1 Introduction

For this assignment, you will write a simple two-player command line game. In this game, the players start with some number of sticks. They then take turns taking away either 1, 2, or 3 sticks each turn. The player who takes away the last stick loses.

- This is an **individual assignment**. That means that while you are encouraged to help each other and talk about the assignment, the code that you submit must be your own. You also must acknowledge who you worked with, and what their contributions to your solution were. You may not submit code that you do not understand.

- Submit your `.cpp` code file on canvas. This assignment is due on **Friday, September 23 at 11:59pm**. Late submissions will not be accepted.

- Your grade will based on both (1) whether your code meets the specifications below, and (2) whether it is properly documented. For this assignment, the standard for documentation is: "Have I sufficiently cited all of my sources, and are my comments clear enough that someone else who has a similar amount of programming experience as I do, but hasn't seen this assignment before, could easily understand what is going on?"

- Some parts of this assignment are quite tricky! When you get stuck for more than an hour or so, please ask for help!

2 Specifications

1. Your code file will be named `yourname_HW2.cpp`. For example, our files would be called `shaunramsey_HW2.cpp` and `kylewilson_HW2.cpp`.

2. The program will ask the user for an initial number of sticks.

   (a) If the initial number of sticks is ≤ 0, the program will display an error message and re-ask for the number of sticks. The program will do this indefinitely until the user gives a positive number.

3. Now, for the rest of the game, the program will alternate between it being player 1 and player 2's turn.

   (a) On each player's turn, they will be asked to type in how many sticks they will take.

   - If the number is not 1, 2, or 3 sticks, it is invalid.
   - If the user types an invalid number of sticks to take, they will be prompted to try again, repeatedly until they enter a valid number of sticks to take.

   (b) When a player takes the last stick, (i.e, `num_sticks <= 0`) the program will tell them that they lost, and that the game is over. The program will then exit.

3 Tips for Doing the Assignment

Incremental Development   Like the previous assignment, don't try to write the whole thing in one go. Pick just a few of the requirements, and make it do those first. Keep testing between every few changes.

Planning   Think ahead and write comments before you deal with the details. What are the major parts of the program? What parts will require loops?

4   Examples

Here is a game where everyone follows the directions:

```
Enter the number of starting sticks: 12
Player 1, how many sticks will you take? 3
There are now 9 sticks left.
Player 2, how many sticks will you take? 3
There are now 6 sticks left.
Player 1, how many sticks will you take? 3
There are now 3 sticks left.
Player 2, how many sticks will you take? 2
There are now 1 sticks left.
Player 1, how many sticks will you take? 1
There are now 0 sticks left.
Player 1, you have lost!
Game over!
```

And here is an example where the user isn't very good at following instructions:

```
Enter the number of starting sticks: -2
Invalid number of sticks.
Enter the number of starting sticks: -5
Invalid number of sticks.
Enter the number of starting sticks: -10
Invalid number of sticks.
Enter the number of starting sticks: 10
Player 1, how many sticks will you take? 5
Invalid choice. Enter 1, 2, or 3. Try again: 3
There are now 7 sticks left.
Player 2, how many sticks will you take? 2
There are now 5 sticks left.
Player 1, how many sticks will you take? 0
Invalid choice. Enter 1, 2, or 3. Try again: 0
Invalid choice. Enter 1, 2, or 3. Try again: -5
Invalid choice. Enter 1, 2, or 3. Try again: 1
There are now 4 sticks left.
Player 2, how many sticks will you take? 3
There are now 1 sticks left.
Player 1, how many sticks will you take? 3
There are now -2 sticks left.
Player 1, you have lost!
Game over!
```