

Gonzaga Men's Basketball Yahtzee Functional Requirements

Business Function Model

Objective: Play a multiplayer game of Gonzaga Men's Basketball Yahtzee in a Graphical User Interface (GUI).

- Start a new game
 - Display the leaderboard (top 3 highest scores in game history)
 - Display instructions and rules
 - Determine number of players
 - Get the player's name(s)
 - Set up empty scorecard(s)
 - Display dice before rolling
- Roll a hand
 - Roll all five dice
 - Determine if rerolls are available
 - Prompt the player to keep dice
 - Reroll dice not kept
 - Determine whether to proceed to scoring
 - Determine if all dice have been kept
 - Determine if all available rolls have been used
- Score a hand
 - Determine which scorelines are unused
 - Calculate the score for each unused line
 - Display the calculated scores to the user as possible scoring options
 - Prompt the player to select a scoring option
 - Record the score of selected option on the appropriate scorecard line
 - Display a scorecard
 - Display the score for each upper scorecard line
 - Calculate and display the total of upper scorecard lines
 - Determine if a bonus was achieved
 - Calculate and display the total of upper scorecard lines including bonus
 - Display the score for each lower scorecard line
 - Calculate and display the total of lower scorecard lines
 - Determine if a bonus was achieved
 - Calculate and display the total of lower scorecard lines including bonus
 - Calculate and display the grand total
- Finish a game
 - Determine whether any scorecard lines remain unused
 - Display final scorecard when all scorecard lines have been used (per parameters outlined above)
 - Determine whether the player's score qualifies them for the leaderboard
 - Add their name and score to the leaderboard if applicable
 - Ask the player if they would like to play again
 - Start a new game if appropriate

Functional Requirements

To start a game:

At the start of the game, the leaderboard (top 3 highest scores in game history) is displayed. The instructions of how to play will be displayed, as well as each player's name, their number, their position, and if they are a starter or bench, as this is key to scoring for the rest of the game. The user will then be prompted to input the number of players for this game. Then, the user will be asked to input each player's name, and then their empty scorecard will be printed. The user will then see which player's turn it is, and then the number of sides and number of dice will be displayed, as well as the first player's first turn.

Roll a hand:

To roll a new hand the first step is to roll all five dice, random generating five Gonzaga basketball players. After each roll, the game will tell the user how many rerolls they still have during their turn, then the game will prompt the user to select which players to keep in their hand, and which to reroll. The dice that are not kept will be rerolled. At this point, the turn will proceed to scoring if one of two conditions is met: either all of the dice have been kept, or all available rolls have been used.

Score a hand:

After each turn the player is asked to select a scorecard line to choose. To score the hand, the program only allows the player to choose from unused lines. At any point during any turn of the game, the program needs to be able to display the scorecard thus far. Once all the lines have been used the entire scorecard is returned with totals for the upper and lower half. Then a grand total of the upper and lower half combined is printed.

Finishing game:

To finish the game, the first step is to determine if any lines of the scorecard are empty. If none are empty, the player has used all their turns. The grand total is calculated for each player. Each player's final scorecard, along with their score from the upper and lower half, and their grand total is displayed. The game then compares the player's scores, and the winner is declared. Determine whether the player's score qualifies them for the leaderboard and add their name and score to the leaderboard if applicable. The players will then be asked if they wish to play again.