITORY)

**Problem analysis**

1. current situation is very limited to few resources, students are unable to get knowledge more than that the lecture provides to them. Solving the problem of students been limited to learning resources and having access to those resource at their own comfort.

**Aims and Objective**

1. To develop a platform that offers a wide variety of online courses to learners around the world.
2. To create a user-friendly and intuitive platform that is easy to navigate and search.
3. To provide a flexible and scalable platform that can accommodate a large number of courses and users.
4. To offer tools for instructors to create and manage their courses.
5. To implement a secure payment system that supports multiple payment methods and currencies which will be implemented using PayPal or PayStack.
6. To reduce learning costs in E-Learning there are no papers, no delays, and no travelling expenses. Such learning enables employees to take what they have just learned from their computer screens and apply it to the tasks at hand.
7. To provide a personalized learning experience for student or anybody willing to learn new skills, including personalized progress tracking.
8. To integrate social features that allow users to connect with other learners and instructors.
9. And to continuously improve the platform through user feedback and data analysis.

**Use Case**

1. Super Administrator
2. Administrator
3. Instructor
4. Student

**FUNCTIONAL REQUIREMENTS**

Here are some of the key features and functionality that would be required:

1. **Course creation and management:** Instructors should be able to easily create and manage their courses, including adding course materials, managing students, and tracking progress.
2. **Course discovery:** Learners or Students should be able to easily discover courses through search functionality, browsing categories, and personalized recommendations.
3. **Payment system:** A secure payment system that supports multiple payment methods.
4. **Learning tools:** The platform should provide learners with a range of tools to support their learning, including quizzes and discussion forums.
5. **Personalization:** The platform should provide personalized recommendations and progress tracking to enable learners to achieve their learning goals.
6. **Social features:** Social features such as messaging, student forums, and instructor Q&A should be implemented to enable learners to connect with instructors and other learners.
7. **Analytics and reporting:** The platform should provide analytics and reporting features to enable instructors and administrators to track student progress, course performance, and other key metrics.

**Architecture**: One of the most important aspects of your platform will be its architecture. This includes the technology stack you will use, as well as the design patterns and principles that will guide your development.

**Data model**

1. course information
2. user profiles
3. payment information

**Non-functional requirements:**

1. Performance: The platform should be able to handle a large number of users and courses without experiencing significant slowdowns or downtime.
2. Usability: The platform should be intuitive and easy to use, with a clear and consistent user interface.
3. Security: The platform should be secure, with strong encryption for user data and payment information.
4. Scalability: The platform should be scalable to support a growing user base and increasing demand for courses.
5. Reliability: The platform should be reliable, with high uptime and minimal errors or bugs.
6. Accessibility: The platform should be accessible to users with disabilities, with support for assistive technologies and accessibility features.

**TECHNICAL REQUIREMENTS:**

1. **Server and hosting:** The platform should be hosted on reliable and secure servers, with a scalable infrastructure to handle traffic and user demand.
2. **Database management:** The platform should have a robust database management system to store user data, course materials, and other important information.
3. **Payment processing:** The platform should integrate with a reliable and secure payment processing system to enable users to purchase courses.
4. **Content management system:** The platform should have a robust content management system to enable instructors to create and manage their courses.

**ENTITIES**

1. **User:** This entity represents a user of the platform, including instructors and learners or Students.
2. **Course:** This entity represents a course created by an instructor.
3. **Lesson/Module:** This entity represents a lesson within a course.
4. **Enrolment:** This entity represents a learner's enrolment in a course.
5. **Review:** This entity represents a learner's review of a course.
6. **Payment:** This entity represents a payment made by a user for a course.
7. **Category:** This entity represents a category or subject area for courses.
8. **Notification:** This entity represents a notification sent to users about course updates, messages, or other relevant information.

**User entity**:

**Student:** This entity represents the learners who use the platform as students, and could include properties such as name, email, username, password, student ID, and profile information.

**Instructor:** This entity represents the teachers or subject matter experts who create and manage courses on the platform, and could include properties such as name, email, username, password, instructor ID, and profile information.

**Admin:** This entity represents the platform administrators who manage user accounts, course content, and other aspects of the platform, and could include properties such as name, email, username, password, admin ID, and permissions.

**Organization:** This entity represents the companies or organizations that use the platform to provide training or education to their employees or members, and could include properties such as name, email, organization ID, and billing information.

**Affiliate:** This entity represents the partners or affiliates who promote courses on the platform and earn commissions for sales, and could include properties such as name, email, affiliate ID, and payment information.

**Social:** This entity represents the users who use social media accounts to sign up or log in to the platform, and could include properties such as name, email, social media ID, and profile information.

* **User ID:** A unique identifier assigned to each user in the platform.
* **First Name:** The first name of the user.
* **Last Name:** The last name of the user.
* **Email:** The email address associated with the user's account.
* **Password:** The password used to authenticate the user.
* **Profile Picture:** An image or avatar representing the user in the platform.
* **Biography:** A short description or bio of the user.
* **Skills:** The skills or areas of expertise the user has.
* **Interests:** The topics or subjects the user is interested in.
* **Language:** The primary language spoken by the user.
* **Country:** The country of residence of the user.
* **Role:** The role or type of user (learner, instructor, administrator, etc.).
* **Courses:** The courses the user has enrolled in or created.
* **Reviews:** The reviews the user has written for courses.
* **Payments:** The payment history of the user, including purchases and refunds.
* **Verified:**

**Address** and **Instructor Payment**

**Course** **entity**

* **Course ID:** A unique identifier assigned to each course in the platform.
* **Title:** The title or name of the course.
* **Description:** A brief summary or overview of the course.
* **:** The subject area or category of the course.
* **Subcategory:** A more specific subcategory or topic within the course category.
* **Instructor ID:** The unique identifier of the instructor who created the course.
* **Language:** The primary language of the course.
* **Difficulty Level:** The difficulty level of the course (beginner, intermediate, advanced).
* **Pricing:** The price of the course or the pricing model used (free, one-time fee, subscription).
* **Enrolments:** The number of users currently enrolled in the course.
* **Ratings:** The average rating and number of ratings the course has received.
* **Reviews:** The written reviews or feedback provided by users who have taken the course.
* **Lessons:** The individual lessons or modules that make up the course.
* **Duration:** The estimated total duration of the course in hours or minutes.
* **Requirements:** Any prerequisites or requirements for taking the course, such as prior knowledge or software tools.

**Lesson** **entity**

* **Lesson ID:** A unique identifier assigned to each lesson in the platform.
* **Title:** The title or name of the lesson.
* **Description:** A brief summary or overview of the lesson.
* **Content:** The actual content of the lesson, such as video lectures, text material, exercises, quizzes, or assignments.
* **Duration:** The estimated duration of the lesson in hours or minutes.
* **Course ID:** The unique identifier of the course to which the lesson belongs.
* **Instructor ID:** The unique identifier of the instructor who created the lesson.
* **Order:** The order of the lesson within the course, indicating the sequence in which it should be taken.
* **Resources:** Any additional resources or materials provided with the lesson, such as slides, handouts, or code samples.
* **Prerequisites:** Any prior knowledge or skills required to complete the lesson successfully.
* **Learning Objectives:** The specific goals or outcomes the learner is expected to achieve by completing the lesson.
* **Language:** The language of the lesson, if different from the course language.
* **Difficulty Level:** The difficulty level of the lesson, if different from the course level.
* **Feedback:** The feedback provided by the instructor or other learners on the lesson.
* **Completion Status:** The status of the lesson completion for the learner, such as completed, in progress, or not started.

**Enrolment** **entity**

* **Enrollment ID:** A unique identifier assigned to each enrollment in the platform.
* **User ID:** The unique identifier of the user who has enrolled in the course.
* **Course ID:** The unique identifier of the course in which the user has enrolled.
* **Enrollment Date:** The date and time when the user enrolled in the course.
* **Completion Status:** The status of the user's progress in the course, such as completed, in progress, or not started.
* **Grade:** The user's grade or score in the course, if applicable.
* **Certificate:** The certificate of completion or achievement awarded to the user upon completing the course.
* **Payment Status:** The status of the user's payment for the course, such as paid, refunded, or pending.
* **Refund Policy:** The refund policy and terms of the course, if applicable.
* **Access Expiration:** The date and time when the user's access to the course expires, if applicable.
* **Instructor Feedback:** The feedback provided by the instructor on the user's performance in the course, if applicable.
* **User Feedback:** The feedback provided by the user on the course and instructor, if applicable.
* **Cancellation Policy:** The cancellation policy and terms of the enrollment, if applicable.
* **Coupons or Discounts:** Any coupons or discounts applied to the course enrollment, if applicable.
* **Billing Information:** The user's billing information and payment method used for the enrollment.

**Review** **entity**

* **Review ID:** A unique identifier assigned to each review in the platform.
* **User ID:** The unique identifier of the user who wrote the review.
* **Course ID:** The unique identifier of the course for which the review is written.
* **Rating:** A rating or score given by the user for the course, typically on a scale of 1-5 stars.
* **Title:** A short title or headline for the review that summarizes its content.
* **Description:** A detailed description of the user's experience and opinion of the course.
* **Date:** The date and time when the review was written.
* **Helpful Votes:** The number of users who found the review helpful and voted for it.
* **Comments:** Comments and replies from other users to the review.
* **Reported:** A flag indicating whether the review has been reported or flagged for inappropriate content.
* **Verified Purchase:** A flag indicating whether the user who wrote the review has purchased the course or not.
* **Instructor Feedback:** Feedback provided by the instructor in response to the review, if applicable.
* **User Feedback:** Feedback provided by other users to the review, if applicable.
* **Editing History:** A record of any edits or revisions made to the review over time.
* **Visibility:** A flag indicating whether the review is visible or hidden to other users.

**Payment entity**

* **Payment ID:** A unique identifier assigned to each payment transaction in the platform.
* **User ID:** The unique identifier of the user who made the payment.
* **Course ID:** The unique identifier of the course for which the payment is made.
* **Payment Amount:** The amount paid by the user for the course.
* **Payment Method:** The payment method used by the user, such as credit card, PayPal, or bank transfer.
* **Payment Date:** The date and time when the payment transaction occurred.
* **Status:** The status of the payment transaction, such as pending, successful, or failed.
* **Refundable:** A flag indicating whether the payment is refundable or not.
* **Refund Date:** The date and time when the refund transaction occurred, if applicable.
* **Transaction ID:** The unique identifier of the payment transaction from the payment gateway or processor.
* **Currency:** The currency used for the payment transaction.
* **Tax:** The tax amount or rate applied to the payment transaction, if applicable.
* **Coupon Code:** The coupon code used by the user to get a discount on the payment amount, if applicable.
* **Invoice ID:** The unique identifier of the invoice generated for the payment transaction, if applicable.
* **Payment Gateway:** The name or ID of the payment gateway or processor used for the payment transaction.

**Category entity**

* **Category ID:** A unique identifier assigned to each category in the platform.
* **Category Name:** The name of the category, such as Programming, Business, or Arts.
* **Category Description:** A brief description of the category, outlining what types of courses it includes.
* **Category Image:** An image or icon that represents the category visually.
* **Parent Category ID:** If the category is a subcategory of another category, this property holds the ID of the parent category.
* **Child Categories:** If the category has any subcategories, this property holds a list of their IDs.
* **Courses:** A list of course IDs that belong to the category.
* **Created Date:** The date and time when the category was created in the platform.
* **Modified Date:** The date and time when the category was last modified in the platform.
* **Status:** The status of the category, such as active, inactive, or deleted.

**Notification entity**

* **Notification ID:** A unique identifier assigned to each notification in the platform.
* **User ID:** The unique identifier of the user who will receive the notification.
* **Notification Type:** The type of notification, such as email, SMS, or in-app notification.
* **Notification Subject:** The subject or title of the notification.
* **Notification Body:** The content or message of the notification.
* **Notification Date:** The date and time when the notification will be sent or has been sent.
* **Status:** The status of the notification, such as scheduled, sent, or failed.
* **Priority:** The priority level of the notification, such as high, medium, or low.
* **Recurrence:** If the notification is recurring, this property holds the frequency and interval of the recurrence.
* **Sender ID:** The unique identifier of the user or system that sent the notification.