

CEWP MOD4

# **INTRODUCTION TO JAVA**

FALL 2019

Deliverable 1

Yahtzee project

(Group B/Team E)

Lucas CHAMPSAUR / Lucas PECH / Arthur RAPP

# Table of Contents

1 - Reflection on working with the others towards a common goal

2 - Contribution on deliverable

3 - Evidences of tests

4 - Yahtzee rules we are using

5 - Evaluation of existing implementation

## 1 - Reflection on working with the others towards a common goal

### Lucas CHAMPSAUR:

Although I had already work on a project as the member of a team several times, this time I had to do it with people that I don't necessarily know that well. However, I think that we worked well together. We got along really quickly and have been able to work efficiently together. There were no disagreements on the project nor on the organization of the work. Though, we still have a lot of work until we finish this project completely.

### Lucas PECH:

Working as a team is not something new for me, we are doing for 2 years now. But the fact is that I usually work with the same person, Lucas is one of these persons, while Arthur is not. At first, I was a bit afraid to be with somebody I never worked with. However, after speaking all three about the project we find a good way to work together by meeting each other after classes and using GitHub. Moreover, the time at the end of classes we had to spend on the project helped us helped us to know us better. Finally, this first phase of the project went well, the cooperation helped us to go way faster and the fact of being 3 to think about the same project but in different way allowed us to find the best way to do it. I hope the other phase will be like this one.

### Arthur RAPP:

Working with both Lucas turn out better than expected. We start the project as soon as possible because we didn't know how much time it would take to complete it. Each one had a task to complete and for each it worked out very well. I'm really pleased with my teammates and wouldn't mind keeping working with them on this project.

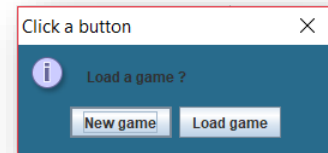
## 2 - Contribution on deliverable

Group B / Team E	Contributions
<b>Lucas CHAMPSAUR</b>	<ul style="list-style-type: none"><li>• Security of the inputs.</li><li>• Optimization of the algorithm.</li><li>• Implementation of the "play again" option.</li><li>• Implementation of the exit of the algorithm.</li><li>• Improvements on the display of the game.</li><li>• Detection of the winner when playing multiplayer.</li><li>• Correction of mistakes created by the implementation of the lower part of the scoreboard</li><li>• Save implementation</li><li>• Design of GUI</li></ul>
<b>Lucas PECH</b>	<ul style="list-style-type: none"><li>• Implementation of the function that enters the score in the scoresheet and reset the other rows.</li><li>• Implementation of the condition that forbid the user to choose the same score again.</li><li>• Implementation of the end condition and of the calculation of the score.</li><li>• Implementation of the limitation of 2 reroll per turn.</li><li>• Implementation of multiplayer</li><li>• Implementation of detection of all lower section rows</li><li>• Implementation of the GUI</li><li>• Hint button implementation</li></ul>
<b>Arthur RAPP</b>	<ul style="list-style-type: none"><li>• Implementation of all the function permitting to roll the dice.</li><li>• Implementation of the function permitting to reroll.</li><li>• Implementation of the menu permitting to choose if we want to reroll or block a score.</li><li>• Implementation of the display of the scoresheet.</li><li>• Separation of the code in different class</li><li>• Load function</li></ul>

### 3 - Evidences of tests

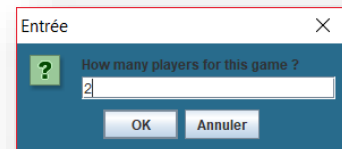
#### Test of the new game / load game menu:

When running our program this first window is displayed, it asks you if you want to play a new game or to load the last game you saved.

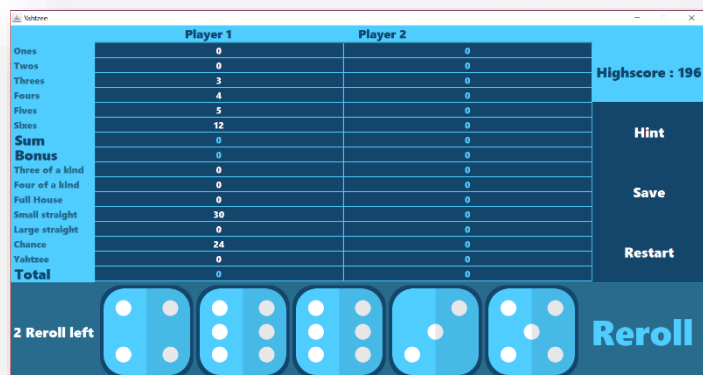


#### Test of the how many player windows:

When selecting new game this menu is displayed asking you the number of players you want for this game. Note that this window is not displayed if you load a game as the choice as already be made for the game you load.

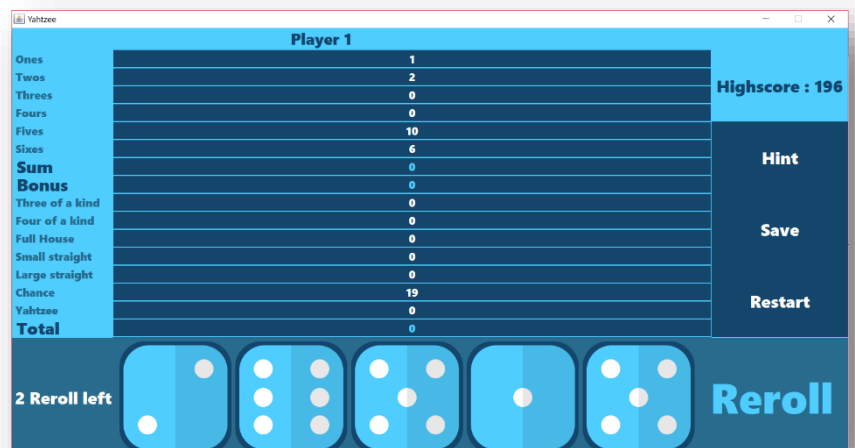


Here is the window you obtain by selecting 2 players for the game.

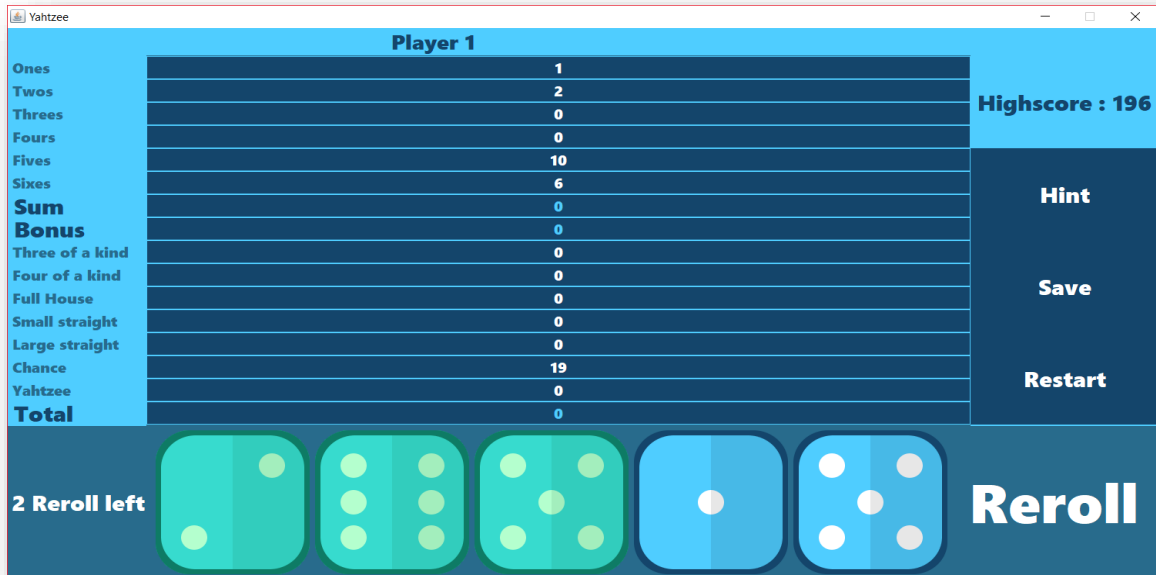


#### Test of the upper section:

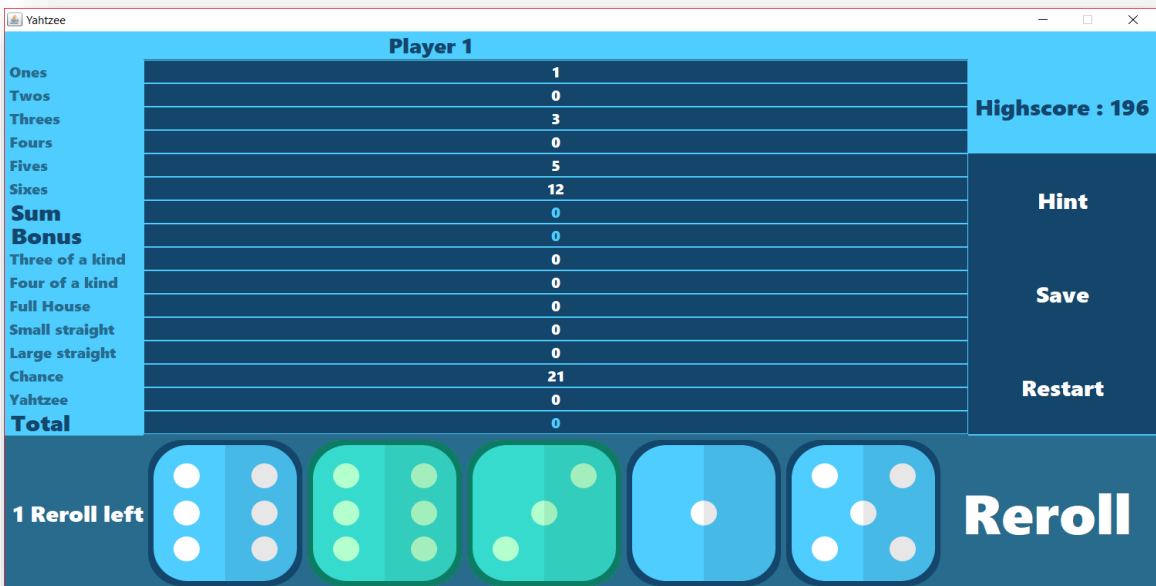
Here we can see that depending of the values of the dices the upper section is filled well.



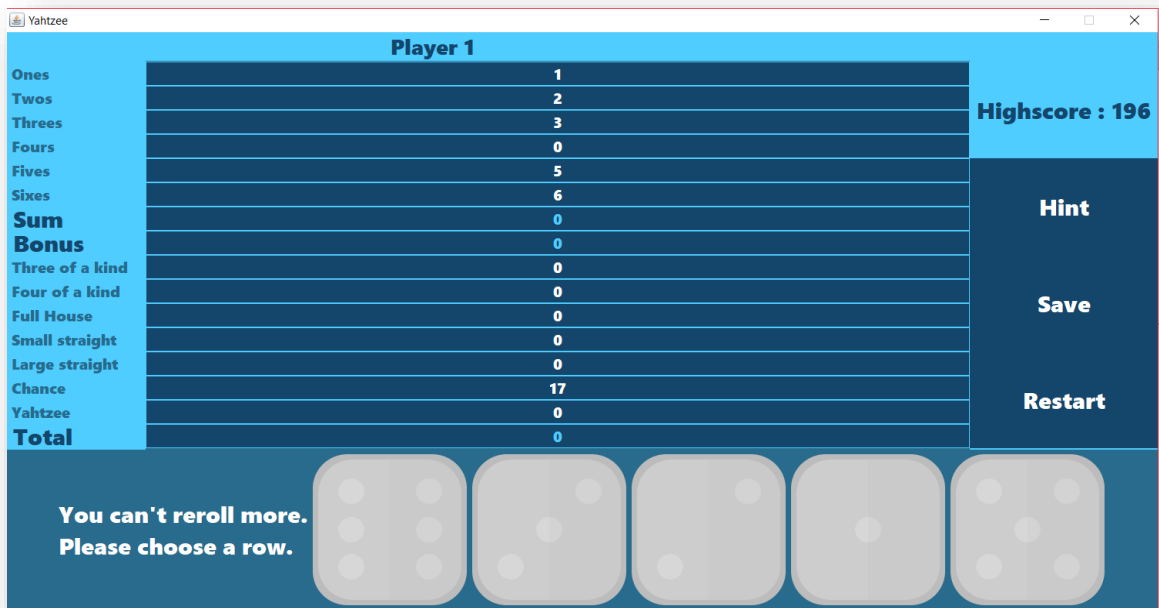
## Test of the reroll:



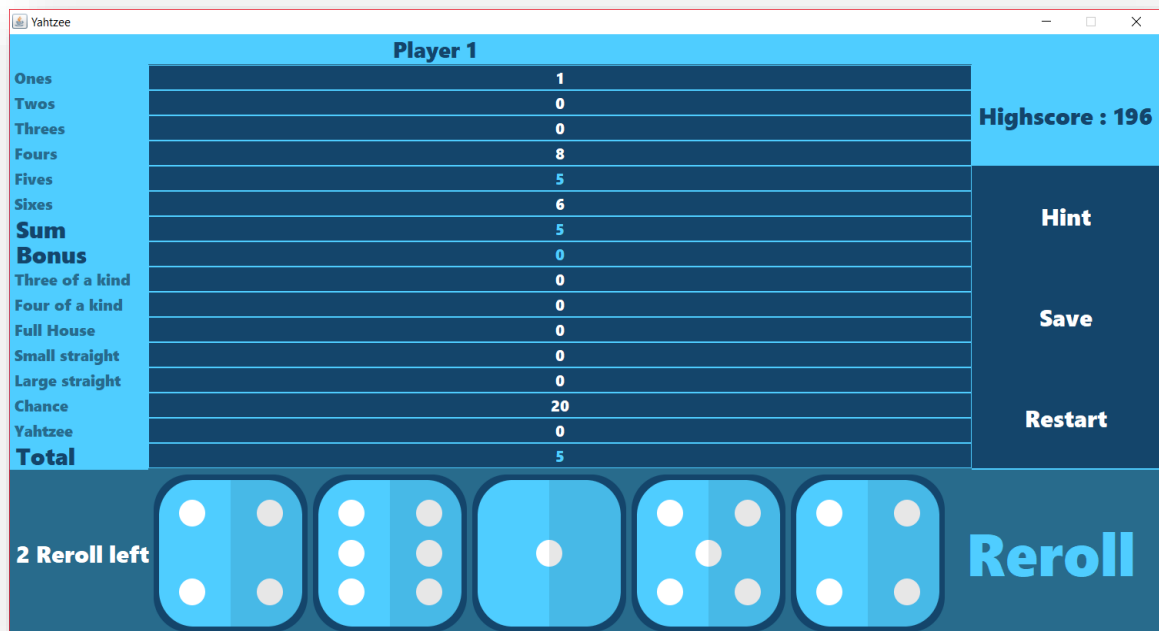
The player can select the dices he wants to reroll, they will change of color to signal that they are select. Note that the button reroll is enabled only when at least one dice is selected



When the user rerolls dices then its number of reroll decreases and the scoreboard preview values changes.

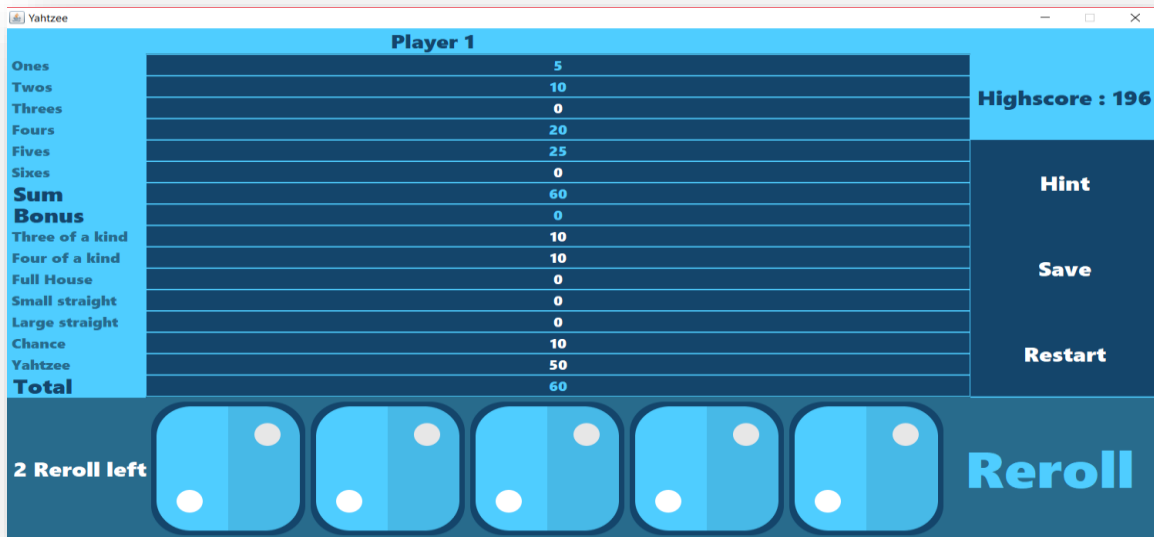


When the player has used its 2 reroll then the button rerolls disappear and the dices are disabled so that the user is forced to choose a row in the scoreboard.

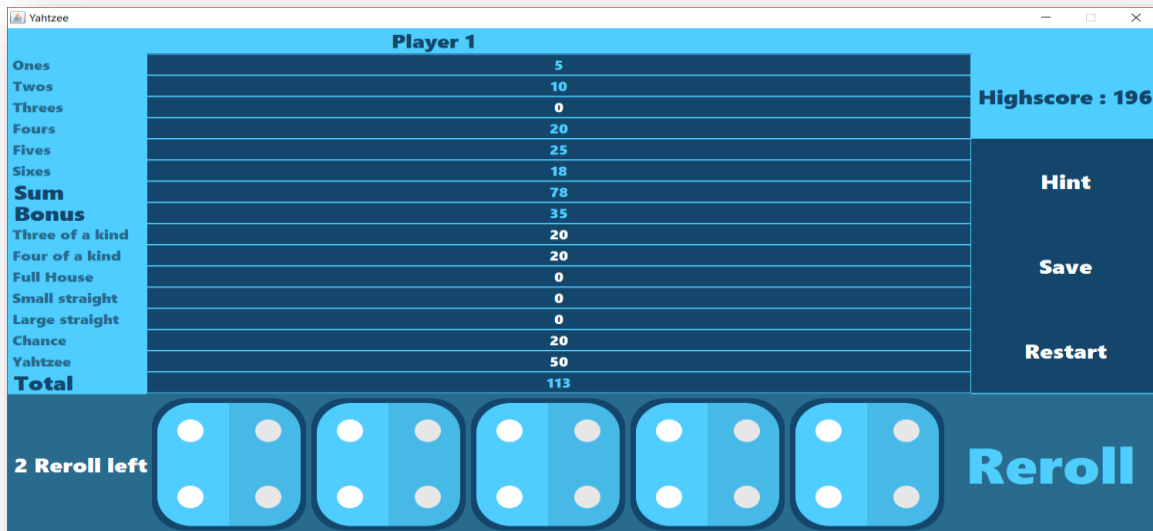


When the user has chosen the row to block in the scoreboard, the row change of color and is enabled so that the player can't choose it again. Then the dices are enabled, and we give him 2 reroll for its new turn.

### Test of the upper section:



We can see on this screen that if the sum of the upper section is lower than 63 then the bonus of 35 point is not given to the player.



Here we can see that the sum of the upper section is working well. It does the addition of all the blocked rows. The bonus section also works: the bonus of 35 points appear because there is more than 63 point in the sum. The total score also works, it does the addition of all the blocked rows.



### Test 3 of a kind:

He we can see that there are 3 dice of the same kind (5,5,5) and that the row corresponding to this combination is well filled with the sum of all the dices.

The screenshot shows the Yahtzee game interface for Player 1. The scorecard is as follows:

Player 1	
Ones	0
Twos	0
Threes	0
Fours	4
Fives	15
Sixes	6
Sum	0
Bonus	0
Three of a kind	25
Four of a kind	0
Full House	0
Small straight	0
Large straight	0
Chance	25
Yahtzee	0
Total	0

On the right side, the Highscore is 196. Below the scorecard, there are buttons for Hint, Save, and Restart. At the bottom, there are five dice showing 5, 5, 5, 5, and 5. The text '2 Reroll left' is on the left and 'Reroll' is on the right.

### Test 4 of a kind:

He we can see that there are 4 dice of the same kind (5,5,5,5) and that the row corresponding to this combination is well filled with the sum of all the dices.

We also observe that the row three of a kind is filled with the sum of the dices which is logic.

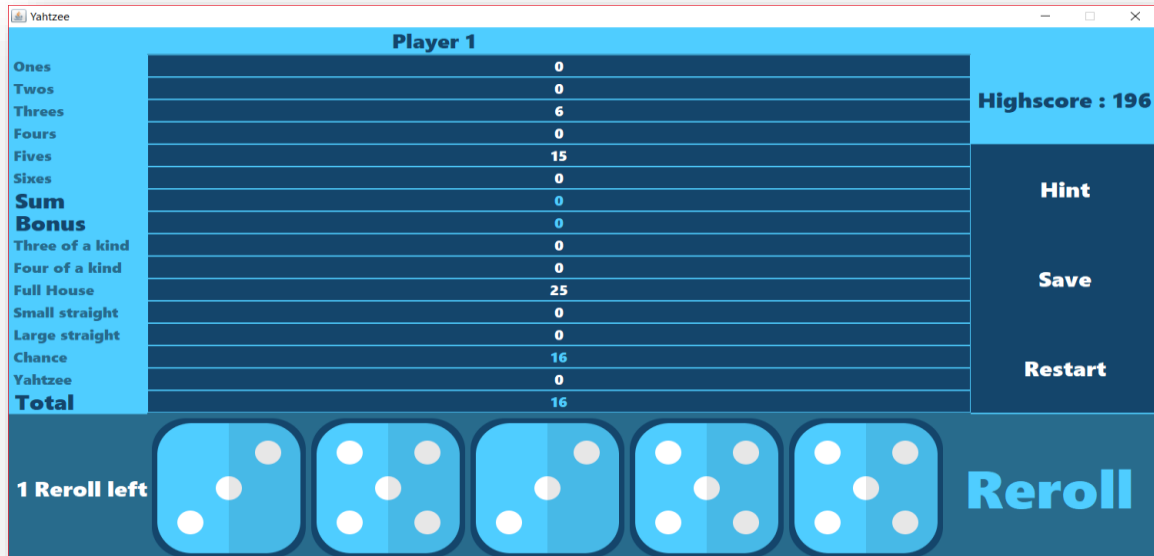
The screenshot shows the Yahtzee game interface for Player 1. The scorecard is as follows:

Player 1	
Ones	0
Twos	0
Threes	0
Fours	0
Fives	20
Sixes	6
Sum	0
Bonus	0
Three of a kind	26
Four of a kind	26
Full House	0
Small straight	0
Large straight	0
Chance	26
Yahtzee	0
Total	0

On the right side, the Highscore is 196. Below the scorecard, there are buttons for Hint, Save, and Restart. At the bottom, there are five dice showing 5, 5, 5, 5, and 5. The text '1 Reroll left' is on the left and 'Reroll' is on the right.

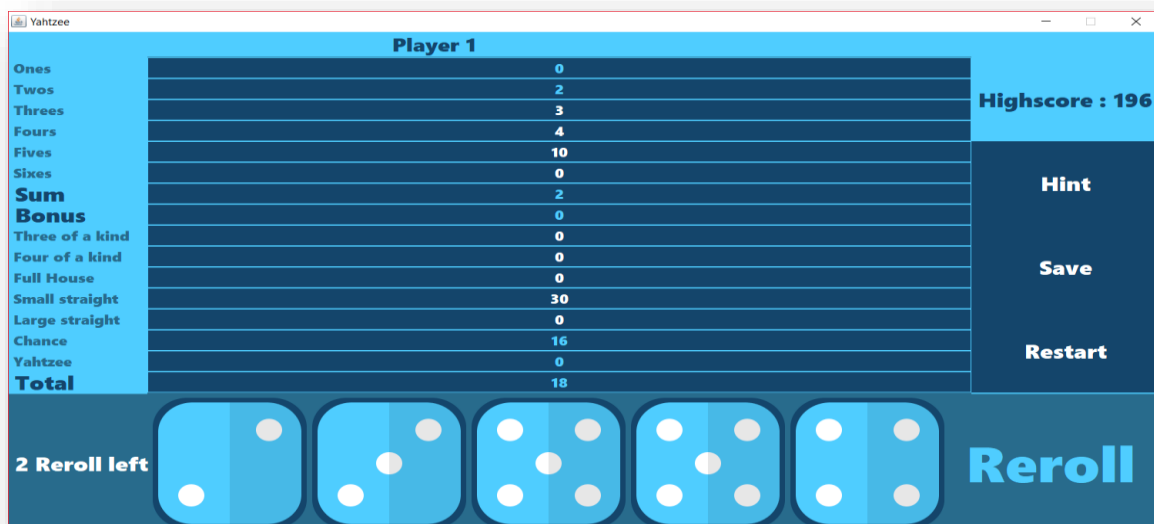
### Test full house:

Here we can observe that the full house row is working well. In fact, the dices are forming a full house (a pair of three and a brellan of fives) and the full house row is filled with 25 point.



### Test small straight:

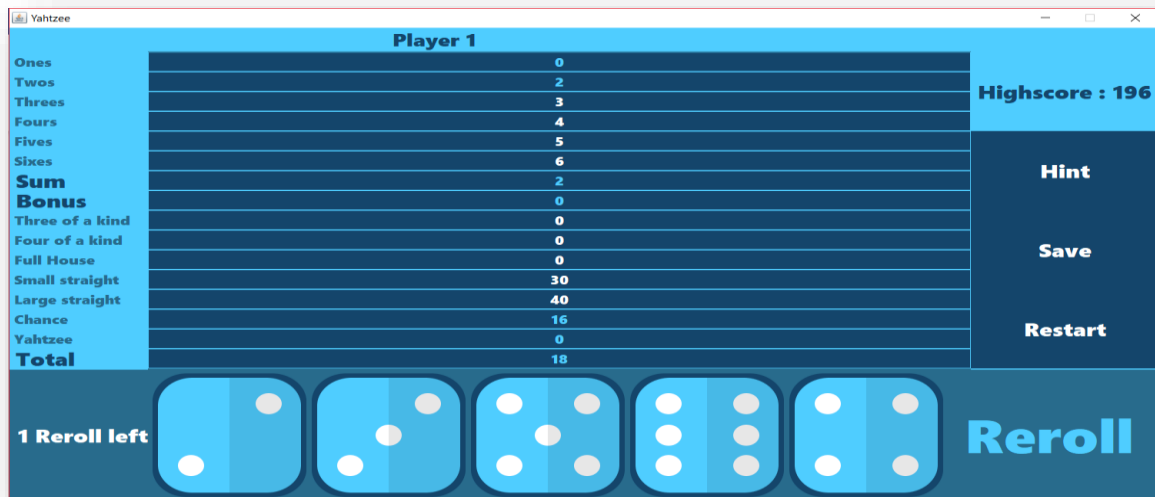
Here we can see that there is a small straight in the roll (2,3,4,5) and that the small straight row is well filled with 30 point.



### Test large straight:

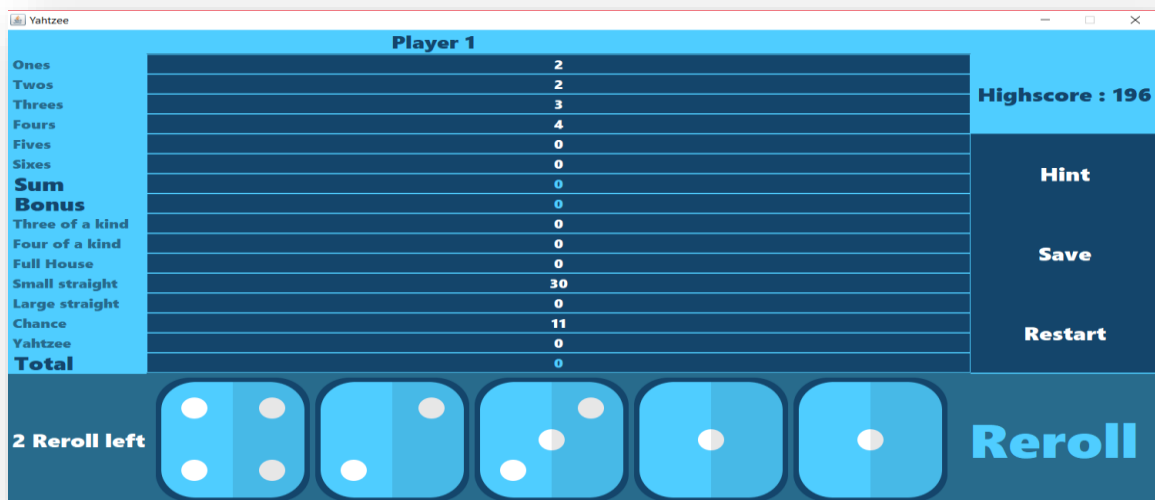
Here we can see that there is a large straight in the roll (2,3,4,5,6) and that the large straight row is well filled with 40 point.

We also observe that the small straight row is filled too which is logic as a large straight is also a small one.



### Test chance:

Here we observe that the chance row works well. This row is always filled with the total of all the dice of the roll. Here  $3+6+4+4+4 = 21$  and the chance row is filled with 21.



### Test Yahtzee:

Here we have 5 same dices and the Yahtzee column is well filled with 50 points.

The three/four of a kind columns are filled which as well means they work well.

Yahtzee

Player 1

Ones	0
Twos	0
Threes	0
Fours	0
Fives	25
Sixes	0
Sum	0
Bonus	0
Three of a kind	25
Four of a kind	25
Full House	0
Small straight	0
Large straight	0
Chance	25
Yahtzee	50
Total	0

Highscore : 196

Hint

Save

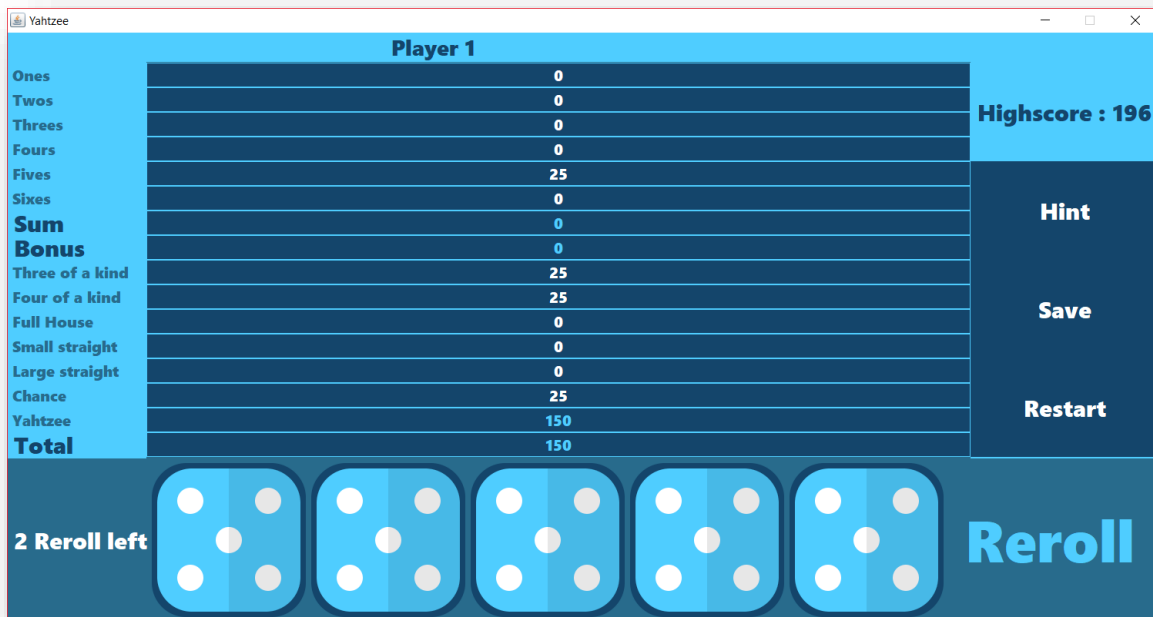
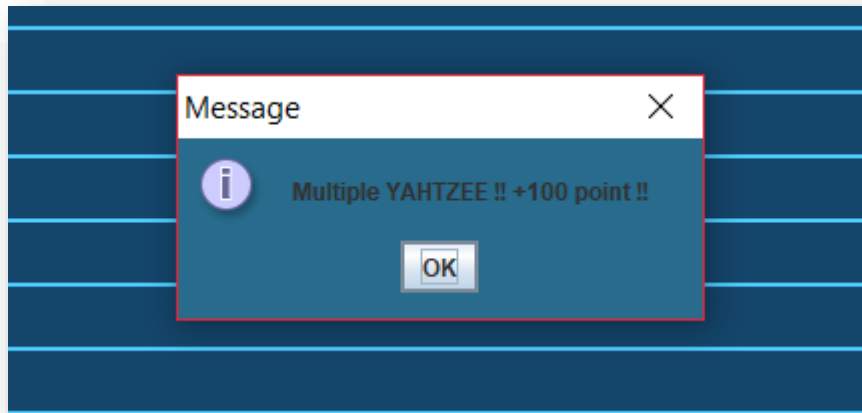
Restart

2 Reroll left

Reroll

### Test multiple Yahtzee:

Here we are testing multiple Yahtzee. The rules say that when a player is having a Yahtzee and he has already filled the Yahtzee row, then he gets 100 bonus point.



### Test multiple Yahtzee:

Here we can observe what happen when the player gets multiple Yahtzee and the upper section is already filled.

The rules say that he can choose the row he wants in the lower section scoring the normal score. We the program is doing exactly this.

The screenshot shows a Yahtzee game window titled "Yahtzee". The main area is divided into two sections. The top section, labeled "Player 1", contains a table of scores. The bottom section shows five dice and a "Reroll" button.

Player 1	
Ones	0
Twos	0
Threes	0
Fours	0
Fives	25
Sixes	0
Sum	25
Bonus	0
Three of a kind	25
Four of a kind	25
Full House	25
Small straight	30
Large straight	40
Chance	25
Yahtzee	250
Total	275

Highscore : 196

Hint

Save

Restart

2 Reroll left

Reroll

### Test end of a game and high score:

Here we can see that the scoresheet has been fully filled by the 2 players, so the game end and the winner is showed.

	Player 1	Player 2
Ones	2	3
Twos	2	4
Threes	3	3
Fours	4	4
Fives	5	5
Sixes	12	12
<b>Sum</b>	<b>28</b>	<b>31</b>
<b>Bonus</b>	<b>0</b>	<b>0</b>
Three of a kind	24	24
Four of a kind	0	25
Full House	0	0
Small straight	30	0
Large straight	40	0
Chance	20	14
Yahtzee	0	0
<b>Total</b>	<b>142</b>	<b>94</b>

Highscore : 196

Hint

Save

Restart

2 Reroll left

Reroll

Message: Player 1 is the winner with a total of 142 point this game!

Our program also handles the case of an equality.

	Player 1	Player 2
Ones	0	0
Twos	0	0
Threes	3	0
Fours	4	0
Fives	0	0
Sixes	6	0
<b>Sum</b>	<b>13</b>	<b>0</b>
<b>Bonus</b>	<b>0</b>	<b>0</b>
Three of a kind	0	0
Four of a kind	0	0
Full House	0	0
Small straight	0	0
Large straight	0	0
Chance	12	25
Yahtzee	0	0
<b>Total</b>	<b>25</b>	<b>25</b>

Highscore : 1545

Hint

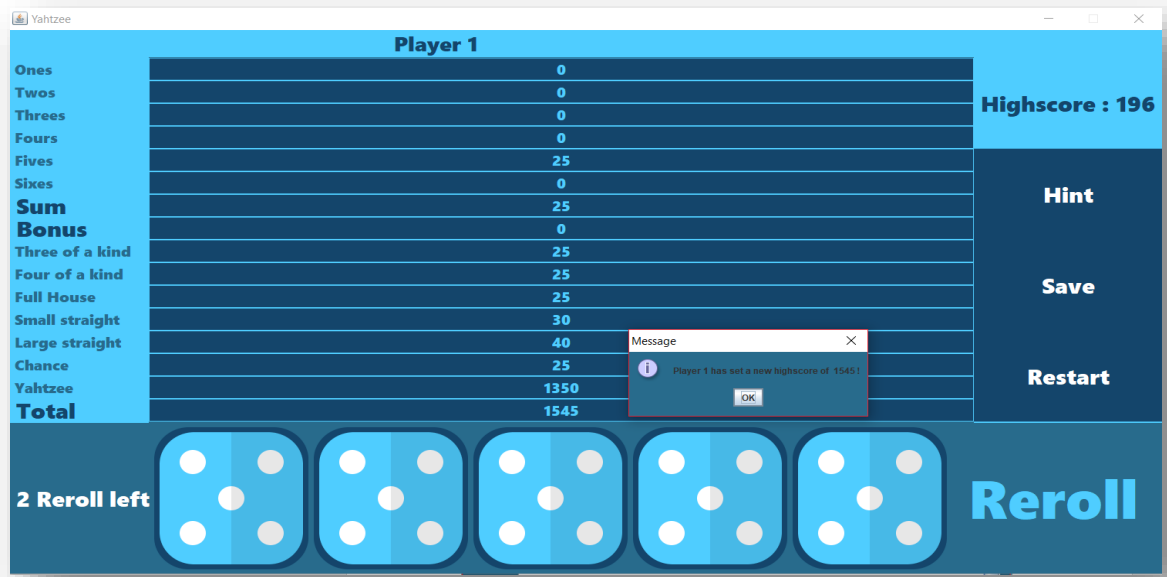
Save

Restart

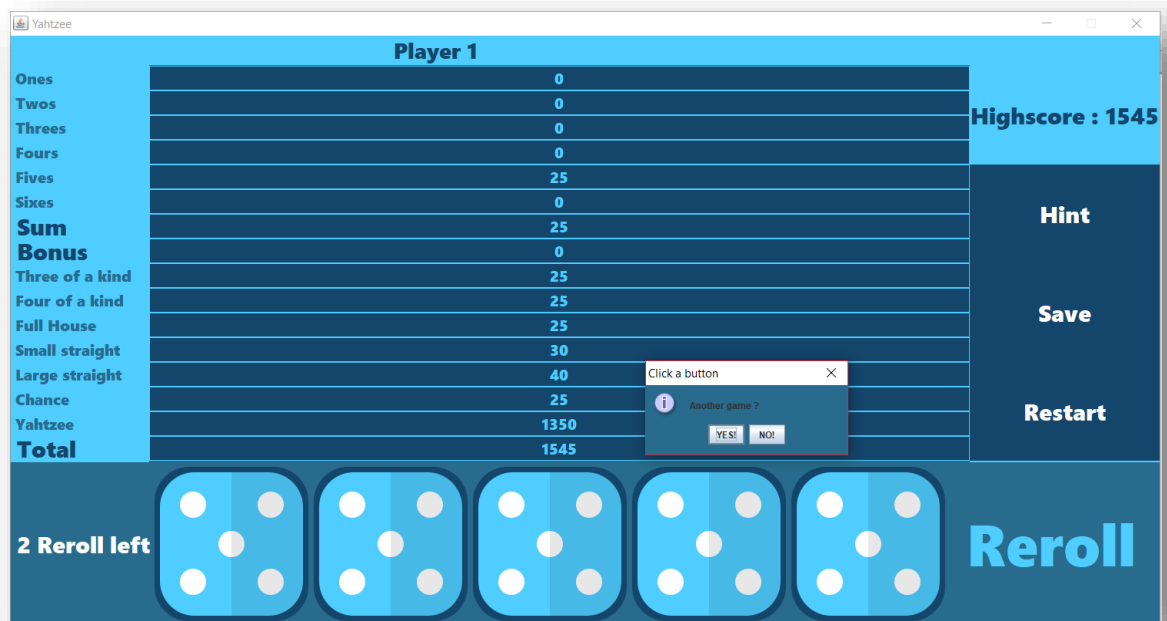
2 Reroll left

Reroll

Message: Equality between : player 1 and : player 2 with a total score of 25!



At the end of the game we check if the player beat the high score, if it is the case then we display a message to tell him and we refresh the value of the high score.

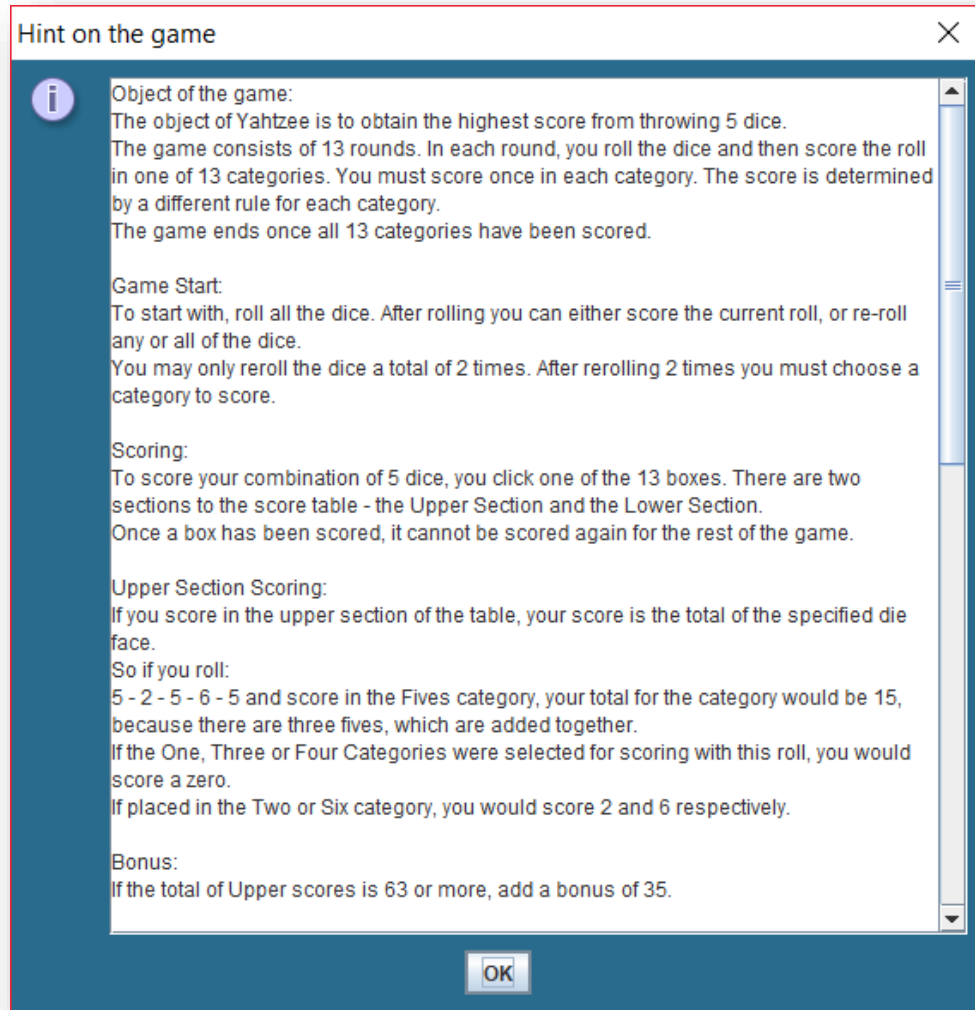


Then we can see that it asks the user if he wants to play again or not.  
If the user chooses yes it display him **the new game / load game menu**



### Test hint menu:

When the play clicks on the hint button then it displays the Yahtzee rules.



**Save button:** save the current score, player turn and number of reroll in a file so that the user can later load this game again.

**Restart button:** close the window and show the player the new game / load game menu

## 4 - Yahtzee rules we are using

### Object of the game:

The object of Yahtzee is to obtain the highest score from throwing 5 dice.

The game consists of 13 rounds. In each round, you roll the dice and then score the roll in one of 13 categories. You must score once in each category. The score is determined by a different rule for each category.

The game ends once all 13 categories have been scored.

### Game Start:

To start with, roll all the dice. After rolling you can either score the current roll, or re-roll any or all of the dice.

You may only reroll the dice a total of 2 times. After rerolling 2 times you must choose a category to score.

### Scoring:

To score your combination of 5 dice, you click one of the 13 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.

### 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.

### Lower Section Scoring:

In the lower scores, you score either a set amount, or zero if you don't satisfy the category requirements.

### 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 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.

For example: 3 - 3 - 2 - 3 - 2 would score 25 in the Full House category.

### First 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.

### Additional Yahtzees:

If you roll a second Yahtzee in a game, and you scored your first yahtzee in the Yahtzee box, you would score a further bonus 100 points in the yahtzee box. You must also put this roll into another category, as follows;

-If the corresponding Upper section category is not filled then you can score the dices in the upper section category or in the 3 or 4 of a kind.

-If the corresponding Upper section category is filled you may then put the score anywhere on the lower section, scoring the maximum point for this category. In 3 of a Kind, 4 of a Kind, and Chance categories you would score the total of the die faces. For the Small Straight, Large Straight, and Full House categories, you would score 30, 40 and 25 points respectively.

### Chance:

You can roll anything and be able to put it in the Chance category. You score the total of the die faces.

## 5 - Evaluation of existing implementation

In the third phase of the code we implemented a lot of new things. We added the graphical interface. Which adds a lot the clearness and fun of the game by make it easier to select dices and see the result at the same time. We also implemented the option to save, load and restart a game and to save the high score.

Ones the graphical interface was implemented we modified every class and got rid of the old main class (Yahtzee.java) because we didn't want our code to print anything into our console.

### Strengths:

Our Code and graphical interface support up to 10 players at the same time. This is possible due to a dynamic table and a dynamic graphical interface.

The simple design of our graphical interface makes it very easy to understand the game and to play it. If someone has difficulties, we implemented a hint bottom.

The save button, saves every important information into a text file than can be modified easily.

As previously shown the game can identify the winner and draws up to 10 players.

The High score in the top right corner of our graphical interface changes if it gets beaten and the program will notify you if the High score has been beaten.

### Weaknesses:

Improve the design to make it visually even more pleasing and attractive.

It is only possible to load a game at the very start of the game. This is one of the reasons for the implementation of the restart bottom.

Some java classes are very big e.g. the scoreboard class could be devised in many smaller classes. Smaller class make it easier to find specific parts of the code.