**Description**

The basic understanding of our culminating is as follows; it will be an interactive game that allows the user to create and sign into an account which will then give access to the application. The program is a number guessing game that can either be two player or one. The computer retrieves a random number based on the difficulty chosen by the user and then prompts them to guess the number. If the guess is wrong then the computer once again asks the user to guess, this time however, after guessing the computer tells the user whether or not they are closer or farther then their previous guess. With this new information the player then keeps guessing until the correct number is found and their score is displayed. If the two player option is selected at the beginning of the game, both players are required to sign in and then they must compete to guess the random number chosen in the least amount of tries. Once both players guess their number a winner is displayed.

**Details**

In order to have the program be functional, decision structure and repetition will be necessities due to how often the program relies on the user’s input. Speaking of which being able to read and write information from both the user and files will be required so that the game may function properly. Since players must sign into an account in order to play, searching files will be very important. After completing the game a leader board will display ranking users by number of tries taken, meaning the lessons on sorting from class will contribute. Knowledge in object relationships will also help with the creation and closure of accounts so the user will have the option to do so.

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| Input | Processing | Output |
| * Number of players   (int f)   * Choice of signing in or signing up   (String acc)   * Username   (String user)   * Password   (String pass)   * First name   (String fname)   * Last name   (String lname)   * Age   (int age)   * Difficulty choice   (int e)   * Number guess   (int input)   * Choice of whether or not they would like to play again * Made user friendly by adding try catches * User prompts * Clear choices * Repeat if input isn’t valid | * The game (1 or 2 player) must be decided * Random numbers are generated * Find difference between guessed number and random number   diff = Math.abs(input - rand);   * Determine if guess is closer or farther to random number than previous guess   If (Math.abs(input - rand)) >= diff) you are colder than last time   * Repeat until number is found by either player * Determine scores and winner | * Whether the guess is hotter or colder than the previous guess * Total amount of tries needed to guess correct number * Winner prompt * Whether the correct number was guessed * Who the winner between player 1 and player 2 is * Rules and options related to starting the game * Output formatted through println, print, and/or gui * Output made user friendly by being made easy to read * All required information for next course of action is provided |