

Problem Statement and Goals

SFWRENG 4G06

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Table 1: Revision History

Date	Developer(s)	Change
2024-09-12	John Popovici	Added content to section 1.1, 1.2, and 1.4
2024-09-12	John Popovici	Added content to section 4
2024-09-17	John Popovici	Added content to section 1.3; Updated section 4 to better reflect extras
2024-09-17	John Popovici	Added content to section 2 and 3
2024-09-19	John Popovici	Updated section 2 and 3 to have measurable goals
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1 Problem Statement

1.1 Problem

Games are a staple of entertainment and are used to bring people together for both competition and fun. There can often be a desire to share the experience of playing a game with someone but meeting can be hard or impossible in-person and so having an online version of popular games allows for such opportunities.

One such game is the game of Yahtzee, which while it does have online versions, are limited to the classic rule-set and do not allow for variants to be designed and played. Yahtzee is a game many know yet is not often played, yet by leveraging the most interesting game mechanics and creating different variants, we could reinvigorate the genre while paying homage to the original.

As developers, we are aiming to create an environment in which Yahtzee and Yahtzee variants can be designed and played with some preset rule-sets to be used as a starting-off point. This would allow for both the classic game as well as different variants of it, such as using 8-sided dice, to be played with a friend online.

1.2 Inputs and Outputs

Upon running the program, a game user would be capable of selecting to play either preset game configurations, or to customize their own given a set of game rules they can select and modify. In starting the game, these game rules would be instantiated and the user could play the Yahtzee version selected with another online player.

In terms of interacting with the game, two players will exist and have the ability to interact with the current game state, allowing them to make decisions based on game events. The game state will be presented through a visual user interface displaying different elements of the game, including the dice and points system(s).

1.3 Stakeholders

Our stakeholders are primarily those people that would spend their time playing the game, falling into the following categories.

Traditional Yahtzee enthusiasts are familiar with the classic Yahtzee ruleset and are generally older and may prefer the simplicity and nostalgia of the original game. They may not be too tech-savvy, but still wish to revisit the game and connect with friends, possibly exploring customization in moderation, without overwhelming complexity.

Typical gamers can span from casual to more dedicated gamers, have experience with online multiplayer, and are looking for an engaging experience with a friend. Having a faster paced experience with more skill expression and instant feedback is something they would be interested in.

1.4 Environment

The game will be run on Windows 10 devices and be run with an internet connection to enable online multiplayer. One of the players would act as the host with the other connecting such that they can play in real-time with an online connection.

2 Goals

For this project to be a success both as a capstone project and as a fun game, there are some goals we must meet.

- Online multiplayer functionality. We need to be able to connect two players to play the game together.

Measurement: Two players can connect such that both players can affect the game state and both players are notified of the updates.

- Customizable game settings. Core game elements must be modifiable to create custom Yahtzee variants. As a goal we would need these options to be implemented:

- The number of dice each player have
- The type of dice used such as cube, octahedron, and more
- Whether scoring will be done only after completing the score card, or by comparing each hand in a head-to-head fashion
- A round timer

Measurement: There are at least 3 options for number of dice, at least 3 options for type-types, at least 2 options for scoring methods, and an option to use a turn timer. These options would be all compatible with one another.

- Preset game settings. By having some preset game configurations, it would allow players to more quickly learn the game or jump into an environment that has been tested.

Measurement: At least 3 preset game configurations would be available for players to load up and play.

- 3D dice rolling. Rolling the dice will need to be or look to be three dimensional to recreate the tactical feel of the original game.

Measurement: Dice rolling will have the appearance of a die shape, depending on the die shape, and of being rolled, based on a minimum of 75% of user feedback considering it so.

3 Stretch Goals

Since we wish this game to go beyond just a capstone, and have the game be worth playing, there are stretch goals we will aim to implement as well.

- Local multiplayer. This would allow for players to play together on a single computer, but would require a different user interface and allow for different user interactions.
Measurement: The ability for 2 players to play together using a single interface and game instance without an internet connection.
- Singleplayer variants. A singleplayer game could be achieved either through a computer-run opponent in a game, or through a custom designed experience that could leverage the different environment.
Measurement: A single person can play at least 1 variant made specifically to be singleplayer without requiring a second human player to update the game state.
- Saving custom game setting. Having this ability would allow for a user who created a custom game variant to save them for the ability to replay it without the need to recreate those specific settings.
Measurement: A custom game variant, as per the "Customizable game settings" goal and "More game setting customization" stretch goals, can be saved locally and loaded up to be played.
- More game setting customization. Besides the options in the goals section, some additional game customization options would include:
 - The ability to customize what hands and options are on the scorecard
 - The points each option on the scorecard would provide
 - Additional methods to score each round or each game
 - A system to allow for gambling such as doubling down on a hand or folding for less of a punishment
 - More options discovered through play-testing and theory crafting*Measurement:* Additional game options outside the ones listed in the "Customizable game settings" goal would be available.
- Dice customization. Dice could be made to appear differently, either as a means for personalization or for aiding with different impairments. An example could be a dice with pips versus a dice with a numbered faces.
Measurement: At least 5 different dice appearance variants players can choose from, that would appear in the game.
- Post game statistics. This could allow for players to analyze a game after completion in a more quantitative manner.
Measurement: A post-game summary showing at least 3 key game stats, available after each game.

- Dice highlighting. This would aid in determining what dice are used when scoring.

Measurement: Dice used in scoring will be highlighted when appropriate.

4 Challenge Level and Extras

Through the implementation of not just a single Yahtzee game variant, but by implementing a system where the user can create a custom game variant and connect to another online player to play it, we are looking to achieve the advanced challenge level. We would also provide some pre-set game variants that have been tested and were found to be more fun than others.

We will include extra elements to aid in better developing our game and allow us to design for a fun gaming experience, as we wish this game to not be just a capstone project, but a game we can be proud of and put out into the world. Following industry practices in game development, we wish to potentially do the following extras:

- Focus groups, Surveys, and Interviews
- Usability testing
- User personas
- User documentation

Appendix — Reflection

[Not required for CAS 741 —SS]

The purpose of reflection questions is to give you a chance to assess your own learning and that of your group as a whole, and to find ways to improve in the future. Reflection is an important part of the learning process. Reflection is also an essential component of a successful software development process.

Reflections are most interesting and useful when they're honest, even if the stories they tell are imperfect. You will be marked based on your depth of thought and analysis, and not based on the content of the reflections themselves. Thus, for full marks we encourage you to answer openly and honestly and to avoid simply writing "what you think the evaluator wants to hear."

Please answer the following questions. Some questions can be answered on the team level, but where appropriate, each team member should write their own response:

1. What went well while writing this deliverable?
2. What pain points did you experience during this deliverable, and how did you resolve them?
3. How did you and your team adjust the scope of your goals to ensure they are suitable for a Capstone project (not overly ambitious but also of appropriate complexity for a senior design project)?