Sprint 1 – Creating User Stories



Jeffery Kimbrow

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# Purpose

The following user stories define the core functional and non-functional requirements for the SOS Game, ensuring a structured, strategic, and user centric approach to development. These user stories clearly provide the goals and expected behaviors for different user roles which will guide the implementation during of the key features during Sprint 2. The acceptance criteria will establish measurable conditions for each features successful implementation to ensure that the game meets usability, functionality, and security standards.

# User Story Table

**User Stories Table**

| **ID** | **User Story Name** | **User Story Description** |  | **Priority** | **Estimated Effort (hours)** |
| --- | --- | --- | --- | --- | --- |
| 1 | Choose a board size | As a player, I want to choose the board size before starting the game so that I can customize my gameplay experience. |  | High | 2 |
| 2 | Choose the game mode | As a player, I want to choose between a simple and general game mode so that I can play the preferred version of the game. |  | High | 3 |
| 3 | Start a new game | As a player, I want to start a new game with the selected board size and game mode so that I can begin playing. |  | High | 2 |
| 4 | Make a move in a simple game | As a player, I want to select a cell and place an "S" or "O" so that I can progress in the game. |  | High | 4 |
| 5 | Detect end of a simple game | As a player, I want the game to detect when a simple game is over so that I know when the game has ended. |  | High | 4 |
| 6 | Make a move in a general game | As a player, I want to select a cell and place an "S" or "O" in the general game mode so that I can progress in the game. |  | High | 2 |
| 7 | Detect end of a general game | As a player, I want the game to detect when a general game is over so that I know when the game has ended. |  | High | 3 |
| 8 | Display a scoreboard | As a player, I want to see a scoreboard that updates automatically so that I can track scores during the game. |  | Medium | 3 |
| 9 | Save game progress | As a player, I want to save my game progress as a CSV file so that I can review my game later. |  | High | 4 |
| 10 | Validate moves | As a player, I want invalid moves to be blocked so that I can only place valid "S" or "O" characters. |  | High | 3 |
| 11 | Highlight winning lines | As a player, I want to see winning SOS sequences highlighted so that I can easily identify completed patterns. |  | High | 3 |
| 12 | Handle invalid game states | As a player, I want the game to prevent actions that lead to an invalid state so that the game remains functional. |  | High | 4 |
| 13 | Handle vulnerable game state | As a hacker, I want to exploit memory safety vulnerabilities so that I can demonstrate security flaws. |  | Low (BAD) | 6 |
| 14 | Mitigate memory safety issues | As a security researcher, I want to ensure secure memory handling in AppSec so that the game cannot be exploited. |  | High | 6 |

**Acceptance Criteria Table**

| **User Story ID and Name** | **AC ID** | **Description of Acceptance Criterion** | **Status** |
| --- | --- | --- | --- |
| 1. Choose a board size | 1.1 | **Given** the player is on the game setup screen **When** they input a board size greater than 3 **Then** the board updates accordingly. | Completed |
|  | 1.2 | **Given** the player inputs a board size less than 4 **When** they attempt to confirm **Then** an error message is displayed preventing them from continuing. | Completed |
| 2. Choose the game mode | 2.1 | **Given** the player is on the game setup screen **When** they select either "Simple" or "General" mode **Then** the game stores and applies the chosen mode. | In Progress |
|  | 2.2 | **Given** the game mode has been selected **When** the game starts **Then** the rules and scoring follow the selected mode. | To Do |
| 3. Start a new game | 3.1 | **Given** the player is on the main menu **When** they press "New Game" **Then** a new game starts with the selected settings. | To Do |
| 4. Make a move in a simple game | 4.1 | **Given** it is the player's turn **When** they click on an empty cell **Then** they are prompted to place an "S" or "O". | Completed |
| 5. Detect end of a simple game | 5.1 | **Given** the game is ongoing **When** the board is full **Then** the game checks for an SOS connection and determines the winner. | In Progress |
| 6. Make a move in a general game | 6.1 | **Given** it is the player's turn in general mode **When** they click an empty cell **Then** they can place an "S" or "O" following the general game rules. | Completed |
| 7. Detect end of a general game | 7.1 | **Given** the board is full in general mode **When** no more moves are possible **Then** the game determines the final score. | To Do |
| 8. Display a scoreboard | 8.1 | **Given** a game is in progress **When** a move is made **Then** the scoreboard updates automatically. | To Do |
| 9. Save game progress | 9.1 | **Given** the player wants to save the game **When** they click the "Save Game" button **Then** they are prompted to select a file location. | Completed |
|  | 9.2 | **Given** the player saves the game **When** the file is written **Then** the recorded moves and scores are stored in CSV format. | In Progress |
| 10. Validate moves | 10.1 | **Given** a cell is already occupied **When** a player attempts to select it **Then** the move is blocked. | Completed |
|  | 10.2 | **Given** the player attempts to enter a character that isn't "S" or "O" **When** they try to place it **Then** the move is blocked. | Completed |
| 11. Highlight winning lines | 11.1 | **Given** an SOS connection is formed **When** the move completes the sequence **Then** the connected letters are highlighted. | To Do |
| 12. Handle invalid game states | 12.1 | **Given** an invalid action occurs **When** the player attempts an action that crashes the game **Then** an error message is displayed. | Completed |
| 13. Handle vulnerable game state | 13.1 | **Given** an exploit is attempted **When** a use-after-free condition is triggered **Then** the game crashes. | To Do (BAD) |
| 14. Mitigate memory safety issues | 14.1 | **Given** the game handles memory securely **When** potential vulnerabilities are tested **Then** no crashes or exploits occur. | In Progress |