

FUNCTIONAL REQUIREMENTS

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CPSC 224 Functional Requirements

Play a multiplayer game of Rainbow Yahtzee

Start a new game:

- Display game configuration - default or from previous game
- Ask user if they would like to change configuration
- Store new configuration
- Create and set up a scorecard

Start a Round:

- Each player takes a turn (taking a turn explained below)
- Each player scores a hand (scoring a hand explained below)
- Each player is shown their scorecard (display a scorecard explained below)

Take a turn:

- Build initial hand by rolling dice
- Determine if rerolls are available
- Prompt user 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 scorecard lines are unused
- Calculate score for each unused line
- Display calculated score to user as possible scoring options
- Prompt the user to select scoring option
- Record score of selected option on appropriate scorecard line

Display a scorecard:

- Display score for each upper scorecard line
- Calculate and display total of upper scorecard lines
- Determine if bonus was achieved
- Display total of upper scorecard lines including bonus
- Display the score for each lower scorecard lines
- Calculate and display grand total

Finish a game:

- Determine whether any scorecard lines remain unused
- Display final scorecard when all scorecard lines have been used
- Ask user if they would like to play again

- Start new game if appropriate

To start a new game, the first step is to retrieve the configuration setup from the previous game. Configuration setup includes choosing the number of players in the game, number of dice in a hand, number of rolls per hand, and number of colors per die. By default, the parameters are set to a predetermined standard value if the game has not been played or the configuration has not been altered before. The user should then be asked if they would like to change the configuration. If the user decides to change the configuration, they should be prompted for new values. The new values should then be stored to be used for the next game. The finalized configuration should be displayed to the user. Based on the final configuration, a blank scorecard should be generated accordingly.

Each round consists of each player taking a turn, scoring a hand, and displaying a scorecard. Once a player has finished these three events, the next player will begin. After the round has finished, if all scoring lines have been used by each player, then finish a game (explained below).

At the beginning of the user's turn, a hand is generated by "rolling" n amount of dice based on the configuration settings. The user will be displayed their hand and then are prompted to choose which of the dice are to be kept. Then, the user can reroll the unkept dice until they run out of rerolls (again, based on configuration settings) or until all dice have been set to kept.

After a user's turn has ended, whether by keeping all their dice or running out of rolls, a display will show the user all the potential scores the user could achieve on each available line of the scorecard. The user will then select which line of the scorecard they want their score for that round to be scored on. The score for that round will be stored in the value of that line of the scorecard. The selected line of the scorecard will then be made unavailable for scoring in future rounds.

After a user has scored a hand, their updated scorecard will be displayed to them. The user will be given the time they need to thoroughly inspect their scorecard before the next player begins their turn. If there are no remaining players that still need to take a turn for this round, then a new round will be started. If there are no more rounds to be played, then finish the game.

A game is considered finished once all scorecard lines have been used for all players in the game. Once this point has been reached, scorecards for each player will be displayed along with a declaration of the highest scoring player. It is then up to the users to decide if they want to start a new game.