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High-Level Software Requirements Specification (SRS) for The Yahtzee Interactive Game.

1. Introduction

1.1 Purpose

The purpose of this document is to describe and provide all the High-Level requirements for the Yahtzee Interactive Game. This document provides the objectives that the software will achieve by the end of the semester. This document is primarily intended for users of this application. However, it will also be of interest to software engineers maintaining this particular software.

1.2 Scope

This document covers the high-level requirements for the first release of Yahtzee Interactive Game. The purpose of this documentation is to provide guidance for the design and implementation of features for the final product.

1.3 Definitions, Acronyms, and Abbreviations.

Rolls - A simulated roll of dice determined by a random generator within the code.

Hold - Keeping a certain die or dice between rolls

Round - After all players have completed a turn

Turn - A set of 3 rolls by one player

Ones - Dice that are displaying a 1, indicated by one dot.

Twos - Dice that are displaying a 2, indicated by two dots.

Threes - Dice that are displaying a 3, indicated by three dots.

Fours - Dice that are displaying a 4, indicated by four dots.

Fives - Dice that are displaying a 5, indicated by five dots.

Sixes - Dice that are displaying a 6, indicated by six dots.

One Pair - Selection of exactly 2 identical dice.

Two Pair - Selection of 2 unique pairs of dice.

Three of a Kind - Selection of 3 identical dice.

Four of a Kind - Selection of 4 identical dice.

Full House - 2 of a kind and 3 of a kind in one turn.

Small Straight - Selection of 4 consecutive numbers. Example: 1-2-3-4 or 2-3-4-5.

Large Straight - Selection of 5 consecutive numbers. Example: 1-2-3-4-5.

YAHTZEE - Selection of 5 identical dice.

Chance - Sum of all dice rolled at the end of a turn.

1.4 References

Yahtzee Score Card from Hasbro™

1.5 Overview

Intentionally skipped. See Section 2. for an overview of the software.

2. The Overall Description

Yahtzee is to be an interactive version of the popular board and dice game. This software is designed to be playable by users 5 years old and up and for both men and women. This software focuses on a one player win model. Players compete against each other on a single screen to obtain the highest score possible. The score is determined by a set of scoring instructions linked to the dice combinations obtained by the player. Underneath is a display of the actual scorecard. This is a multiplayer game for 2-6 players. The user can choose two different game modes. First, the normal strict version where the player must follow the scorecard from top to bottom and what you are aiming for is already predetermined. Secondly, you can choose to play a game mode called “Pick and Choose”. In this mode the user rolls and they can then choose which category they want to apply their roll combination into. All categories can only be picked once. The score you can get on each turn is either pre determined for what section you choose (small straight, large straight, yahtzee, etc) while others you add up all the applicable dice and that is your score for that turn. The winner is the one with most overall points after completing each slot of the Yahtzee scoreboard.

2.1 Product Perspective

Yahtzee Interactive Game is independent and totally self-contained. The application is intended for both genders, and the user/users have to know basic mathematical computations and orders. Yahtzee is intended to help the programmers obtain a functional knowledge of object-oriented programming and to apply software engineering techniques.

2.1.1 System Interfaces

Game Mode Selection. The state in which the user will select the mode that is desired to play.

Player Count Selection. The state in which the user will select the number of players from 2-6 inclusive.

Player Name Entry. The state in which the user will enter the names of the players.

Dice Hold/Roll State. The state in which the player will select dice to hold and roll for their turns.

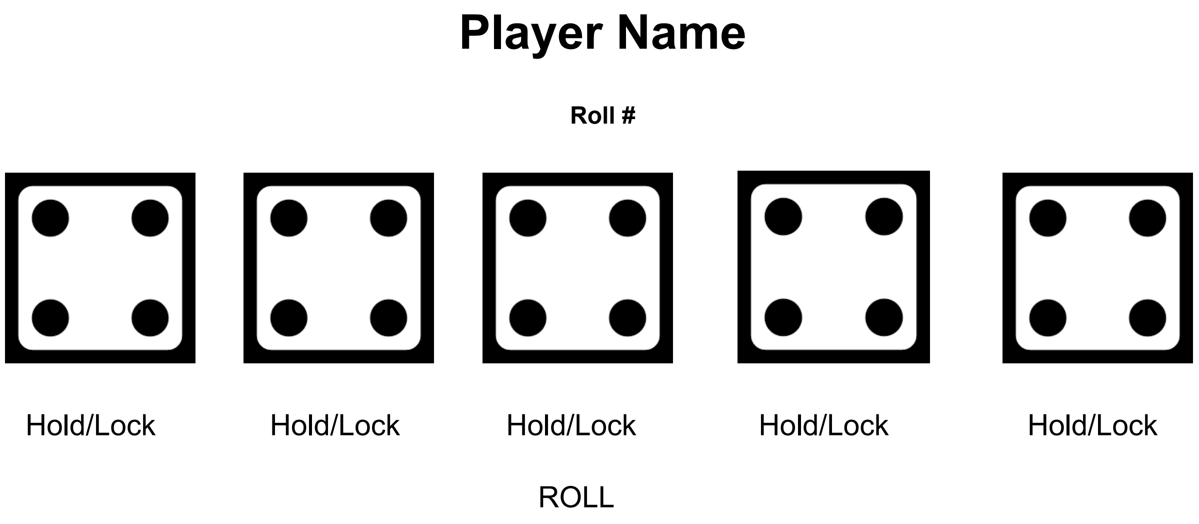


Figure 1.1 - Display of Dice Hold/Roll State

Scoreboard - Pick and Choose. The state which the player can see the scoreboard and choose which section their rolls counts towards in the Pick and Choose mode.

Scoreboard - Normal Strict. When user clicks on end turn system displays scoreboard with newest score added in.

Display Final Scoreboard and Winner. The final scoreboard and winner are displayed.

Category	**How To Score**	**Player 1**	**Player 2**	**Player 3 etc.**
Ones	Count and add only ones	3	5	3
Twos	Count and add only twos	2	6	8
Threes	Count and add only threes	9	6	12
Fours	Count and add only fours	12	16	12
Fives	Count and add only fives	5	15	20
Sixes	Count and add only sixes	24	12	18
Total	--------------->	55	60	73
Bonus	If Total is 63 or over, additional 35 point bonus	-	-	35
Upper Total	--------------->	55	60	108
1 Pair	Add value of pair. Ex: 2x4 = 8	8	-	9
2 Pairs	Add value of both pairs. Ex: 2x4+2x3 = 21	12	20	-
3 of a Kind	Add value of all dices. Ex: 3x5 = 15	10	8	12
4 of a Kind	Add value of all dices. Ex: 4x6 = 24	14	-	-

Small Straight (Sequence of 4)	Score 30	-	30	30
Large Straight (Sequence of 5)	Score 40	40	40	40
Full House	Score 25	-	25	-
Yahtzee (5 of a kind)	Score 50	-	50	50
Chance (Player choose)	Add value of all dices.	19	27	24
Lower Total	--------------->	110	200	165
Grand Total	--------------->	165	260	273

Figure 1.2 - Display of Final Scoresheet

2.1.2 Interfaces

For our software we plan to create a GUI, so that the user will be able to interact with the game in a visual manner. When the game has started it will display a menu where the user has the option to choose which game mode they would like to play. After the user has chosen their desired mode, the application will transition to an interface asking for the number of players. The user will then be asked to enter the player's names.

2.1.3 Hardware Interfaces

Not applicable for our project. Our software does not have any hardware interfaces.

2.1.4 Software Interfaces

Not applicable to our project. Our software does not have any software interfaces.

2.1.5 Communications Interfaces

Not applicable for our project. Our software does not have a communication interface

2.1.6 Memory Constraints

Our software will not have much to put on the computer’s memory, therefore, Yahtzee Digital Version shall require no more than 16MB of RAM and 20 MB of secondary storage.

2.1.7 Operations

This software has one mode of operation, it plays a digital version of Yahtzee.

2.1.8 Site Adaptation Requirements

None

2.2 Product Functions

2.2.1 Game Mode Selection

The system will display a window showing the name of the game “Yahtzee” with a selection for game mode type. The two game modes user can choose between is the normal strict mode and the pick and choose mode.

2.2.2 Player Selection/Name Entry

1. After selecting game mode, the system will display a window asking for how many players they want to play with. From 2-6 people.
2. After selecting the number of players, the GUI will ask player to enter the name for each player. The names can be a nickname, real name, etc. The name will be shortened to the first 15 characters.

2.2.3 Dice Hold/Roll State

Game starts and the application displays a window with all the dice. Furthermore, there is a button to click for roll and a button for each dice where you can choose to hold/lock it. See Figure 1.1 for further details.

2.2.4 Display Scoreboard - Normal Strict

After a player has completed their turn by getting the desired die combination or used all of their rolls. The application will display the scoreboard with the new score in designated place. See figure 1.2 for a rough outline of scoreboard. Furthermore, the application shall go between dice hold/roll state and displaying scoreboard after every turn(3 rolls) for each player.

2.2.5 Select Scoring Category - Pick and Choose

If playing Pick and Choose gamemode, the user has to pick when turn is over what category they want the score of ended turn to be in. When user picked category it is locked and cannot be selected again.

2.2.6 Display Winner/Final Scoreboard

When the game is finished and scoreboard is full the system will display the final scoreboard and the winner.

2.3 User Characteristics

The user of this software is expected to be anyone from 5 years old and up. The user should be able to use a computer and be interested in Yahtzee as a digital game/version that is easy to play with other people.

2.4 Constraints

Our software shall operate on PCs running on Windows 10 or later. Python should be the implementation language.

2.5 Assumptions and Dependencies

None

2.6 Apportioning of Requirements.

The high-level requirements discussed and described in Sections 1 and 2 of this document are referred to as “customer requirements”. This means that the primary audience for these two sections will be customers or users of our Interactive Yahtzee Game. While the secondary audience is the developers and programming community. These two sections are requirements that are consistent.

3. Detailed Requirements

3.1 External Interfaces

None

3.2 Functional Requirements

Upon opening the application the system should display the main screen with the game title “Yahtzee” and a button to create the game.

From the main screen, the user should be able to press a new game button that takes them to the game set up screen

From the main screen, the user should be able to press the rules button that displays a rule sheet for the user that contain the rules of yahtzee and the two game modes.

On the gamemode selection screen the user should be able to select the type of gamemode to play with the options of “straight” and “pick-and-choose”

On the number of players screen, users should be able to select the number of players with a minimum of 2 and a maximum of 6.

On the player names screen, users should be able to input the names of the players for each player they have selected.

Upon clicking a game mode button, a game is started with the number of players selected with the rules of the gamemode selected.

When the game is started from the create game screen, the first player should get their turn.

For each turn, the program should display the player name, five dice that have been rolled, a hold button for each die, a roll button that can be clicked up to twice per turn, and an end turn button.

upon selecting the hold button assigned to each die, the die associated with it is signified as locked and does not roll when the reroll button is clicked.

when the roll button is clicked, the program should reroll the dice that are not locked (which may or may not change them).

when the user uses all the rerolls they have (two) then the roll button should be disabled to signify to the user that nothing else can be done in that turn.

when the user clicks the end turn button it is determined what happens by the game mode selected which can be found in the gamemode requirements below.

Straight Gamemode Functional Requirements

After a user roll, the user should be able to end their turn with the end turn button available on the screen. If a user ends the turn then the current dice are displayed into the current scoring category.

After a players turn of 3 total dice rolls and player selects end turn button the system will display the final dice score into the current scoring category and display the scoreboard.

Pick-and-Choose Functional Requirements

After a user’s roll, the user should be able to press the end turn button to bring up the current scoreboard and select a scoring category to place their dice in to. The user must pick a scoring category that is available (which means that it does not have a score in it). When a user selects a scoring category the associated button for that category becomes disabled so that the user can no longer make that selection in future rounds.

After a players turn of 3 total rolls the user must press the end turn button to select scoring category.If user does not have any applicable dice combinations that fit one of the open scoring categories, user has to choose a category that is not taken. System displays a 0 in the chosen category to indicate that player failed to get the desired combination of dice for this category.

After the user selects their scoring category, the user will press the next player turn button located at the bottom of the scoreboard. The player whose turn is next (player 1 if the last player went and the game is not over) turn starts.

The program shall hold all player's scores separately, letting each player have an independant one from all the others.

Upper section scoring:

If you score in the upper section of the scoreboard, your score will be the total of the specified die face.

Example:

> If you roll 1-2-6-1-1 and you score in the Ones category, your total for that category would be 3 = 1 + 1 + 1. If the Threes, Fours, or Fives category is selected you will score a 0. While if you choose to score in the two's, or the six category they will score 2 or 6 respectively.
>
> If total of Upper Total score is 63 or over you receive a bonus of 35 points

Ones:

After ended turn system checks each dice for ones and displays the sum of all ones in the scoring category for Ones.

Twos:

After ended turn system checks each dice for twos and displays the sum of all twos in the scoring category for Twos.

Threes:

After ended turn system checks each dice for threes and displays the sum of all threes in the scoring category for Threes.

Fours:

After ended turn system checks each dice for fours and displays the sum of all fours in the scoring category for Fours.

Fives:

After ended turn system checks each dice for fives and displays the sum of all fives in the scoring category for Fives

Sixes:

After ended turn system checks each dice for sixes and displays the sum of all sixes in the scoring category for Sixes

Lower section scoring:

In the lower scores you either score a set amount or 0 if you do not fulfill the requirements for the selected scoring category.

1 and 2 pairs:
After ended turn system checks each die, if a pair is found system displays the sum of the pair in that category in the scoreboard. If player does not have a pair, display 0 in that category in scoreboard
After ended turn system checks each die, if a two pairs is found system displays the sum of the pairs in that category in the scoreboard. If player does not have 2 pairs, display 0 in that category in scoreboard

3 and 4 of a kind:
After ended turn system checks each die, if system finds three of a kind system displays the sum of the three dice in that category in scoreboard. If player does not have 3 of a kind, display a 0 in that category in scoreboard.

Small and Large Straight:
After ended turn system checks each die, if the system finds a set of dice that can be arranged to form 1,2,3,4 or 2,3,4,5, or 3,4,5,6 then the system will display a 30 in the scoring category for small straight. If this combination is not found the system will display a 0 in the scoring category

if the system finds a set of dice that can be arranged to form 1,2,3,4,5 or 2,3,4,5,6 then the system will display a 40 in the scoring category for large straight. If this combination is not found the system will display a 0 in the scoring category

Full House:
After ended turn system checks each die, if the system finds a pair as well as 3 of a kind, the system displays a score of 25 in the full house scoring category. if the pair and 3 of a kind are not found then the system will display a 0 in the scoring category.

Yahtzee:
After ended turn system checks each die, if system finds five identical dice faces, the System displays a score of 50 in the Yahtzee score category. if player does not have 5 of a kind, display 0 in the Yahtzee category.

Chance:
After ended turn system checks each die, the system will total all of the die faces and display the total in the scoring category for Chance

Total Score:

After each player has completed all their turns, the system will take you to the Display Winner screen, displaying the winner and their total score. From there players can either click the rematch button, which starts the game over with the same rules and players, or the

3.3 Performance Requirements

Each roll should execute in less than one second.
The application shall load and display the scoreboard in less than a second after turn is finished.

3.4 Logical Database Requirements

Not Applicable

3.5 Design Constraints

Not Applicable

3.5.1 Standards Compliance

Not Applicable

3.6 Software System Attributes

3.6.1 Reliability

Yahtzee - The Interactive Game shall fail no more than once in every 1000 games played.
Test documentation < reference to test goes here >.

3.6.2 Availability

Yahtzee - The Interactive Game shall be available for play on any PC running Windows 10 or later.

3.6.3 Security

Not Applicable

3.6.4 Maintainability

Not Applicable

3.6.5 Portability

Not Applicable

3.7 Organizing Specific Requirements

3.7.1 System Mode - or

3.7.2 User Class - or

3.7.3 Objects - or

3.7.4 Feature - or

3.7.5 Stimulus - or

3.7.6 Response - or

3.7.7 Functional Hierarchy - or

3.8 Additional Comments

Use Cases

Game Settings

1. User clicks on application

2. System displays game title screen with a play game button, rules button, and a x button in the top right corner to exit application
    a. User clicks play game button
    b. User clicks rules button
        b1. System displays the rules for the two game modes in a new window
        b2. User clicks back button
        b3. System takes you back to step 2.
1. System displays a window with two options for user to choose game mode, one Straight button and one Pick-and-Choose button.
1. User clicks on one of the game modes, the one they want to play.
2. System displays a window for user to choose numbers of players playing the game. The game is for 2-6 players.
3. User clicks on checkbox with desired number of players from 2-6.
4. System displays a window to input name for each player. Each player is assigned a box where player types in its name. Must be letters and no longer than 20 characters.
5. User enters name/nickname of their own choosing with keyboard
6. User clicks button to start game
7. System displays the game in a new window
    This is continued by the Gameplay Screen use case

Gameplay Screen

accessed via player name entry

1. System displays a window displaying a set of 5 dice
2. System displays a button to roll the dice
3. System displays a button under the dice indicating hold/lock
4. System displays a button to display the scoreboard
5. System displays a button to end turn
6. System displays a button to Quit Game
7. System displays a button to Exit Game
    This is continued by the Roll Dice, Hold/Lock Dice, Display Scoreboard, End Turn, Quit Game, Exit Game use cases

Roll Dice

This is a continuation of the Gameplay Screen use case

1. User presses roll button
2. System displays new dice with randomized value from 1-6 for each roll
3. User can press hold dice which will lock that dice for the next roll
4. User goes back to step 1 until rolled three times.

Display Scoreboard

This is a continuation of the Gameplay Screen use case

1. System will display the scoreboard with current scores
2. In straight mode scoreboard will be displayed after each player turn
    If game mode is set to Pick-and-Choose:
1. User presses scoring category of their choice
2. System adds the score into the selected category
3. System displays the score in the scoreboard category

End Turn

This is a continuation of the Gameplay Screen use case

1. System will add current score to active players scoreboard
2. System will move to next player screen
3. System will end player turn after player reaches 3 total rolls

Display Winner/Result

From final player turn

1. System calculates each players final total score
2. System calculates the players with the highest overall score
3. System displays final scoreboard
4. System displays the winner to the users
5. System displays button for rematch
6. System displays button for new game

Rematch

From Display Winner/Result use case

1. User presses rematch button
2. System restarts game and displays gameplay screen. See gameplay screen use case
3. System maintains same players
4. System maintains same settings (game mode).

New Game

This is a continuation of the Gameplay Screen use case

1. User presses New Game button
2. System returns to select gamemode screen allowing user to set up new match

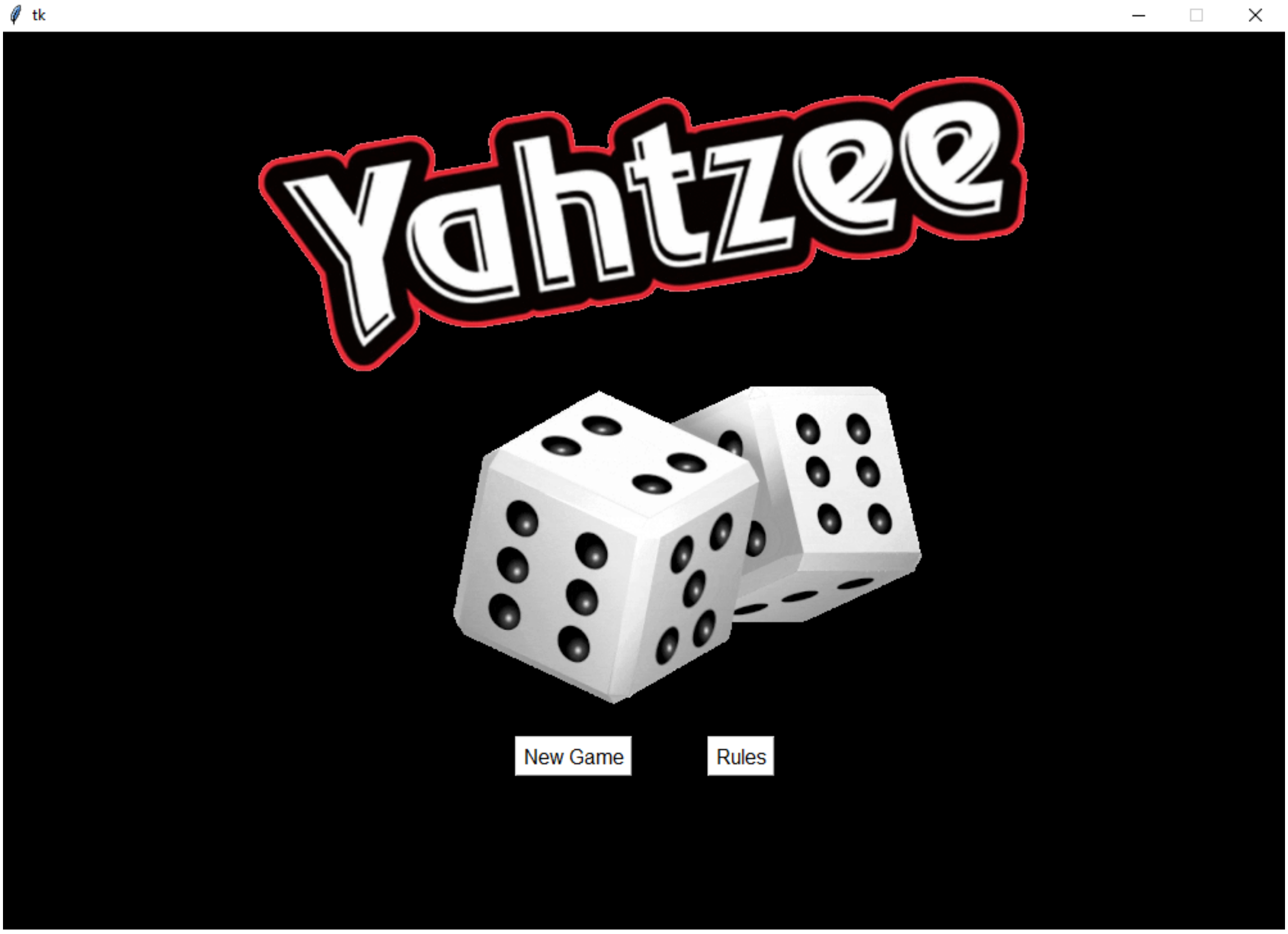
Exit Game

This is a continuation of the Gameplay Screen use case

1. User presses exit game button displayed in the corner of gameplay screen by an X.
2. Application is terminated
3. System returns user to main screen of their computer

Hold dice
Highlight scoreboard button

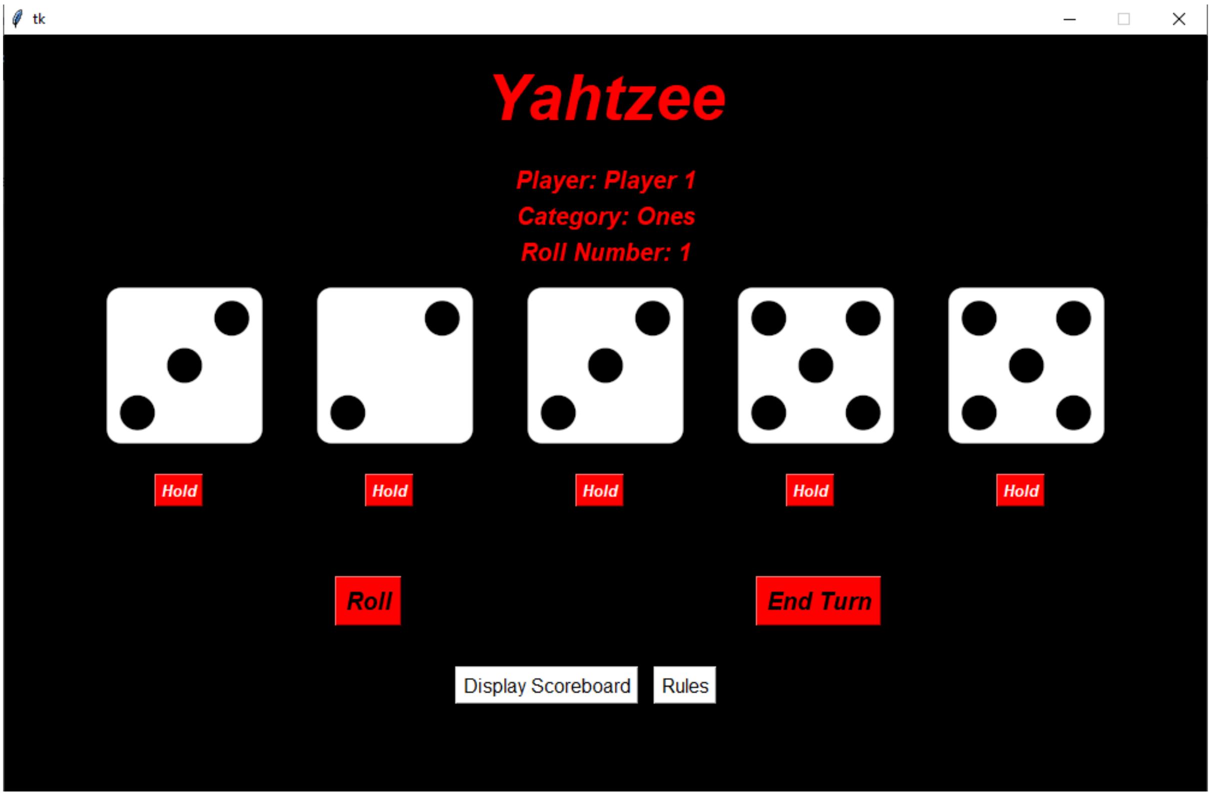
- Main menu screen
    - Create game screen button
    - Display rules screen button
- Display rules screen
    - Displays rules in popup
- Game setup screen
    - Choose gamemode dropdown
    - Choose number of players dropdown
    - Name of players input forms
    - Displays rules button
- Roll dice Screen
    - Displays dice
        - Hold button for each die
        - Roll button
        - End Turn button
        - Display scoreboard button
        - End game button
        - Display rules button
- Display Scoreboard screen
    - Select scoring category button(s)
    - Display rules button
- Display winner screen
    - Displays final scoreboard
    - Rematch button
    - Display rules button



Main Screen Gui

New Game - Allows user to set up a new game

Rules - Allows user to bring up the rules of the game in a pop up window when pressed



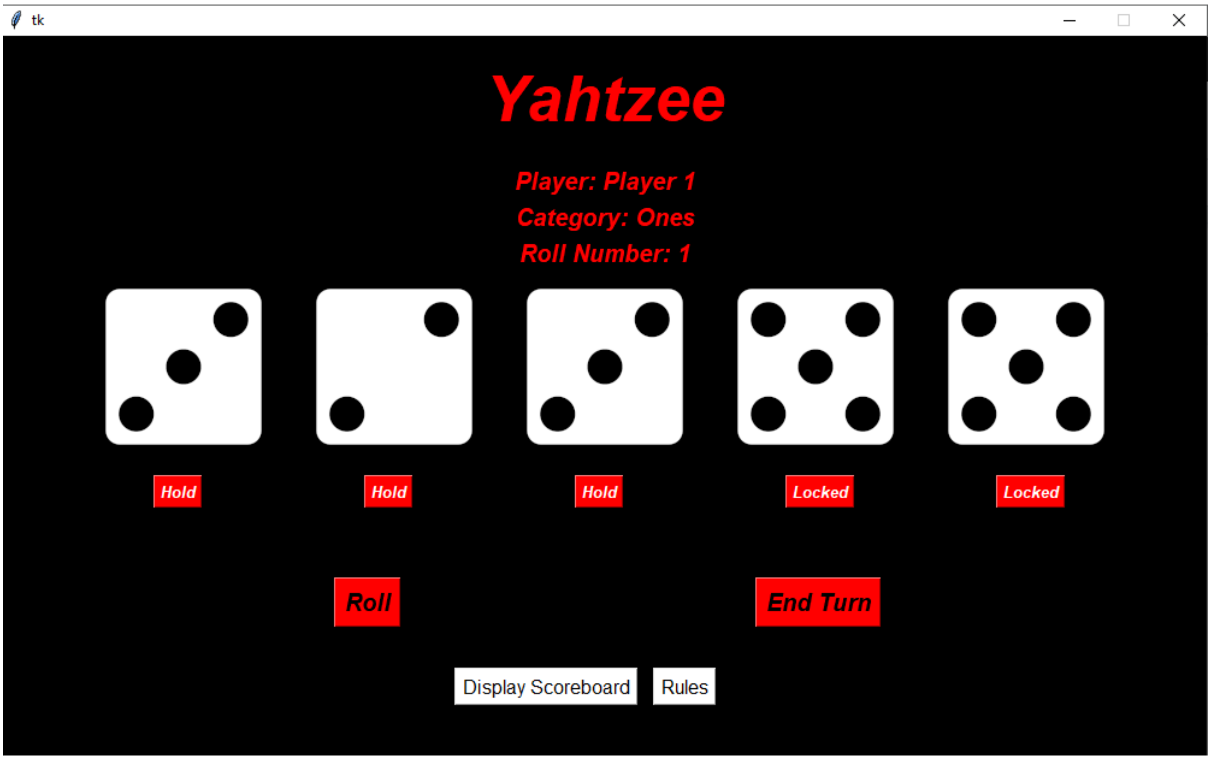
Hold - Indicates the users ability to lock the dice between rolls

Roll - Allows user to roll dice on their turn

End Turn - Allows user to end their current turn to be scored with current dice

Display scoreboard - Allows user to view the scoreboard when pressed

Rules - Allows user to bring up the rules of the game in a pop up window when pressed



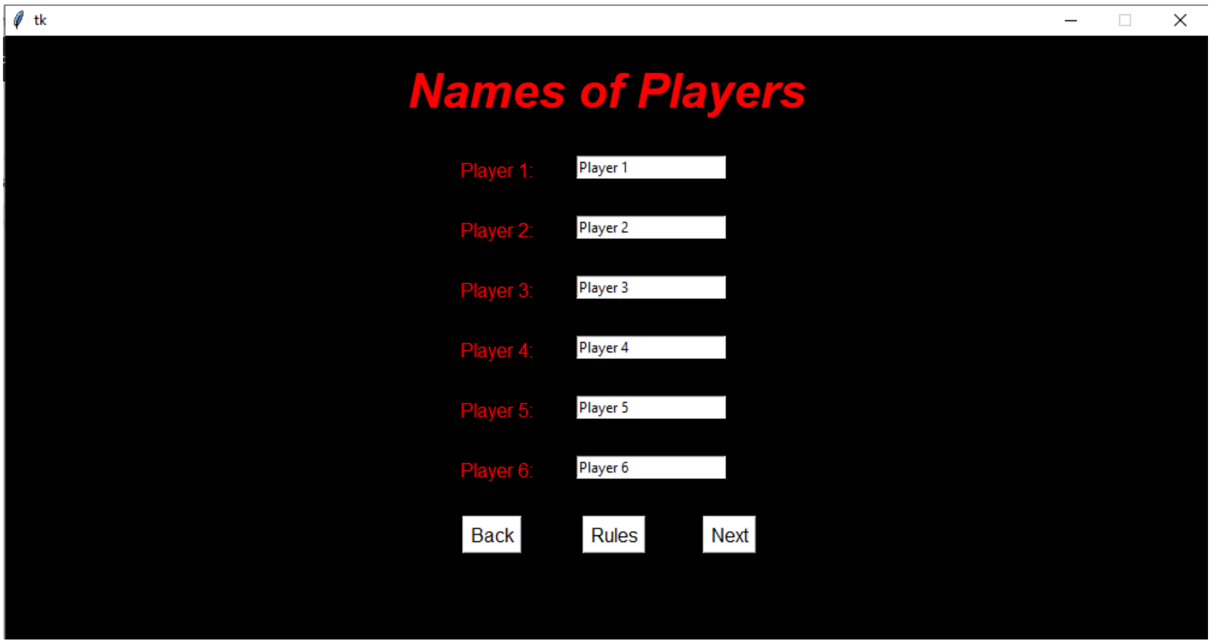
Player: Player 1

Category: Ones

Roll Number: 1

Same widgets as last screen

Locked - indicates that the current dice displayed above is being held between rolls



Player 1: Player 1

Player 2: Player 2

Player 3: Player 3

Player 4: Player 4

Player 5: Player 5

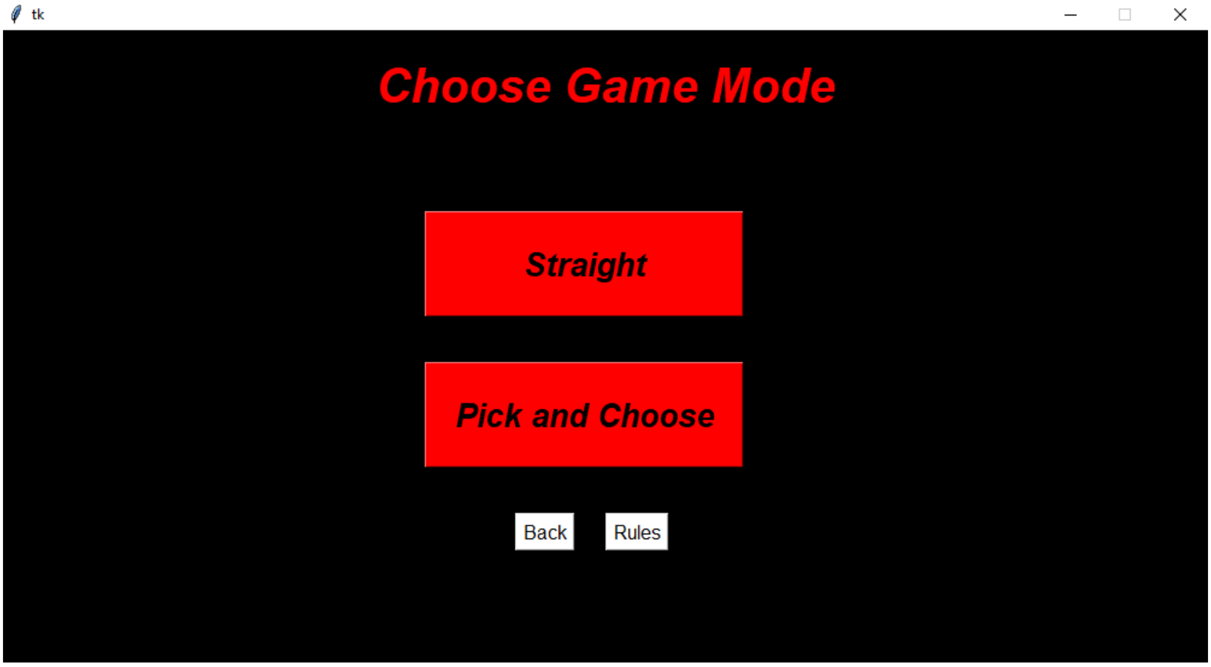
Player 6: Player 6

Player text field - Allows user to enter their name into the blank provided

Back - Allows user to return to the previous window

Rules - Allows user to bring up the rules of the game in a pop up window when pressed

Next - Allows user to begin playing the game with settings entered

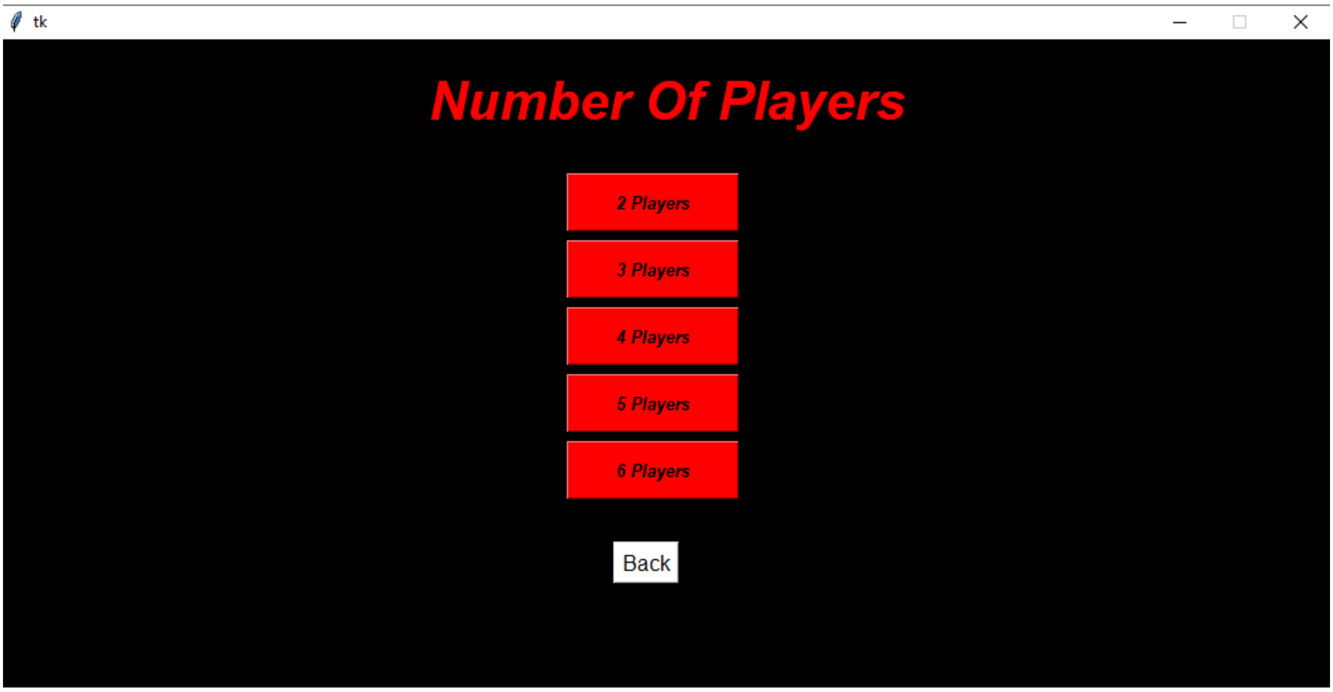


Straight - Allows user to choose to play the normal game mode when selected

Pick-and-Choose - Allows user to choose to play the pick-and-choose game mode when selected

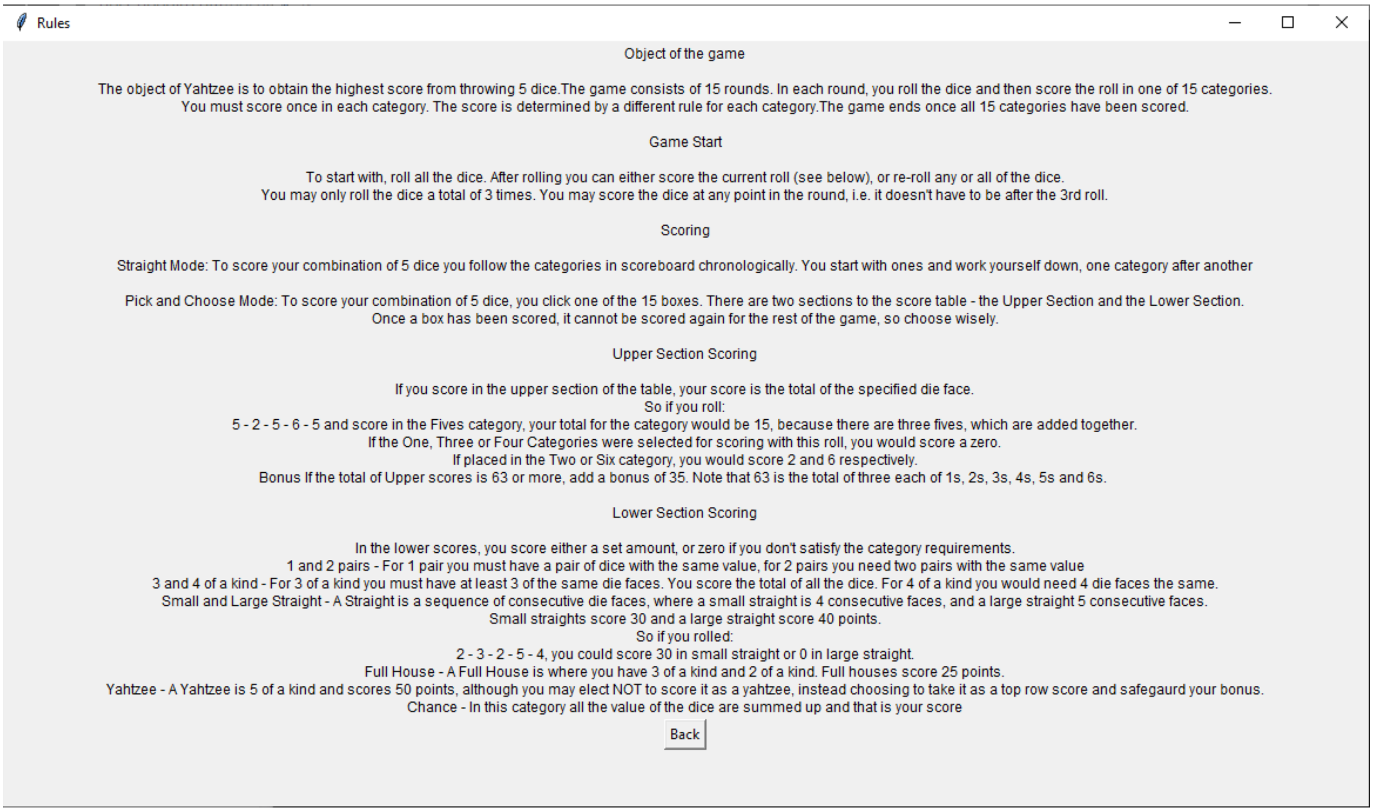
Back - Allows user to return to the previous window when pressed

Rules - Allows user to bring up the rules of the game in a pop up window when pressed



Player Number Buttons - Allows user to select the number of players that will be playing the game

Back - Allows user to return to the previous window when pressed



Object of the game

The object of Yahtzee is to obtain the highest score from throwing 5 dice.The game consists of 15 rounds. In each round, you roll the dice and then score the roll in one of 15 categories.
You must score once in each category. The score is determined by a different rule for each category.The game ends once all 15 categories have been scored.

Game Start

To start with, roll all the dice. After rolling you can either score the current roll (see below), or re-roll any or all of the dice.
You may only roll the dice a total of 3 times. You may score the dice at any point in the round, i.e. it doesn't have to be after the 3rd roll.

Scoring

Straight Mode: To score your combination of 5 dice you follow the categories in scoreboard chronologically. You start with ones and work yourself down, one category after another

Pick and Choose Mode: To score your combination of 5 dice, you click one of the 15 boxes. There are two sections to the score table - the Upper Section and the Lower Section.
Once a box has been scored, it cannot be scored again for the rest of the game, so choose wisely.

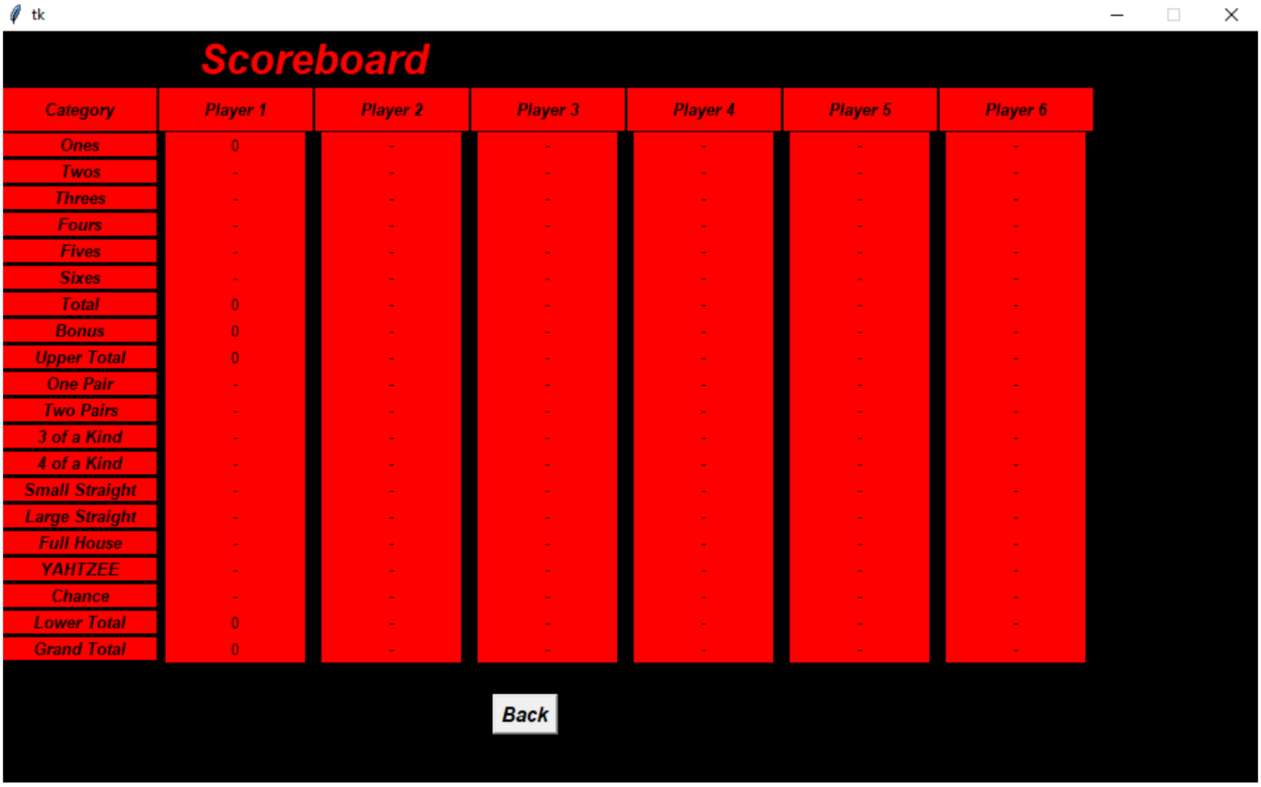
Upper Section Scoring

If you score in the upper section of the table, your score is the total of the specified die face.
So if you roll:
5 - 2 - 5 - 6 - 5 and score in the Fives category, your total for the category would be 15, because there are three fives, which are added together.
If the One, Three or Four Categories were selected for scoring with this roll, you would score a zero.
If placed in the Two or Six category, you would score 2 and 6 respectively.
Bonus If the total of Upper scores is 63 or more, add a bonus of 35. Note that 63 is the total of three each of 1s, 2s, 3s, 4s, 5s and 6s.

Lower Section Scoring

In the lower scores, you score either a set amount, or zero if you don't satisfy the category requirements.
1 and 2 pairs - For 1 pair you must have a pair of dice with the same value, for 2 pairs you need two pairs with the same value
3 and 4 of a kind - For 3 of a kind you must have at least 3 of the same die faces. You score the total of all the dice. For 4 of a kind you would need 4 die faces the same.
Small and Large Straight - A Straight is a sequence of consecutive die faces, where a small straight is 4 consecutive faces, and a large straight 5 consecutive faces.
Small straights score 30 and a large straight score 40 points.
So if you rolled:
2 - 3 - 2 - 5 - 4, you could score 30 in small straight or 0 in large straight.
Full House - A Full House is where you have 3 of a kind and 2 of a kind. Full houses score 25 points.
Yahtzee - A Yahtzee is 5 of a kind and scores 50 points, although you may elect NOT to score it as a yahtzee, instead choosing to take it as a top row score and safegaurd your bonus.
Chance - In this category all the value of the dice are summed up and that is your score

A display of the rules of the game to be displayed in a separate window at any time in the game when user presses the rules button

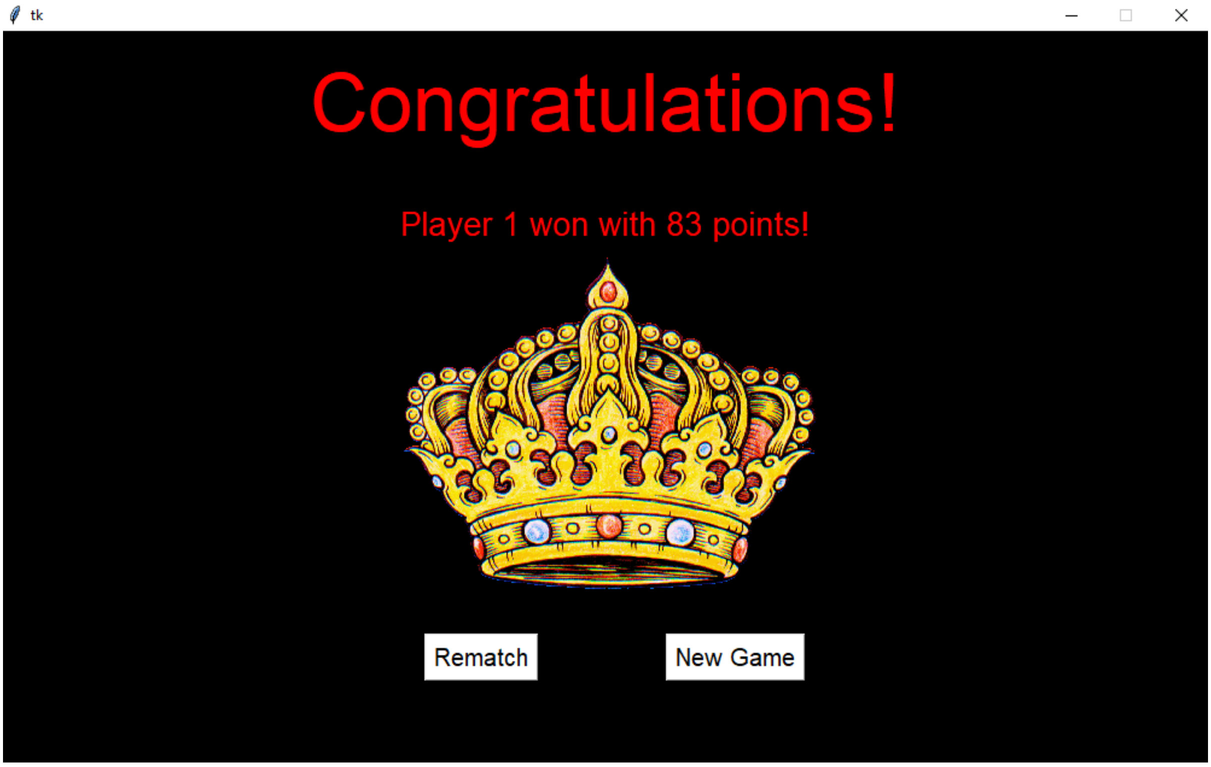


Scoreboard

Category	Player 1	Player 2	Player 3	Player 4	Player 5	Player 6
Ones	0	-	-	-	-	-
Twos	-	-	-	-	-	-
Threes	-	-	-	-	-	-
Fours	-	-	-	-	-	-
Fives	-	-	-	-	-	-
Sixes	-	-	-	-	-	-
Total	0	-	-	-	-	-
Bonus	0	-	-	-	-	-
Upper Total	0	-	-	-	-	-
One Pair	-	-	-	-	-	-
Two Pairs	-	-	-	-	-	-
3 of a Kind	-	-	-	-	-	-
4 of a Kind	-	-	-	-	-	-
Small Straight	-	-	-	-	-	-
Large Straight	-	-	-	-	-	-
Full House	-	-	-	-	-	-
YAHTZEE	-	-	-	-	-	-
Chance	-	-	-	-	-	-
Lower Total	0	-	-	-	-	-
Grand Total	0	-	-	-	-	-

Scoreboard with scoring category buttons that allow the user to choose which category to place their dice into in the Pick-and-Choose game mode

Scores for each category will be displayed for each player under their names column and the coordinating row.



Congratulations!

Player 1 won with 83 points!

Display Winner GUI:

Name and points of winner

Rematch button - Keeps all player and mode information and begins a new game at   Game Play Screen with round and score reset

New Game button - Returns user to choose game mode screen and resets all variables

Classes

Rules GUI

Attributes:
rules_displayed_in_text_format

Methods:
show_rules()

Player number selection GUI:

Attributes:
checkbox for # players

back_button
rules_button
continue_button

Methods:
show_rules()

Player name entry GUI:

Attributes:
textbox for # of players. If user chooses four players in previous GUI, this window displays four text boxes to enter name for each player
back_button
rules_button
start_game_button

Methods:
showRules()
next()
goBack()

Game Mode Selection GUI

Attributes:
pick_and_choose_button
straight_button

Methods:
show_rules() - Pop up window displaying rules
pick_and_choose(game_mode) - button for pick and choose game mode
straight(game_mode) - button to choose straight game mode
game(num_players, names, game_mode)

Game Screen GUI

Attributes:
die_image * 5
hold_button * 5 (changes to locked text if player chooses to lock die)
end_game button
display_scoreboard button
end_turn_button
current_player_name_text_box
roll_button
current_player_turn_text_box

Methods:
roll()

display_scoreboard()
end_game()
lock_die()

Scoreboard GUI

Attributes:

Methods:
select_category()

DisplayWinner GUI

Attributes:
winner_text_box
string_player_name
player_score

Methods:
display_winner(calculate_score) - shows the player name with highest total score
rematch() - returns to game_screen
exit_game() - ends the game and returns to main_screen

Game

Attributes:
int players - the number of players in the game
str game_mode - indicates if the game is straight or pick-and-choose
Methods:
void roll_dice() - calls roll method on each die in Game
display_winner(list total_scores,) - returns winner name and score as a tuple
display_scoreboard()
void new_round(int turn_number)

Die

Attributes:
boolean locked - tells if the die is being locked from rolling
int value - the value of the current die, 1-6
Methods:
void roll() - changes variable “value” to a random number 1-6 if the die is unlocked

Player

A class that

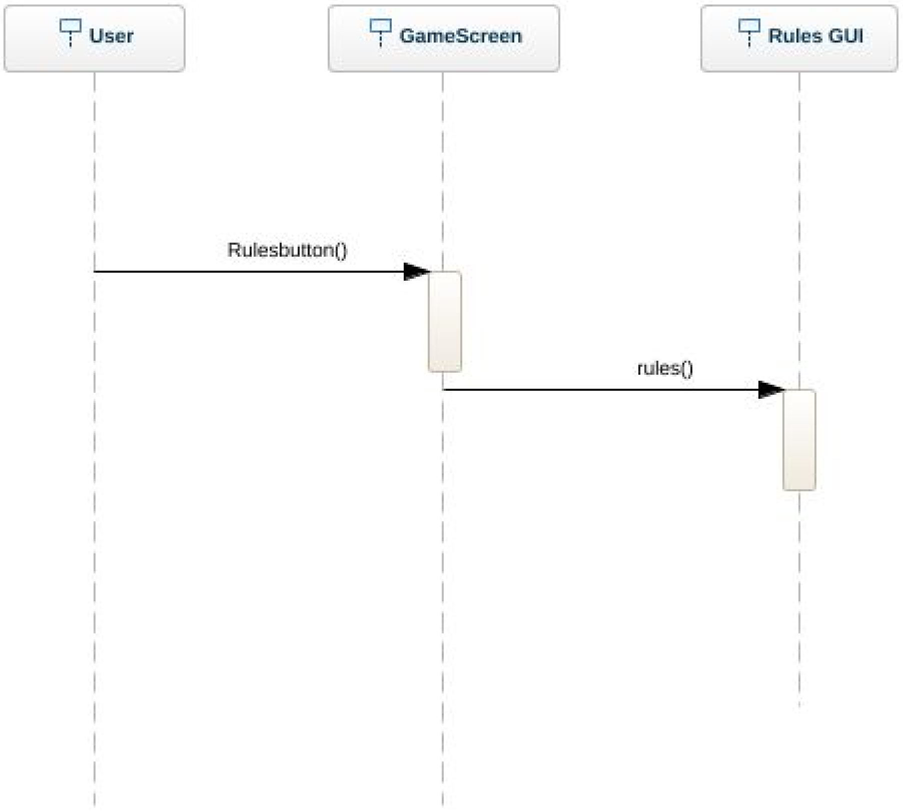
Attributes:

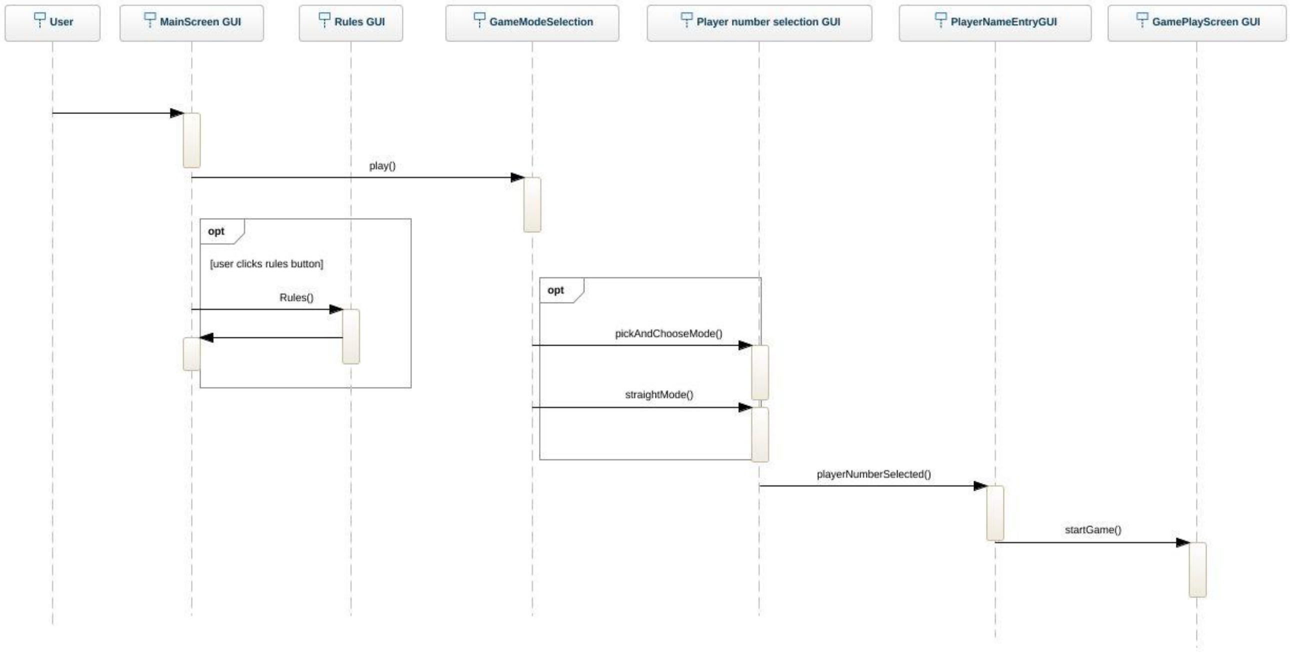
str name - indicates the name of the player
int player_nr - indicates which player it is. 1, 2, 3, 4, 5, or 6.
int roll_number - indicates the turn number the player is currently on (1-3)
{} scoreboard - key is string of category and value is the score
Methods:

Scoreboard

Attributes:
[] list_of_scoreboards - list of dictionaries
Methods:
user_choose_category(int player_nr, str category)
void set_score(category, score)
int calculate_score(str category,int player_number, int [ ]list of dices) - returns calculated score for given category
new_turn(next_player) - changes the turn
display_buttonless_scoreboard() - displays scoreboard for in turn viewing

Week 1:
It shall be possible to choose game mode of your choice.
Pick number of players and enter their names
Display the gamescreen with images of die and applicable buttons
Week 2:
It shall be possible to roll the die and show a randomized number between 1 to 6 on each die. It shall be possible to lock each die.
Week 3:
The game shall display the scoreboard and it shall be possible to choose category if pick and choose game mode and the game should calculate score for category and display it in the applicable category in scoreboard.
Week 4: Shall be possible for player object to hold information for the player such as score, turn
Week 5:
Get everything to work together. Finalize and clean up the game with no errors.

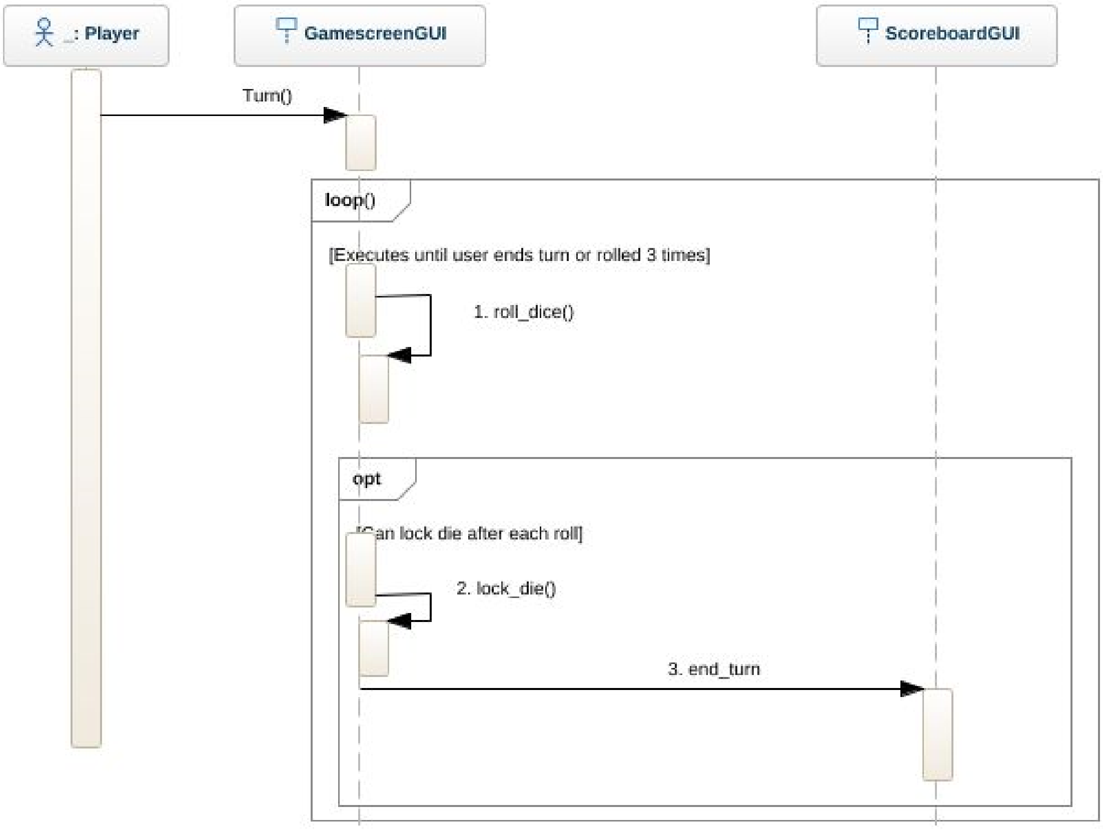

User
GameScreen
Rules GUI
Rulesbutton()
rules()


User
MainScreen GUI
Rules GUI
GameModeSelection
Player number selection GUI
PlayerNameEntryGUI
GamePlayScreen GUI
play()
opt
[user clicks rules button]
Rules()
opt
pickAndChooseMode()
straightMode()
playerNumberSelected()
startGame()

Sequence Diagram for Roll Dice Use Case

Use Case

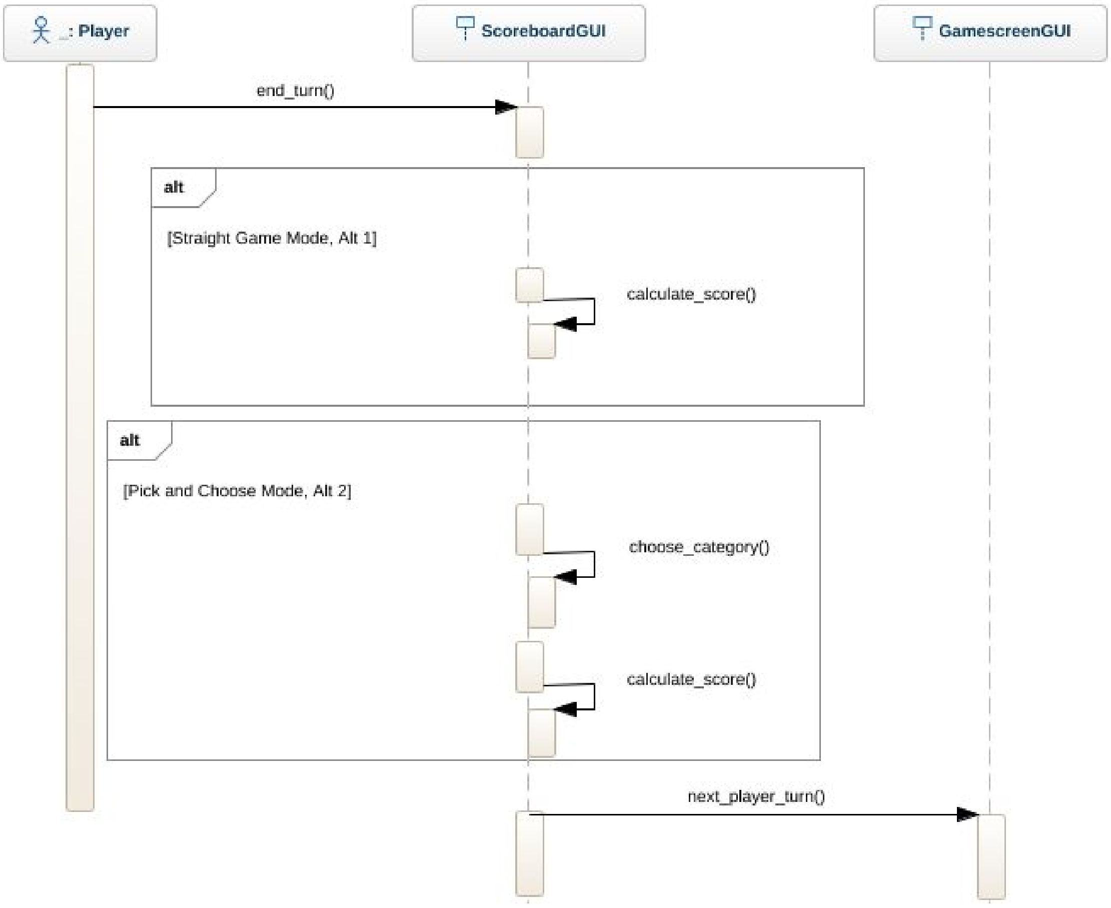
1. User presses roll button
2. System displays dice with randomized value from 1-6
3. User can press hold dice which will lock that dice for the next roll
4. User goes back to step 1 until rolled three times.
5. User can choose to end turn after each roll



Sequence Diagram for Scoreboard Use Case

Use Case

1. User clicks end turn
2. System displays scoreboard
3. In straight mode scoreboard will be displayed after each player turn with score for category calculated and displayed in right category
If game mode is set to Pick-and-Choose:
4. User presses scoring category of their choice
4. System calculates the score for selected category
5. System displays the score in the category in scoreboard
6. User presses “next player turn”
7. System displays the gameplay screen



Pilkin Functional Requirements for library:

3.2 Functional Requirements

Upon opening the software, the system should display the login screen with text boxes for user name and password and a button to submit the login information. User will enter their credentials and click on the submit button when completed.

If user enters the correct credentials, the system will display a main menu screen. The main menu screen will allow the user to select between multiple options including Add Book, Remove Book, Add Patron, Remove Patron, Book Search, Book Check-In and Book Check-Out.

When the user selects Add Patron the system will display a window prompting the user to enter the Patron’s name, address, date of birth. There will be a button displayed that the user will press to generate a unique id for the patron. After entering all the information and obtaining the id, the user will press the Add Patron button which will add the patron’s information into the system. This button press will also send the information to the printer and will print an identification card for the patron.

When the user selects the Remove Patron option from the main menu selection screen, the system will display a small pop up window prompting the user to scan the patron’s identification card. There shall also be a button on the pop-up window that the user will press if the patron does not have an id card. If the user scans a patron’s card, then the system should display a window with the patron’s information and a button that says remove patron. When the user selects the remove patron button then the system should display a message asking the user if they are sure they would like to remove the patron. If the user presses yes, then the system will remove the patron and return the user to the main screen GUI. If the user presses no then the patron account is not removed, and the user is returned to the main screen GUI.

When the user selects the Add Book option from the main menu selection screen, the system will display a window for the user to enter the details of the book. These details will include the title, the author, the genre, the number of pages and the quantity. This window will also have a button for the user to press when all information has been entered, this button is labeled Add Book and when pressed will add the book and its details to the system. When the button is pressed it will also send to the printer the information and it will print barcodes for the number of books that the user entered in the quantity section.

When the user selects the Remove Book option from the main menu selection screen, the system will display a small pop-up window prompting the user to scan the book’s barcode. There shall also be a button on the pop-up window that the user will press if there is no barcode for the book. When the user scans the barcode, the system shall open a window displaying the book’s information along with a quantity to remove text box. User will enter the quantity to remove and press the on-screen button labeled Remove Book. When the user selects the button to remove the book the system will display a message asking the user if they are sure they would like to remove x copies of y book. If the user presses yes, the system shall remove the book from its memory and return the user to the main screen. If the user presses no then the book shall remain unchanged and the user returned to the main screen.

When the user selects the Check-Out option from the main menu selection screen, the system shall display a small pop-up window prompting the user to scan the book's barcode. There shall also be a button on the pop-up window that the user will press if there is no barcode for the book. The system will then display a window with all the book's information. There will be a button on this window labeled Check Out. When the user presses the check out button the system will display a small pop-up window prompting the user to scan the patron's identification card. This pop-up should also feature a button that the user may press if the patron does not have an identification card. After the user has scanned the patron's id, the system will remove the book from on hand inventory and add it to the patrons account. The user is returned to the main menu screen.

When the user selects the Check-In option from the main menu selection screen, the system shall display a small pop-up window prompting the user to scan the patron's id. There shall also be a button on the pop-up window that the user will press if the patron does not have their id. After scanning the patron's info, the system will display a small pop-up window prompting the user to scan the book's barcode. There shall also be a button on the pop-up window that the user will press if there is no barcode for the book. After scanning the barcode, the system shall remove the book from the patron's account and add the book into the book inventory. The user is returned to the main menu screen.

When the user selects the Book Search option from the main menu selection screen, the system shall display a window with a keyword search bar. There will also be a drop-down selection menu next to the keyword entry box. This drop-down menu will feature categories such as general, title, and author. If the user selects general, then the system will match keywords from all categories. If the user selects title, then the system will only search keywords in the title category. If the user selects author, then the system will only search keywords in the author category. The system shall display search results as a list of 25 per page. When the user clicks on an item, they are taken to the Book Information Screen.

From the Book Information screen, the user has the options to locate the item, view the availability of the item and order the item if there is none in inventory at the location. When the user enters a quantity into the order and presses the order button, the system will display a message asking the user if they are sure they want to order those copies. User presses yes and the system will order and return user to the main screen. User presses no and no order is placed, and user is returned to the main screen.