

System Design Document

for

CompetiQuest

Version 1.0

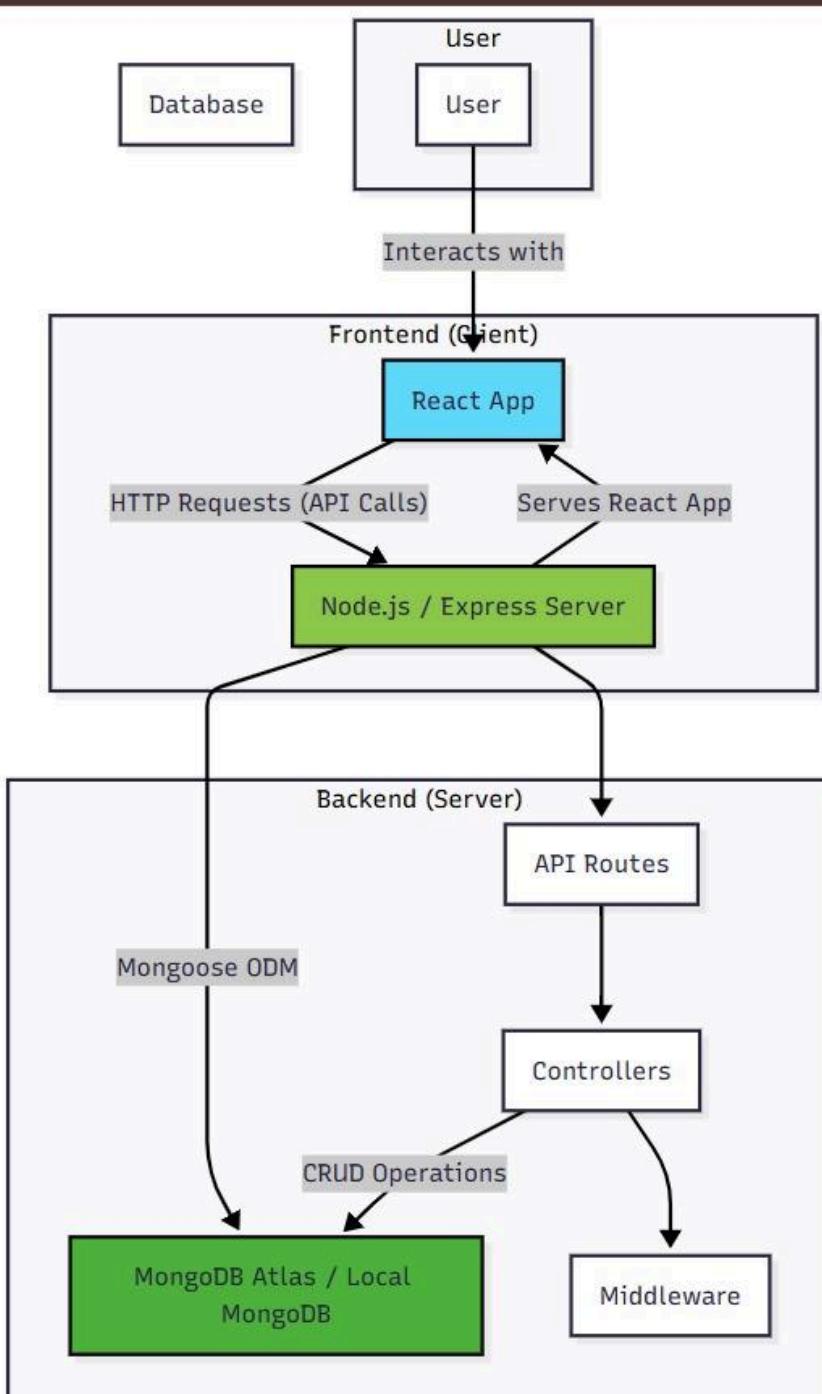
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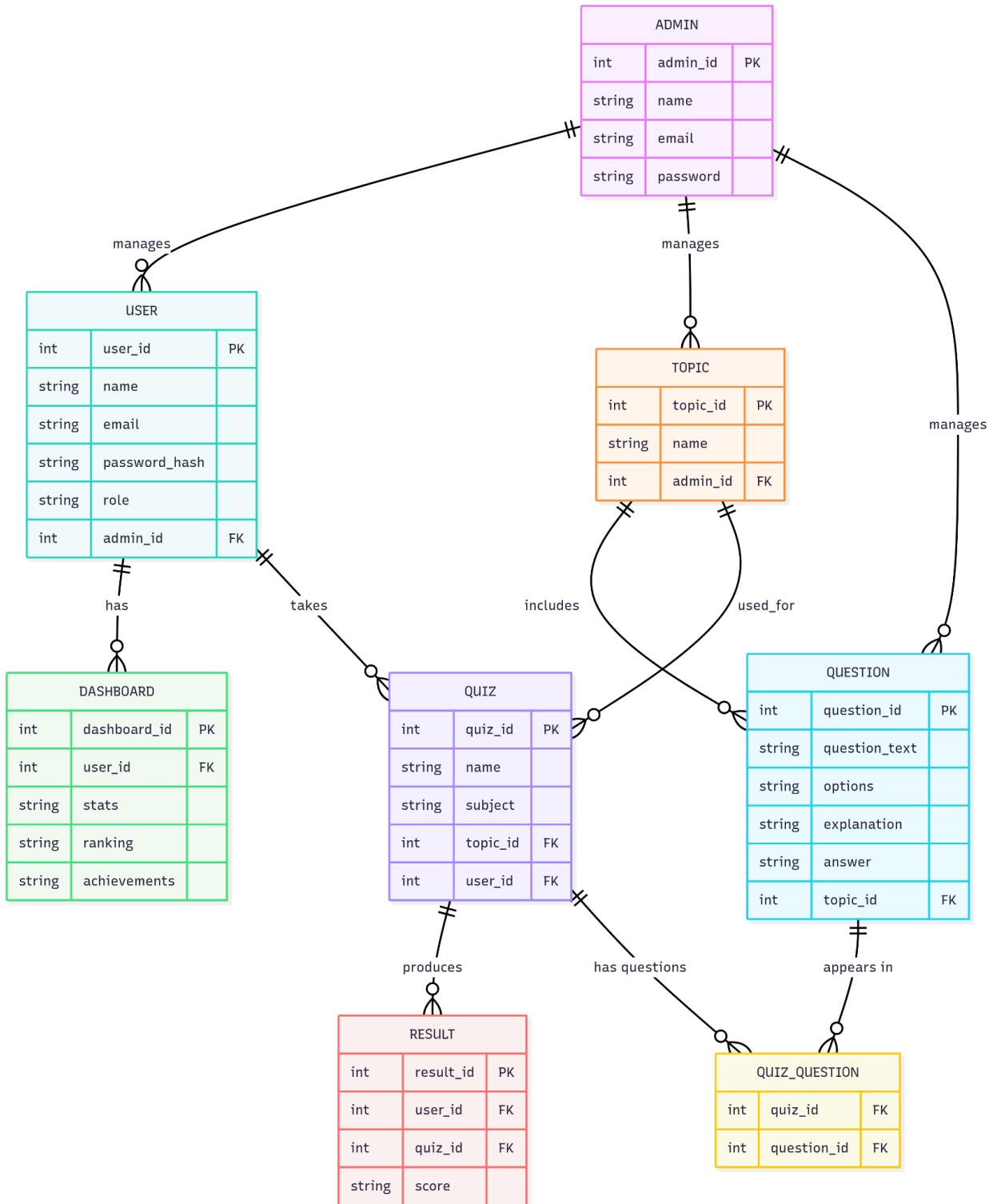
Instructor : Prof. JayPrakash T. Lalchandani

Date : 14th September 2025

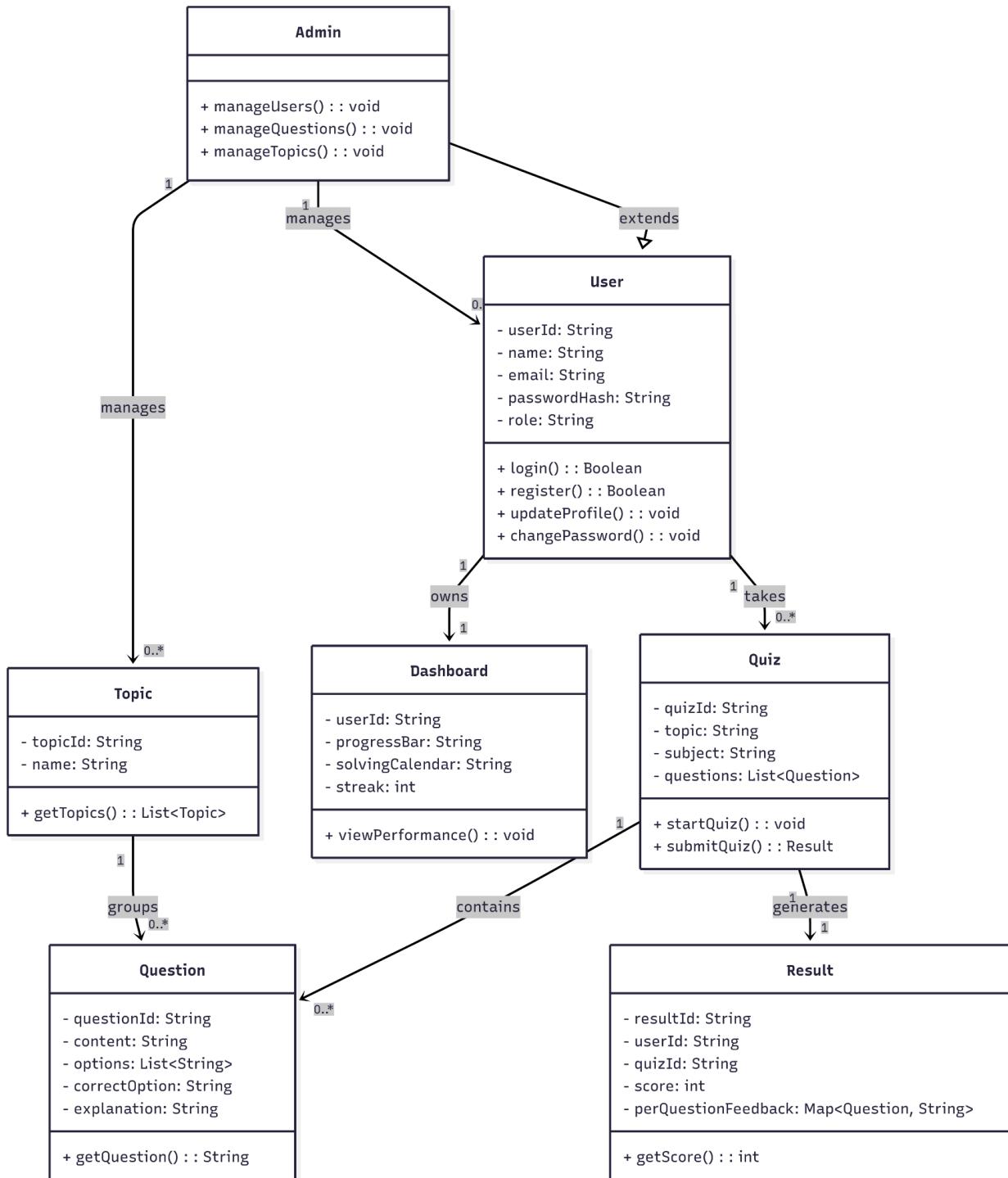
Architecture diagram



DataBase Schema (ER diagram)



Class diagram



REST API Contracts

General Information

- Base URL: `http://localhost:5000/api/`
- Format: JSON
- Authentication: JWT Bearer Token (for protected endpoints)
- Common Status Codes: 200 OK, 201 Created, 400 Bad Request, 401 Unauthorized, 404 Not Found, 500 Internal Server Error

API Endpoints

1. Health Check

- **GET /health**
 - Purpose: Check if the API is running
 - Request: None
 - Response: `{ "status": "ok" }`

2. Authentication APIs

- **POST /auth/register**
 - Purpose: Register a new user
 - Request Body:
`{ "name": "John Doe", "email": "john@example.com", "password": "password123" }`
 - Response:
`{ "message": "User registered successfully", "userId": "689df3c730562a333ce8469e" }`
- **POST /auth/login**

- Purpose: Authenticate and return JWT token
- Request Body:

```
{ "email": "john@example.com", "password": "password123" }
```
- Response:

```
{ "token": "jwt_token_here" }
```

3. User APIs

- **GET /users/profile**
 - Purpose: Fetch logged-in user's profile
 - Auth Required: Yes
 - Response Example: { "id": "...", "name": "John Doe", "email": "john@example.com" }
- **PUT /users/profile**
 - Purpose: Update user profile
 - Auth Required: Yes
 - Request Body: { "name": "John Smith" }
 - Response Example: { "message": "Profile updated" }
- **PUT /users/change-password**
 - Purpose: Change user password
 - Auth Required: Yes
 - Request Body:

```
{ "currentPassword": "password123", "newPassword": "newpassword123" }
```
 - Response Example: { "message": "Password updated successfully" }
- **GET /users/quiz-history?page=1&limit=10**
 - Purpose: Fetch quiz history (paginated)
 - Auth Required: Yes

- Response Example:
[{ "quizId": "...", "score": 85 }]
- **DELETE /users/delete**
 - Purpose: Delete logged-in user account
 - Auth Required: Yes
 - Response Example: { "message": "User deleted" }
- **GET /users/all**
 - Purpose: Get all users (admin only)
 - Auth Required: Yes
 - Response Example:
[{ "id": "...", "name": "User 1" }]

4. Company APIs

- **POST /companies**
 - Purpose: Create a new company
 - Auth Required: Yes
 - Request Body:
{ "name": "Microsoft", "description": "Technology company",
"website": "https://microsoft.com" }
 - Response Example: { "id": "...", "name": "Microsoft" }
- **GET /companies/search?q=Microsoft**
 - Purpose: Search company by name
 - Auth Required: No
 - Response Example: [{ "id": "...", "name": "Microsoft" }]
- **GET /companies/{id}**
 - Purpose: Get company by ID
 - Auth Required: No
 - Response Example: { "id": "...", "name": "Microsoft" }

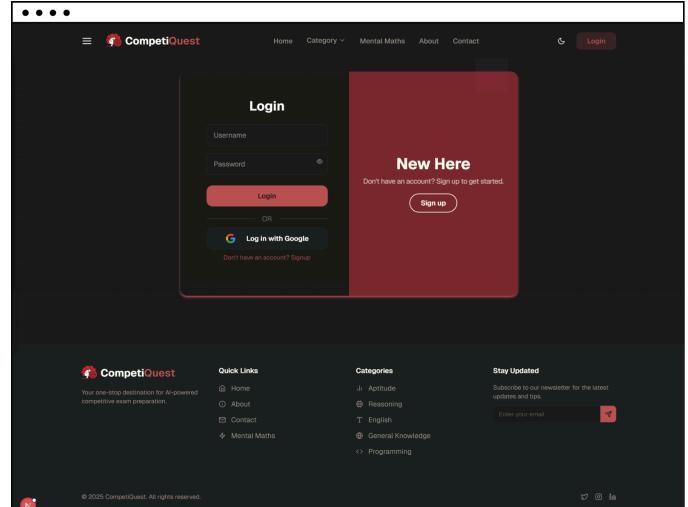
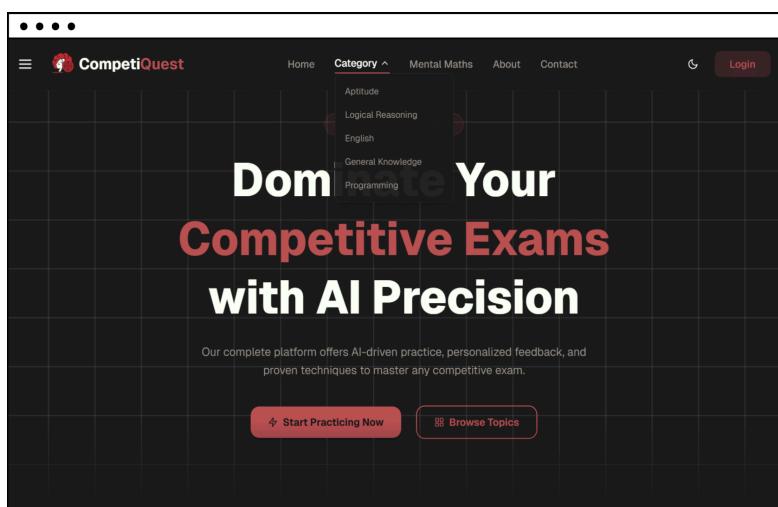
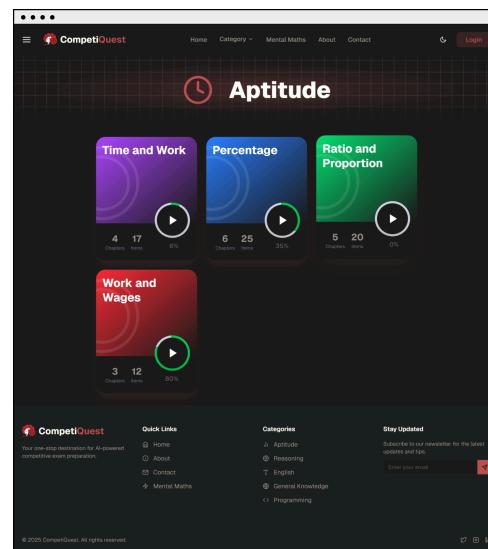
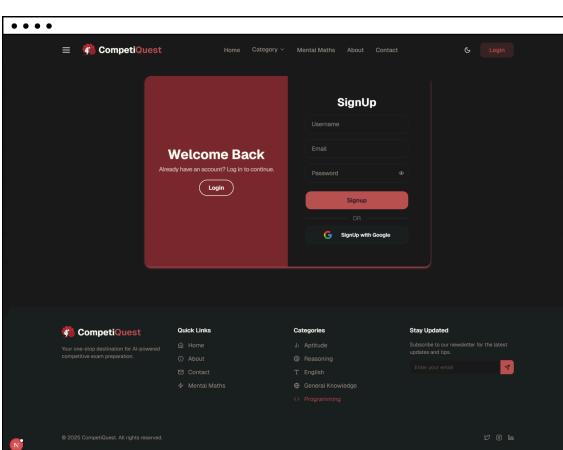
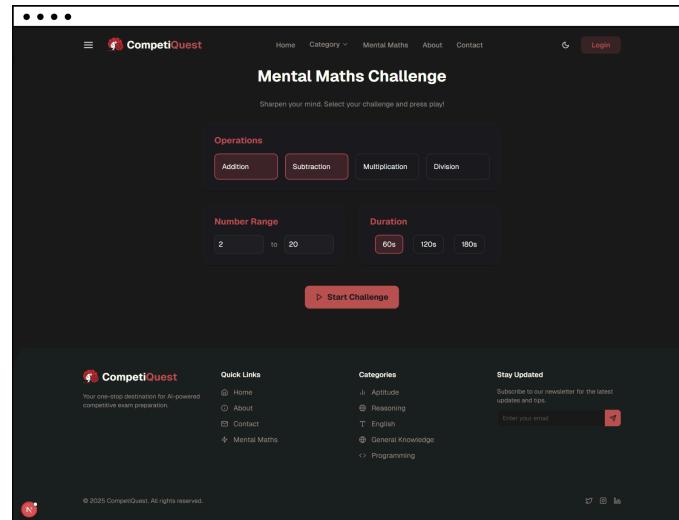
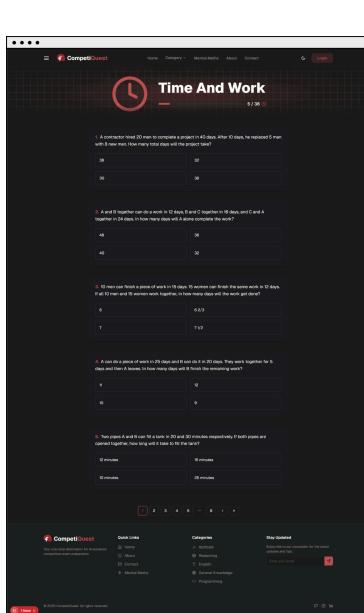
- GET /companies?page=1&limit=10
 - Purpose: Get paginated list of companies
 - Auth Required: No
 - Response Example: [{ "id": "...", "name": "Microsoft" }]
- DELETE /companies/{id}
 - Purpose: Delete company by ID
 - Auth Required: Yes
 - Response Example: { "message": "Company deleted" }

5. Topic APIs

- POST /topics
 - Purpose: Create new topic
 - Auth Required: Yes
 - Request Body:
 { "name": "Machine Learning", "description": "AI concepts",
 "subjects": ["Neural Networks", "Deep Learning"] }
 - Response Example: { "id": "...", "name": "Machine Learning" }
- GET /topics/search?q=Machine Learning
 - Purpose: Search topic by name
 - Auth Required: No
 - Response Example: [{ "id": "...", "name": "Machine Learning" }]
- GET /topics/subjects
 - Purpose: Get all subjects
 - Auth Required: No
 - Response Example: ["Neural Networks", "Deep Learning"]
- GET /topics?page=1&limit=10&subject=Neural Networks
 - Purpose: Search topics by subject
 - Auth Required: No

- Response Example: [{ "id": "...", "name": "Machine Learning" }]
- **GET /topics/{id}**
 - Purpose: Get topic details by ID
 - Auth Required: No
 - Response Example: { "id": "...", "name": "Machine Learning" }
- **POST /topics/{id}/subjects**
 - Purpose: Add subject to topic
 - Auth Required: Yes
 - Request Body: { "subject": "Reinforcement Learning" }
 - Response Example: { "message": "Subject added" }
- **DELETE /topics/{id}/subjects**
 - Purpose: Remove subject from topic
 - Auth Required: Yes
 - Request Body: { "subject": "Reinforcement Learning" }
 - Response Example: { "message": "Subject removed" }
- **DELETE /topics/{id}**
 - Purpose: Delete topic by ID
 - Auth Required: Yes
 - Response Example: { "message": "Topic deleted" }

Wireframes and mockup (final)



A Journey Through Our Features

Discover the powerful tools designed to help you succeed, step by step.

- Extensive Question Bank
- AI Chatbot Tutor
- Progress Tracking
- Mental Maths
- Modern UI & Dark Mode

The Philosophy Behind Our Platform

We're more than just a question bank. We are a dedicated team driven by a core set of values, united in our mission to provide the best competitive exam preparation experience.

- Our Mission
- Our Vision
- Our Approach

Our Impact in Numbers

With a goal of the community we've built and the progress our students have made:

- 5,000+ Students with Testimonials
- 1,000+ Active Learners
- 90% Improved Mental Maths

Get In Touch

Have a question or a concern? We'd love to hear from you.

Our Office: 123 Innovation Drive, Tech Park, Amsterdam, Square 30000
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Extensive Question Bank
Master Arithmetic, Reasoning, English, GK, and more.

AI Chatbot Tutor
Instant answers and topic explanations powered by AI.

Progress Tracking
Monitor your strengths and weaknesses in each section.

Mental Maths
Improve your calculation speed with interactive challenges.

Modern UI & Dark Mode
Study in style with a sleek, responsive interface.

AI Extensive Question Bank
Master Arithmetic, Reasoning, English, GK, and more.

AI Chatbot Tutor
Instant answers and Topic explanations powered by AI.

Modern UI & Dark Mode
Study in style with a sleek, responsive interface.

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Keep up-to-date with the latest features and news.

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Anytime access via our mobile app.

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Explore our core offerings to find the right fit for your competitive exam needs.

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Develop strong arithmetic skills with the comprehensive arithmetic tests & exercises.

Reasoning
Improve your logical reasoning skills through various puzzles and challenges.

English Language
Enhance your English language skills with grammar, vocabulary, and comprehension tests.

Our Impact in Numbers

5,000+ Students with Testimonials | 1,000+ Active Learners | 90% Improved Mental Maths

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Time And Work Quiz Page:

The page displays a clock icon and the title "Time And Work". It shows 5 / 38 questions completed. The first question asks: "A contractor hired 20 men to complete a project in 40 days. After 10 days, he replaced 5 men with 8 new men. How many total days will the project take?" Options are 36, 32, 30, and 38. The second question asks: "A and B together can do a work in 12 days, B and C together in 16 days, and C and A together in 24 days. In how many days will A alone complete the work?" Options are 48, 36, 40, and 32. The third question asks: "10 men can finish a piece of work in 15 days. 15 women can finish the same work in 12 days. If all 10 men and 15 women work together, in how many days will the work get done?" Options are 6, 6 2/3, 7, and 7 1/2. The fourth question asks: "A can do a piece of work in 25 days and B can do it in 20 days. They work together for 5 days and then A leaves. In how many days will B finish the remaining work?" Options are 11, 12, 10, and 9. The fifth question asks: "Two pipes A and B can fill a tank in 20 and 30 minutes respectively. If both pipes are opened together, how long will it take to fill the tank?" Options are 12 minutes, 15 minutes, 10 minutes, and 25 minutes.

Aptitude Category Landing Page:

The page displays a clock icon and the title "Aptitude". It features four categories: "Time and Work" (4 chapters, 17 items, 6%), "Percentage" (6 chapters, 25 items, 35%), "Ratio and Proportion" (5 chapters, 20 items, 0%), and "Work and Wages" (3 chapters, 12 items, 80%).

Footer Navigation Bar:

The footer includes the CompetiQuest logo, quick links (Home, About, Contact, Mental Maths), categories (Aptitude, Reasoning, English, General Knowledge, Programming), a newsletter sign-up form, and social media links.