ITP 109: Introduction to Java Programming

Assignment 6

Goal

In this assignment you will create a program that manipulates the data from CSV team roster files. The program will track basic basketball statistics. In doing so you will practice…

- Creating methods
- Using ArrayLists
- Working with _encapsulated_ classes

Requirements

TeamUSC Class Methods That You Must Complete:

public void printPlayer(String nameOfPlayer)
- Takes in a string which is the name of the player
- Finds that player in the ArrayList
- Calls the print() method on the given player

public void printPlayer(int numberOfPlayer)
- Takes in a number which is the basketball number of the player
- Finds that player in the ArrayList
- Calls the print() method on the given player

public void printBestPlayer()
- Finds the player with the highest overall score in the ArrayList
- Calls the print() method on that player
- DOES **NOT** USE SORTING (**DO NOT** CALL A SORT METHOD)

public void printShortestPlayer()
- Finds the player with the shortest height in inches, in the ArrayList
- Calls the print() method on that player
- DOES **NOT** USE SORTING (**DO NOT** CALL A SORT METHOD)

public void printTallestPlayer()
- Finds the player with the tallest height in inches, in the ArrayList
- Calls the print() method on that player
- DOES **NOT** USE SORTING (**DO NOT** CALL A SORT METHOD)

public void addPlayerToRoster()
- Uses the Encapsulation class' generatePlayer() method to get a new Player
- Adds the generated player to the ArrayList of players
- Calls the Encapsulation class' addNewPlayerToTextFile(Player p) method to add the player into the roster txt file (which now provides something called permanence – where the players that you add will be permanently added to the roster, even after your program terminates! Cool eh?!)

- In order to test your code, make sure to run it on both roster1.txt and roster2.txt (examples at *basketball.dgarry.com*)
- Make sure to **comment** ALL code (besides getters and setters) and use good style like proper indentation.
- HINT: For everyone turning in homework with horrible indentation, right before you submit:
  - For PC: Hold down Control + A, then hold down Control+Shift+i
  - For MAC: Hold down Command + A, then hold down Command+Shift+i
- This will auto-indent your code & make your grader less inclined to hate you! (Just kidding they don't hate you)
- Make sure that when you run your terminal, you have checked off both "unlimited buffering" and "clear screen at method call" in the options menu of the BlueJ terminal.
- Make sure that you are handling **all possible cases of input**, including:
  - What happens if you try to print the tallest player if there are no players in the roster yet?
  - Or if there are two players with the same height?
  - The same idea for shortest, best, etc.
- What happens if the user tries to search for a player that does not exist (i.e. "Harry Potter" is searched for)?
- Ask questions on Piazza if you have any!
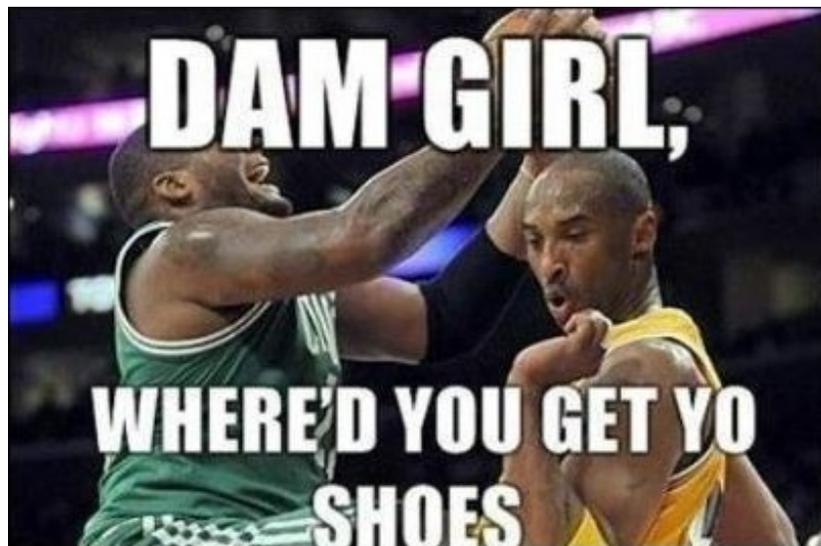
Sample output of printAllStats() method on roster1.txt:

<div align="center">Before Sorting: After Sorting:</div>

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● ● ●   BlueJ: Terminal Window - BasketballT...

File: roster.txt
*************** TEAM USC ***************


     *** COACHES ***

        Coach: Andy Enfield
            Wins: 60
            Loses: 12
            Ratio: 83%
        Coach: Tony Bland
            Wins: 55
            Loses: 9
            Ratio: 86%
        Coach: Jason Hart
            Wins: 12
            Loses: 4
            Ratio: 75%
        Coach: Jim Boeheim
            Wins: 23
            Loses: 3
            Ratio: 88%
        Coach: Steve Fisher
            Wins: 20
            Loses: 10
            Ratio: 67%

     *** PLAYERS ***

        Player: 0, Darion Clark
            Height: 79 inches
            Weight: 220 lbs
            Shooting Average: 23%
            Overall Score: 0.14
        Player: 2, Malik Martin
            Height: 83 inches
            Weight: 220 lbs
            Shooting Average: 38%
            Overall Score: 0.24
        Player: 3, Shaqquan Aaron
            Height: 79 inches
            Weight: 175 lbs
            Shooting Average: 25%
            Overall Score: 0.11
        Player: 4, Chimezie Metu
            Height: 83 inches
            Weight: 215 lbs
            Shooting Average: 8%
            Overall Score: 0.12
        Player: 11, Jordan McLaughlin
            Height: 73 inches
            Weight: 10 lbs
            Shooting Average: 30%
            Overall Score: 1.74
        Player: 12, Julian Jacobs
            Height: 76 inches
```

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● ● ●   BlueJ: Terminal Window - BasketballT...

File: roster.txt
*************** TEAM USC ***************


     *** COACHES ***

        Coach: Jim Boeheim
            Wins: 23
            Loses: 3
            Ratio: 88%
        Coach: Tony Bland
            Wins: 55
            Loses: 9
            Ratio: 86%
        Coach: Andy Enfield
            Wins: 60
            Loses: 12
            Ratio: 83%
        Coach: Jason Hart
            Wins: 12
            Loses: 4
            Ratio: 75%
        Coach: Steve Fisher
            Wins: 20
            Loses: 10
            Ratio: 67%

     *** PLAYERS ***

        Player: 11, Jordan McLaughlin
            Height: 73 inches
            Weight: 10 lbs
            Shooting Average: 30%
            Overall Score: 1.74
        Player: 13, Samer Dhillon
            Height: 79 inches
            Weight: 220 lbs
            Shooting Average: 50%
            Overall Score: 0.52
        Player: 40, David Garry
            Height: 72 inches
            Weight: 170 lbs
            Shooting Average: 100%
            Overall Score: 0.44
        Player: 30, Elijah Stewart
            Height: 77 inches
            Weight: 180 lbs
            Shooting Average: 30%
            Overall Score: 0.41
        Player: 2, Malik Martin
            Height: 83 inches
            Weight: 220 lbs
            Shooting Average: 38%
            Overall Score: 0.24
        Player: 14, Strahinja Gavrilovic
            Height: 81 inches
```

Deliverables

1. A compressed **Assignment6** folder containing all the Java files (Player, Coach, TeamUSC, Encapsulated). It must be submitted through Blackboard.

   <u>Here are the instructions for submission</u>

   a) Navigate to your project folder.
   b) Create a compressed folder with all your code (include the **src** folder—if you don't have a **src** folder, make sure you include all your **.java** files that are within the project folder).
   c) Name the folder as follows
      ITP109_assignment#_lastname_firstname   *(replace # with this assignment number)*
   d) Upload zip file to Blackboard site for our course

> Navigate to *basketball.dgarry.com*. At this page, you will find the sample inputs and outputs generated from running the code on the 2 provided roster files. Make sure that your code behaves exactly as expected – these are the same tests that we will be running to grade your assignment, so make sure that they match.

Grading

Item	Points
Everything done in class is present and correct	15
printPlayer(String) method works correctly	5
printPlayer(int) method works correctly	5
printBestPlayer() method works correctly (not hardcoded, no sorting used, only search algorithms – any would suffice)	8
printShortestPlayer() method works correctly (not hardcoded, no sorting used, only search algorithms – any would suffice)	5
printTallestPlayer() method works correctly (not hardcoded, no sorting used, only search algorithms – any would suffice)	5
addPlayerToRoser() method works correctly (calls appropriate Encapsulation methods, and correctly adds to the ArrayList)	10
Comments, style, and proper submission (If you do not indent your code correctly and comment it before submitting you will lose all of these points)	5
Total	58