Front-End UI/UX Mini Project

Interactive Quiz Website

Submitted By: K. Viswakowsik – 2462374

Shreya Joseph Elizabeth – 2462364

Irene Ajay K – 2462329

College-E-mail id- viswakowsik.k@btech.christuniversity.in

- shreya.elizabeth@btech.christuniversity.in

- irene.ajay@btech.christuniversity.in

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Instructor Name: Madam Nagaveena
Institution: Christ University, Kengeri
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Abstract

This project involves the design and development of a responsive and Interactive Quiz website using HTML, CSS, Bootstrap, and JavaScript (with jQuery). The website highlights personal skills, showcases projects, and provides a contact form for communication. Unlike static-only projects, this implementation integrates JavaScript for smooth scrolling, dynamic portfolio filtering, form validation, and modal popups, resulting in a more engaging and professional user experience.

Objectives

- Design a clean, user-friendly, and interactive quiz application.
- Implement structured **HTML5** with semantic tags.
- Use **Bootstrap and custom CSS** for layout, design consistency, and responsiveness.
- Integrate **JavaScript and jQuery** for interactivity: smooth scrolling, animated sections, modals, and contact form handling.
- Ensure accessibility, mobile compatibility, and cross-browser support.

Scope of the Project

The scope of making an interactive quiz website includes creating a user-friendly platform with features like question banks, timers, scoring, feedback, leaderboards, and responsive design—usable for education, training, or entertainment.

Tools & Technologies Used

- **HTML5** → Page structure & semantic elements

- **CSS3 / Bootstrap 5** → Styling, responsive grid system, components
- **JavaScript (jQuery)** → Interactivity, animations, event handling
- **Font Awesome** → Icons
- **VS Code** → Code editor
- **Chrome DevTools** → Testing and debugging

HTML Structure Overview

Top-Level Container

- <div class="quiz-container">
  Holds everything inside the quiz app.

1. Quiz Header

- <div class="quiz-header card">

  o Title with **icon**: <h1 class="quiz-title">Interactive Quiz</h1>

  o **Timer display** (#timer).

  o **Progress bar** (#progressBar).

  o Status line:

    ▪ Current question (#currentQ) of total (#totalQ).

    ▪ Score (#currentScore / #totalScore).

2. Question Card

- <div class="question-card card" id="questionCard">

  o **Question text** (#questionText).

  o **Options container** (#optionsContainer) → dynamically filled.

  o **Explanation box** (#explanationBox) → shown after answer.

  o **Action buttons**:

    ▪ Submit Answer (#submitBtn).

    ▪ Next Question (#nextBtn).

  o Timer info (#timerInfo).

3. Question Navigation

- <div class="navigation-card card">

    - Title: *Question Progress.*

    - **Navigation dots/links** (#questionNav) → to track answered/skipped questions.

4. Results Screen

- <div class="results-screen" id="resultsScreen"> (hidden until quiz ends)

    - Trophy icon.

    - Completion message (#resultsMessage).

    - Score display (#finalScore, #scorePercentage).

    - Stats: **Correct** (#correctAnswers) & **Incorrect** (#incorrectAnswers).

    - Retry button → resetQuiz().

External Links

- Bootstrap CSS + JS (CDN).

- Font Awesome for icons.

- styles.css → your custom styles.

- script.js → logic for quiz functionality.

CSS Styling Strategy

1. Global Setup

- **Reset styles** with * { margin: 0; padding: 0; box-sizing: border-box; }.

- Set a **unified font family** and gradient **background** for body.

- Center the .quiz-container with max-width + auto margin.

- Add a **fadeIn animation** for smooth entry.

2. Theming with Gradients

- Light **linear gradients** for cards (#ffffff → #f8f9fa).

- Bold **vibrant gradients** for highlights (progress bar, selected option, score circle).

- This creates a **modern, energetic feel** throughout the quiz.

3. Component-Based Styling

- **Quiz header**:

  - Clear title, colorful timer with status states (normal, warning, danger + pulse animation).

- **Question card**:

  - Hover lift (transform + box-shadow) for interactivity.

- **Options**:

  - Styled as buttons (.option-btn) with hover, selected, correct/incorrect states.

  - Consistent rounded corners, transitions, and animations.

- **Explanation box**:

  - Uses a **slideDown animation** for smooth reveal.

- **Action buttons**:

  - Rounded, uppercase, animated hover effects.

- **Navigation dots**:

  - Color-coded (pending, current, correct, incorrect) for quick visual progress.

4. Results Screen

- Trophy icon with **bounce animation**.

- Score displayed in a **gradient circle** with scale animation.

- Correct/incorrect counts styled as colored stat cards.

- Strong emphasis on **feedback + celebration**.

5. Responsive Design

- Breakpoints at **768px** (tablet) and **576px** (mobile).

- Adjusts font sizes, paddings, navigation dot size.

- Flex layouts turn into stacked layouts for small screens.

6. Accessibility

- Adds **focus outlines** for .option-btn and .btn → good for keyboard users.

- Disabled states are dimmed with opacity.

7. Extra Enhancements

- **Custom animations**: fadeIn, slideIn, pulse, bounce.

- **Loading state**: .loading { opacity: 0.7; pointer-events: none; }.

- **Print styles**: neutralizes background + shadows for clean printouts.

JavaScript Functionality

Quiz Data Handling – Stores questions, options, correct answers, and explanations in a structured array.

Dynamic Question Rendering – Loads questions and answer options onto the webpage in real time.

Answer Selection & Validation – Lets users select answers, checks correctness, and provides instant feedback.

Scoring System – Tracks user's score, correct/incorrect answers, and updates progress dynamically.

Timer Functionality – Implements countdown for each question with warnings and auto-submit on timeout.

Navigation Support – Provides next/previous navigation, keyboard shortcuts, and navigation dots.

Explanations & Feedback – Shows detailed explanations after each question to aid learning.

Results Display – Summarizes final score, percentage, correct/incorrect answers, and performance message.

Reset & Replay – Allows restarting the quiz with all values reset.

Enhanced UX – Includes smooth scrolling, animations, and accessibility (keyboard use, focus states).

Features & Description

Feature	Description
Quiz Data Storage	Questions, options, correct answers, and explanations are stored in an array.
Dynamic Rendering	Questions and options are displayed dynamically using JavaScript.
Answer Validation	User's selected answer is checked against the correct one in real time.
Scoring System	Score is updated instantly based on correct answers.
Timer Functionality	Each question has a countdown; time-out auto-submits the question.
Feedback & Explanations	Provides immediate feedback with explanations for each answer.
Navigation Dots	Visual progress indicators allow easy tracking of completed questions.
Keyboard Shortcuts	Users can select answers or move to the next question using keys (1–4, Enter).

Feature	Description
Results Screen	Final performance summary with score, percentage, and correct/incorrect count.
Reset & Replay	Option to restart the quiz from the beginning.
Enhanced UX	Includes smooth scrolling, animations, and responsive interactions.

Challenges Faced & Solutions

Challenge	Solution
Navigation felt abrupt	Implemented smooth scrolling with jQuery
Portfolio cluttered	Added filter buttons for categories
Contact form lacked validation	Added regex-based email validation and input checks
Navbar blending with background	Added dynamic background change on scroll
Static feel	Added animations (fade-in, modal, image load effects)

Outcome

A fully responsive and interactive **Quiz website** with enhanced UI/UX. The project demonstrates proficiency in **HTML, CSS, Bootstrap, and JavaScript**. The website is visually appealing, easy to navigate, and has great potential for future project integrations

Future Enhancements

- Backend integration for **real contact form submission**.
- Theme toggler (dark/light mode).
- SEO optimization.
- More animations (e.g., typed text, parallax).
- Integration with a CMS or headless backend for projects.

Sample Code

```html
1   <!DOCTYPE html>
2   <html lang="en">
3   <head>
4       <meta charset="UTF-8">
5       <meta name="viewport" content="width=device-width, initial-scale=1.0">
6       <title>Interactive Quiz Application</title>
7       <link rel="stylesheet" href="styles.css">
8       <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">
9       <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.0.0/css/all.min.css"
10  </head>
11  <body>
12      <div class="quiz-container">
13          <!-- Quiz Header -->
14          <div class="quiz-header card shadow-lg mb-4">
15              <div class="card-body">
16                  <div class="d-flex justify-content-between align-items-center mb-3">
17                      <h1 class="quiz-title mb-0">
18                          <i class="fas fa-brain me-2"></i>Interactive Quiz
19                      </h1>
20                      <div class="timer-display">
21                          <i class="fas fa-clock me-2"></i>
22                          <span id="timer">30</span>s
23                      </div>
24                  </div>

26                  <!-- Progress Bar -->
27                  <div class="progress mb-3" style="height: 8px;">
28                      <div class="progress-bar progress-bar-striped progress-bar-animated"
29                          id="progressBar" role="progressbar" style="width: 0%"></div>
30                  </div>
```

```html
            <div class="d-flex justify-content-between">
                <span class="text-muted">Question <span id="currentQ">1</span> of <span id="totalQ">8</
                <span class="text-muted">Score: <span id="currentScore">0</span>/<span id="totalScore">
            </div>
        </div>
    </div>

    <!-- Question Card -->
    <div class="question-card card shadow-lg mb-4" id="questionCard">
        <div class="card-body">
            <h2 class="question-text mb-4" id="questionText"></h2>

            <div class="options-container" id="optionsContainer">
                <!-- Options will be dynamically generated -->
            </div>

            <!-- Explanation -->
            <div class="explanation-box" id="explanationBox" style="display: none;">
                <div class="alert alert-info">
                    <i class="fas fa-lightbulb me-2"></i>
                    <strong>Explanation:</strong>
                    <p class="mb-0 mt-2" id="explanationText"></p>
                </div>
            </div>
```

```html
        </div>

            <!-- Progress Bar -->
            <div class="progress mb-3" style="height: 8px;">
                <div class="progress-bar progress-bar-striped progress-bar-animated"
                     id="progressBar" role="progressbar" style="width: 0%"></div>
            </div>

            <div class="d-flex justify-content-between">
                <span class="text-muted">Question <span id="currentQ">1</span> of <span id="totalQ">8</
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            </div>
        </div>
    </div>

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        <div class="card-body">
            <h2 class="question-text mb-4" id="questionText"></h2>

            <div class="options-container" id="optionsContainer">
                <!-- Options will be dynamically generated -->
            </div>

            <!-- Explanation -->
            <div class="explanation-box" id="explanationBox" style="display: none;">
```

```
87              <!-- Results Screen -->
88          <div class="results-screen" id="resultsScreen" style="display: none;">
89              <div class="card shadow-lg text-center">
90                  <div class="card-body">
91                      <div class="trophy-icon mb-4">
92                          <i class="fas fa-trophy"></i>
93                      </div>
94                      <h2 class="results-title mb-3">Quiz Completed!</h2>
95                      <p class="results-message mb-4" id="resultsMessage"></p>
96
97                      <div class="score-display mb-4">
98                          <div class="score-circle">
99                              <div class="score-number" id="finalScore">0/8</div>
00                              <div class="score-percentage" id="scorePercentage">0%</div>
01                          </div>
02                      </div>
03
04                      <div class="row mb-4">
05                          <div class="col-md-6">
06                              <div class="stat-card correct">
07                                  <i class="fas fa-check-circle"></i>
08                                  <div class="stat-number" id="correctAnswers">0</div>
09                                  <div class="stat-label">Correct</div>
10                              </div>
11                          </div>
12                          <div class="col-md-6">
13                              <div class="stat-card incorrect">
```
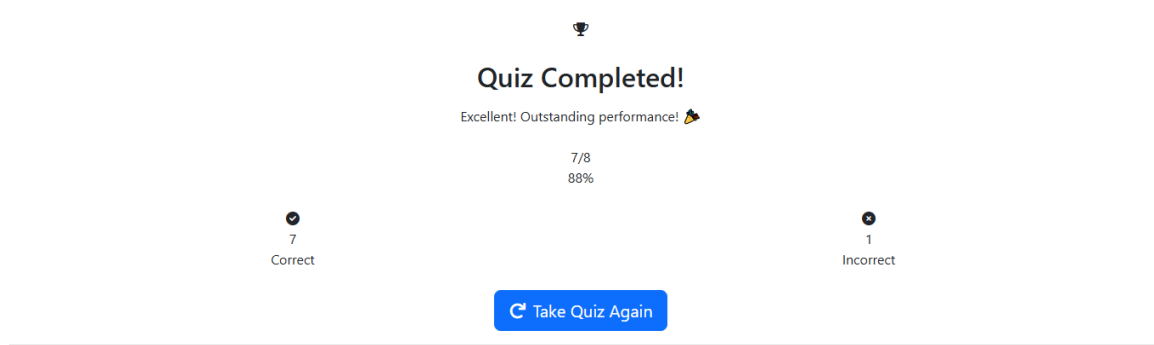
Screen shorts of final output

Interactive Quiz 🕐 6s

Question 1 of 8   Score: 0/8

What is the capital of France?

A London | B Berlin | C Paris | D Madrid

⏳ 6 seconds remaining   ✓ Submit Answer

📖 **Question Progress**

1
2
3
4
5
6
7
8

🏆

Quiz Completed!

Excellent! Outstanding performance! 🎉

7/8
88%

✓
7
Correct

✗
1
Incorrect

🔄 Take Quiz Again

Conclusion

The interactive quiz website effectively combines dynamic content rendering, real-time feedback, scoring, and user-friendly navigation to create an engaging learning experience. With features like a timer, explanations, and result analysis, it not only tests knowledge but also supports continuous improvement and makes online assessments more interactive and efficient.

References

L&T LMS: https://learn.Intedutech.com/Landing/MyCourse

- Bootstrap Documentation: https://getbootstrap.com
- jQuery Documentation: https://jquery.com
- Font Awesome: https://fontawesome.com
- L&T LMS (reference template)