1) Project description

We will be building our own version of the classic game Yahtzee. Yahtzee is a dice game based off of poker, and the rules are very simple. Each player rolls dice to try and get a combination of numbers, different combinations of numbers give different scores. The rules of Yahtzee state that there are five dice in play to be rolled, and that each player gets up to three retrolls per turn. After every turn, a player must choose a line on the scorecard that they wish to enter a score for based off of the dice they rolled. If the combination of dice a player rolls does not fulfill an empty line on their scorecard, they must choose a line to enter a zero on. Once all players' scorecards are fully filled out, a winner can be decided. All players simply total all the lines of their scorecard, and the player with the highest score wins.

With this project, we will be using Java to create a multiplayer version of Yahtzee, which will be displayed in a GUI using Java Swing. In our program, the user(s) will first be greeted with a start screen in which they can configure how many players will be playing, and from there will be able to start the game. Once they start the game, a separate GUI will appear, and this will contain the contents of our game, including a scorecard and scoring functions, and buttons to reroll dice and change whos turn it is. Once a winner is selected, the players will then be asked if they would like to play again, and if they choose not to, the program will end. Our overall goal for this project is to make a smooth playing experience for the users, and we want it to look as professional as possible.

2) Functional Requirements

- Ability to add players to create multiplayer function
- Ability to display scorecard possibilities based on dice hand that was rolled
- Ability to select score from scoreboard score lines
- Ability to display dice in the form of images using Java Swing
- Ability to check which dice you would like keep and which one you'd like to reroll during each turn
- Display which players turn it is, what dice have been rolled, how many rerolls a player still has left for that turn, and the current scorecard for whichever player is currently up, all in an organized manner

Part	Title
Priority	
Purpose	
input / Needs	
operators / Actors	
Outputs	

Multiplayer Functionality	Title
Priority	Med
Purpose	The program is designed to allow multiple players to play the game on the same device
Input / Needs	The inputs would involve having another player class that is able to dynamically create up to a ceratin number of players depending on the user input
Operators / Actors	Scorecard, player object
Outputs	The output of this requirement involves multiple scorecards and an ability to sort the winner depending on the score of their scorecard. It would need to store all this data, almost dynamically depending on the amount of players

Roll Dice	Title
Priority	High
Purpose	The program will roll all the dice or however many are selected to roll again depending on

	which buttons are pressed
input / Needs	The input would have to be with clicks to a button(s)
operators / Actors	actionListener would have to be implemented in order to see which buttons were pressed and which need to be rolled again. Another function would handle the action of creating a random number that would then be used to retrieve the dice rolled's image and put that into the frame.
Outputs	Populating the frame with a new dice side(image)

Scorecard	Title
Priority	High
Purpose	The purpose is to display the current scorecard from the hand that was rolled
input / Needs	Dice, dice hand rolled, and how many scorecard options are left to be scored, score total
operators / Actors	Frame 2 would be involved as it is where we intend to put this scorecard object, depending on how many players we would display that many scorecards
Outputs	Updated display of scorecard depending on the dice that were rolled

Select score	Title
Priority	High
Purpose	Select a score from scorecard to add to total

input / Needs	Scorecard would be needed, buttons or something that can be clicekd in order to be changed, score total would be changed, removing of hte score from scorecard
operators / Actors	Scorecard would be involved in changing this along with a function to update an array list that displays the current scores available. Simple adding function as well in order to add score to the selected score
Outputs	Total score should be modified, along with the scorecard not being able to display that current score anymore, turn would also be the other players if multiple players

Display Dice	Title
Priority	High
Purpose	Display the dice that have been rolled
input / Needs	Frame along with image labels, and the actual image in folder
operators / Actors	The jframe would be involved alone with file io so a label would be displayed as an image.
Outputs	Image being displayed on the GUI (multiple dice)

Select dice	Title
Priority	high
Purpose	Select the dice you want to keep
input / Needs	Actionlistner to when the dice is selected to keep.

operators / Actors	Nothing is going to happen to the dice so make them static in the array list
Outputs	Does not change the dice when the reroll happens

Display score	Title
Priority	high
Purpose	See which player has the highest score.
input / Needs	Hand of dice and score of each. Scorecard frame me to be able to display this on
operators / Actors	Functions for adding up scores and population them into the score card (ex. 4k function, 3k function).
Outputs	Display score on scorecard and populate it

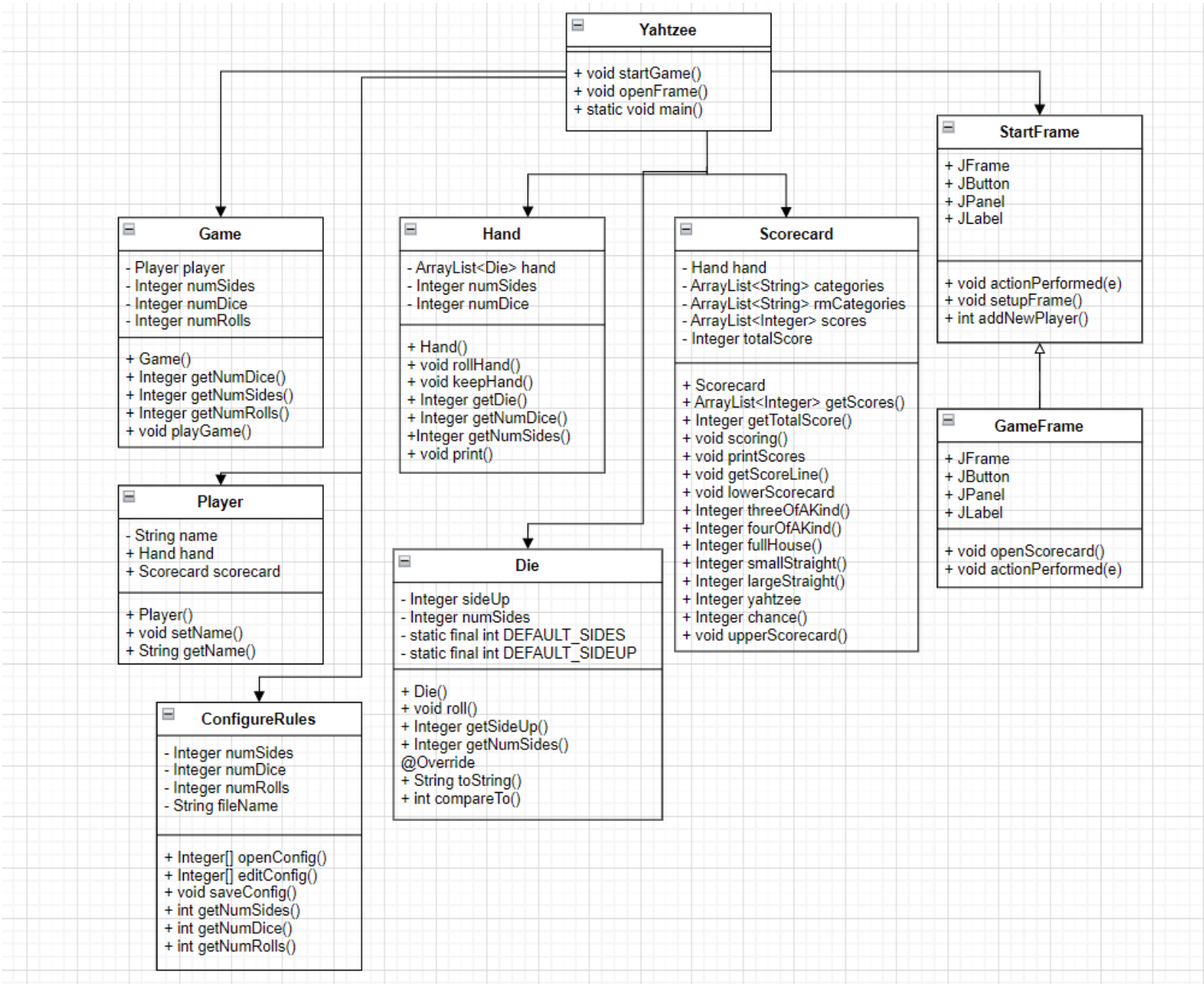
Display player	Title
Priority	high
Purpose	Be able to distinguish which players turn it is
input / Needs	Player number and player counter
operators / Actors	Be able to display it with a label, be able to add and mod it to be able to display player and next turn correctly
Outputs	Display the players turn on the play frame

Rerolls left	Title
Priority	High
Purpose	Be able to know how many rolls are left in your turn
input / Needs	Label that is able to display score that is on the play frame
operators / Actors	Be able to subtract one roll each time the player rerolls and should be distinct for each player depending on their rerolls
Outputs	Display the rerolls left on the frame play

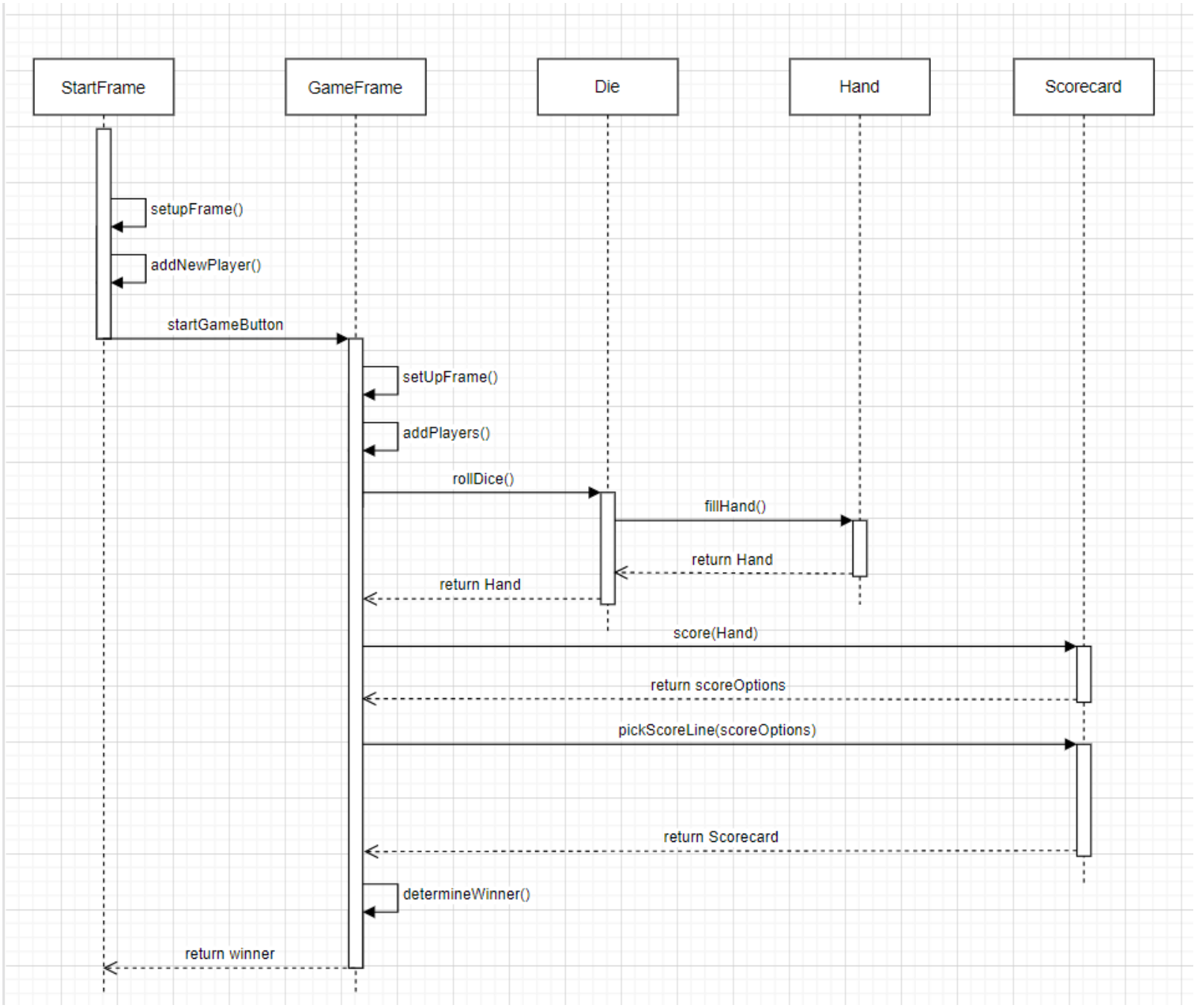
Display winner	Title
Priority	Medium
Purpose	Display which player has won at the end of the game
input / Needs	Scorecard and adding of the scores to see which one is full first
operators / Actors	Adding function that is able to see which scorecard is full.
Outputs	Display the winner. Maybe let others finish their game to not just have one sole winner. Ranking system almost

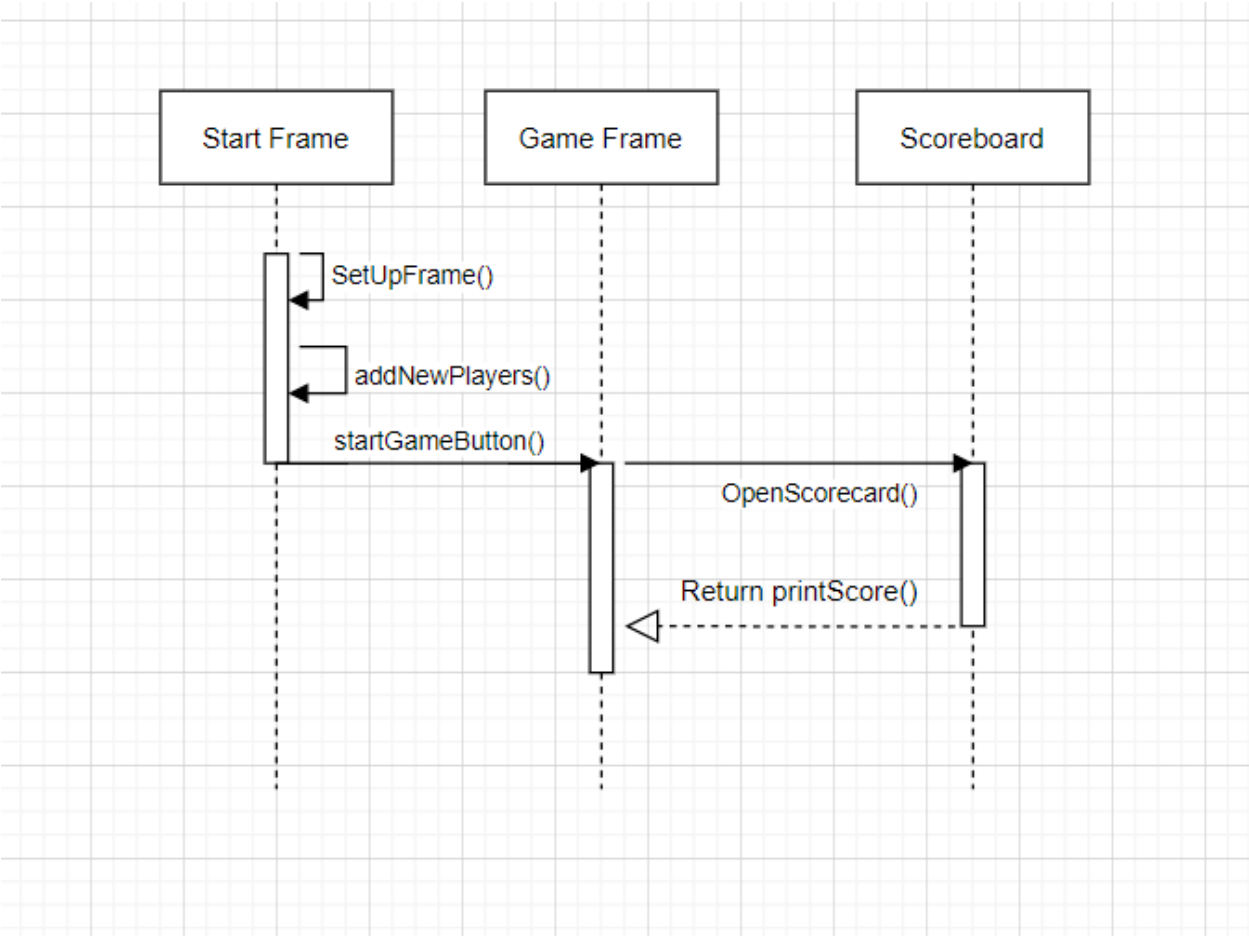
3) UML for:

a) System objects you'll be making



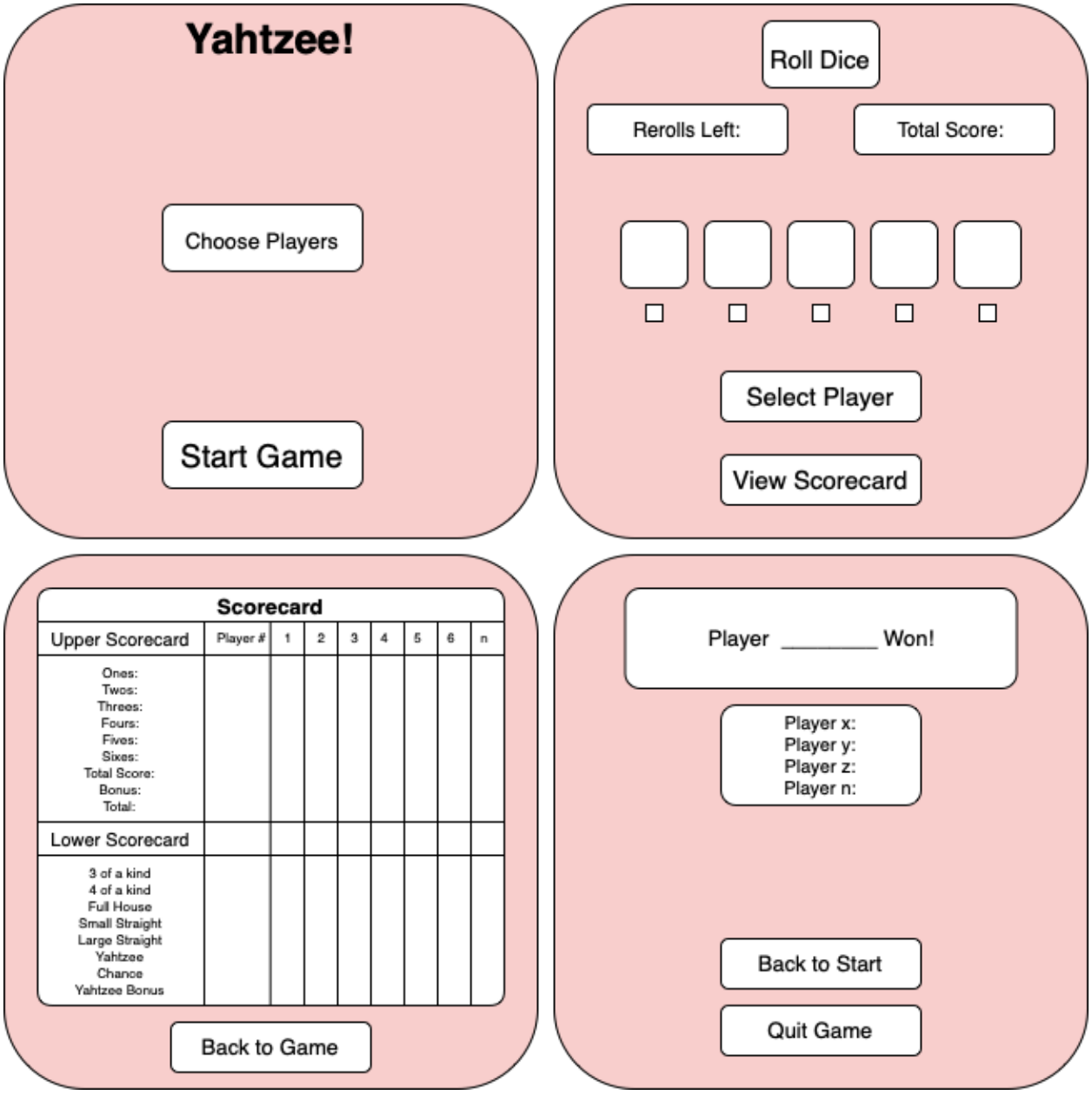
b) Primary 2-3 sequence diagrams for the game interface




Start Frame
Game Frame
Scoreboard
SetUpFrame()
addNewPlayers()
startGameButton()
OpenScorecard()
Return printScore()

4) Sketch of your user interface design

Ranking players on final frame
Total score - rerolls left - select score



5)

Work on part 3 of final project (Group; 6 hrs) by november 18
Create a player class that will hold each players scorecard and player names (Brandon; 2 hrs) by november 19
Create the dice and scoreboard class (Louis; 2 hrs) by november19
Create the hand class (Arjuna; 2 hrs) by november 21
Create the start frame for yahtzee. (Arjuna; 2 hrs) by november 21
Properly implement the start frame in the yahtzee driver class (Louis; 2 hrs) by november 23
Create the scoreboard frame for yahtzee (Brandon; 1hr) by november 23
Create the game frame for yahtzee (Finn*; 3 hrs) by november 23
Create the game over frame for yahtzee (Brandon; 2 hrs) by november 23
Properly implement the game frame in the yahtzee driver class (Brandon; 3 hrs) by nov 23
Create tests for the scoreboard class(Brandon; 1hr) by november 23
Create tests for the player class (Brandon; 1 hr) by november 23
Create tests for the dice class (Louis; 1 hr) by november 23
Create tests for the start frame for yahtzee (Arjuna; 1 hr) by november 23
Create tests for the game frame for yahtzee (Finn; 2 hrs) by november 29
Create tests for the game over frame and scoreboard frame (Brandon; 2 hrs) by november 29