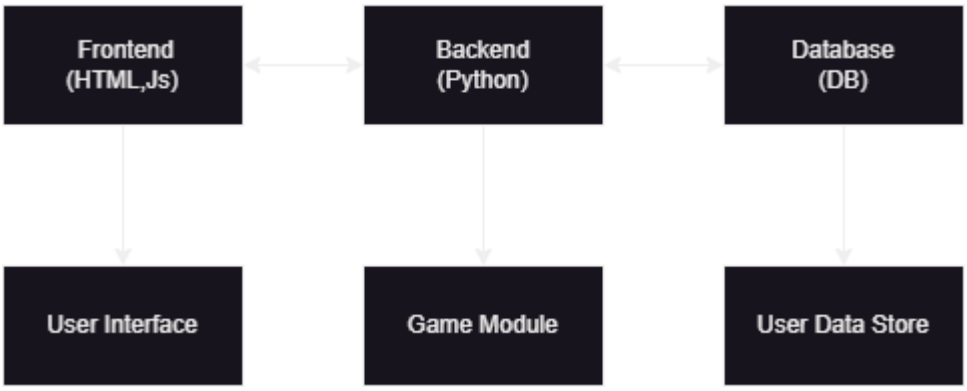
# Overview Design Document

## 1. System Architecture Design

### 1.1 System Overview

The system aims to combine traditional Chinese poetry with modern technology through the Fei Hua Ling game, providing an engaging and interactive learning platform. The system consists of three main components: the frontend, backend, and database. The frontend is responsible for the user interface and interaction, the backend handles game logic, data storage, and poetry generation, while the database stores user data, game history, and poetry content.

### 1.2 System Architecture Diagram




### 1.3 Key Module Description

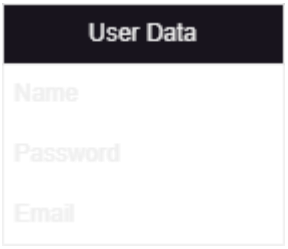
1. **Frontend Module**
    - Developed using Node.js, this module displays the user interface and provides an interactive game experience.
    - Users can input answers through the interface, receive feedback, and view poetry explanations.
2. **Backend Module**
    - Developed using Python, this module handles game logic, such as poetry generation, input validation, and user data storage.
    - It communicates with the frontend via API calls and interacts with the database for data retrieval and updates.
3. **Database Module**
    - Uses MySQL to store user information.
    - Regularly updates user data to ensure accuracy and smooth user experience.
4. **Poetry Generation Module**
    - Uses large language models (such as ChatGPT or Starfire model) to generate poetry lines that adhere to Fei Hua Ling rules.
    - The model needs to learn and follow basic poetry structures, such as tonal patterns and rhyme schemes.

5. **Recommendation System**
    - Recommends relevant poetry, questions, or URLs based on the user's game history, interests, and interaction behavior.
    - Provides personalized content recommendations to enhance the entertainment and educational value of the game.

# 2. Database Design

## 2.1 Database Schema

The database is used to store user-related information, facilitating subsequent operations like registration and login. Below is an example schema:




- **Users Table**: Stores basic user information, including username, password, and email.

# 3. Key Functional Module Design

## 3.1 Fei Hua Ling Game Module

- **Function Description**:
    - The player inputs a character or word, and the system generates a poetry line that adheres to Fei Hua Ling rules.
    - The system validates the player's input to ensure it meets game rules, including proper word pairing, rhyme, etc.
    - The game supports a competitive mode, where the player alternates with the system to generate poetry lines and check whether the answers are correct.
- **Module Flowchart**: (*This would be a placeholder for the flowchart showing the sequence of operations within the game module.*)
- **Detailed Design**:
    - The game module parses the player's input and checks if it adheres to poetry rules. If the input is valid, the system returns the corresponding poetry line and continues the game; if invalid, the system displays an error message.

## 3.2 Poetry Generation Module

- **Function Description**:
    - Integrates large language models (e.g., GPT, Starfire model) to generate poetry lines that follow Fei Hua Ling rules.
    - Supports extracting poetry lines from a poetry library that align with the game's rules, combining the player's input to generate the next line.
- **Model Design**:
    - The model uses a trained language model to parse the user's input and

generate a poetry line that follows traditional poetry formats.

- The model will match the input content with historical data and generate an appropriate response.