Minesweeper Pro System Report - First Iteration Achievements

This document presents what we achieved in the first iteration of our Minesweeper Pro application through screenshots taken during actual use.

How to Run the System

To run the Minesweeper Pro software, follow a few simple steps. The system is designed to run as a standard JAR file and requires a Java Runtime Environment (JRE) to be installed in order to operate.

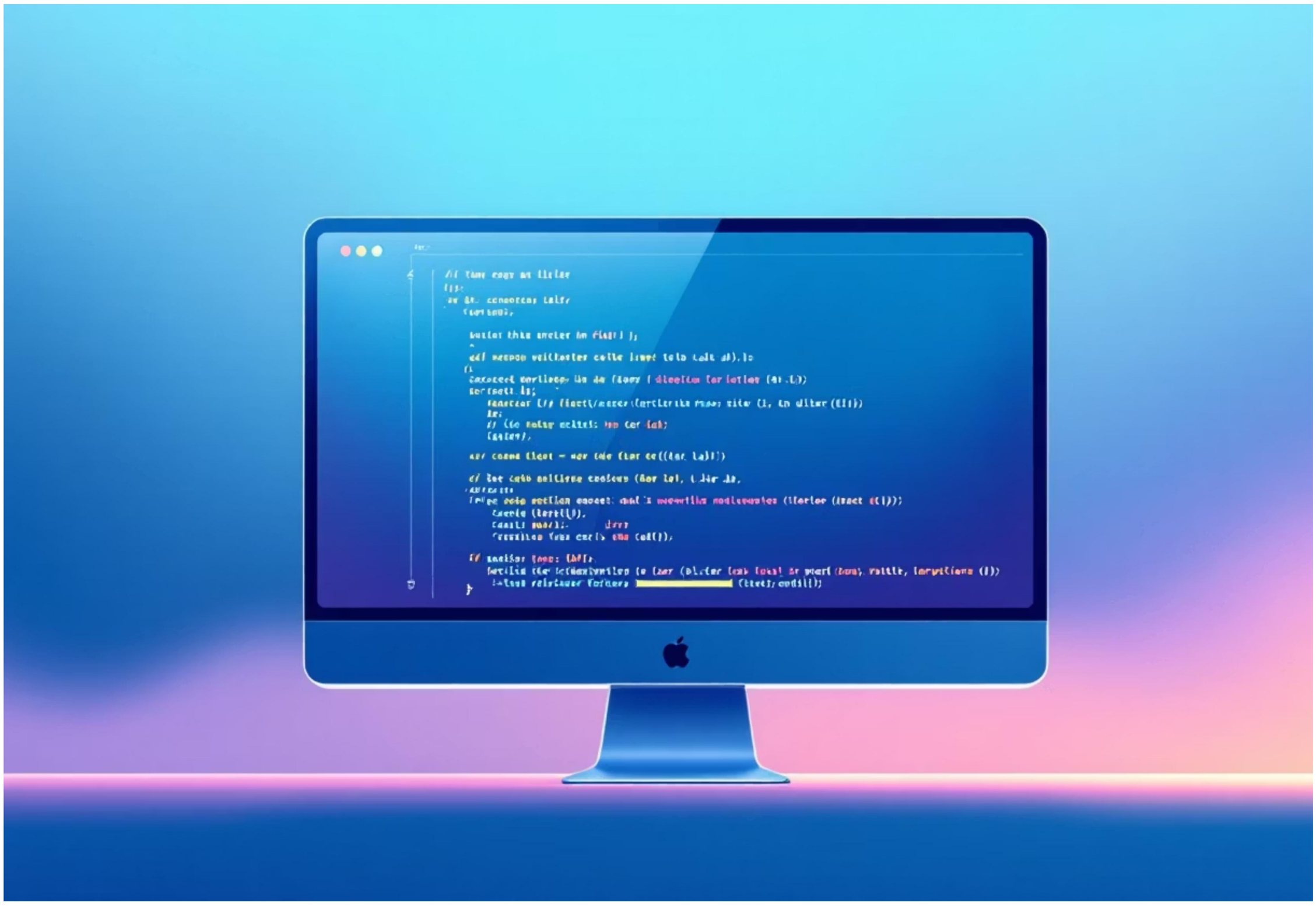
1. **Download the JAR file**
2. **Run using Java Runtime Environment**

System Requirements

Ensure that Java 19 or higher is installed on your computer. The latest JRE version can be downloaded from the Oracle website.

To run from the command line, navigate to the directory where the JAR file is saved and type the following command:

```
java -jar MinesweeperPro.jar
```



Expected Outcomes in Various Scenarios

Here is a breakdown of the expected outcomes for various scenarios when using the Minesweeper Pro game:

01

Entering Valid Data

When the user enters all required data correctly (e.g., username, difficulty level) and clicks the start button, the game will successfully begin, and the game board will be displayed.

02

Leaving Name Field Empty

If the user attempts to start a game without entering a username in the appropriate field, a clear error message will be displayed, instructing them to enter a name before proceeding.

03

Discovering a Mine

If the player clicks on a cell containing a mine, the game will end immediately, and a prominent "Game Over" message will be displayed, along with the option to start a new game or return to the main menu.

04

Discovering a Question or Surprise Cell

When the player discovers a special cell (e.g., a question cell that grants bonus points or a surprise cell with an unexpected event), a dedicated message will be displayed explaining the event and its effects on the game.

05

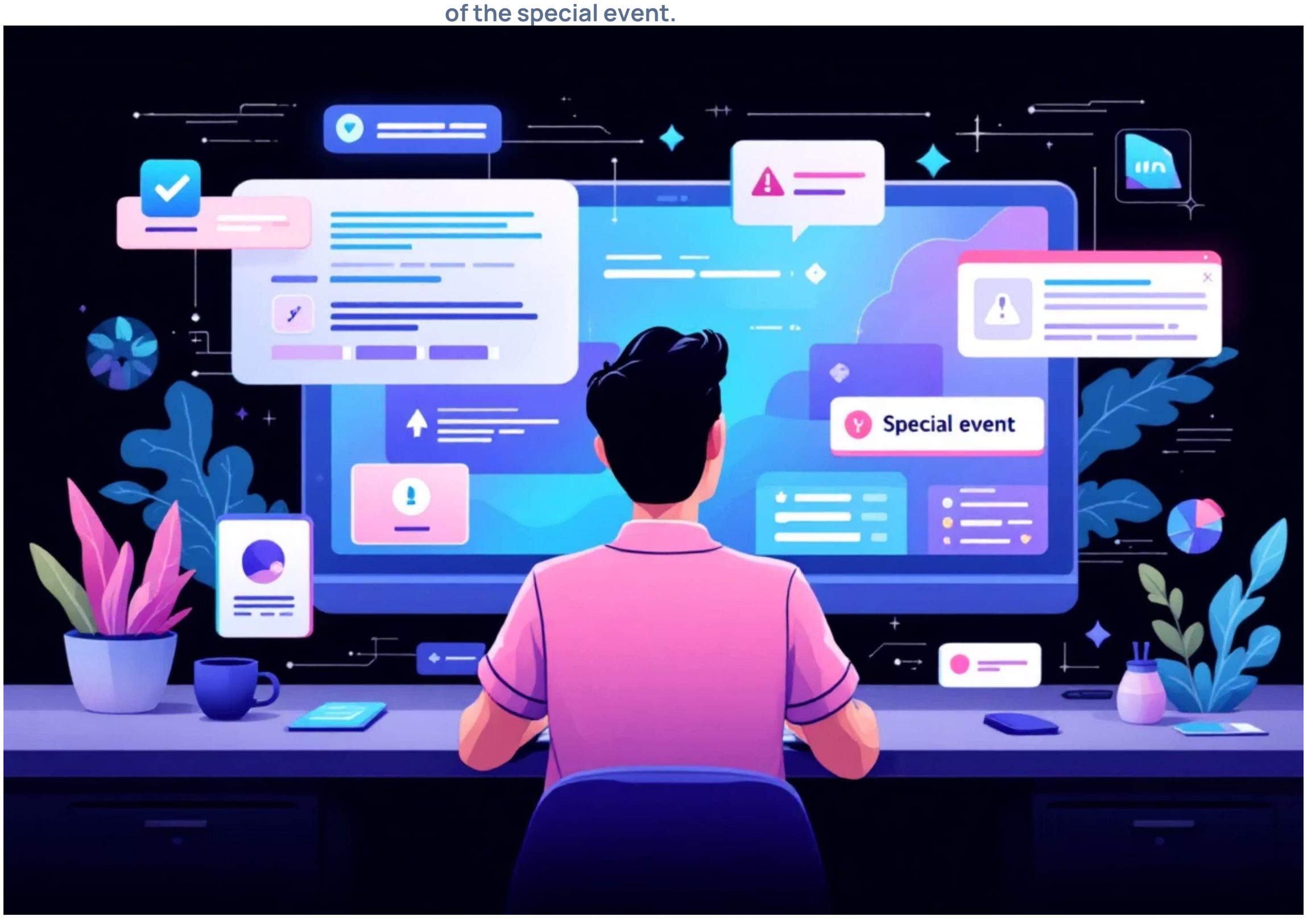
Opening Question or Surprise Cell

When a player clicks on a question or surprise cell, a special dialog appears on screen. Question cells present trivia or bonus opportunities, while surprise cells trigger unexpected events or rewards. The system provides clear visual feedback to inform the player of the special event.

06

Returning to Main Menu

The user can return to the main menu from any stage of the game (e.g., from game over or settings menu) using a dedicated button, which allows for smooth and intuitive navigation within the application.



Required User Inputs

The Minesweeper Pro game allows users to set various parameters before starting the game, some mandatory and some optional, to customize the gaming experience. Below are the main inputs:

Player Names

The user is required to enter names for the participating players. This field is mandatory to start the game.

Difficulty Level Selection

The user can choose the game's difficulty level from the options: Easy, Medium, Hard. This field is optional; if not selected, the difficulty will default to “Easy."

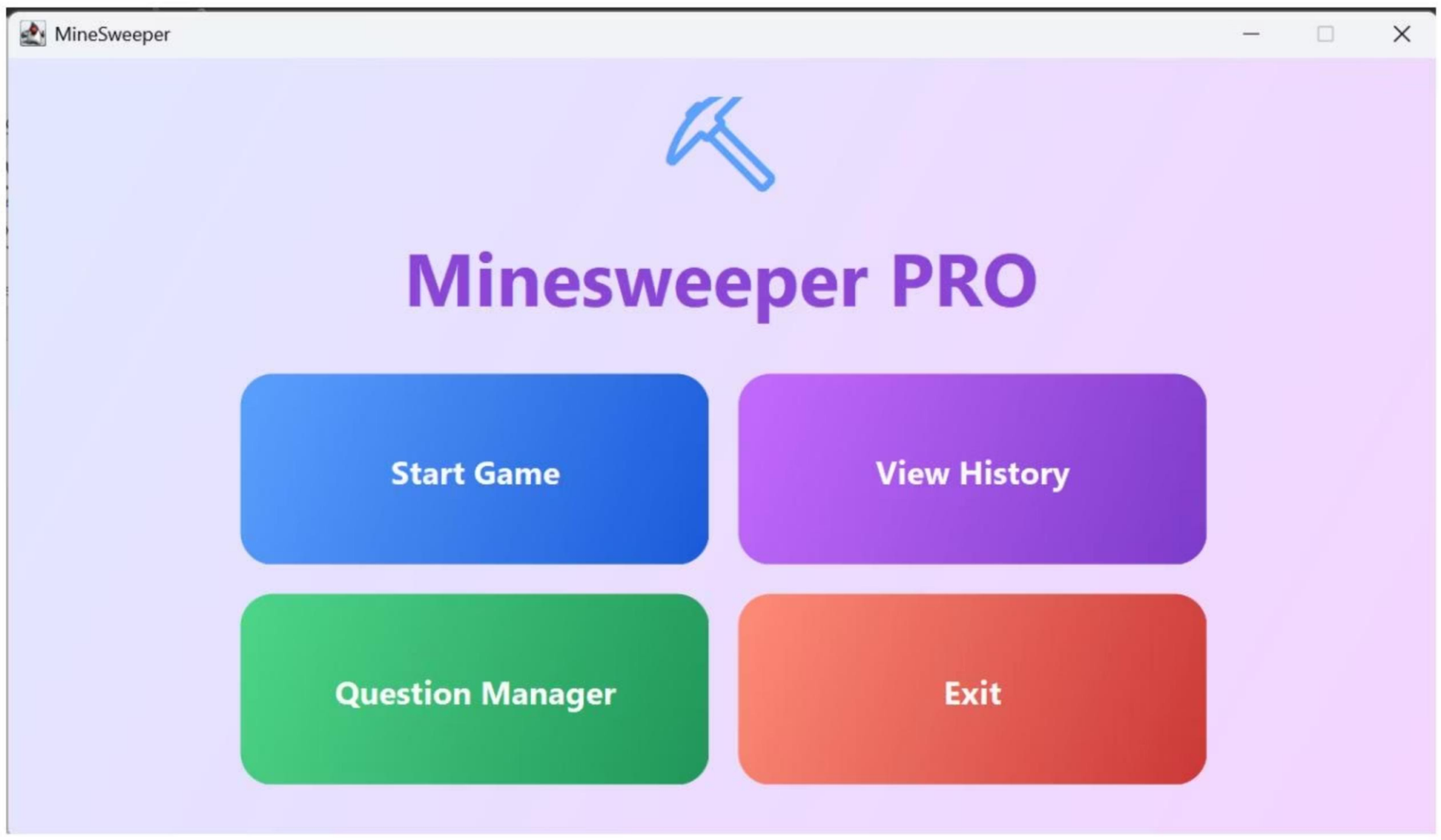
Player Names

Enter names for all players (mandatory)

Difficulty Level

Choose Easy, Medium, or Hard (optional)

Homepage Interface



This is the homepage of our Minesweeper Pro application. The homepage serves as the entry point for users, providing a clean and intuitive interface to begin their gaming experience.

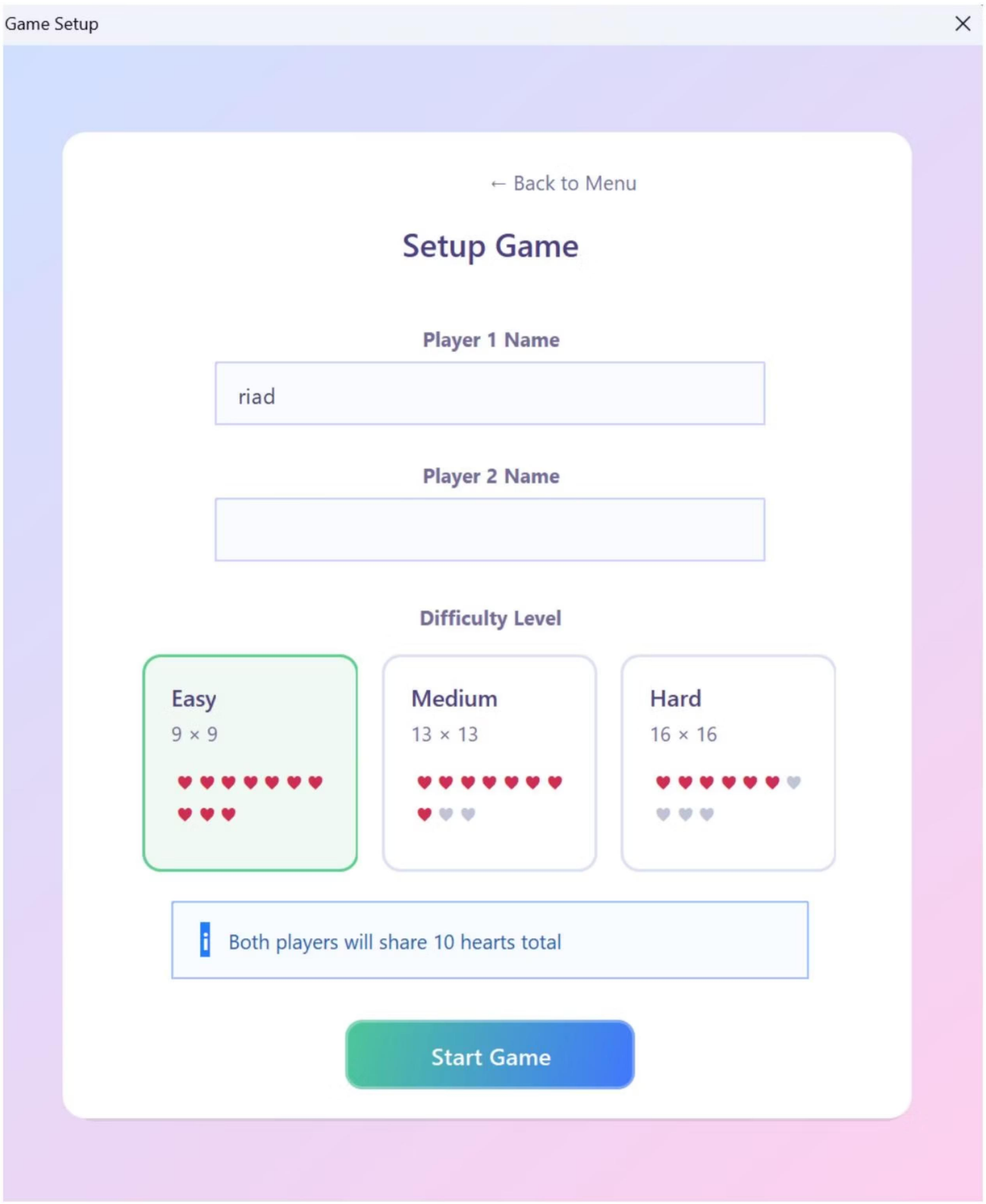
The design focuses on simplicity and accessibility, ensuring that players can quickly navigate to game settings and start playing without unnecessary complexity.

Game Settings Interface

This is the game settings user interface where players define their game preferences before starting. The settings interface allows users to customize their gaming experience according to their preferences.
Key features of the game setup include:

- Input fields for player name customization
- Difficulty level selection that includes Board size configuration options
- Clear visual layout for easy navigation

The interface was designed to be user-friendly and simple, guiding players through the necessary setup steps before starting the game.



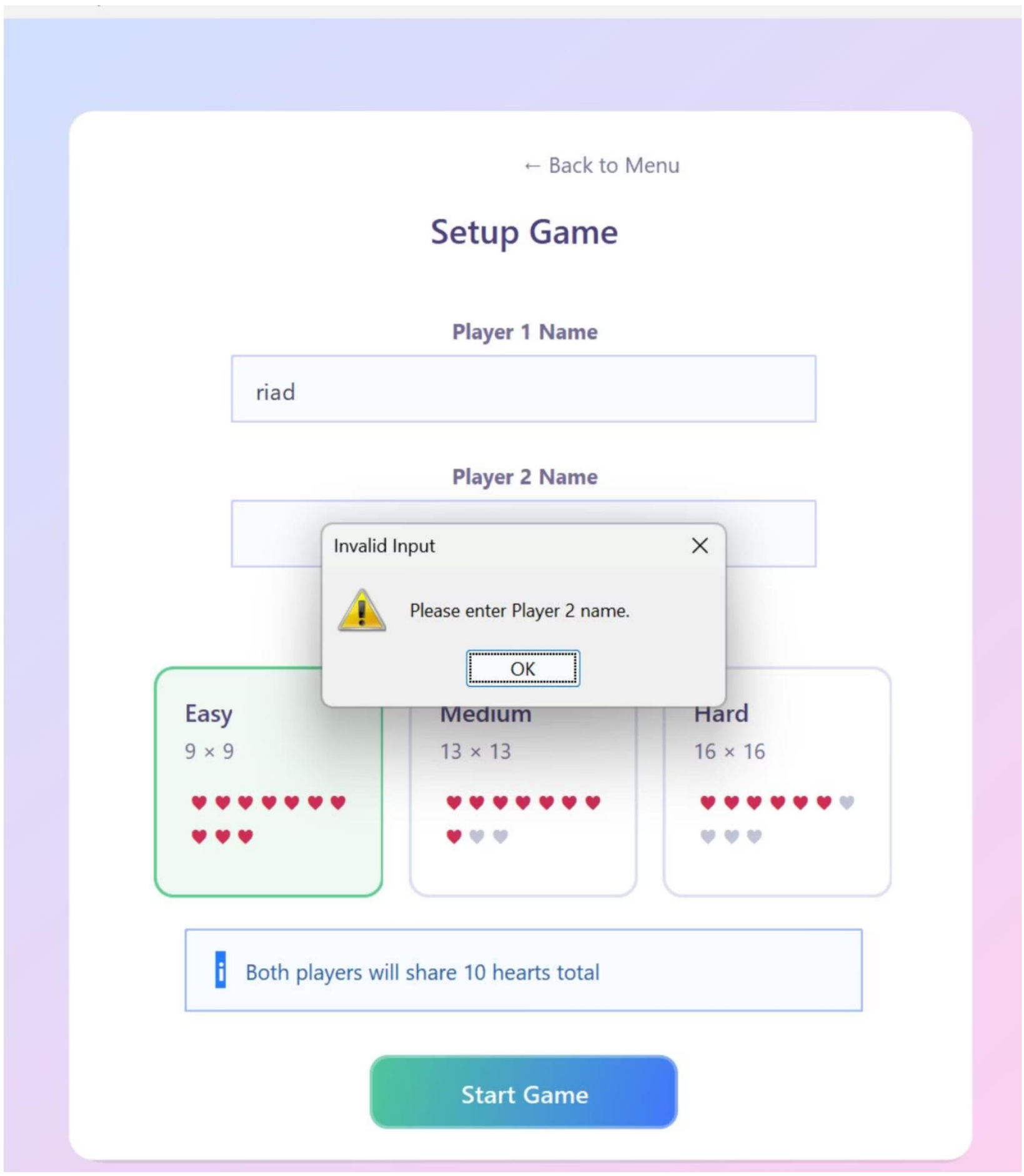
Input Validation and Error Handling

Still in game settings, but showing an exception if a name field is left blank. This demonstrates our application's robust input validation system.

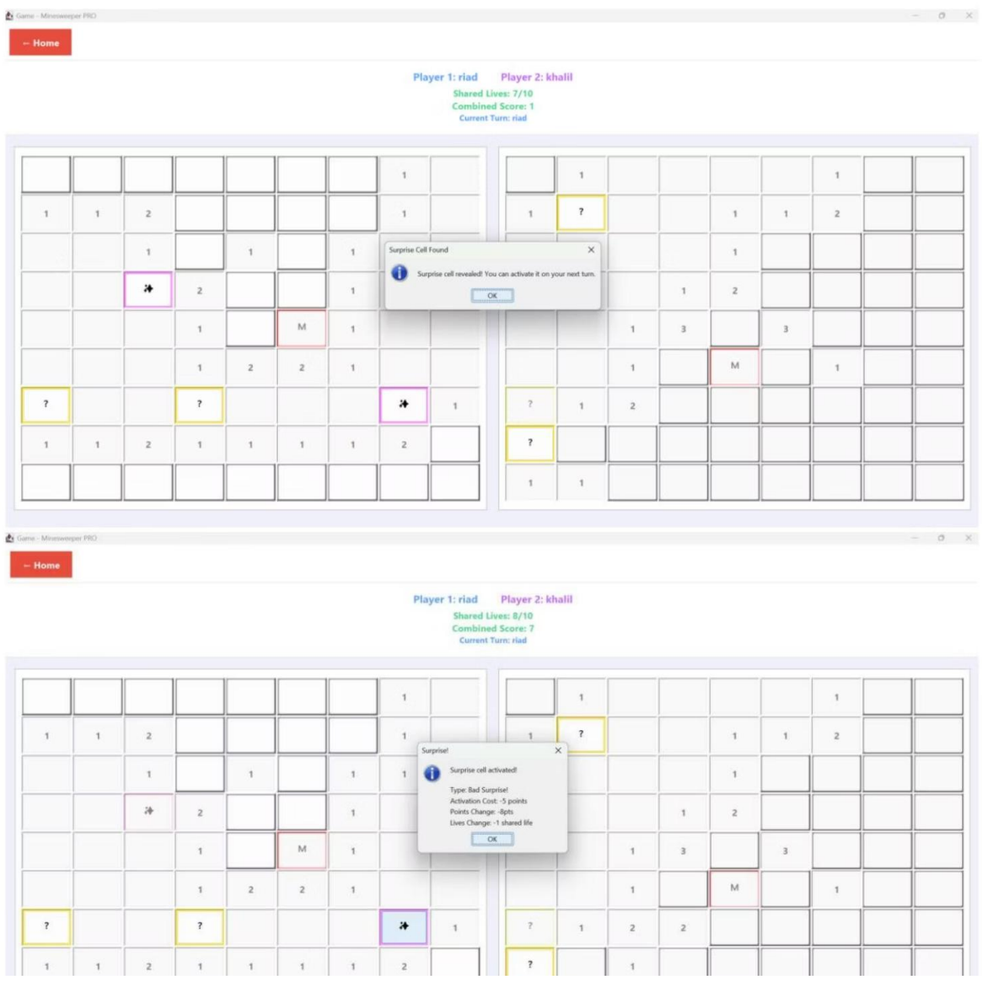
The error handling mechanism ensures that:

- **Users cannot proceed without entering required information**
- **Clear error messages guide users to correct their input**
- **The application maintains data integrity from the start**
- **User experience remains smooth with helpful feedback**

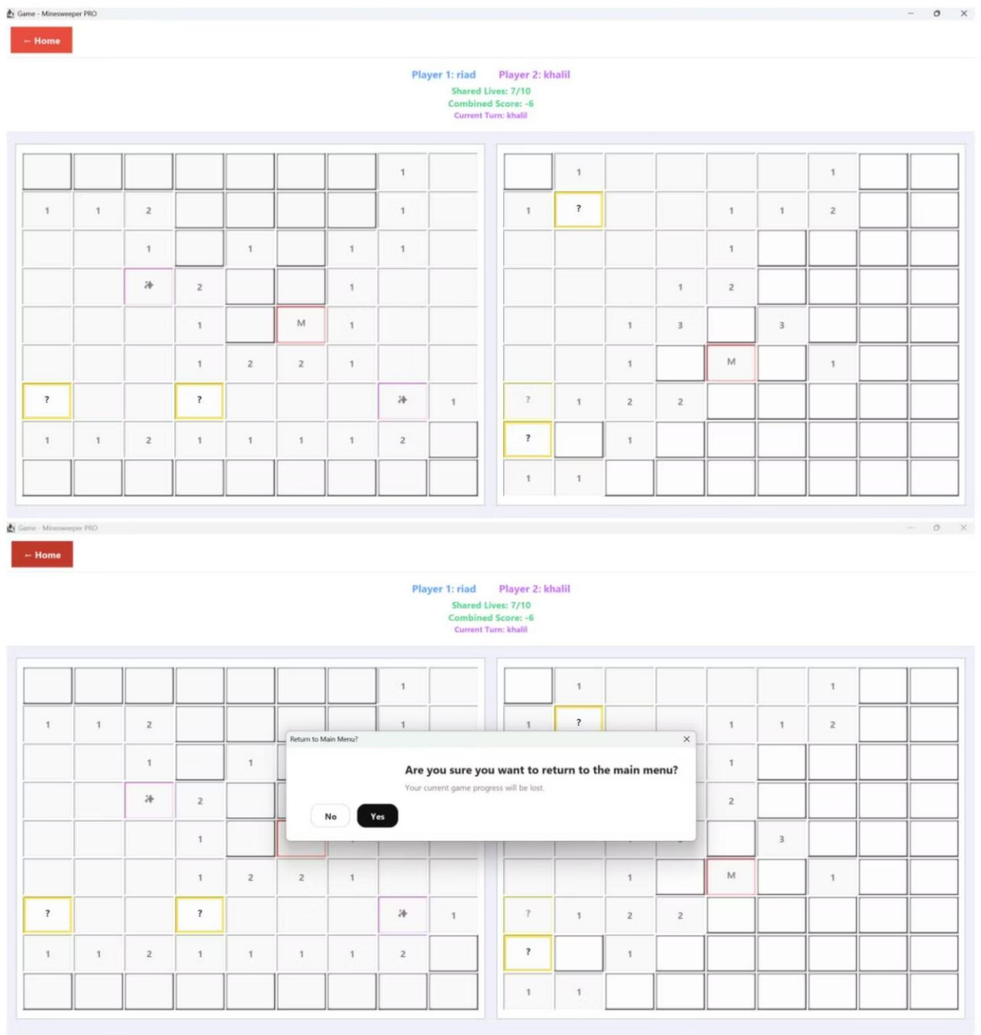
This validation feature prevents potential issues during gameplay and ensures all necessary player information is collected before the game begins.



Actual Gameplay Experience



Actual gameplay of game boards revealing question cell and surprise cell messages.



The game interface displays interactive cells that reveal various content types.

The game interface showcases the core mechanics of Minesweeper Pro, featuring game boards with various cell types, including question cells and surprise cells that enhance the traditional Minesweeper experience.

Interactive Cell Mechanics

The game demonstrates message unveiling for question cells and surprise cells, adding an engaging layer of interactivity to the classic Minesweeper formula.

Question Cells

Interactive cells that present challenges or questions to the player during the game.

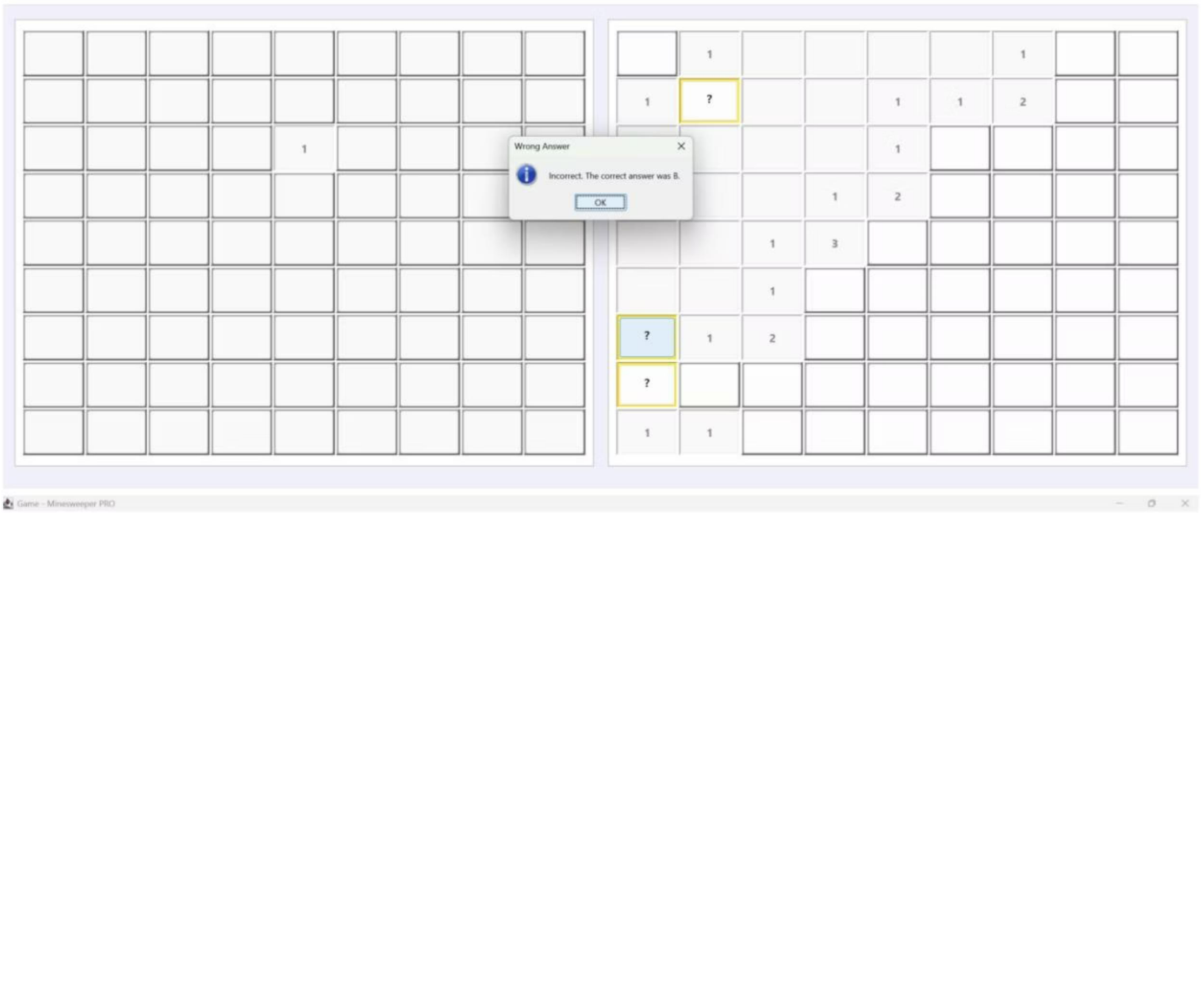
Surprise Cells

Special cells that reveal unexpected messages or bonuses when uncovered.

Messaging System

A clear visual feedback system that conveys cell content to players.

These features differentiate our Minesweeper Pro from traditional applications by adding variety and excitement to each game session.



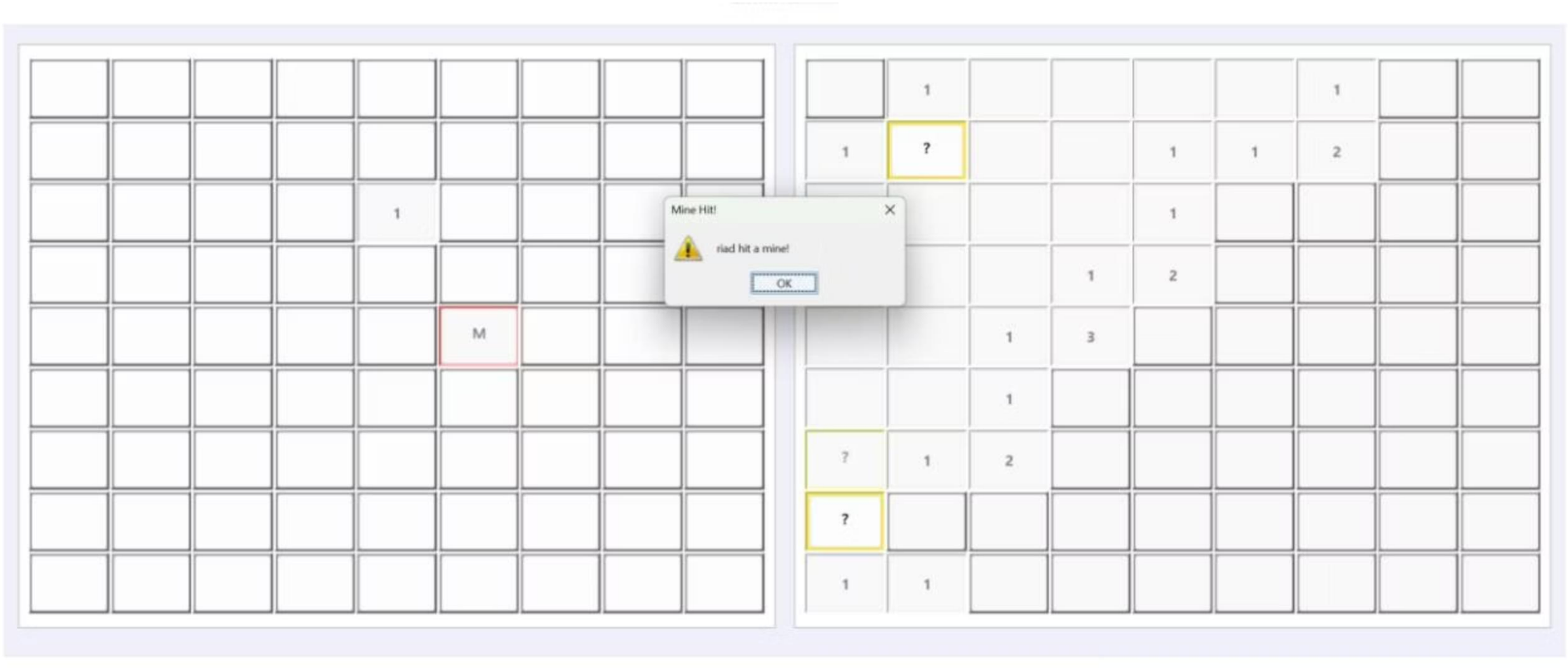
Mine Detection and Game Over State

A message after revealing a mine. This screenshot captures the critical moment when a player uncovers a mine, triggering the game-over sequence.

The mine detection system includes:

- **Immediate visual feedback upon mine exposure**
- **Clear notifications to inform the player of the game's outcome**
- **Proper game state management to handle termination conditions**

This functionality is crucial to the core Minesweeper experience, and our implementation ensures that the game-over state is handled smoothly, providing appropriate feedback to the player.



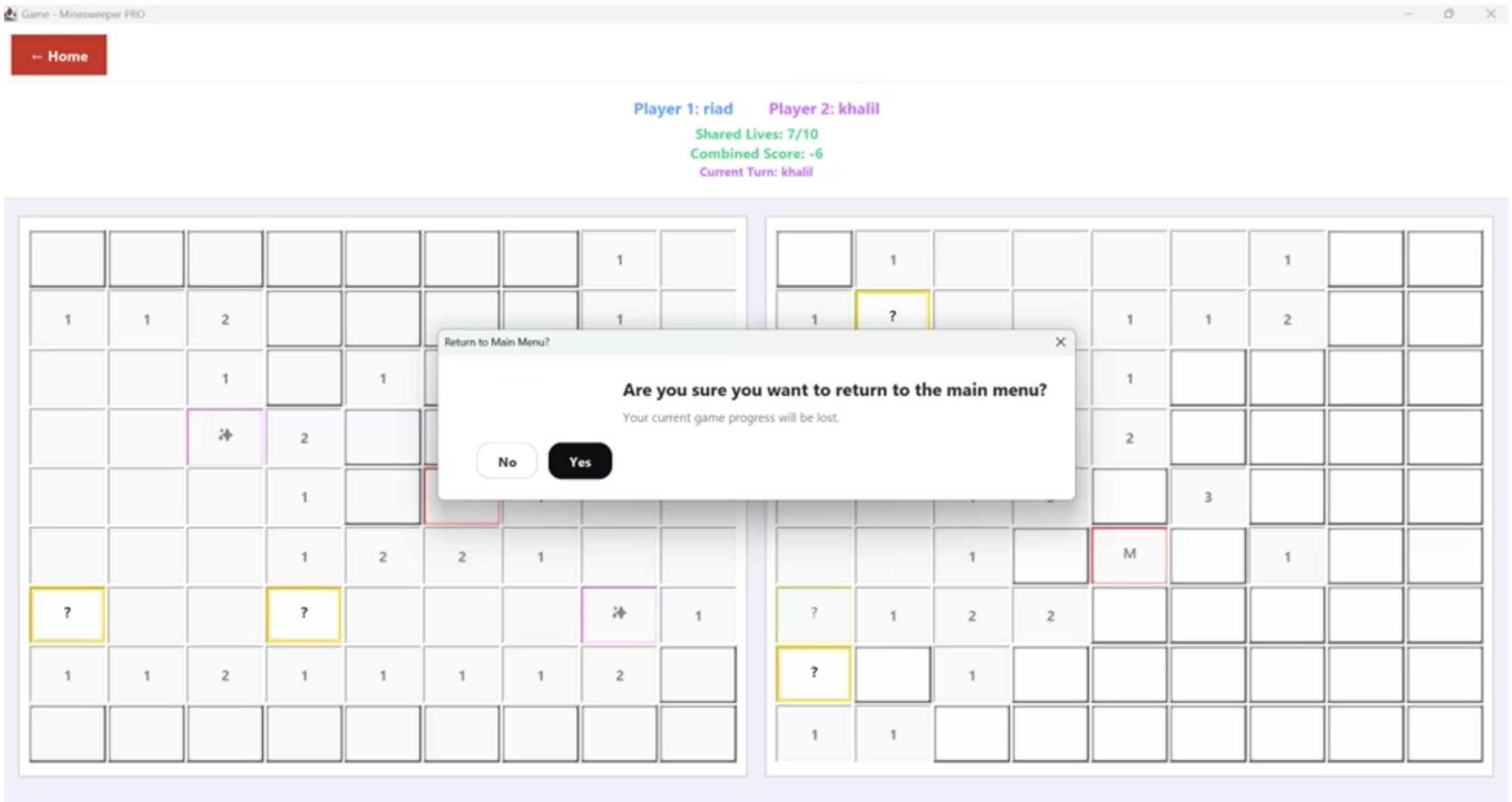
Navigation and Menu System

Return to the main menu. This feature demonstrates the seamless navigation system implemented in our application.

The menu navigation allows players to:

- **Return to the main menu at any point during the game**
- **Start a new game without restarting the application**
- **Access different game modes and settings**
- **Maintain a smooth user experience throughout the application**

This functionality is crucial for giving players control over their game session and ensuring they can easily navigate between different parts of the application.



What the Player Can Do in the System

The Minesweeper Pro application allows the user to perform a variety of actions to customize and play the game. Below is a detailed breakdown of the main capabilities available to the player:

→ Navigation Between Different Screens

The player can easily navigate between the home page, game settings screen, and other menus, allowing for a smooth and intuitive transition between different parts of the application.

→ Setting Up a New Game with Custom Parameters

The player can set up a new game by entering a username, choosing a difficulty level according to their preferences.

→ Gameplay - Revealing Cells and Flagging Mines

The player clicks on cells on the board to reveal them, and can simultaneously flag cells suspected of being mines. The goal is to reveal all safe cells and acquire highest score possible.

→ Viewing Special Messages from Question and Surprise Cells

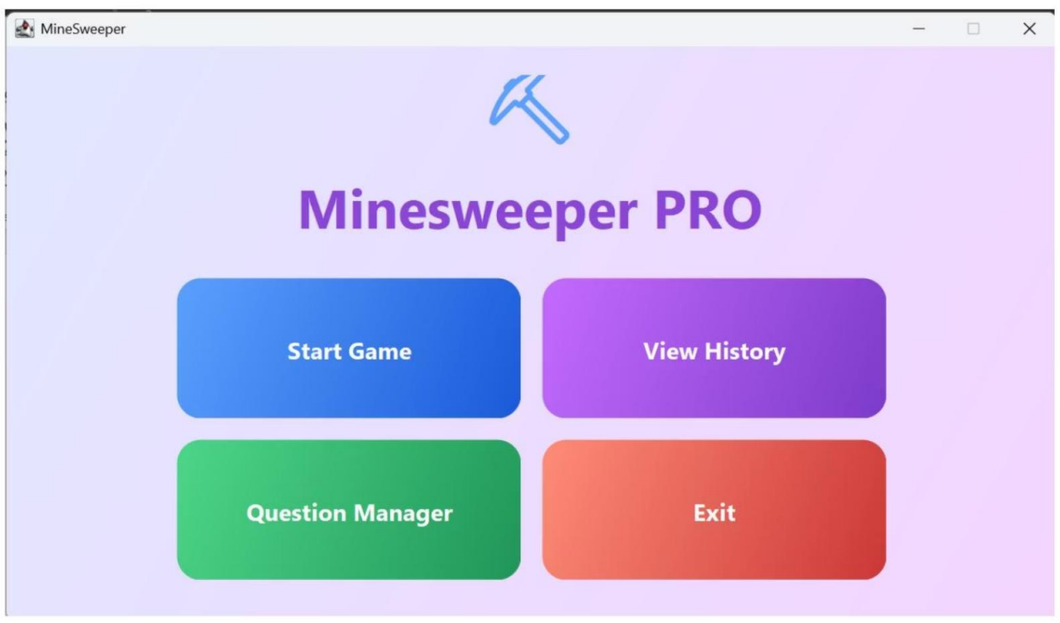
During the game, the player may discover question cells and surprise cells that display unique messages, challenges, or unexpected bonuses that enhance the gaming experience.

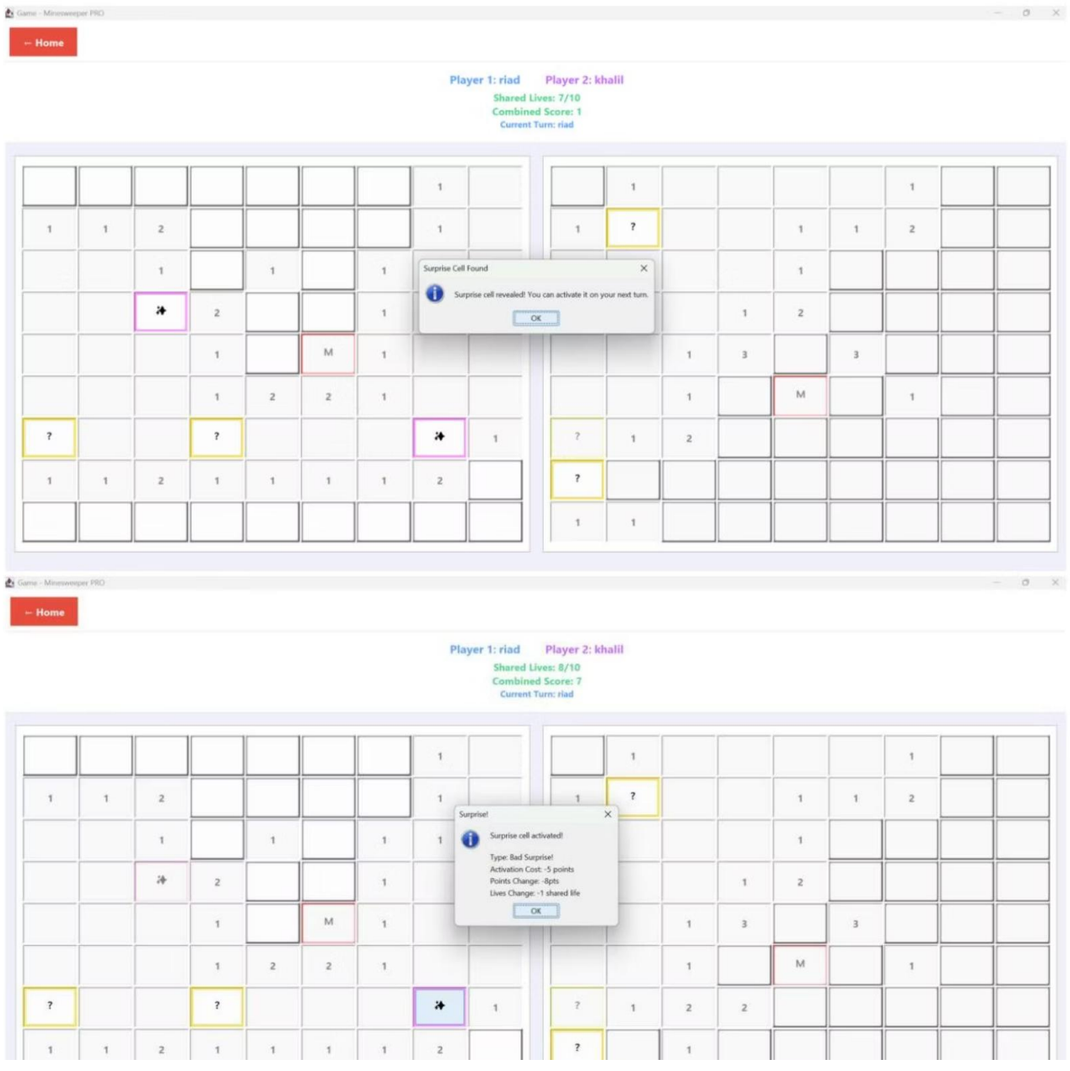
→ Return to the Main Menu at Any Time

The player can return to the main menu from any point in the game, whether from finishing a game or from within the settings screen, using a dedicated button.

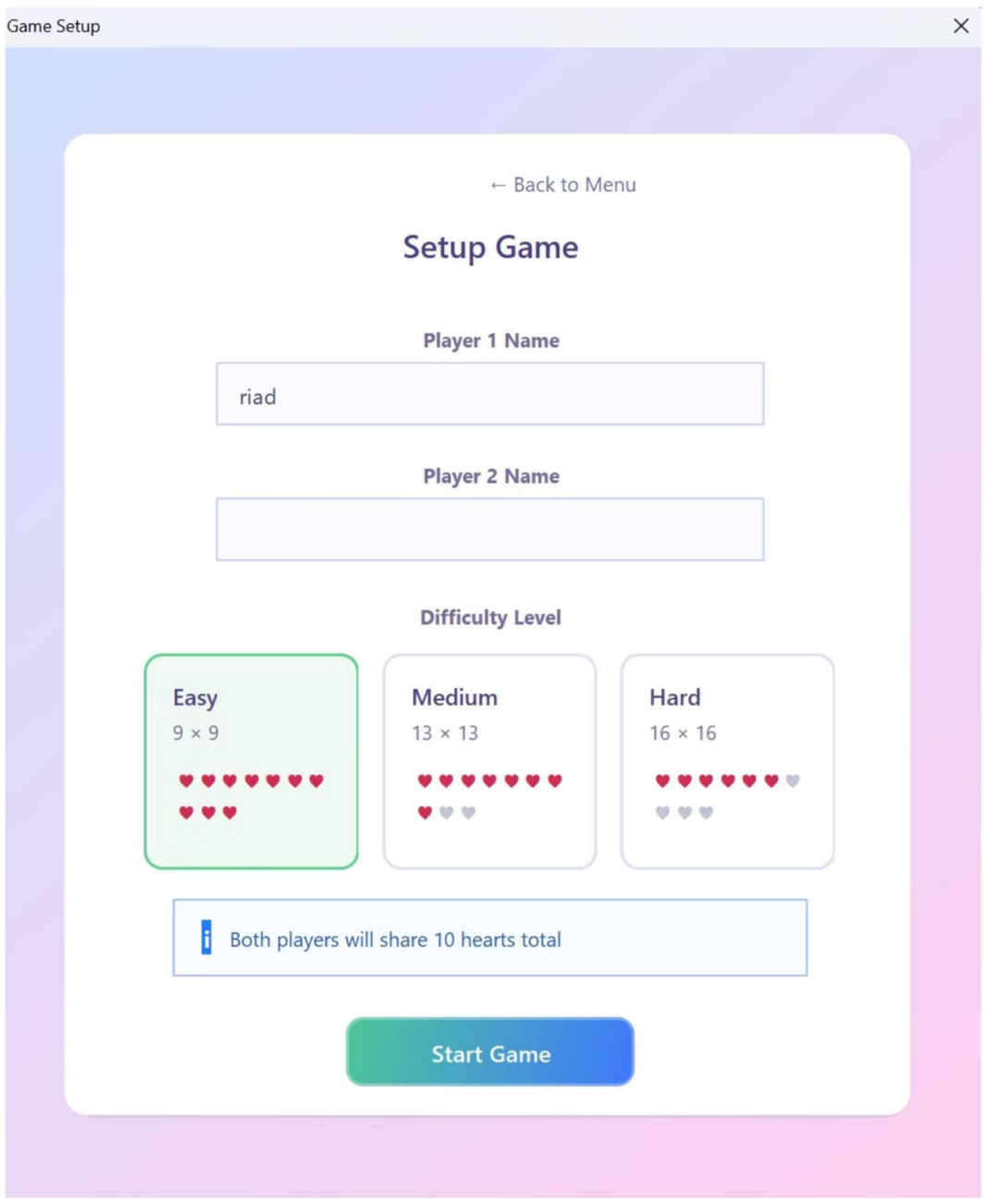
Below are some visual examples of actions the player can perform in the system:

Navigation and starting from the game's home page.

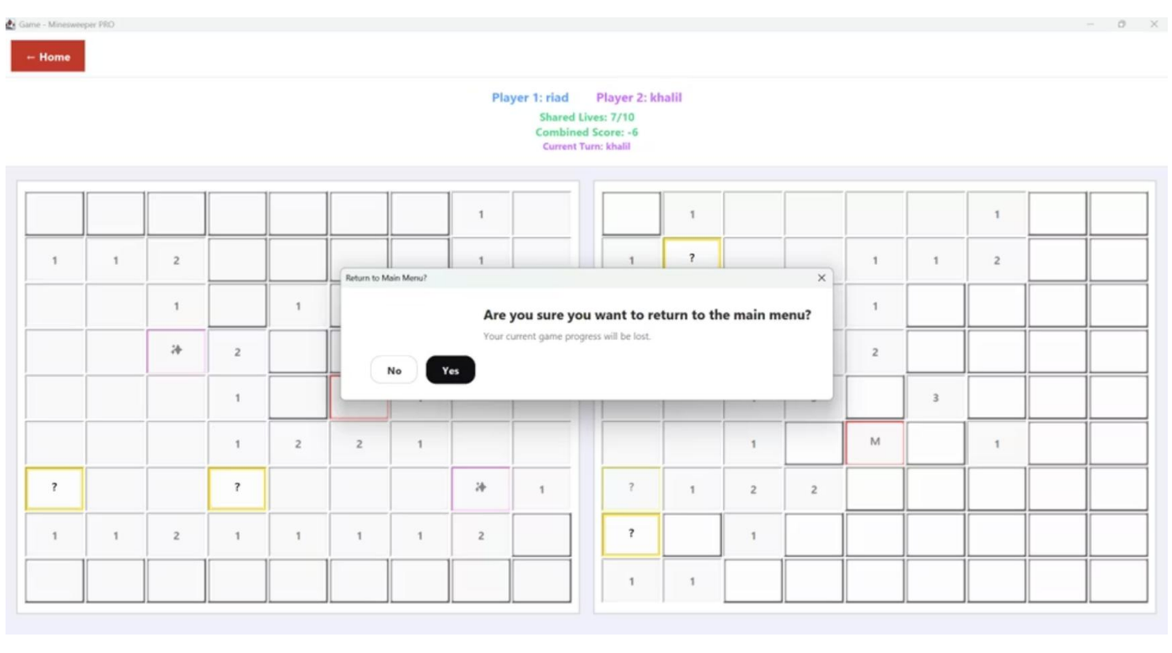




Setting up a new game with custom parameters on the settings screen.



Option to return to the main menu at any stage.



System Testing

The Minesweeper Pro application underwent a series of comprehensive tests to ensure its integrity, stability, and optimal user experience. Our testing methodology focused on several critical aspects of the system:

1 Functional Tests

Verifying that all features work correctly, including starting a game, revealing cells, flagging mines, and ending a game.

2 Input Tests

Checking the validity of user input, such as player names and game settings, and error validation to prevent failures.

3 Game Scenarios Tests

Testing various game scenarios, including winning, losing, revealing special cells (questions and surprises), and the system's behavior in these situations.

4 Navigation Tests

Ensuring smooth and intuitive transitions between different screens in the application, such as the home page, game settings screen, and end menu.

5 Screenshots as Proof of Functionality

Visual documentation of the system's behavior in various situations, serving as proof of functionality and error handling.

This approach allowed us to identify and fix potential issues in the early stages, ensuring a high-quality and reliable product.

Key Features Implemented

1

Homepage Interface

A clean and intuitive entry point for users to begin their gaming experience

2

Game Setup System

Comprehensive configuration interface with input validation and error handling

3

Interactive Gameplay

Game boards with question cells, surprise cells, and message revelation mechanisms

4

Navigation System

Smooth menu navigation allowing players to return to the main menu at any time

These features represent the key achievements of our first iteration, establishing a solid foundation for future enhancements.

First Iteration Summary

Our Minesweeper Pro implementation successfully achieved significant milestones in its first iteration. Through screenshots taken during actual use, we demonstrated:

User Interface

- **Sleek homepage design**
- **Intuitive game setup interface**
- **Clear visual feedback systems**
- **Responsive navigation menus**

Core Functionality

- **Robust input validation**
- **Interactive gameplay mechanics**
- **Proper game state management**
- **Enhanced Minesweeper features**

The implementation successfully combines traditional Minesweeper gameplay with innovative features like question cells and surprise cells, while maintaining a user-friendly interface throughout the experience.

This first iteration establishes a strong foundation for future development, with all core systems functioning as planned and delivering an engaging user experience from start to finish.