Project 1: Game Score Board

DUE: February 10th at 11:59pm

Extra Credit Available for Early Submissions!

Basic Procedures

You must:

- Fill out a readme.txt file with your information (goes in your user folder, an example readme.txt file is provided).
- Have a style (indentation, good variable names, etc.) and pass the provided style checker.
- Comment your code well in JavaDoc style and pass the provided JavaDoc checker.
- Have code that compiles with the command: **`javac *.java`** in your user directory without errors or warnings.
- For methods that come with a big-O requirement (check the provided template Java files for details), make sure your implementation meet the requirement.
- Implement all required methods to match the expected behavior as described in the given template files.
- Have code that runs with the commands: **`java ScoreBoardUI InputFILE`**

You may:

- Add additional methods and class/instance variables, however they **must be private**.

You may NOT:

- Make your program part of a package.
- Add additional public methods or public class/instance variables, remember that local variables are not the same as class/instance variables!
- Use any built in Java Collections Framework classes anywhere in your program (e.g. no ArrayList, LinkedList, HashSet, etc.).
- Declare/use any arrays anywhere in your program (except the **`data`** field provided in the **`ThreeTenDynArray`**).
  - When you need to expand or shrink the provided data field, it is fine to declare/use a "replacement" array.
- Alter any method signatures defined in this document of the template code. Note: “throws” is part of the method signature in Java, don’t add/remove these.
- Alter provided classes that are complete (**`ScoreBoardUI`**).
- Add any additional import statements (or use the “fully qualified name” to get around adding import statements).
- Add any additional libraries/packages which require downloading from the internet.

Setup

- Download the **`p1.zip`** and unzip it. This will create a folder **`section-yourGMUUserName-p1`**;
- Rename the folder replacing **`section`** with the **`004`** or **`006`** based on the lecture section you are in;
- Rename the folder replacing **`yourGMUUserName`** with the first part of your GMU email address;
- After renaming, your folder should be named something like: **`000-yzhong-p1.`**
- Complete the **`readme.txt`** file (an example file is included: **`exampleReadmeFile.txt`**) .

Submission Instructions

- Make a backup copy of your user folder!
- Remove all test files, jar files, class files, etc. You should just submit your java files and your readme.txt
- Zip your user folder (not just the files) and name the zip **`section-username-p1.zip`** (no other type of archive) following the same rules for **`section`** and **`username`** as described above. For example:
  - **`000-yzhong-p1.zip --> 000-yzhong-p1 -->`** **`JavaFile1.java`**, **`JavaFile2.java`**, **`JavaFile3.java ...`**
- Submit to blackboard.

Grading Rubric

Due to the complexity of this assignment, an accompanying grading rubric pdf has been included with this assignment. Please refer to this document for a complete explanation of the grading, including extra credit for early submissions.

Overview

There are three major components to this project:
1. Implementing one of the most fundamental data structures in computer science (the dynamic array list).
2. Using this data structure to implement a larger program.
3. Practicing many fundamental skills learned in prior programming courses including generic classes.

The end product of this project will be a score board program that can display multiple game scores of multiple players. Using a generic dynamic array as our basic data structure, we will be able to combine the score records from multiple files, report detailed statistics of a selected player or of a particular game. We will use the dynamic array list in more than one of the classes we implement. We will explain the details below with examples.

In this project, we will associate with each player a record (**`PlayerRec.java`**), including a name, a count of games participated, a total score, and a list of scores, one per game. We will also implement basic maintenance of the record to allow insertions of new scores, updates of existing scores, and locating the top scores of a player, etc. Every row in the table below shows one example player record. Note: they do not belong to the same score board.

	Player Name	Game Count	Scores	Total Score
Player Record 1	George	5	1, 5, 4, 3, 5	18
Player Record 2	G. Mason	3	0, 20, 1	21
Player Record 3	Weiss	0	empty list	0

Assumptions:
- All scores are non-negative.

A score board essentially contains a collection of player records. One example is given below.

Player Count: 3	Game Count: 5				
	Game 0	Game 1	Game 2	Game 3	Game 4
George	1	5	4	3	5
Mason	2	3	5	5	1
George Mason	1	5	4	2	4

Notes:
- The table represents one score board while each row shows information from one player record.

Assumptions:
- Each player in a score board has a unique name.
- All players of a score board must have the same number of games, which is always a positive integer.

In our implementation of score board (**ScoreBoard.java**), we will support a group of operations to append or prepend new records, to update / remove players' records, and to display details of a player or of a game as needed. We provide a simple textual user interface (**ScoreBoardUI.java**) with a menu system to allow convenient interaction with the score board. Multiple sample runs are included in the Appendix of this document. Each sample run has a session of score board operations to help you to understand the expected behavior better.

Implementation/Classes

This project will be built using a number of classes representing the generic dynamic array, the player record, and the score board as we described in the previous section. Here we provide a description of these classes. Template files are provided for each class in the project package and these contain further comments and additional details. You must follow the instructions included in those files.

- **ThreeTenDynArray (ThreeTenDynArray.java)**: The implementation of a dynamic array used by other classes. You will implement this class as a generic class to practice that concept.
- **PlayerRec (PlayerRec.java)**: The class representing a player record. Each record has a name, a collection of scores, a count of scores, and a total score.

- **ScoreBoard (ScoreBoard.java)**: The implementation of a score board. It stores a collection of player records. The class supports multiple operations for maintenance, including appending/prepending new records, updating a record, removing a record, and displaying details of one player or one game.
- **ScoreBoardUI (ScoreBoardUI.java)**: A textual user interface class with a menu system to display and maintain the score board. This class is provided to you and you should NOT change the file.

Requirements

An overview of the requirements is listed below, please see the grading rubric for more details.

- **Implementing the classes** - You will need to implement required classes and fill the provided template files.
- **JavaDocs** - You are required to write JavaDoc comments for all the required classes and methods.
- **Big-O** - Template files provided to you contains instructions on the REQUIRED Big-O runtime for many methods. Your implementation of those methods should NOT have a higher Big-O.

How To Handle a Multi-Week Project

While this project is given to you to work on for about two weeks, you are unlikely to be able to complete everything in one weekend. We recommend the following schedule:

- Step 1 (Prepare): First weekend (by 01/29)
  - Complete Project 0 if you haven't.
  - Go over Project 1 with a fine-toothed comb.
  - Read about Dynamic Array List (Ch15 of textbook).
- Step 2 (`ThreeTenDynArray,PlayerRec`): Before the second weekend (01/30-02/03)
  - Implement and test methods of `ThreeTenDynArray.`
  - Start the implementation of `PlayerRec.`
- Step 3 (`PlayerRec,ScoreBoard`): Second weekend (02/04-02/05)
  - Complete implementation and testing of `PlayerRec.`
  - Implement and test methods of `ScoreBoard.`
- Step 4 (`Wrapping-up`): Last week (02/06-02/10)
  - Additional testing, debugging, get additional help.
  - ☺ Also, notice that if you get it done early in the week, you can get extra credit! Check our grading rubric PDF for details.

Testing

The main methods provided in the template files contain useful example code to test your project as you work. You can use command like "`java ThreeTenDynArray`" or "`java PlayerRec`" to run the testing defined in `main()`.

- ***Note:*** passing all yays does NOT guarantee 100% on the project! Those are only examples for you to start testing and they only cover limited cases. Make sure you add many more tests in your development. You could edit `main()` to perform additional testing.
- JUnit test cases will not be provided for this project, but feel free to create JUnit tests for yourself. A part of your grade *will* be based on automatic grading using test cases made from the specifications provided.

The provided `ScoreBoardUI` can be run with an input file as the command line argument.

- The file is used to initialize the score board. A valid file always needs to be provided in order to add new records or update multiple scores of a player. We provide a number of input files that you can use with `ScoreBoardUI` under the folder **input/**. Check the sample runs in Appendix to see how to use them.
- File I/O are all processed in the provided `ScoreBoardUI`. You can find an explanation of the file format in the Appendix of this document.

You can use the provided menu options from `ScoreBoardUI` to interact with the score board. We include multiple sample-runs in the Appendix of this document to show you the expected behavior.

- ***Note:*** similarly, matching all provided sample runs does NOT guarantee 100% on the project!
- You should test with more scenarios and files of your own.

Appendix: Input Files

The provided **`ScoreBoardUI`** needs to run with a valid file name to link to an input file. The input file contains one or more player's information to use in initializing the score board. We include multiple sample input files you can use in under **`input/`** folder. All input files follow the same format as described below:

- Every single line of the file ends with a comma.
- The first line of the file must be a single positive integer **`N`** which defines how many games (i.e. scores) each player has in this input file.
- Starting from the second line, each line of the file contains the score record of one player. It starts with the name of the player, followed by **`N`** non-negative integers, separated by commas. **Assumptions**:
  - Commas are never part of a player's name.
  - All scores are non-negative.
  - Each file has at least one player record.

Example input: in1.txt

```
5,
George,1,5,4,3,5,
Mason,2,3,5,5,1,
George Mason,1,5,4,2,4,
```

The player's information corresponding to **in1.txt** represented as a table (same as our previous example):

Player Count: 3	**Game Count: 5**				
	Game 0	**Game 1**	**Game 2**	**Game 3**	**Game 4**
George	1	5	4	3	5
Mason	2	3	5	5	1
George Mason	1	5	4	2	4

Scoreboard initialized with **in1.txt** displayed by **`ScoreBoardUI`**:

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 3
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]George,5,18,[1, 5, 4, 3, 5]
------------------------------------------------------------
[1]Mason,5,16,[2, 3, 5, 5, 1]
------------------------------------------------------------
[2]George Mason,5,16,[1, 5, 4, 2, 4]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

Appendix: Sample Runs

Sample Run 1

Initialize a scoreboard with one file and explore menu options.

```
java ScoreBoardUI input/in1.txt
```

Start with input file in1.txt

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 1
---------------------------------------
```

Display current score board.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 3
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]George,5,18,[1, 5, 4, 3, 5]
-----------------------------------------------------------------
[1]Mason,5,16,[2, 3, 5, 5, 1]
-----------------------------------------------------------------
[2]George Mason,5,16,[1, 5, 4, 2, 4]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 2
Please enter the name of player to show: Mason
Player Name: Mason
  Game Count: 5, Total Score: 16
  Scores: [2, 3, 5, 5, 1]
  Top Games: [2, 3]
```

Display the details of one player specified by name.

Top games: games that this player has the highest score. Mason has the highest score (5) in game 2 and game 3.

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
```

```
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 3
Please enter the game number to show [0-4]: 0
Game [0]:   [1, 2, 1]
  Game Total: 4
  Game Max: 2
  Game Min: 1

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 7
Top Total Score: 18
Top Player(s): [George]

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 6
Please enter the name of player to change: Mason
Please enter the game number to change [0-4]: 1
Please enter the new score (>=0): 5
Score updated for Mason, game 1. New score = 5.

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 1
---------------------------------------
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

Display the details of one game specified by game index: total scores of all players, highest and. lowest score of this game.

Report the top total score of all players and the list of players achieving that top total score: George has the highest total which is 18.

Change one score of one player: specify the name of the player, game index, and new score.

```
Game Count: 5      Player Count: 3
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]George,5,18,[1, 5, 4, 3, 5]
-----------------------------------------------------------------
[1]Mason,5,18,[2, 5, 5, 5, 1]
-----------------------------------------------------------------
[2]George Mason,5,16,[1, 5, 4, 2, 4]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

Updated record of Mason -- changed numbers highlighted in blue.

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 7
Top Total Score: 18
Top Player(s): [George, Mason]
```

Updated top players – now both George and Mason have a total of 18.

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 5
Please enter the name of player to remove: George
Player removed!
Removed player details: George,5,18,[1, 5, 4, 3, 5]
```

Remove a player by name.

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 1
---------------------------------------
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 2
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

Updated score board.

```
[0]Mason,5,18,[2, 5, 5, 5, 1]
----------------------------------------------------------------
[1]George Mason,5,16,[1, 5, 4, 2, 4]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 7
Top Total Score: 18
Top Player(s): [Mason]

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 8
Good-bye!
```

Updated top player list.

Exit.

Sample Run 2

Combine records from multiple files.

Start with input file in1.txt

```
java ScoreBoardUI input/in1.txt

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
----------------------------------------
Your choice (1-8): 1
```

Display of current score board

```
----------------------------------------
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 3
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]George,5,18,[1, 5, 4, 3, 5]
----------------------------------------------------------------------
[1]Mason,5,16,[2, 3, 5, 5, 1]
----------------------------------------------------------------------
[2]George Mason,5,16,[1, 5, 4, 2, 4]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
----------------------------------------
Your choice (1-8): 4
```

Append records from in2.txt.

```
Append(0) or Prepend(1)? 0
Please enter the name of file to append: input/in2.txt
New records added / applied.

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
----------------------------------------
Your choice (1-8): 1
----------------------------------------
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 4
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]George,5,18,[1, 5, 4, 3, 5]
------------------------------------------------------------------
[1]Mason,5,16,[2, 3, 5, 5, 1]
------------------------------------------------------------------
[2]George Mason,5,16,[1, 5, 4, 2, 4]
------------------------------------------------------------------
[3]Mark,5,5,[1, 1, 1, 1, 1]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

Display of updated score board: new records added to the end of the list.

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 4
Append(0) or Prepend(1)? 1
Please enter the name of file to prepend: input/in3.txt
New records added / applied.

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 1
---------------------------------------
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 6
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]Allen,5,12,[2, 3, 2, 3, 2]
------------------------------------------------------------------
[1]Weiss,5,4,[0, 0, 3, 1, 0]
------------------------------------------------------------------
[2]George,5,18,[1, 5, 4, 3, 5]
------------------------------------------------------------------
[3]Mason,5,16,[2, 3, 5, 5, 1]
------------------------------------------------------------------
[4]George Mason,5,16,[1, 5, 4, 2, 4]
------------------------------------------------------------------
[5]Mark,5,5,[1, 1, 1, 1, 1]
```

Prepend records from in3.txt which contains two player record (in order):
Allen,2,3,2,3,2,
Weiss,0,0,3,1,0,

Display of updated score board: new records added at the beginning of the list.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 4
Append(0) or Prepend(1)? 0
Please enter the name of file to append: input/in5.txt
New records added / applied.

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 1
---------------------------------------
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 7
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]Allen,5,12,[2, 3, 2, 3, 2]
-----------------------------------------------------------------
[1]Weiss,5,4,[0, 0, 3, 1, 0]
-----------------------------------------------------------------
[2]George,5,8,[1, 1, 1, 1, 4]
-----------------------------------------------------------------
[3]Mason,5,16,[2, 3, 5, 5, 1]
-----------------------------------------------------------------
[4]George Mason,5,16,[1, 5, 4, 2, 4]
-----------------------------------------------------------------
[5]Mark,5,5,[1, 1, 1, 1, 1]
-----------------------------------------------------------------
[6]M Weiss,5,17,[3, 0, 9, 4, 1]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

Append records from in5.txt which contains two players:
George,1,1,1,1,4, (existing player)
M Weiss,3,0,9,4,1, (new player)

Updated score board:
- existing player record updated;
- new player record appended.

Sample Run 3

Input file with more than one row for the same player.

```
java ScoreBoardUI input/in4.txt

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
----------------------------------------
Your choice (1-8): 1
----------------------------------------
```

Start with input file in4.txt

Display of current score board

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 2
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]Mark,5,50,[0, 5, 10, 15, 20]
------------------------------------------------------------------
[1]George,5,18,[1, 5, 4, 3, 5]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

```
5,
Mark,0,5,10,0,0,
George,1,5,4,3,5,
Mark,0,5,10,15,20,
```

Input file in4.txt:

- Two rows for the same player Mark: the later record should override the earlier record.

Sample Run 4

Examples of invalid inputs.

```
java ScoreBoardUI input/in1.txt
```

Start with input file in1.txt

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
----------------------------------------
Your choice (1-8): 1
```

Display of current score board

```
----------------------------------------
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Game Count: 5      Player Count: 3
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
[0]George,5,18,[1, 5, 4, 3, 5]
------------------------------------------------------------------
[1]Mason,5,16,[2, 3, 5, 5, 1]
------------------------------------------------------------------
[2]George Mason,5,16,[1, 5, 4, 2, 4]
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
----------------------------------------
Your choice (1-8): 2
Please enter the name of player to show: Nobody
```

Incorrect player name

```
No such player!

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
----------------------------------------
Your choice (1-8): 3
Please enter the game number to show [0-4]: 10
```

Invalid game index

```
Game index 10 invalid!
```

```
Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 5
Please enter the name of player to remove: Someone
No such player!

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 6
Please enter the name of player to change: Mason
Please enter the game number to change [0-4]: 0
Please enter the new score (>=0): -12
Score CANNOT be updated to -12 for Mason, game 0.

Please select from the following options:
1 - Show current score board
2 - Show details of a player
3 - Show details of a game
4 - Combine/update records from file
5 - Remove a player
6 - Change one score of one player
7 - Show top total score & top player(s)
8 - Exit
---------------------------------------
Your choice (1-8): 4
Append(0) or Prepend(1)? 0
Please enter the name of file to append: input/in6.txt
New records cannot be added / applied.
```

Incorrect player name

Score cannot be negative.

File cannot be combined if the count of games does not match the current score board.