

Faculty of Applied Sciences  
Bachelor of Science in Computing

**COMP221 Group Project  
Report**Academic Year 2021/22 Semester 2

|  |  |
| --- | --- |
| Online Turn-based Game | |
|  |  |
| Group Number: | 01 |
| Student ID: | P2010411 |
|  |
| Student Name: | Jing Yu Long, Grant |
|  |
|  |
|  |
| Submission Date: | April 26, 2022 |

**Table of Content**

[1 Introduction 2](#_Toc97221575)

[1.1 Application Information 2](#_Toc97221576)

[1.2 Requirement Analysis 2](#_Toc97221577)

[1.3 Software Architecture 3](#_Toc97221578)

[1.4 How to Use 4](#_Toc97221579)

[1.5 Details / Demonstration 5](#_Toc97221580)

[2 Object Model 6](#_Toc97221581)

[2.1 Abstraction 6](#_Toc97221582)

[2.2 Encapsulation 6](#_Toc97221583)

[2.3 Modularity 6](#_Toc97221584)

[2.4 Hierarchy 6](#_Toc97221585)

[3 Design Principle 7](#_Toc97221586)

[3.1 X Principle 7](#_Toc97221587)

[3.2 Y Principle 7](#_Toc97221588)

[4 Design Pattern 8](#_Toc97221589)

[4.1 X Pattern 8](#_Toc97221590)

[4.2 Y Pattern 8](#_Toc97221591)

[5 Additional Features/Work (Optional) 9](#_Toc97221592)

# Introduction

We have learned how to write client and server in java last semester, so we want to apply this to our project.

## Application Information

The theme of our application is the Rock-Paper-Scissors Game. Our game has three modes to choose: one round, three round, and five round. We made this game that allows two players to play together through the computer.

## Requirement Analysis

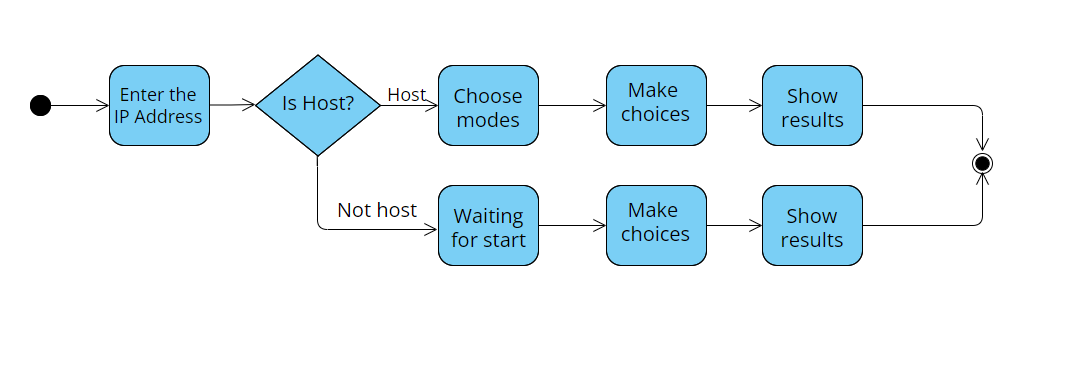
1. This game requires two players to play.
2. Every player needs to enter an IP address to enter the game.
3. The first player to enter will be the host by default, only the host has the right to choose the mode and start the game.
4. Mode cannot be selected when host is waiting for another player.
5. During the game, players only have 10 seconds to choose in each round, and 1 second to display the result of each round.
6. In each round of the game, the player can only choose once. If you choose multiple times, the system will use the first choice.
7. If the player does not make a choice within 10 seconds, the system will automatically choose ROCK for you.
8. During the game, when one round is over, it will go to the next round automatically.
9. When the player has made all the choices, the game will automatically jump to the end page and display all the results.
10. If one player quits mid-game, the other player will get a warning automatically and quit.

## Software Architecture

The following diagram shows the structure of the application:

  
Figure-1: UML Structural diagram (package diagram)

The following diagram shows the behaviour (flow) of the application:

  
Figure-2: UML Activity diagram

## How to Use

First Step: Enter the IP Address

When players enter the game, players need to enter the IP address, as shown in the picture below.

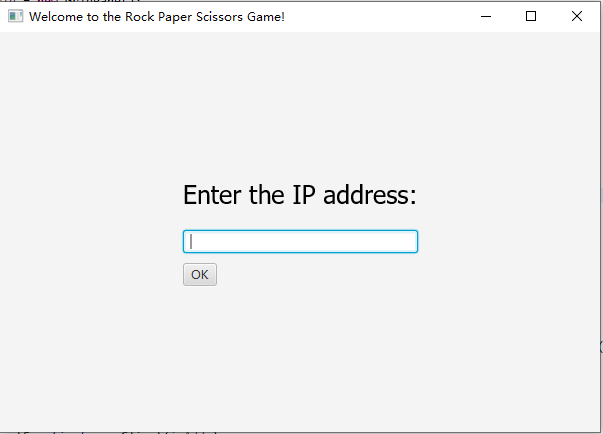


Figure-3: User Interface

Second Step: Choose the Modes(host) and Waiting(non-host)

After the player enters the IP address, the player needs to click OK to enter the game. The first player to enter will become the host, and he has three modes (corresponding to three buttons) to choose from. For non-host player, he can only wait for host to start.

Third Step: Make Choices

When players enter the selection interface, there are three buttons corresponding to Rock, Paper and Scissors, you can make choices by clicking the button.

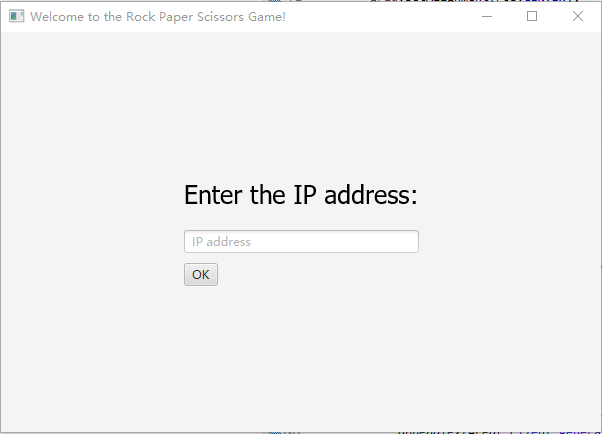
Fourth Step: Result and Exit

When the player has made all the choices, the game will automatically jump to the end page and display all the results. If you want to exit the game, please directly click exit in the upper right corner of the window.

## Details / Demonstration

This application has 5 pages. Page one is for players to enter the IP address.

The following figure shows the screenshot of IP address page(scene). Players can enter IP address in the input box.

  
Figure-4: IP Address Page

The following figures are screenshots of choosing modes and waiting pages, for the host, there are three buttons that you can click to choose the modes.

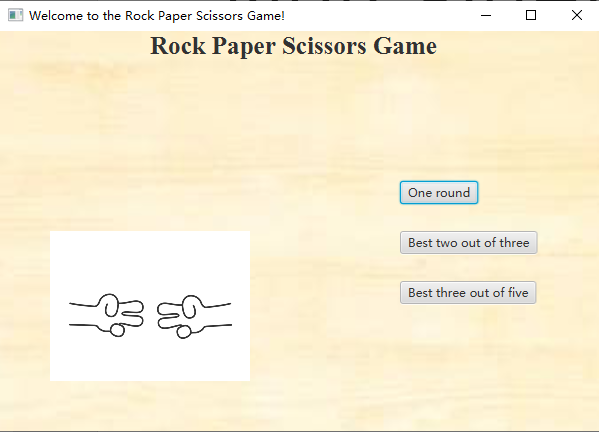


Figure-5: Choose Modes Page (For host)

For non-host, player can only wait for the host to start the game.

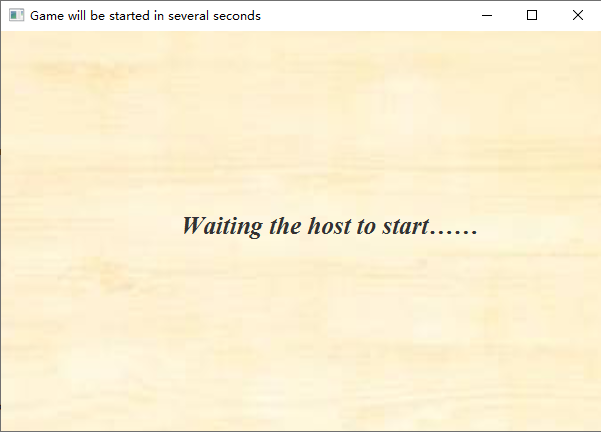


Figure-6: Waiting Page (For non-host)

The following figure is screenshot of making a choice page, the clock icon in the upper right corner of the picture is a countdown. Below the picture there are three buttons corresponding to Rock, Paper, and Scissors.

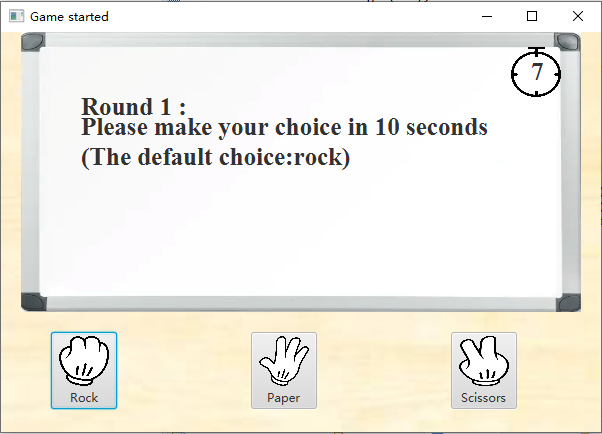


Figure-7: Make a Choice Page

The following figures are screenshots of result pages, the first row in pink is the total score between you and your opponent (You – You Opponent). The second row is the result, under the result are the result of each round. If you win, the font colour is green, if you lose, the font colour is red. In case of a tie, the font colour is purple.

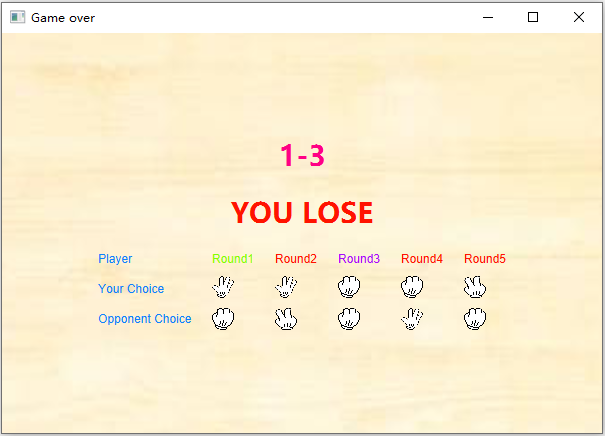
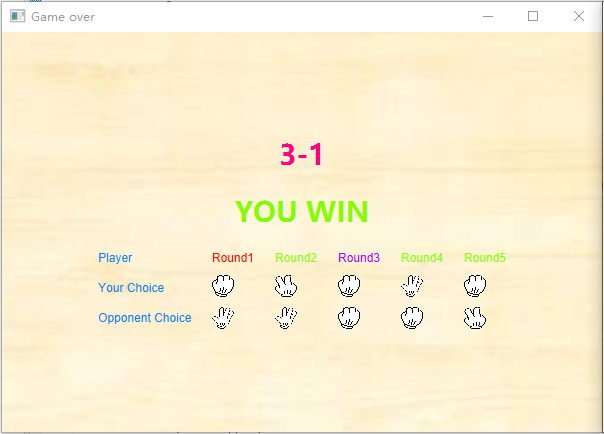


Figure-8: Result Pages

# Object Model

We have adopted the object model concept to develop the application.

## Abstraction

Describe how you have used the abstraction concept to build this application?

## Encapsulation

Describe how you have used the encapsulation concept to build this application?

## Modularity

Describe how you have used the modularity concept to build this application?

## Hierarchy

Describe how you have used the hierarchy concept to build this application?

# Design Principle

We have followed the design principles to develop the application.

## X Principle

Describe where you have followed the principle.

By following this principle, we can…

## Y Principle

Describe where you have followed the principle.

By following this principle, we can…

# Design Pattern

We have used the design patterns to develop the application.

## X Pattern

Describe where you have used the pattern.

By using this pattern, we can…

## Y Pattern

Describe where you have used the pattern.

By using this pattern, we can…

# Additional Features/Work (Optional)

We have added special features to the application…