



Requirements

⚙️ Status	Review
📖 difficulty	hard

Learning Platform

Core Components

1. Roadmap Structure

- List of sections aligned with course topics
- Progressive unlocking system
- Section-by-section advancement
- Progress tracking capabilities

2. Section Structure

- 2-5 quizzes per section
- Final exam for each section
- Course topic association
- Completion requirements: All quizzes + final exam
- Sequential unlocking mechanism

3. Quiz System 📋 Quiz Specifications:

- 10 exercises per quiz
- 75% passing threshold
- Multi-difficulty exercises
- Immediate feedback system

- Progress visibility

4. Exam Structure 🎓 Exam Features:

- 25 exercises
- 90% passing threshold
- No immediate answer feedback
- Section completion requirement

Exercise Types

1. Fill-in-the-blank Exercise

- Text length: 1-200 characters
- 1-3 input spaces
- Case-insensitive validation
- Space-tolerant checking

2. Multiple Choice Exercise

- Question length: 1-200 characters
- 2-5 answer options
- Multiple selection capability
- Exact match requirement

3. Association Exercise

- Two-column matching format
- One-to-one pairing
- Initial instruction statement

System Features

Difficulty Levels

- Easy 
- Normal 
- Hard 

Progress Tracking

- Quiz results history
- Section completion status
- Exercise performance metrics

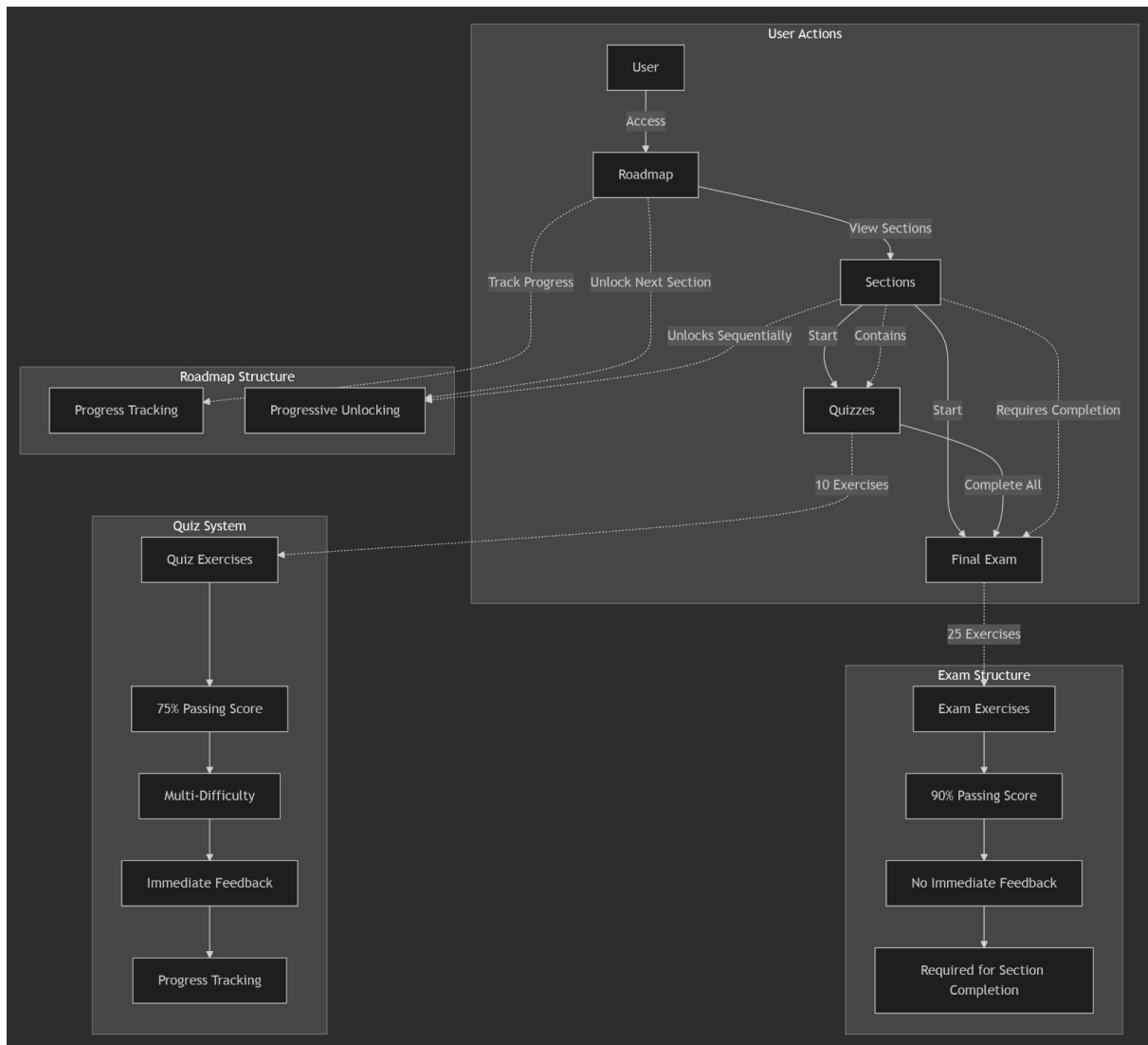
Quiz Flow

```
graph TD;
  A["Start Quiz"] → B["Exercise"];
  B → C["User Answer"];
  C → D["Show Result"];
  D → E["Next Exercise"];
  E → F{"Last Exercise?"};
  F →|"No"| B;
  F →|"Yes"| G["Show Final Score"];
  G → H{"Pass >= 75%?"};
  H →|"Yes"| I["Unlock Next Quiz"];
  H →|"No"| J["Quiz Failed"];
```

Exam Flow

```
graph TD;
  A["Start Exam"] → B["Exercise"];
  B → C["User Answer"];
  C → E["Next Exercise"];
  E → F{"Last Exercise?"};
  F →|"No"| B;
  F →|"Yes"| G["Show Final Score"];
  G → H{"Pass >= 90%?"};
  H →|"Yes"| I["Finish Section"];
  H →|"No"| J["Exam Failed"];
```

Use case Diagram



use case diagram

ROADMAP STRUCTURE

The roadmap represents the user's learning path through the platform. It is organized into sections, with progression beginning from Section 1, Quiz 1. The number of sections matches or exceeds the number of course topics. Additional sections may be added or removed to the roadmap by admins.

Subsequent sections become available after completing all sections coming before it.

SECTION STRUCTURE

Sections function as structured learning units within the platform. Each section is linked to a specific subject, which itself connects to theoretical courses. The content structure varies between 2-5 quizzes per section, determined by the volume of material, and includes a mandatory final exam. The platform enforces strict progression rules with sequential quiz unlocking and section advancement - the next quiz only unlocks after successful completion of the current one, and future quizzes remain locked until all prerequisites are met. The sequential quizzes progress higher in difficulty culminating with the final exam. The final exam becomes available only after successful completion of all section quizzes. To complete a section, users must pass all quizzes and the final exam. Past completed quizzes are available for users to re-complete.

QUIZ SYSTEM

Quizzes serve as structured assessment units with precise requirements. Each quiz contains exactly 10 exercises featuring mixed difficulty levels, with an overall difficulty average assigned by administrators. During quiz progression, users receive immediate feedback for incorrect answers and automatically advance to the next exercise. A 75% correct answer threshold is required to pass. The system provides immediate feedback, displays final scores, and clearly indicates pass/fail status after completion of the last exercise. After completing each quiz, users can view their results, including the total number of correct and incorrect answers.

EXAM SYSTEM

Exams function as comprehensive section completion assessments. Each exam consists of 25 exercises and implements a stricter evaluation system than regular quizzes. Unlike quizzes, exams do not provide immediate answer feedback, requiring users to complete all exercises before seeing their results. The passing threshold is set at 90%, significantly higher than regular quizzes. The system automatically advances users between

exercises and displays final results (pass/fail status) only upon exam completion. Exam exercise difficulty is also higher compared to quizzes, comparable to last quizzes of the respective section.

EXERCISES

Exercises represent the building-blocks of quizzes and exams. An exercise is made up of a singular question, specific to the section's subject the exercise belongs to. An exercise has one unique correct way of answering it. In order for the user to check the correctness of the exercise they are answering, a check must be made, this option becomes available after different actions which are determined by the exercise type. There are 3 types of exercises. Depending on the type, the method of answering is different.

Fill-in-the-blank Exercise

These exercises present text-based completion challenges with specific parameters. The main text ranges from 1 to 200 characters and includes 1-3 input spaces, each accommodating up to 30 characters. The validation system implements case-insensitive checking and tolerates variations in whitespace to focus on content accuracy rather than formatting. Once all available blank spaces have been completed with at least one character different from a whitespace, checking for correctness becomes available. If the completed whitespaces coincide with the intended answers then the exercise is considered completed successfully.

Multiple Choice Exercise


These exercises feature selection-based questions with a defined structure. Questions contain 1-200 characters of text, followed by 2-5 answer choices, each limited to 80 characters. Users may select multiple answers, but must choose all correct options and avoid incorrect ones to succeed. The number of correct answers can vary from one to the number of total answers. Checking for correctness of the answer becomes available once at least one of the options has been selected.


Association Exercise


Association exercises implement matching-based challenges with specific requirements. Each exercise begins with an initial instruction statement, followed by a two-column format. Each column may have 3-5 different cards that match to one specific card in the other column. Column cards are short statements pertaining to the instruction (1-30 characters). Users must create one-to-one pairings between items in the columns, with all items requiring unique correct matches for successful completion. Once all available items belong to one pairing, checking for correctness becomes available.

DIFFICULTY LEVELS

The platform implements a three-tier difficulty system managed by administrators:

Easy 

Normal 

Hard 

Administrators bear responsibility for assigning appropriate difficulty levels to all relevant components. Difficulty levels for quizzes determines the average difficulty level for the exercises. Higher difficulty exercises present more choices or longer answers. Quizzes and Exercises increase in difficulty as the user progresses throughout a section.

Admin Page Functionality

ADMIN PAGE FUNCTIONALITY

The admin page is the control hub for the app's content. It provides administrators with the ability to create, modify, and organize Exercises,

Quizzes, Exams and Sections.

EXERCISE MANAGEMENT

Administrators can create exercises across all available types. Each exercise requires a difficulty level and its type.

Fill-in-the-blank Exercise

- Admins define the main text (1-200 characters)
- Specify 1-3 input spaces (max 30 characters each)
- Admin specifies the intended answer for each of the entered input spaces

Multiple Choice Exercise

- Admins input a question (1-200 characters)
- Provides 2-5 possible answers and combination of correct answers up to the total number of answers
- Each answer limited to 80 characters

Association Exercise

- Admins enter an instruction statement
- Create two columns matching in the number of items (3-5 item cards)
- Column items are 1-30 characters long and pertain to the stated instruction statement
- Each item has a corresponding pair
- Admin enters the correct pair configuration for a successful completion

QUIZ MANAGEMENT

Quiz Creation:

- Admins define the quiz title
- Set difficulty level
- Assign exactly 10 exercises with average difficulty levels close to the difficulty of the quiz

Exercise Assignment:

- Admins select exercises from the available ones
- Input the ID of each exercise

EXAM MANAGEMENT

Exam Creation:

- Admins define the exam title
- Set difficulty level
- Assign exactly 25 exercises

Exercise Assignment:

- Admins select exercises from the available ones
- Input the ID of each exercise

SECTION MANAGEMENT

Section Creation:

- Admins define the section title
- Associate with a specific subject available from the Courses app

Quiz & Exam Assignment:

- Admins link 2-5 quizzes
- Add one mandatory final exam

ROADMAP MANAGEMENT

Admins arrange sections in a queue. Each new added section can be added to the end of the queue, such that it will automatically be locked for the user until every other section has been completed.

```
graph TD;
  A["Create Exercise"] → B["Create Quiz/Exam"];
  B → C["Build Section"];
  C → D["Add to Roadmap Queue"];
```

