Functional Design Learning Project

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# Introduction

* Our project is a language learning platform that aims to help users learn new languages through online courses. The platform is designed to be user-friendly and accessible, with features that cater to both learners and course creators.
* The purpose of this project is not only to create a language learning platform but also to provide a learning opportunity for developers to improve their programming skills. We invite anyone who is interested in contributing to this project to join us on GitHub, where they can review the code and make suggestions.
* Our goal is to provide a comprehensive language learning experience that is accessible to everyone, regardless of their level of experience or background. We hope to create a platform that is not only informative but also engaging and enjoyable to use, and that encourages users to continue learning and improving their language skills.
* We believe that by working together and sharing our knowledge, we can create a better language learning platform that benefits the entire community.

# 2 The user interface

The user part of the website is designed to provide a seamless experience for learners, allowing them to browse and enroll in courses, create their own courses, and review courses created by other users. The user part of the website will be divided into two main sections: Course Taking and Course Creation.

## 2.1 Course Taking

The Course Taking section of the website will allow users to explore a wide range of language courses, including free and paid courses, unique courses, and courses covering multiple categories. Users will be able to search for courses based on their interests and needs, and filter courses by level, category, and other criteria.

Once a user has selected a course, they will be able to access the course materials, including video lectures, quizzes, and assignments. The website will track the user's progress through the course, allowing them to pick up where they left off if they need to take a break.

The pages that will be created for the Course Taking section include:

- Home page: This page will provide an overview of the website and allow users to navigate to other pages.

- Course catalog: This page will display a list of all available courses, and allow users to search for courses by keyword, category, level, and price.

- Course detail page: This page will provide more information about a specific course, including course description, instructor information, and a breakdown of course materials.

- Enrollment page: This page will allow users to enroll in a course, either for free or for a fee if the course is paid.

- My courses page: This page will display a list of courses that the user has enrolled in, as well as their progress through each course.

## 2.2 Course Creation

The Course Creation section of the website will allow users to create and publish their own courses for others to take. Users will be able to choose a course category, create course content using text, images, and videos, and set the course price if they wish to charge for it. Course creators will also be able to view course analytics, including user feedback and statistics on course engagement.

The pages that will be created for the Course Creation section include:

- Course creation page: This page will allow users to create and publish their own courses, including course description, category, course materials, and price.

- Course analytics page: This page will allow course creators to view analytics on their courses, including user engagement, feedback, and ratings.

## 2.3 Course Review

The Course Review section of the website will allow users to review and rate courses created by other users. Users will be able to flag courses that contain false information, and leave feedback to help course creators improve their content. Additionally, users will be able to report other users who violate the website's community guidelines.

The pages that will be created for the Course Review section include:

- Course review page: This page will allow users to review and rate courses created by other users, as well as report courses that contain false information.

# 3. Admin Part

The Admin Part of the website will be accessible only to authorized administrators who can manage the website and its content. This section of the website will allow administrators to perform tasks such as user account management, course content management, and site management.

## 3.1 Overview

The Admin Part of the website is designed to provide a comprehensive set of tools and features to help administrators manage and maintain the website. Administrators will be able to access the Admin Part of the website by entering their login credentials on the Admin login page.

Once logged in, administrators will be able to access a dashboard page that provides an overview of the website's performance, including site analytics and key metrics. From there, they will be able to perform a range of tasks related to user account management, course content management, and site management.

## 3.2 Features

The features included in the Admin Part of the website are:

### 3.2.1 User account management

Administrators will be able to add, edit, and delete user accounts through the user management page. They will be able to view user analytics and reports to gain insights into user behavior and engagement.

### 3.2.2 Course content management

Administrators will be able to add, edit, and delete courses through the course management page. They will be able to view course statistics and feedback to monitor the performance of courses and identify areas for improvement.

### 3.2.3 Site management

Administrators will be able to view site analytics through the dashboard page, which will provide them with key metrics such as site traffic and user engagement. They will also be able to manage site settings and configuration, such as email templates and notification settings, through the site settings page.

In addition, the following features will be available in the Admin Part of the website:

- Course review management page: This page will allow administrators to review and moderate course reviews submitted by users.

- Payment management page: This page will allow administrators to manage payments received from users for paid courses, including view transaction history and generate reports.

- Helpdesk page: This page will allow users to get in touch with administrators for support and assistance with their courses or the website.

We welcome feedback and suggestions on the Admin Part of the website, and we encourage administrators to participate in the community and share their knowledge with others.

# 4. Technology Stack

The web development tools and technologies used in the project are critical to the success of the website. A suitable technology stack should be used to ensure the website is robust, scalable, and efficient. The technology stack chosen for this project includes NextJS, HTML, CSS, NodeJS, and PostgreSQL.

## 4.1 Overview

NextJS is a popular React-based framework used for server-side rendering and building static websites. It simplifies the process of creating and deploying web applications by providing out-of-the-box solutions for SEO optimization, routing, and performance optimization.

HTML and CSS are the foundational technologies used to create the visual layout and styling of web pages. HTML provides the basic structure of a web page, while CSS provides the styling and layout for the content. Together, they provide a way to create rich, interactive, and responsive web pages.

NodeJS is a popular JavaScript runtime environment used to build scalable and efficient server-side applications. It provides a non-blocking I/O model that enables the server to handle a large number of concurrent connections and requests.

PostgreSQL is an open-source relational database management system used for data storage and retrieval. It is known for its scalability, reliability, and support for advanced features such as transactions and foreign keys.

## 4.2 Tools and Technologies

The following web development tools and technologies will be used in the project:

- NextJS: This framework will be used to build the front-end of the website, providing out-of-the-box solutions for SEO optimization, routing, and performance optimization.

- HTML: This markup language will be used to provide the basic structure of web pages.

- CSS: This styling language will be used to provide the visual layout and styling for web pages.

- NodeJS: This runtime environment will be used to build the back-end of the website, providing a non-blocking I/O model that enables the server to handle a large number of concurrent connections and requests.

- PostgreSQL: This relational database management system will be used for data storage and retrieval.

# 5. User Interface

## 5.1 Learner Home Page

Requirements:

- The Home page should provide a brief introduction to the website and its purpose.

- The page should include links to the Course catalog and User login pages.

- The design should be visually appealing and easy to navigate.

- The homepage should also provide an option to switch to the creator site

Suggestions:

- Use high-quality images or graphics to create an engaging and professional-looking home page.

- Include a tagline or slogan that summarizes the website's mission or values.

- Use clear and concise language to describe the website and its features.

## 5.2 Course Catalog Page

Requirements:

- The Course catalog page should display all available courses.

- Users should be able to search for courses by keyword, category, level, and price.

- Each course should be presented with a thumbnail image, title, and brief description.

Suggestions:

- Use clear and descriptive titles for each course in the Course catalog.

- Provide filters to help users easily find courses that fit their interests and needs.

- Include information about course ratings and feedback to help users make informed decisions.

## 5.3 Course Detail Page

Requirements:

- The Course detail page should provide more information about a specific course, including course description, instructor information, and a breakdown of course materials.

- The page should include a button or link to the Enrollment page.

Suggestions:

- Include a preview video or demo lesson on the Course detail page to give learners an idea of what the course entails.

- Use clear and concise language to describe the course materials and learning objectives.

- Include information about the course duration and level of difficulty.

## 5.4 Login Page

Requirements:

- The Login page should allow users to enter their login credentials (username and password) to access their account.

- The page should include a link to the Registration page for new users.

Suggestions:

- Include a "Remember me" checkbox to allow users to stay logged in.

- Provide an option for users to reset their password in case they forget it.

## 5.5 Registration Page

Requirements:

- The Registration page should allow new users to create an account by entering their personal and account information.

- The page should include a confirmation message or email to verify the user's email address.

Suggestions:

- Use clear and concise language to explain the registration process and the benefits of creating an account.

- Provide guidance on creating a secure password.

## 5.6 Enrollment Page

Requirements:

- The Enrollment page should allow learners to enroll in a course, either for free or for a fee if the course is paid.

Suggestions:

- Use clear and concise language to explain the enrollment process and the payment options available.

- Provide a confirmation message or email to verify the user's enrollment.

## 5.7 My Courses Page

Requirements:

- The My courses page should display a list of courses that the user has enrolled in, as well as their progress through each course.

Suggestions:

- Include a progress tracker to help learners keep track of their progress.

- Provide links to the Course detail page for each enrolled course.

## 5.8 Course Creation Page

Requirements:

- The Course creation page should allow course creators to provide course description, category, course materials, and price.

- The course materials section should allow course creators to add text, images, and videos to their course content.

Suggestions:

- Use clear and descriptive titles and descriptions for each course.

- Provide templates or guidelines to help course creators structure their course content effectively.

- Include multimedia content to make the course materials more engaging and interactive.

## 5.9 Course Analytics Page

Requirements:

- The Course analytics page should allow course creators to view analytics on their courses, including user engagement, feedback, and ratings.

Suggestions:

- Provide graphs and charts to help course creators visualize their course analytics

## 5.10 Course Review Page

Requirements:

- The Course Review page should allow users to rate and review courses they have completed.

- The page should display the course title and a rating system, with the option for users to provide written feedback.

Suggestions:

- Allow users to rate courses on a scale of 1-5 stars.

- Provide guidelines on how to write effective course reviews.

- Include a summary of course ratings and feedback on the Course detail page.

## 5.11 User Profile Page

Requirements:

- The User Profile page should display the user's personal information and account details, including their name, email address, and course history.

- The page should include links to the User Settings and My Courses pages.

Suggestions:

- Provide a profile picture option for users to add a personal touch to their account.

- Allow users to update their personal information and change their password on the User Profile page.

- Display badges or achievements earned by the user for completing courses or contributing to the community.

## 5.12 User Settings Page

Requirements:

- The User Settings page should allow users to manage their account preferences, including email notifications and language settings.

- The page should include options to update account information and delete the user's account.

Suggestions:

- Allow users to choose the frequency and type of email notifications they receive from the website.

- Provide clear instructions and warnings before allowing users to delete their account.

- Include a feedback form or survey to gather user feedback on the website and its features.

## 5.13 About Page

Requirements:

- The About page should provide a detailed description of the website's mission, vision, and values.

- The page should include information about the website's creators and contributors.

Suggestions:

- Include a timeline of the website's history and milestones.

- Provide information about the website's development process and technology stack.

- Highlight any unique or innovative features of the website.

## 5.14 Contact Page

Requirements:

- The Contact page should provide a form or email address for users to contact the website's support team or administrators.

- The page should include a brief description of the types of inquiries that can be submitted through the contact form.

Suggestions:

- Provide clear instructions on how to submit an inquiry or report an issue.

- Include a frequently asked questions (FAQ) section to help users find answers to common questions.

- Ensure that the contact form or email address is monitored regularly and that users receive timely responses.  
  
Sure, here's a brief overview of what could be included in each section:

# 6. Database Design:

- An Entity Relationship Diagram (ERD) showing the relationships between the different entities in the PostgreSQL database used for the project.

- A description of the database schema, including tables, columns, and data types, and how they relate to each other.

- An explanation of any data constraints, such as foreign key constraints, unique constraints, and not-null constraints, used to maintain data integrity.

# 7. API Design:

- An overview of the API architecture, including the technologies used to build the API and any third-party APIs or services integrated into the project.

- A description of the endpoints used in the project, including the HTTP methods and URLs used to access each endpoint.

- A discussion of the request and response format for each endpoint, including any required parameters and data types, and examples of the expected output for different use cases.

# 8. Deployment:

The website and API were deployed using Vercel, a cloud-based platform that provides an efficient and scalable deployment environment for web applications. Vercel provides an easy-to-use interface for deploying websites and APIs, with seamless integration with Git and GitHub. The deployment process involves configuring the necessary environment variables and secrets, which are stored securely on Vercel's servers. The deployed site is automatically optimized for performance, with features such as static and dynamic caching, asset optimization, and automatic compression. Automated testing and build processes are also used to ensure that the deployed site is stable and reliable. Vercel provides detailed analytics and monitoring tools to track website performance and user activity, allowing for quick identification and resolution of any issues that may arise.- A discussion of any security measures implemented to protect the website and user data, such as SSL encryption and user authentication.