

## Project Sprint #1

The SOS game is described in CS449HomeworkOverview.docx. You should read the description very carefully.

Your submission must include the GitHub link to your project and you must ensure that the instructor has the proper access to your project. You will receive no points otherwise.

GitHub link: <https://github.com/JUSH334/Project-Sprint-1.git>

In this assignment, you aim to specify the requirements (i.e., user stories and acceptance criteria) of the target software that allows a human player to play a simple or general SOS game against a human opponent. These requirements will be fully implemented by the end of sprint 3. The minimum features include **choosing the board size, choosing the game mode (simple or general), starting a new game, making a move (in a simple or general game), determining if a simple or general game is over**. The following is a sample GUI layout.

The GUI layout includes the following elements:

- Game Mode Selection: **SOS** with radio buttons for ☒ Simple game and ☐ General game.
- Board Size: A text input field containing the number **8**.
- Blue player controls: A label **Blue player** and radio buttons for ☒ S and ☐ O.
- Red player controls: A label **Red player** and radio buttons for ☐ S and ☒ O.
- Game Board: An 8x8 grid. The top row contains 'S' at column 2. The second row contains 'O' at column 6. The third row contains 'S' at column 4. The fourth row contains 'O' at column 3 and 'S' at column 5. The fifth row contains 'S' at column 2 and 'O' at column 3. The sixth row contains 'S' at column 2 and 'O' at column 3. The seventh row contains 'S' at column 2 and 'O' at column 3. The eighth row contains 'S' at column 2 and 'O' at column 3. A red diagonal line is drawn from the top-left to the bottom-right. A blue horizontal line is drawn across the bottom row.
- Current turn: A label **Current turn: blue (or red)**.
- New Game: A button labeled **New Game**.

Figure 1. Sample GUI layout of the first working program by the end of Sprint 3

Use the following tables to document your user stories and acceptance criteria.

You are required to use the free ChatGPT version to complete 2 user stories and their respective acceptance criteria. You also need to ensure that the generated user stories are correct and refine them if not. At the end of the submission,

provide screenshots of your ChatGPT prompts and answers, along with errors the ChatGPT made and that you had to correct. You may also use LLMs hosted locally. Points will be deducted if no screenshots are provided.

### I. User Stories (3 points)

- **User Story Template:** As a <role>, I want <goal> [so that <benefit>]

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 control the duration of the game.	Low	2
2	Choose the game mode of a chosen board	As a player, I want to choose between the Simple or General game mode so that I can play with my preferred set of rules.	Low	2

3	Start a new game of the chosen board size and game mode	As a player, I want to start a new game with my selected board size and game mode (Simple game or General game), So that I can play an SOS game according to my preferences.	Moderate	2
4	Make a move in a simple game	As a player, I want to make a move in a Simple game by placing an "S" or "O" on the board, So that I can try to form an SOS sequence and win.	High	3
5	A simple game is over	As a player, I want to know when the Simple game is over, So that I can see if I won, lost, or if the game ended in a draw.	High	4
6	Make a move in a general game	As a player, I want to place an "S" or "O" on the board during my turn, So that I can attempt to create as many SOS sequences as possible.	High	5
7	A general game is over	As a player, I want to know when the General game is over, So that I can see if I won, lost, or if the game ended in a draw based on the number of SOS sequences made.	High	5

## II. Acceptance Criteria (AC) (8 points): Add/delete rows as needed.

User Story ID and Name	AC ID	Description of Acceptance Criterion	Status (completed, toDo, inProgress)
1. Choose a board size	1.1	AC 1.1: Player selects a custom board size  Given the player is starting a new game, When they are prompted to choose a board size, Then the player can input any custom board size within the valid range of 3x3 to 20x20, And the selected board size is applied to the game.	inProgress
	1.2	AC 1.2: Invalid board size selection  Given the player is starting a new game, When they input an invalid or out-of-range board size (e.g., less than 3x3 or greater than 20x20), Then an error message is displayed, And the player is prompted to input a valid board size.	inProgress
2. Choose the game mode of a chosen board	2.1	AC 2.1: Player selects the game mode  Given the player has chosen a valid board size, When they are prompted to choose the game mode, Then the player can select between the "Simple game" and "General game" modes, And the selected game mode is applied to the game.	inProgress

3. Start a new game of the chosen board size and game mode	3.1	<p>AC 3.1: Starting a new game with selected board size and game mode</p> <p>Given the player has chosen a valid board size and selected a game mode, When they click the "Start Game" button, Then a new SOS game should be initiated with the selected board size and game mode.</p>	toDo
	3.2	<p>AC 3.2: Invalid game start attempt</p> <p>Given the player has not selected both a board size and a game mode, When they attempt to start the game, Then an error message should be displayed asking the player to select both a board size and a game mode.</p>	toDo
	3.3	<p>AC 3.3: Displaying the chosen settings</p> <p>Given the player has selected a board size and game mode, When the game starts, Then the board size and game mode should be displayed on the game screen to confirm the player's selections.</p>	toDo
4. Make a move in a simple game	4.1.1	<p>AC 4.1.1: Placing a valid move</p> <p>Given the player is playing a Simple game, When they select an empty cell on the board and place either an "S" or an "O", Then the chosen letter appears in the selected cell, And the turn alternates to the other player.</p>	toDo
	4.2.1	<p>AC 4.2.1: Invalid move</p> <p>Given the player is playing a Simple game, When they attempt to place an "S" or "O" in a cell that is already occupied, Then an error message is displayed, And the player is prompted to select a different cell and turn is not alternated..</p>	toDo
	4.3.1	<p>AC 4.3.1: Creating an SOS sequence</p> <p>Given the player has placed an "S" or "O" on the board, When the move results in a vertical, horizontal, or diagonal sequence of "S-O-S", Then the player wins the game.</p>	toDo
	4.4.1	<p>AC 4.4.1: Game ends in a draw</p> <p>Given the board is completely filled with no SOS sequences formed, When the last move is made, Then the game is declared a draw.</p>	toDo
5. A simple game is over	5.1.1	<p>AC 5.1.1: Game ends with a winner</p> <p>Given a player has successfully created the first "SOS" sequence, When the SOS is formed either horizontally, vertically, or diagonally, Then the game should immediately end, And the player who created the SOS should be declared the winner.</p>	toDo

	5.2.1	<p>AC 5.2.1: Game ends in a draw</p> <p>Given all cells on the board have been filled, When no SOS sequence has been created by either player, Then the game should end in a draw, And a message should be displayed declaring the game as a draw.</p>	toDo
	5.3.1	<p>AC 5.3.1: Game reset or Game stop</p> <p>Given the game has ended with either a winner or a draw, When the player views the end-game screen, Then they should be presented with the option to start a new game or stop playing.</p>	toDo
6 .Make a move in a general game	4.1.2	<p>AC 4.1.2: Placing a valid move</p> <p>Given the player is playing a General game, When they select an empty cell on the board and place either an "S" or an "O", Then the chosen letter should appear in the selected cell, And if no SOS sequence is created, the turn should alternate to the other player.</p>	toDo
	4.2.2	<p>AC 4.2.2: Invalid move</p> <p>Given the player is playing a General game, When they attempt to place an "S" or "O" in a cell that is already occupied, Then an error message should be displayed, And the player is prompted to choose a different cell and the turn is not alternated.</p>	
	4.3.2	<p>AC 4.3.2: Creating an SOS sequence</p> <p>Given the player places an "S" or "O" on the board, When the move results in an "SOS" sequence (horizontally, vertically, or diagonally), Then the player scores a point, And they immediately take another turn.</p>	toDo
	4.4.2	<p>AC 4.4.2: Ending the player's turn</p> <p>Given the player continues to make moves after creating an SOS, When they can no longer create any SOS sequences on their current turn, Then their turn ends, And the turn switches to the other player.</p>	toDo
	4.5.2	<p>AC 4.5.2: Game ends in a draw</p> <p>Given the board is completely filled, When both players have made the same number of SOS sequences, Then the game should end in a draw, And a message should be displayed informing both players of the draw result.</p>	toDo

7. A general game is over	5.1.2	<p>AC 5.1.1: Game ends when the board is filled</p> <p>Given the General game is being played,  When the board is completely filled with no empty cells remaining,  Then the system should count the total number of SOS sequences made by each player,  And the player with the most SOSs is declared the winner.</p>	toDo
	5.2.2	<p>AC 5.2.2: Game ends in a draw</p> <p>Given both players have created the same number of SOS sequences,  When the board is completely filled,  Then the game should end in a draw,  And a message should be displayed declaring the result as a draw.</p>	toDo
	5.3.2	<p>AC 5.3.2: Winner is declared</p> <p>Given the board is completely filled,  When one player has created more SOS sequences than the other,  Then that player is declared the winner.</p>	toDo
	5.4.2	<p>AC 5.4.2: Game reset or restart option</p> <p>Given the game has ended with either a winner or a draw,  When the player views the end-game screen,  Then they should be presented with the option to start a new game or stop the game.</p>	toDo

## Screenshots:

### User Story 1:

create a practical straightforward user story using the format: User Story Template: As a <role>, I want <goal> [so that <benefit>]



#### User Story:

As a **player**, I want **to be able to see the score displayed on the screen during the game** so that I **can easily keep track of the current standings without needing to check elsewhere**.

given the user story: Choose a board size



#### User Story:

As a **player**, I want **to choose the board size before starting the game** so that I **can customize the gameplay experience and adjust the level of challenge**.

make it one practical benefit



#### User Story:

As a **player**, I want **to choose the board size before starting the game** so that I **can control the duration of the game**.

## User Story 2:



### User Story:

As a **player**, I want to **choose the game mode for a chosen board size** so that I can **tailor the gameplay to my preferred style**.

there are two game options for the SOS game. Simple game and general game. Improve the user story to be more practical.



Memory updated

### User Story:

As a **player**, I want to **choose between the Simple game or General game mode for a chosen board size** so that I can **select the preferred rules and strategy for my gameplay experience**.

make it one practical benefit



### User Story:

As a **player**, I want to **choose between the Simple game or General game mode for a chosen board size** so that I can **play the game with my preferred set of rules**.

can you make it more straightforward?



### User Story:

As a **player**, I want to **choose between Simple or General game mode** so that I can **play with the rules I prefer**.

can you combine this and the previous version?



**User Story:**

As a **player**, I want to **choose between the Simple or General game mode** for a **chosen board size** so that I can **play with my preferred set of rules**.

remove chosen board size



**User Story:**

As a **player**, I want to **choose between the Simple or General game mode** so that I can **play with my preferred set of rules**.

🔊 📄 👍 🗨️ ↻ ⌵



## Acceptance Criteria 1:

given the user story: Choose a board size, provide a description of acceptance criteria with this format: AC 1.1 <scenario description>  
Given  
When  
Then



Here's a description of acceptance criteria for the user story "Choose a board size" in the requested format:

### AC 1.1: Player selects a valid board size

**Given** the player is starting a new game,

**When** they are prompted to choose a board size,

**Then** the player can select a size from predefined options (e.g., 3x3, 4x4, 5x5), and

**Then** the selected board size is applied to the game.

### AC 1.2: Invalid board size selection

**Given** the player is starting a new game,

**When** they enter an invalid or out-of-range board size (e.g., 2x2 or 6x6 if only 3x3, 4x4, 5x5 are allowed),

**Then** an error message is displayed,

**And** the player is prompted to choose a valid board size again.

You can expand this with additional criteria if necessary, depending on the game's design specifics!

there are no predefined options for the SOS board size



Memory updated

Here's an updated description of the acceptance criteria without predefined board size options:



#### AC 1.1: Player selects a custom board size

**Given** the player is starting a new game,  
**When** they are prompted to choose a board size,  
**Then** the player can input any custom board size within a valid range (e.g., 3x3 to 10x10),  
**And** the selected board size is applied to the game.

---

#### AC 1.2: Invalid board size selection

**Given** the player is starting a new game,  
**When** they input an invalid or out-of-range board size (e.g., too small or too large),  
**Then** an error message is displayed,  
**And** the player is prompted to input a valid board size.

---

This accommodates custom sizes without predefined limits.

can you make the max limit for board size 20



Memory updated

Here's the updated acceptance criteria with a maximum board size limit of 20:

---

#### AC 1.1: Player selects a custom board size

**Given** the player is starting a new game,  
**When** they are prompted to choose a board size,  
**Then** the player can input any custom board size within the valid range of 3x3 to 20x20,  
**And** the selected board size is applied to the game.

---



#### AC 1.2: Invalid board size selection

**Given** the player is starting a new game,  
**When** they input an invalid or out-of-range board size (e.g., less than 3x3 or greater than 20x20),  
**Then** an error message is displayed,  
**And** the player is prompted to input a valid board size.

---

This ensures the board size is capped at 20x20.



## Acceptance Criteria 2:

given the user story: Choose the game mode of a chosen board, provide a description of acceptance criteria with this format: AC 2.1 <scenario description>  
Given  
When  
Then



Here's a description of the acceptance criteria for the user story "Choose the game mode of a chosen board" in the requested format:

---

#### AC 2.1: Player selects the game mode

**Given** the player has chosen a valid board size,  
**When** they are prompted to choose the game mode,  
**Then** the player can select between the "Simple game" and "General game" modes,  
**And** the selected game mode is applied to the game.

### III. Data flow diagram (DFD) (4 points):

Consider a web-based SOS game that allows players from all over the world to play SOS games against each other (similar to chess.com for chess). Using data flow diagram examples presented in class, **draw the data flow diagram for your global SOS game**. You may use the tool of your choice, but it is a good idea to get familiar with draw.io (<https://app.diagrams.net/>) or other similar tools.

