**Project 2 – Yahtzee Simulation**

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CSC-17A-43396: Programming Concepts and Methodology II: C++ Objects

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Introduction

Yahtzee is a classic dice game. In this game, players participate in thirteen rounds of gameplay, and each player can roll the dice of their choice up to three times. They can then choose any category to score their dice to, provided they have not yet used that category. At the end, whoever has scored the most points wins the game. For the sake of this project, the number of players has been limited to be between 1 and 6.

Summary

Project size: About 1000 lines

Number of functions: 3 in main, 46 across all classes

Variables: About 30 major variables

This project took about one week to code. Since I decided to go with Yahtzee for both Project 1 and Project 2, I was able to spend less of my time on this project focusing on basic gameplay elements. Instead, I could focus more on new concepts, like classes, exception handling, and templates. It was interesting to see how I could create the same game using different programming methods. I think that since I already had the basic elements of the game from my last project, and I built the new project over so many different versions, this project wasn’t too difficult. It was fairly easy for me to catch errors and figure out what changes I needed to make for the code to work. My least favorite part is easily documenting the code, because while it isn’t necessarily difficult, I do find it very tedious.

Pseudocode

Seed the random number generator

Create a vector of pointers to Game objects

Open the results file for output

Ask the user if they would like to play a game

Output an error message and re-prompt them for input if their input is invalid

While the user wants to play another game

Create a new element in the games vector

Allow the user to enter the number of players and their names

While the last round has not been reached

While the last player has not been reached

Output the player’s stats

Randomize the dice roll

Output the dice roll

While the user has not exceeded two rerolls and has not chosen to stop rolling

Ask the user if they would like to reroll

If the user chooses to reroll

Allow them to select which dice to roll

Roll the dice

Output their new roll

Ask the user which category they would like to save their roll to

If the category exists and has not been used

Calculate the player’s score

Save the score to their chosen category

Calculate the scores for each player

Determine the game results

Output the results

Ask the user if they would like to play a game

Increase the game number

Write the data for all of the games to the results file

Close the results file

Reopen the results file for input

Read in the data from the results file and print it

Cleanup the memory allocated earlier for each Game

Close the results file

End the program

References

Kitchen, Mike. “A Simple Yahtzee Game.” *CodeProject*, 26 Oct. 2004, www.codeproject.com/Articles/8657/A-Simple-Yahtzee-Game?fid=121307&df=90&mpp=25&sort=Position&spc=Relaxed&prof=True&viev=Normal. Accessed 16 May 2021.