Lahdaa - Software Technical Specification

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Introduction

Lahdaa is an innovative web platform on a mission to democratize entrepreneurial education globally. We utilize cutting-edge technology to provide aspiring entrepreneurs with access to practical courses, experienced mentors, and a supportive community to empower their success.

Purpose

This document serves as a comprehensive technical guide to the software architecture and components underlying the Lahdaa platform. It aims to provide clarity to engineers, leadership, and integration partners on our technical stack, powering this next-generation education ecosystem.

Intended Audience

The core audiences for this specification include:

1. **Lahdaa Software Engineers**

The primary audience, Lahdaa's software engineers, will benefit from detailed technical insights. This includes information on development methodologies, coding practices, and the overall technology stack employed in building and maintaining the platform.

2. **Leadership & Decision Makers**

Leadership and decision-makers will gain a strategic understanding of the technology stack, enabling them to make informed decisions regarding the platform's scalability, security, and future enhancements.

3. **Integration Partners**

Providing integration partners with technical details ensures seamless collaboration and interoperability with Lahdaa's systems. This involves APIs, data exchange formats, and compatibility standards.

Project Scope

The scope of the Lahdaa platform covers:

1. **Web Application:** The front-facing site experience with learner & mentor dashboards. The user dashboards within the Lahdaa web application offer a personalized experience. This encompasses features such as progress tracking, personalized content recommendations, and interactive tools for an enriched user journey.

2. **Admin Portal:** Content and user management console for running the platform. The admin portal acts as the control center for Lahdaa's content management. This involves overseeing courses, assessments, mentorship programs, and community forums. The portal ensures efficient and centralized administration.
3. **API Layer:** RESTful services enable core platform capabilities. Lahdaa's RESTful API layer provides a standardized and efficient means for external applications to interact with core services. This involves functionalities such as user authentication, course enrollment, and data retrieval.
4. **Cloud Infrastructure:** AWS-hosted technology stack powering scalability. Utilizing Amazon Web Services (AWS) for cloud infrastructure ensures scalability, reliability, and security. AWS EC2 provides flexible computing resources; S3 caters to scalable and secure storage; and RDS manages the relational database.

System Architecture

Lahdaa employs a layered service-oriented architecture for maximum extensibility:

Presentation Layer

ReactJS front-end with UI/UX enhancing engagement. The ReactJS web application serves as the user interface, offering a dynamic and responsive platform. This involves the utilization of React components for modular design, ensuring a smooth and engaging user experience.

Business Logic Layer

PHP/Laravel services drive core functions like courses and mentorship. Laravel, a robust PHP framework, powers Lahdaa's business logic. This includes the implementation of services such as user authentication, course management, and mentor matching algorithms.

Data Layer

PostgresSQL database provides structured content storage. PostgresSQL, a reliable relational database, houses Lahdaa's structured data. This includes user profiles, course details, assessment results, and other critical information in a well-organized manner.

Infrastructure Layer

AWS cloud services: EC2 computing, S3 storage, and the RDS database. WS EC2 provides the compute engine, ensuring Lahdaa's scalability. S3 offers secure and scalable cloud storage for multimedia content, and RDS manages the relational database efficiently.

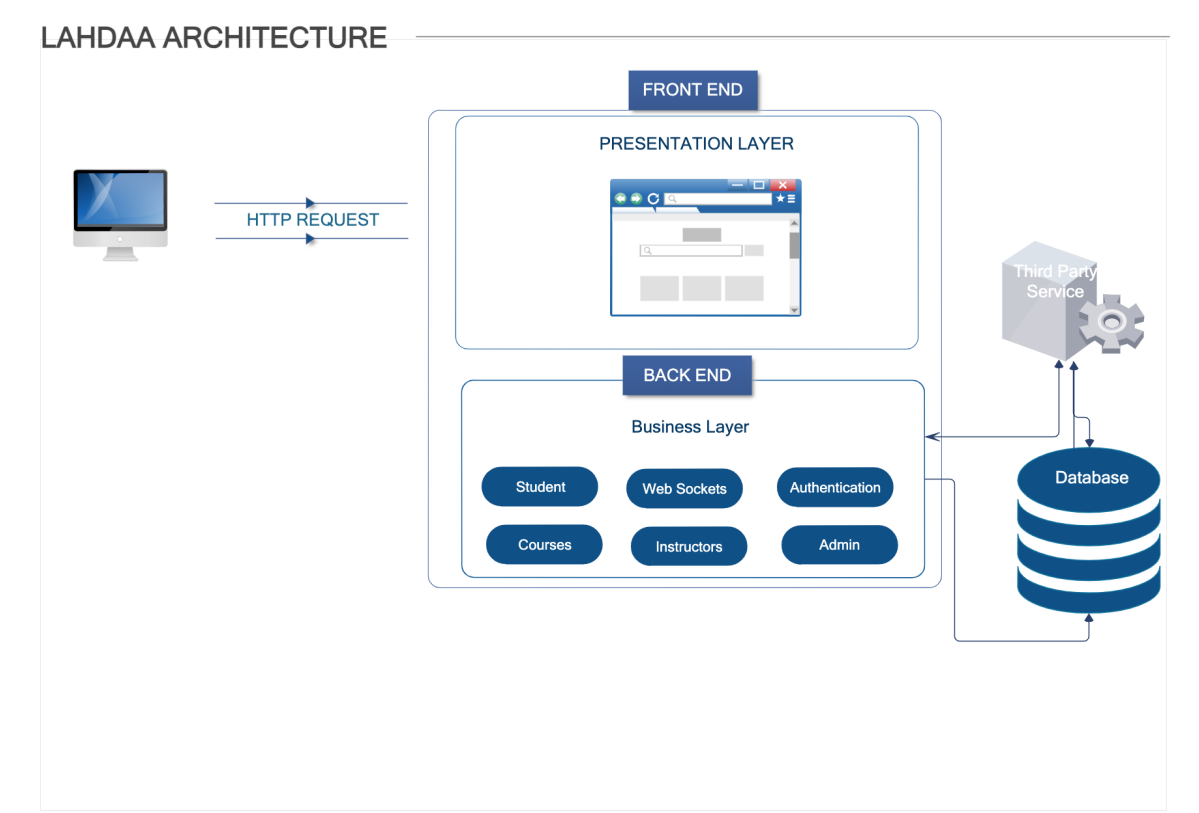

Figure 1: System Architecture Diagram

Platforms and Tools

Our best-in-class open source technology stack includes:

1. **Laravel - Backend API Application Framework:**

Laravel serves as the backbone for Lahdaa's backend API. Its elegant syntax, modular structure, and extensive ecosystem contribute to the development of scalable and maintainable code.

2. **ReactJS - Frontend User Interface:**

ReactJS powers Lahdaa's frontend, enabling the creation of interactive and responsive user interfaces. React components, state management, and virtual DOM contribute to a seamless user experience.

3. **PostgresSQL - Relational Database:**

PostgresSQL, a powerful open-source relational database, ensures Lahdaa's data integrity, consistency, and reliability. It supports complex queries and transactions and provides a scalable solution for handling large datasets.

4. **AWS EC2 - Cloud Compute Engine:**

AWS EC2 provides on-demand compute resources, enabling Lahdaa to scale dynamically based on user demand. The virtual servers offered by EC2 ensure the platform's responsiveness and reliability.

5. **AWS S3 - Cloud Storage:**

AWS S3, a scalable and secure cloud storage service, is used to store and retrieve user-uploaded multimedia content. This ensures efficient content delivery and a seamless user experience.

6. **AWS RDS - Managed Database:**

AWS RDS simplifies database administration, offering a managed relational database service. It ensures Lahdaa's database is secure, highly available, and automatically backed up, reducing administrative overhead.

Key Components

- **Identity Management - User Authentication and Authorization:**
  Identity management is crucial for Lahdaa, encompassing secure user authentication and authorization mechanisms. This ensures that only authorized users have access to specific resources and functionalities.

- **Learning Management - Courses, Assessments, and Tracking:**
  Lahdaa's learning management system involves the creation, management, and tracking of courses. Assessments gauge user progress, providing valuable insights into the effectiveness of the educational content.

- **Mentor Matching - Connect Entrepreneurs to Coaches:**
  The mentor matching component uses sophisticated algorithms to connect entrepreneurs with suitable mentors. This involves assessing user profiles, mentor expertise, and aligning goals for a meaningful mentor-mentee relationship.

- **Community Modules - Discussion Forums and Networking:**
  Community modules provide a platform for users to engage in discussion forums, fostering collaboration and knowledge sharing. Networking features enable users to connect with like-minded individuals, creating a supportive entrepreneurial community.

Data Model

Key Entities:

- **Users:** Individuals interacting with Lahdaa, each with a unique profile, preferences, and progress tracking.
- **Courses:** Educational modules offered on the platform, each with distinct content, assessments, and learning objectives.
- **Assessments:** Evaluation tools associated with courses measure user understanding and proficiency.
- **Mentors:** Experienced individuals offering guidance and mentorship to aspiring entrepreneurs.
- **Forums:** Virtual spaces for community discussion, providing a platform for knowledge exchange.
- **Messages:** Communication channels within the platform, facilitating mentor-mentee communication and community interaction.

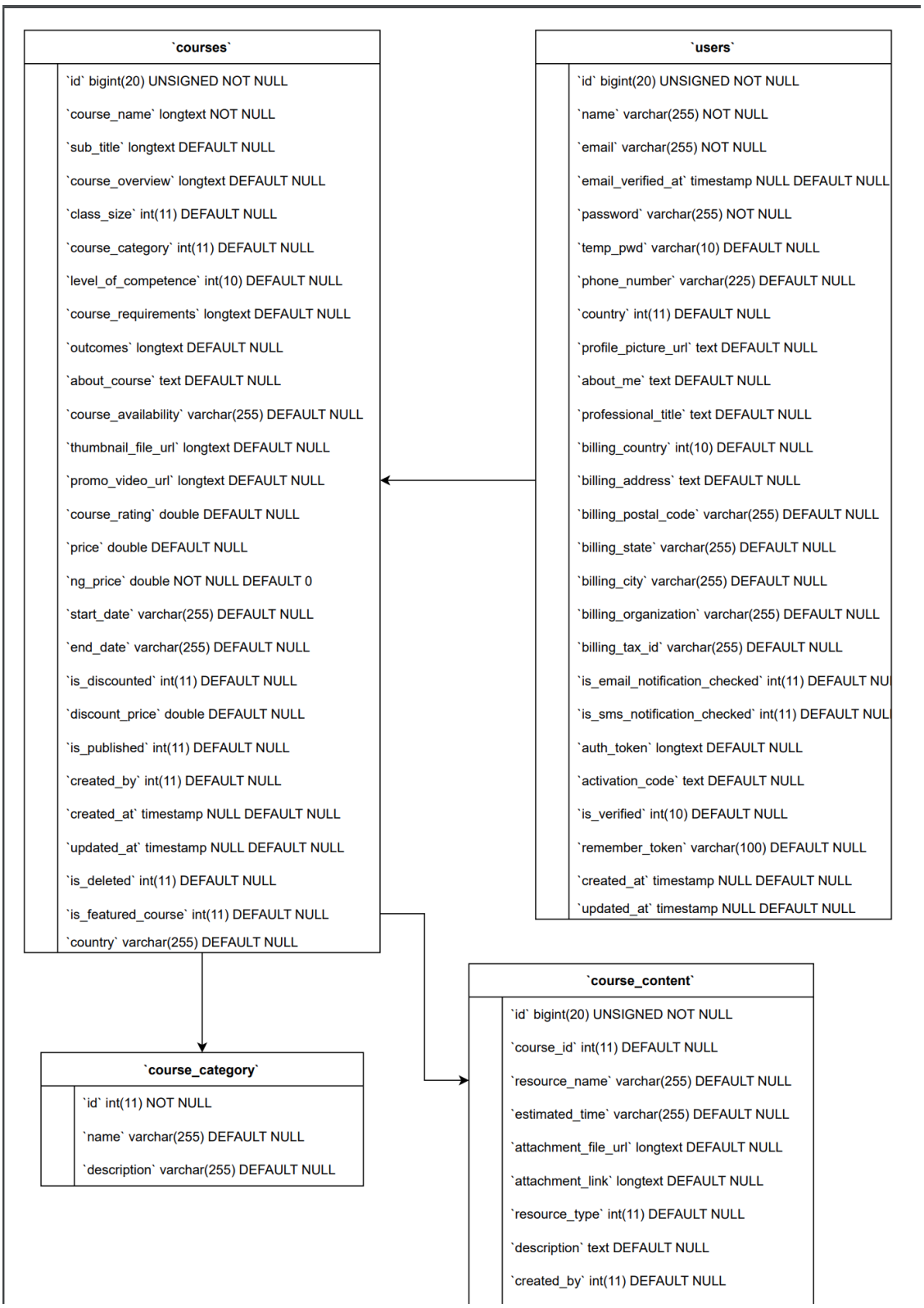

Figure 2: Snippet of the Entity Relationship Diagram

External Integrations

Stripe - Payment Processing:
Stripe integration allows Lahdaa to process payments securely. This is crucial for premium features, course enrollments, and any other transactions within the platform.

SendGrid - Transactional Email:
Transactional emails, facilitated by SendGrid, ensure effective communication within Lahdaa. This includes email notifications for course updates, mentorship connections, and other relevant information.

Cloudinary - User Uploaded Content Storage:
Cloudinary, a cloud-based media management solution, is integrated for the secure storage and retrieval of user-uploaded multimedia content. This includes images, videos, and other user-generated materials.

Conclusion

This document provides an exhaustive exploration of Lahdaa's technical landscape, from its foundational architecture to key components and external integrations. Lahdaa stands as a testament to next-generation entrepreneurial education, combining cutting-edge technologies to empower and inspire aspiring entrepreneurs globally.