# COSC 1436: Programming Fundamentals I

# (Assignment 4)

* **DUE Time and Date**: **Midnight, Friday, 11/09/2018**
* **What to submit:** **LastNameFirstNameBackgammonTournament.java**

**Note 1:** Unless otherwise mentioned, you are asked to upload ONLY your **java source files** (not the class files) through blackboard. Email submission is not accepted, because of confusion in grading.

**Note 2:** If your programs contain any syntactical errors, no points will be given. Thus, please make sure your programs are properly compiled with computers at the CS labs, not only in your laptop or desktop environments.

**Note 3:** No late submission will be accepted, thus keep the deadline.

**Note 4:** Grading will be divided into two categories, formatting and logic, where formatting compromise 20% of your total grade. Formatting will be based on the following rules.

**Rule 1:** Naming is an important issue in Java. Not only you need to define meaningful variable names, but also have to give appropriate names for the physical java file, which should be the same as your public class name that you edit.

Unless otherwise mentioned, you will follow **the industry standard for Java naming convention**:

(1) Java Classes start in uppercase and each individual word in the class name is capitalized;

(2) All Java methods and variables start in lowercase and each individual word in the method and variable is capitalized;

(3) Each final variable (known as a constant) should be written in all uppercase.

**Rule 2:** There should be a space around all operators (e.g., 3 + 5, not 3+5). In addition, spacing with regards to parentheses should be consistent.

**Rule 3:** In addition to the Java naming convention, you are asked to add your name in front of each class name like **LastNameFirstNameClassName.java.**

For instance, if your name is “John Doe” and the class name is “RightTriangle”, then your class name in your source code should be “DoeJohnRightTriangle” and your corresponding physical file name should be “DoeJohnRightTriangle.java”.

**Rule 4:** Everything nested inside of an open brace should be indented with regular-sized spaces (say, 4 or 8 spaces). The open brace for functions and classes should (1) come at the end of the line and be preceded by a space like

**public class DoeJohnRightTriangle {**

**public static void main() {**

**}**

**}**

or (2)start with the new line as shown below:

**public class DoeJohnRightTriangle**

**{**

**public static void main()**

**{**

**}**

**}**

**Rule 5:** Always type block comments to include title of the project, program’s purpose, your name, the date, and the version number as in the lectures or in the labs. For example,

**/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**@Title: LastNameFirstNameClassName**

**@Purpose: To verify the edit, compile, execute function in Textpad**

**@Author: (your last & first name)**

**@Date: (today’s date)**

**@Version: 1.0**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/**

**Or**

**/\*\***

**@Title: LastNameFirstNameClassName**

**@Purpose: To verify the edit, compile, execute function in Textpad**

**@Author: (your last & first name)**

**@Date: (today’s date)**

**@Version: 1.0**

**\*/**

**Question (100 points in Total): Backgammon Tournament**

1. **(60 points)** Two high school teams organized a backgammon tournament. In quarter finals, each player played against an opponent from another school. Write a program that prompts the user to enter backgammon tournament game results. The scores should be saved in two different arrays, named **schoolA[]** and **schoolB[]**. The program should display:
2. the percentage of games won by **schoolA**,
3. the highest total score (**schoolA** and **schoolB** combined) of all the games and the corresponding game number,
4. the largest deficit of **schoolB** and corresponding game number.

***Assumptions:*** Winner of 5 is needed to end a game and games will not finish with a tie.

For example:

If the user enters the following data for **schoolA**, and

|  |  |  |  |
| --- | --- | --- | --- |
| **5** | 3 | 4 | 0 |

Plays against each other

if the user enters the following data for **schoolB** scores

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | **5** | **5** | **5** |

**Output:**

**In quarter finals, winning Percentage of schoolA is: 25%**

**In quarter finals, highest scored game was 9 points in the 3rd game.**

**In quarter finals, largest deficit of schoolB was 4 points in the 1st game.**

1. **(40 points)** Based on the quarter final scores, store the winners of that round into another array (Based on the above example those players will be **schoolA**[0], **schoolB**[1], **schoolB**[2], and **schoolB**[3]). Once an array is setup, randomly draw semi-final matches. Once matches are drawn, randomly pick the winner of the semi-final games (assign the winner player a score of 5) and then randomly assign a value between 0 and 4 to the opponent. Now your extended program should display:
2. number of **schoolB** players made it to finals,
3. the percentage of games won by **schoolB (this should include results from quarter finals)**.

For example:

If the semi Final drawings and results were as below:

**schoolA**[0] **schoolB**[1] **schoolB**[2] **schoolB**[3]

|  |  |  |  |
| --- | --- | --- | --- |
| **5** | 4 | 3 | **5** |

Played each other Played each other

**Output:**

**Only 1 player from schoolB made it Finals**

**Overall, winning Percentage of schoolB is: 67%**

Your file will have the following documentation header:

**/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**@Title: LastNameFirstNameBackgammonTournament**

**@Purpose: To get familiar with single dimensional arrays**

**@Author: (your last first name)**

**@Date: (today’s date)**

**@Version: 1.0**

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