

Capstone Project Report: EduVerse E-Learning Portal

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1. Project Introduction

1.1. Objective

The primary objective of this capstone project, as per Task 5 of the internship, was to independently design, build, and deploy a professional-grade web application to showcase industry readiness. The "E-learning Portal" (EduVerse) was selected for this task.

1.2. Project Overview

EduVerse is a full-stack, database-driven E-learning platform. It provides a complete portal for students to register, browse courses, and manage their learning, while also providing a full administrative backend for site management, user tracking, and analytics.

1.3. Technologies Used

- **Frontend:** HTML5, Tailwind CSS, JavaScript (ES6+)
- **Backend:** PHP
- **Database:** MySQL
- **Key Libraries:**
 - **PHPMailer:** For sending transactional emails (Email OTP verification).
 - **Chart.js:** For rendering analytics charts on the admin dashboard.
- **Tools & Deployment:**
 - **Git & GitHub:** For version control.
 - **Composer:** For managing PHP dependencies (PHPMailer).
 - **InfinityFree:** For live hosting of the web application and database.
 - **GitHub Actions:** For establishing a CI/CD pipeline for live updates via FTP.

2. Key Features Implemented

This project includes a wide range of features for both students and administrators.

2.1. Secure Authentication System

- **User Registration:** New users can create an account. Passwords are secured in the database using `password_hash()`.
- **Email OTP Verification:** A 6-digit One-Time Password is sent to the user's email via PHPMailer. The user must enter this OTP to verify their account.
- **Secure Login:** The login system checks for a correct password (`password_verify()`) and confirms that the user's account is `is_verified`.
- **Role-Based Access:** The system differentiates between 'student' and 'admin' roles, showing the correct dashboard and links for each.

2.2. Student & User Features

- **Course Catalog (Home Page):** Students can view all available courses.
- **AJAX Real-time Search:** A live search bar filters the course catalog in real-time without a page reload.
- **My Dashboard:** A personalized dashboard where students can see only the courses they are enrolled in.
- **User Profile Page:** A dedicated settings page where a user can view their name and email.
- **Change Password:** Users can securely update their password by providing their current password and a new one.
- **Delete Account:** Users can permanently delete their own account. This action is protected by a confirmation modal and, upon confirmation, deletes the user and all their associated data (like enrollments) from the database.

2.3. Administrative Panel

- **Admin-Only Access:** The entire admin dashboard is protected and is only accessible to users with the 'admin' role.
- **Statistics Overview:** The admin homepage features key site statistics (Total Users, Total Courses, Total Enrollments) pulled from the database.
- **Enrollment Analytics (Chart.js):** A dynamic bar chart displays the most popular courses by enrollment count.
- **User Management:** A table view listing all registered users, their IDs, emails, and roles.
- **Course Management:** A table view listing all courses in the database.

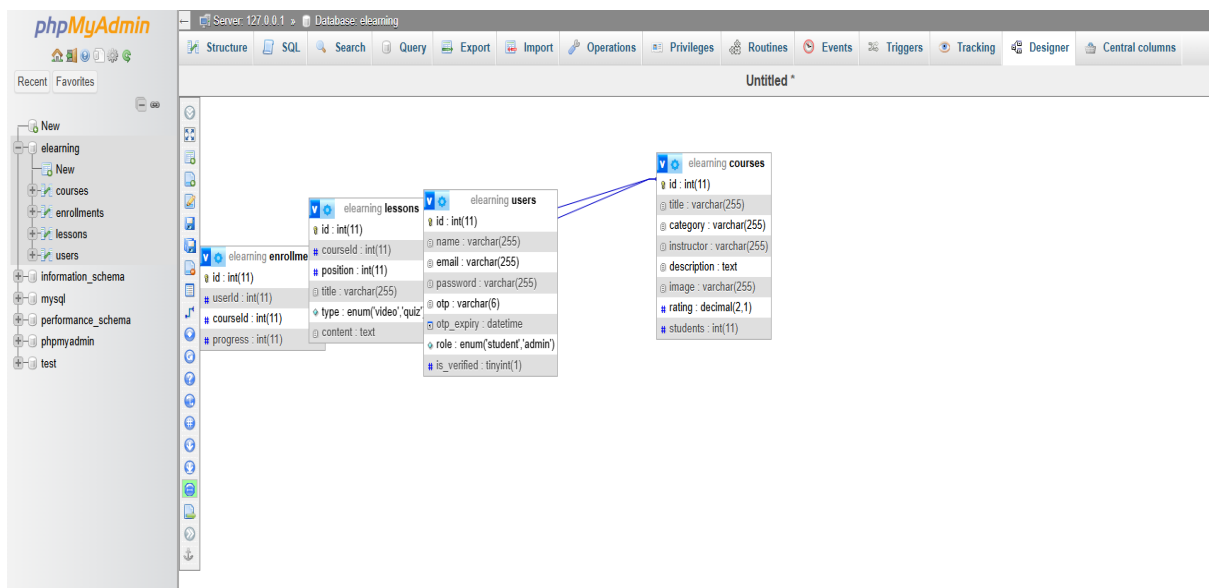
3. Database Schema

The database is the core of the application, designed with four relational tables in MySQL to manage all user and course data efficiently.

- **users:** This is the main table for authentication and user data. It stores the user's id, name, email, and securely hashed password. It also contains the complete authentication logic: `otp`, `otp_expiry`, and the `is_verified` (boolean) flag for the

email verification system. The role column (student or admin) enables role-based access control across the site.

- **courses:** This table holds all public information about the courses, including title, category, instructor, description, image, rating, and students (a simple count).
- **lessons:** This table stores the actual content for each course. It is linked to the courses table via a courseId foreign key. Each lesson has a title, a type (video or quiz), and content (a YouTube link for videos or a JSON string for quizzes).
- **enrollments:** This is the crucial "join table" that connects users and courses. It creates a **many-to-many** relationship by linking users.id (as userId) and courses.id (as courseId). This single table allows the application to know which users are enrolled in which courses and even tracks their progress.



4. Project Screenshots

4.1. Login & Registration

Fig. 1: Login Page

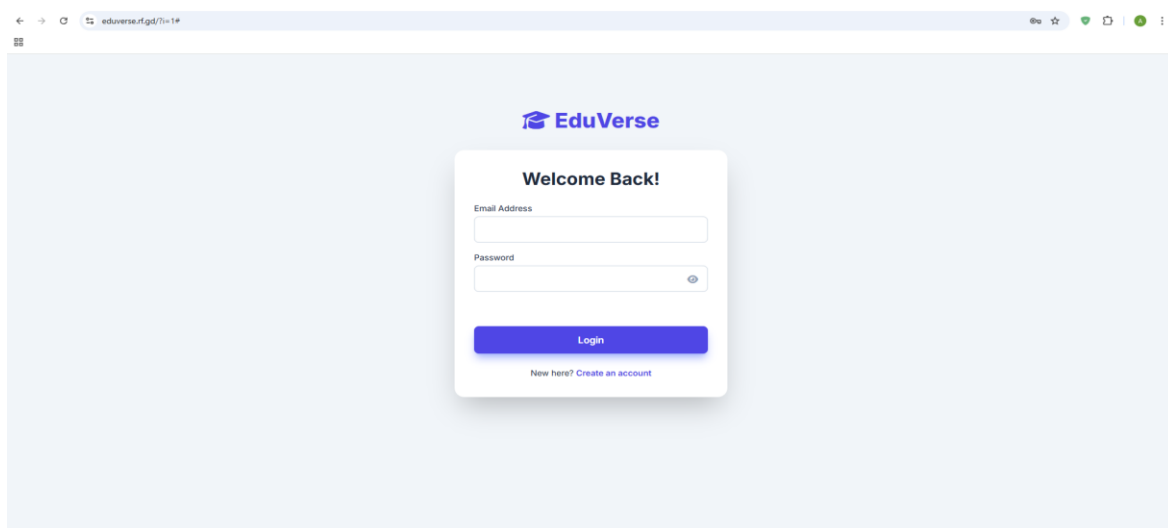
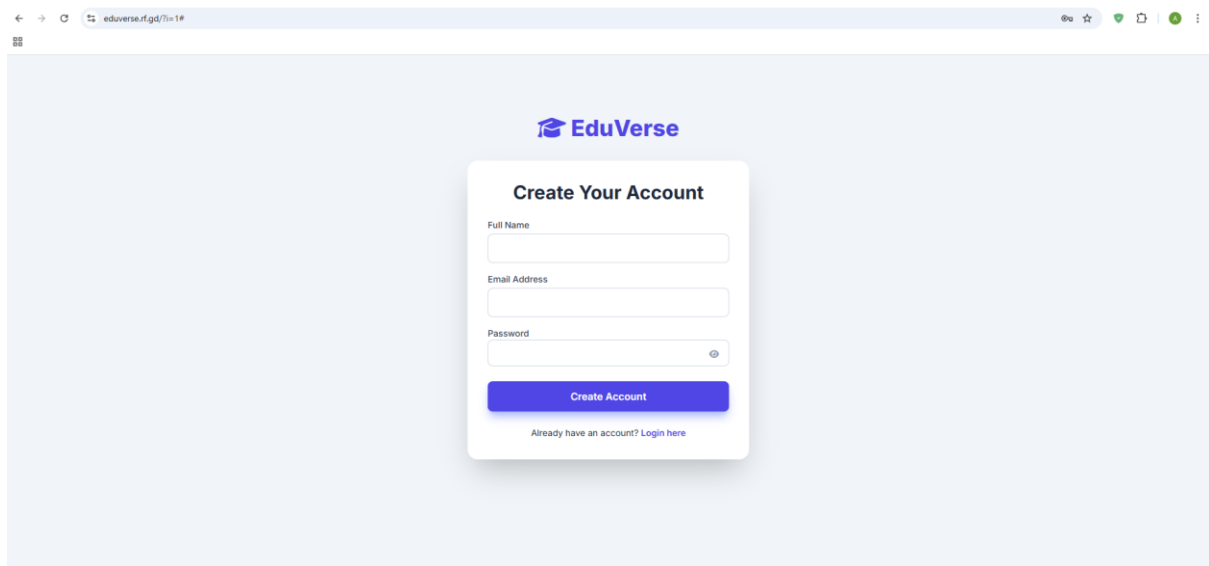
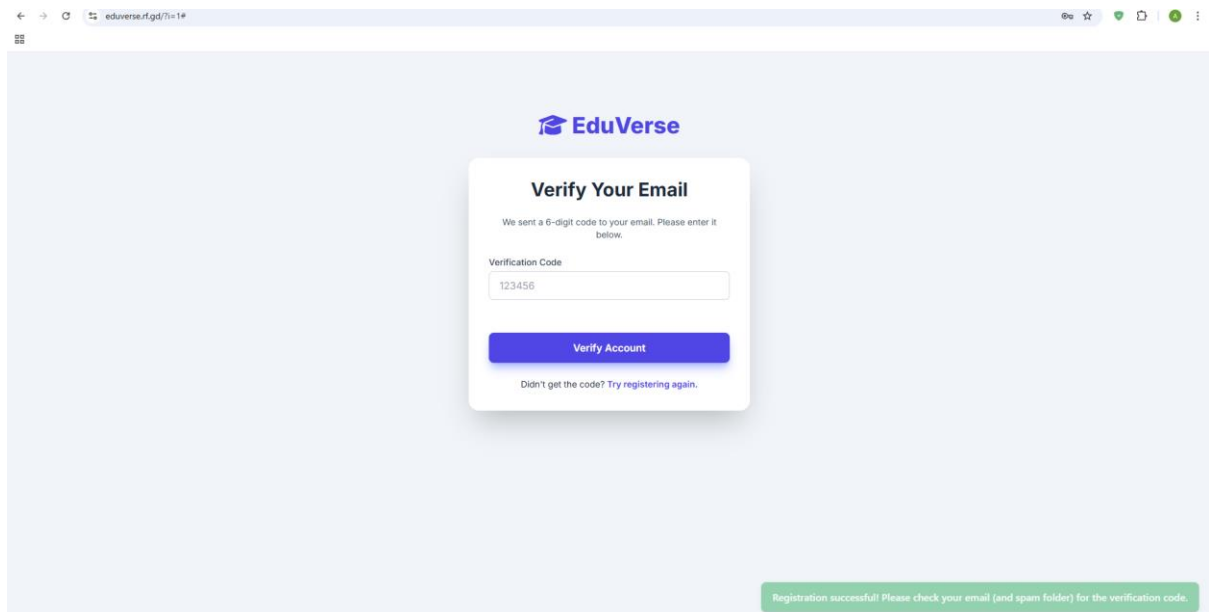


Fig. 2: Registration Page



The screenshot shows a web browser window with the URL `eduverse.rf.gd/?i=1#`. The page features the EduVerse logo at the top center. Below the logo is a white card titled "Create Your Account". The card contains three input fields: "Full Name", "Email Address", and "Password". The "Password" field has a toggle icon for visibility. Below the input fields is a blue "Create Account" button. At the bottom of the card, there is a link: "Already have an account? [Login here](#)".

Fig. 3: Email OTP Verification



The screenshot shows a web browser window with the URL `eduverse.rf.gd/?i=1#`. The page features the EduVerse logo at the top center. Below the logo is a white card titled "Verify Your Email". The card contains the text: "We sent a 6-digit code to your email. Please enter it below." Below this text is a "Verification Code" input field containing the text "123456". Below the input field is a blue "Verify Account" button. At the bottom of the card, there is a link: "Didn't get the code? [Try registering again.](#)".

Registration successful! Please check your email (and spam folder) for the verification code.

4.2. Student Dashboard

Fig. 4: Course Catalog (Home)

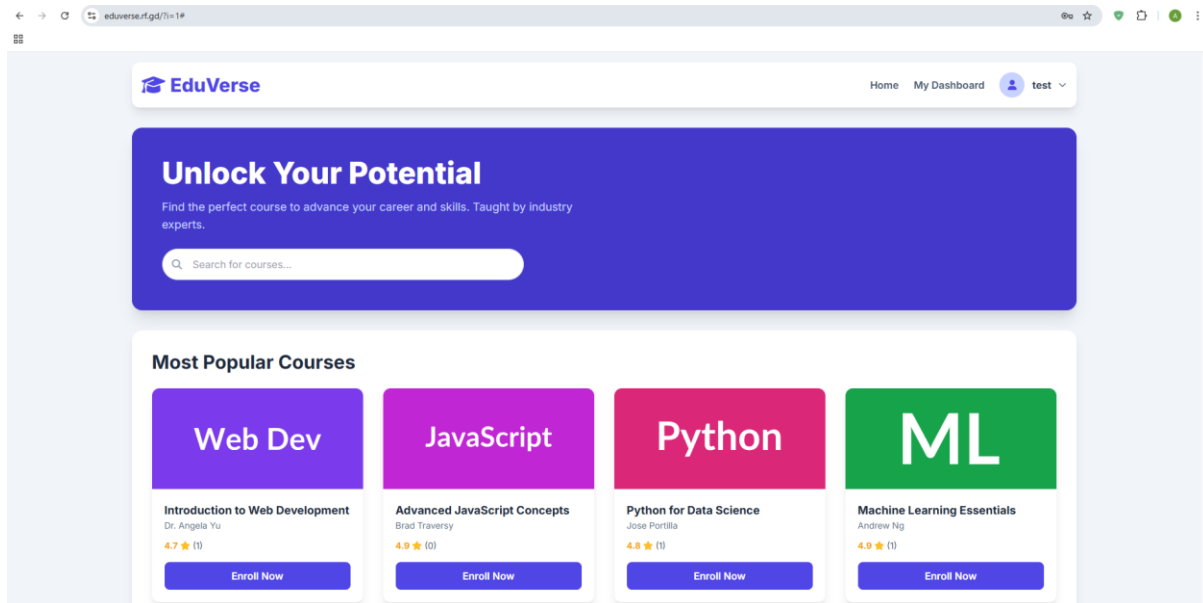
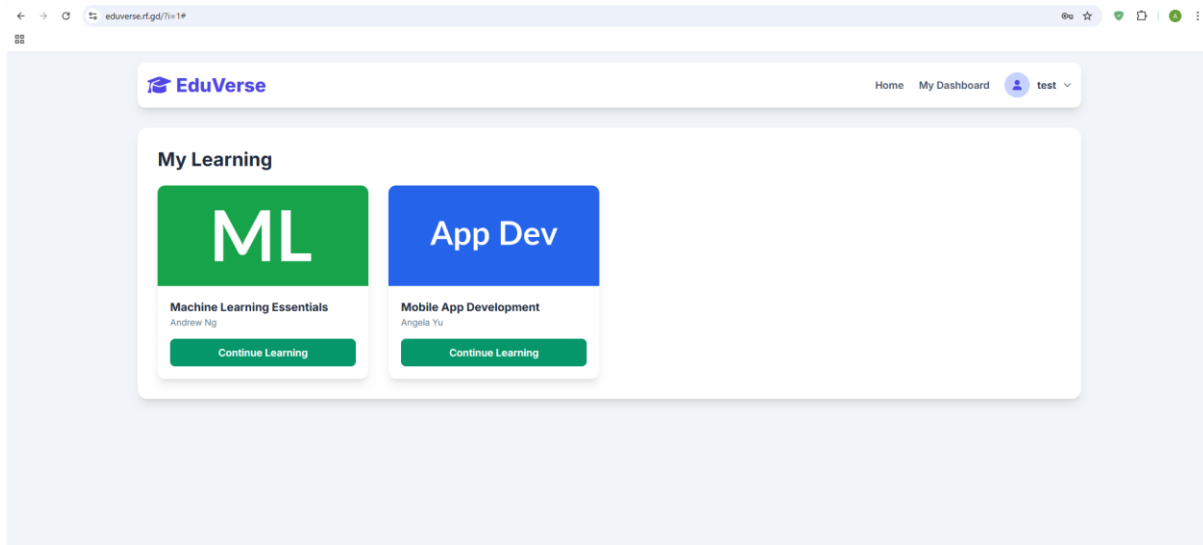


Fig. 5: Student's "My Dashboard"



4.3. Profile Setting and Security

Fig. 6: Profile Settings Page

The screenshot shows the 'Profile Settings Page' on the EduVerse website. The page has a light blue background. At the top, there is a navigation bar with the EduVerse logo on the left, and 'Home', 'My Dashboard', and a user profile dropdown labeled 'test' on the right. The main content area is divided into two columns. The left column contains two white cards. The top card, titled 'My Profile', shows the user's name as 'test' and an empty email field. The bottom card, titled 'Change Password', has three password input fields labeled 'Current Password', 'New Password', and 'Confirm New Password', each with an eye icon for toggling visibility. A blue 'Update Password' button is at the bottom of this card. The right column features a red-bordered box titled 'Danger Zone'. It contains a warning message: 'Deleting your account is permanent. All of your data, including course enrollments and progress, will be removed.' Below this message is a red button labeled 'Delete My Account'.

Fig. 7: Delete Account Confirmation

This screenshot shows the same 'Profile Settings Page' as Fig. 6, but with a confirmation dialog box overlaid in the center. The dialog box is white with a thin border. It has a title 'Are you sure?' and a message: 'This action is permanent and cannot be undone. All your course progress and enrollment data will be lost.' At the bottom of the dialog are two buttons: a red button labeled 'Yes, Delete My Account' and a light blue button labeled 'Cancel'. The background of the page is dimmed to gray to highlight the dialog.

4.4. Admin Panel

Fig. 8: Admin Overview & Analytics

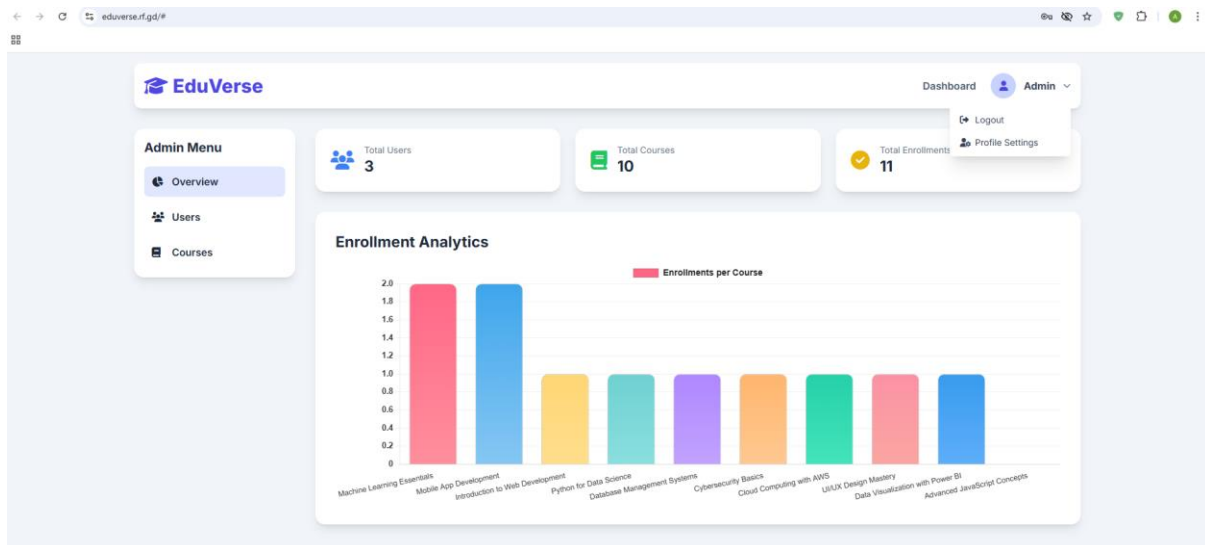


Fig. 9: Admin User Management

The screenshot shows the Admin User Management dashboard. The top navigation bar and left sidebar are identical to Fig. 8. The main content area features a User Management table with the following data:

Sl. No.	User ID	Name	Email	Role
1	4	demo	demo@example.com	Student
2	5	Admin User	admin@example.com	Admin
3	24	test		Student

5. Deployment & Live Links

5.1. Deployment

The application was successfully deployed to **InfinityFree**, a free web hosting provider. The MySQL database was exported from the local XAMPP environment and imported into the live server via phpMyAdmin.

A secure config.php file (excluded from Git) was created on the server to store live database and email credentials.

5.2. GitHub CI/CD

A **GitHub Actions** workflow (deploy.yml) was established to create a CI/CD (Continuous Integration / Continuous Deployment) pipeline. On every git push to the master branch, the workflow automatically deploys the updated files to the InfinityFree server via FTP, allowing for live, automated updates.

5.3. Live Links

- **Live Hosted Site :-**

<https://eduverse.rf.gd>

- **GitHub Repository :-**

https://github.com/Arijit-Podder636/elearning_website.git