

Assignment #5

File I/O: Processing Golf Scores

(75 pts) You will design, implement, and test a program to process one round of golf scores from some number, N , of players. One round of golf consists of 18 holes, and each hole has its own value for par. For more details check out the internet for rules related to golf (remember to think simple at least until you get your program working with files).

You will create a Text file with golf scores where:

The first line will contain the number of golfers, N , in the round

The scores of N golfers will be stored in the subsequent lines

Each line of the file represents one hole

Each line contains $N+1$ values:

a value for the par of the hole (which you get to chose) then,

a value for the strokes that each of the golfers used on that hole

The file will contain 19 lines

You will determine the winner and produce a table showing how well each golfer did (compared to par).

Objectives:

Learn about file input and output, learn about parsing simple data, practice algorithmic handling and formatting of data.

Your program will:

1. Read information from a file, add the scores from each hole for each golfer
2. Determine each golfers final score
3. Print a table showing each golfer's score compared to par. (e.g. 2 under par, 36 over par)
4. Determine the winner of this golf game and print a message saying who won
5. Check to see that data is formatted correctly as it parses the file, and will gracefully exit on a poorly formatted file (it is okay for it to print a generic message mentioning bad formatting and halt, but the more information made available the better).

Extra credit considerations (do not attempt these until you have your simple cases working!):

1. Create the file you will be reading from by randomly generating the values needed and writing them to the file
2. Allow for an arbitrary number of golfers, without storing this number as the 1st line in the file, and an arbitrary number of holes

(10 pts) In your implementation, make sure that you include a program header in your program, in addition to proper indentation/spacing and other comments!

```
/*  
** Program: GolfScores.java
```

** Author: Your Name
** Date:
** Description:
** Input:
** Output:
*****/

You are graded on having a header, proper comments, and readable code with indentation and vertical spacing that is CONSISTENT throughout your program. DO NOT align your entire program on the left side. This will cause you to automatically lose the full 10 points. In addition, do not forget your program header!!!

(15 pts) You are required to turn in a written document (**as a pdf**) addressing Polya's steps to solving a problem with step 3 being the C code you write to carry out/implement your plan. With this said, your written document must include these three sections:

Understanding the Problem

In your own words, explain what YOU think the problem is asking you to do. In this section, document your uncertainties about the problem and anything else that you feel was unclear or vague. This is to ensure that YOUR understanding matches MY understanding of the problem☺

Devising a Plan/Design

At a minimum, provide an algorithm/pseudo code you designed to help solve the problem. In addition, include pictures/flow charts you used to help you devise your plan, as well as any other design decisions you made such as how to manage your time, how to decompose the problem, where to start first, etc. You can scan any handwritten work and attach it to the document as needed.

Looking Back/Self-Reflection

Report any checking/self-reflection you did while solving the problem. For instance, how did you make sense of the output from the implementation? This includes things such as using a calculator to make sure the output is correct, testing to make sure your code executes correctly and behaves the way you expect under specific circumstances, using external sources of information such as the internet to make sense of the results, etc. Also, include a statement about what you learned from the assignment.