JS-Saga: Requirements and Design Document

1. Project Overview

JS-Saga is an interactive web application designed to help users enhance their JavaScript coding skills through a **gamified and structured learning experience**. The platform provides:

A live coding environment where users can write and execute JavaScript code.
Multiple challenge levels that users can complete to improve their coding skills.
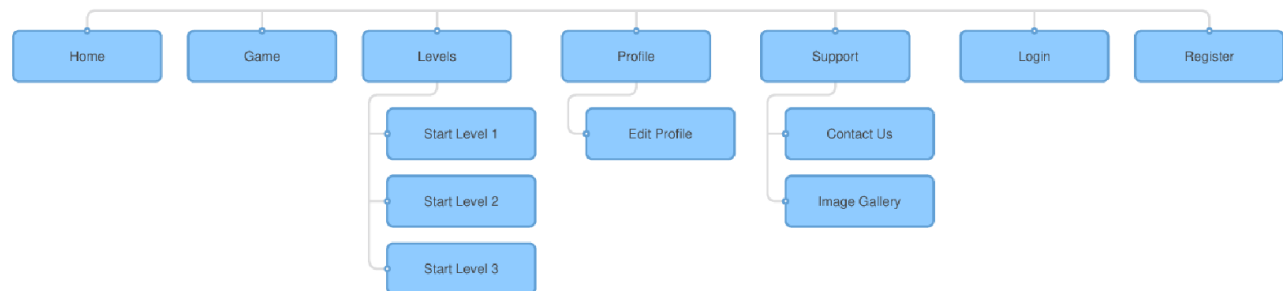**User progress tracking and a leaderboard system** to enhance engagement.
An interactive UI, including a **support page** with an image gallery and a contact form.
User authentication, allowing registered users to track achievements and customize their experience.

The target audience includes **beginner and intermediate programmers**, students, and self-learners who want a structured and interactive way to improve their JavaScript skills.

2. Site Map

The JS-Saga website includes the following key pages, all accessible via a **global navigation bar**:

- **Home Page (index.html)**
- **Game (game.html)** - Live coding environment with challenges.
- **Levels (level.html)** - Challenge selection based on difficulty.
    - Start Level 1 (Dynamic Section).
    - Start Level 2 (Dynamic Section).
    - Start Level 3 (Dynamic Section).
- **Profile (profile.html)** - Displays user achievements and progress.
    - Edit Profile - Allows users to update their information.
    - Leaderboard - Displays top-ranked players.
- **Support (support.html)** - Contains a **user contact form** and **interactive images**.
    - Contact Us (Section inside support.html).
    - Image Gallery (Section inside support.html).
- **Authentication System (login.html, register.html)** - Handles user login, registration, and session management.

Each page includes **a consistent navigation bar, a header and footer, and AJAX-based interactivity**.

3. Page Design Documentation

Each page has a **specific purpose and functionality**:

index.html (Home Page)

- **Purpose:** Introduces JS-Saga and serves as the main navigation hub.
- **Buttons & Actions:** "Start Game" button redirects users to game.html.

game.html (Coding Interface)

- **Purpose:** Provides a **live coding environment** where users write and execute JavaScript.
- **Buttons & Actions:** "Run Code" button submits the user's JavaScript to execute.php via **AJAX**.

level.html (Level Selection)

- **Purpose:** Allows users to select **difficulty levels** for JavaScript challenges.
- **Buttons & Actions:** Each level button directs users to game.html?level=x.

profile.html (User Profile)

- **Purpose:** Displays **user achievements, current progress, and rankings**.
- **Buttons & Actions:** "Edit Profile" button allows users to modify personal details.

support.html (Support & Gallery)

- **Purpose:** Provides a **contact form and interactive gallery** for user support.
- **Buttons & Actions:**
  - Contact form submits messages.
  - Gallery images open in a **modal window**.

login.html (Login Page)

- **Purpose:** Handles user authentication for login.
- **Data Fields:** Username, password.
- **Buttons & Actions:** Login button authenticates users; Register button redirects to sign-up.

register.html (Sign-Up Page)

- **Purpose:** Allows users to **create an account**.
- **Data Fields:** Username, email, password, confirm password.
- **Buttons & Actions:** Register button creates a new account.

4. Content Categories and Interactivity

Content Categories

Category	Description
Users	Players engaging in JavaScript coding challenges.
Events	JavaScript challenges, level progression, and leaderboard rankings.
Information	Guides, coding tips, and explanations on JavaScript concepts.
Gallery	A section in support.html displaying interactive images.

Interactivity & User Engagement

JS-Saga incorporates **various interactive features** to enhance the **learning experience and user engagement**:

AJAX Code Execution

- Users submit JavaScript code dynamically without needing to reload the page.
- Code is sent via **AJAX to execute.php**, which processes it and returns the result.

CodeMirror Integration

- A **live JavaScript coding interface** with syntax highlighting, error detection, and indentation.

Gamified Progression System

- Users unlock new levels and **progress through challenges** based on performance.

Leaderboard System

- Users are **ranked based on challenge completion and accuracy**.

Interactive Image Gallery

- Users can **view coding-related visuals** in a **dynamic gallery** on support.html.

Contact Form with Validation

- Users can **submit feedback, inquiries, or issue reports** through the contact form.

Inspiration from Existing Web Applications

JS-Saga's **interactive features and gamified learning experience** are inspired by:

- [JSFiddle](#) – Provides a **live JavaScript coding and execution environment**.
- [Khan Academy Programming](#) – Implements **interactive JavaScript tutorials and exercises**.
- [Codewars](#) – Uses a **challenge-based learning system** where users complete coding problems to level up.

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5. Dynamic Functionality

JS-Saga integrates **JavaScript, AJAX, and jQuery UI** to create an engaging, interactive coding experience.

- **AJAX-Based Code Execution** → Allows users to write JavaScript code, send it to execute.php, and receive real-time results.
- **Live Code Editor** → Powered by **CodeMirror**, providing syntax highlighting, auto-indentation, and error detection.
- **Gamification** → Users unlock levels, earn achievements, and track their progress.
- **Leaderboard System** → Users are ranked based on their JavaScript coding performance.
- **jQuery UI Enhancements** → Includes **modal pop-ups for the image gallery, interactive UI elements, and enhanced form validation**.
- **Dynamic Form Validation** → Ensures users enter valid data in forms (e.g., valid email format, required fields).