COMP30820 Java Programming

Main Project

5/12/21 Poorna Sri Praneeth Swamy Korukonda (20200201) COMP30820

Introduction: This project provides the user with a console that displays and lets them choose a simple game. These games and interfaces are implemented with the help of concepts provided during the module. The projects consist of five classes in which two classes are defined to represent the games. While the other three classes are used to store the player information and guide the user through the menu.

The detailed UML diagram of this project is shown in Figure 1.

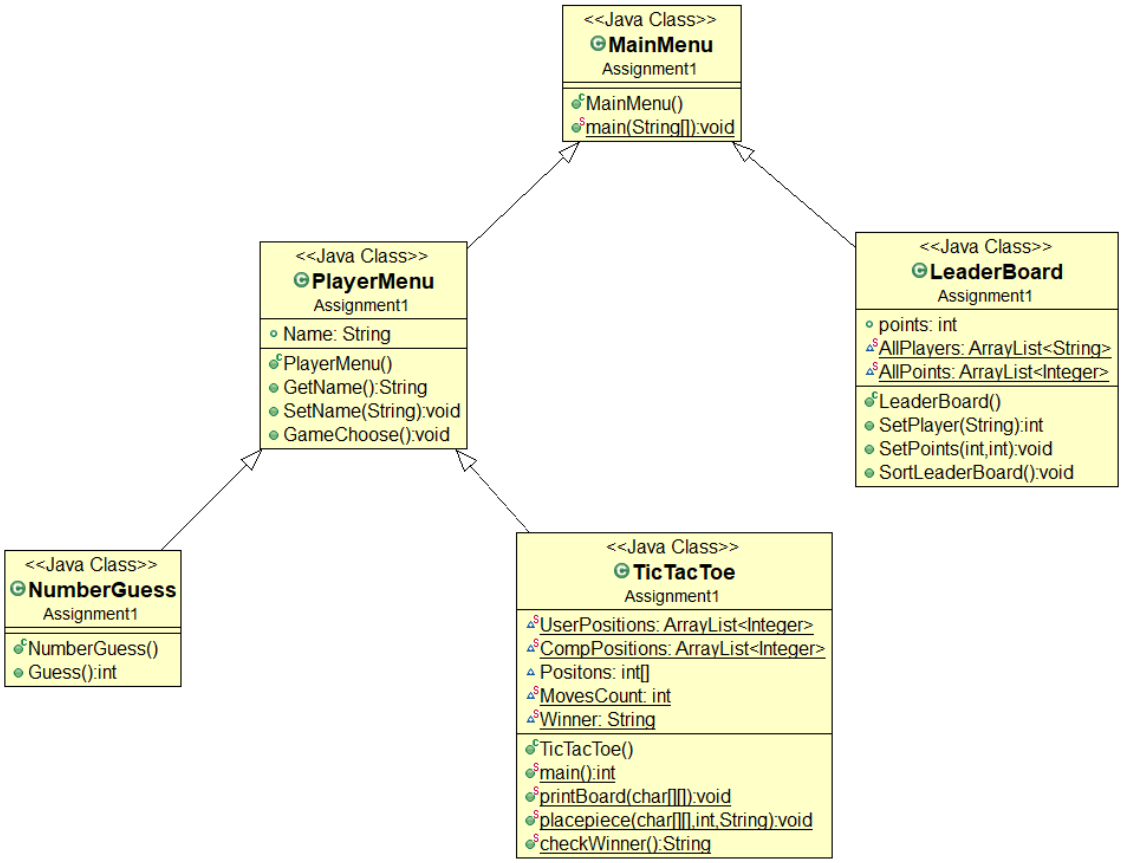

Figure 1

The project can be run by running the class “MainMenu”. All other classes are activated from this class as it acts as a base class.

Class - MainMenu: This class acts as the main menu for the project and allows the user to choose an option between new player or quit. Hence the main method prints the two options as provided above in the console and reads the input provided by the user to further process the selection.

If the user selects option 1 i.e. “New Player”, then the appropriate condition triggers the class “PlayerMenu” which is the next step in the gaming process. Else, then the game will be ended.

Class – PlayerMenu: The player menu indicates that the player can enter their name and selects an option if the user is a VIP player. Once all these details are collected, then this information is processed in the leaderboard class to make note of the user. Furthermore, after the user information, he/she can select a game to play among two given options. According to the input, that particular game class will be activated, and the user can start playing the game.

This class consists of three methods which two are the getter and setter methods. These are used to assign the player's name to the variable and pass it to the leader board class for storing this information along with default points.

Class – LeaderBoard: The leader board consists of all the details of the players played during the period of the game run. These players are stored in the array list and the points for each of these players are updated in another array list. Initially, each player is assigned with 0 points if the player is a limited player and if he/she is a VIP player then that player points are updated with 10 points as the user is a VIP player.

This class consists of 3 different methods which are used to store or update the player information based on certain conditions which are detailed below.

VIP player:

1. Initially, gets 10 bonus points if the user is a VIP player.

Limited Player:

1. The limited player can be a VIP player if the achieved points are greater than 60 and the extra will be awarded accordingly.

Class – NumberGuess: This is the first game among the two and as the name indicates it is a guessing game where the user needs to guess a number that should be matched with the random number generated by the system between 0 to 100. The whole game is implemented in a single method and each player's moves are analyzed and if he guesses the number within 3 moves then the user is assigned 20 points. And these points will be reduced by five when the user count goes down every three moves until nine. After nine moves the user can guess further but the points the player can achieve will be five.

Class – TicTacToe: This is the second last game of the project. This game is played against the computer by generating a random place between 1 to 9. The user needs to place their option within nine locations such that they are in three consecutive positions before computer positions. If so then that player will win against the computer and will be awarded certain points.

This class consists of four methods including the main method. Each of these helps the player board updated and will generate the number when it is computer turn. Here the points are categorized into three parts as

1. if the player wins within 3 moves then the user is awarded 20 points.

2. If the player wins in more than 3 moves then he/she is awarded 10 points.

3. If the match is a tie between the user and the computer then the player is awarded 0 points.

After playing any game by the user then the player can select an option to the same or different game or can quit the game. These options are defined in the Player Menu class and the appropriate player inputs are analyzed using different conditions.

All the variables which are used in this project are defined globally and can be accessed in different methods. While some of them are static fields as it is required to share the same variable for multiple users. On the other hand, these classes are interlinked with main class Main Menu as it is the primary step to all the players to choose a game. Furthermore, the inheritance, encapsulation concepts are implemented in all the classes. These concepts and the getter, setter methods are very helpful for this assignment as it is necessary to assign each player with appropriate information.

On the other hand, the text input-output files during the practicals helped me to try different write methods such as override or append data to the existing file. Also, the knowledge gained from other practical sheets is supported in this assignment by implementing classes and solving problems of real-world cases.