

CS271 Homework 1

Posted Online: Tuesday 2007.01.30

Due Date/Time: Tuesday 2007.02.06 at Midnight

Description: Compute the BCS (Bowl Championship Series) Ranking of College Football Teams and display which 2 will play in the Championship Game.

Files to Submit: Makefile, BCS.cpp

Purpose: Get you acquainted with Linux, C++, and the homework submission process.

Knowledge Needed: Makefiles, functions, cin, cout, getline, arrays, casting, loops

Special Requirements: You must input the rankings as Integers, then CAST them to double
You must use the double data type in ALL calculations (not float or int).
Must use at least 3 functions (besides main), all w/ pre/post Comments
All team names are one-words, with no spaces.

Homework Details: The statistical rating system is used at the end of the football season to determine the 2 teams that will play in the championship game. The highest 2 ratings play in the game.

In 2006, the BCS Ranking included three components: (all Rankings are 1-25)

- 1.) USA Today Coaches Poll (Subjective Poll)
- 2.) Harris Interactive College Football Poll (Subjective Poll)
- 3.) An average of six computer rankings (excluding the Hi & Lo Computer Rankings)
 - i. Peter Wolfe
 - ii. Wes Colley
 - iii. Sagarin
 - iv. Seattle Times
 - v. Richard Billingsley
 - vi. Kenneth Massey

$$\begin{aligned} \text{BCS Ranking Points} &= 1.0/3.0 * (1.0 / \text{USA Today Ranking}) * \\ & 1.0/3.0 * (1.0/ \text{Harris Ranking}) * \\ & 1.0/3.0 * ((1.0 / 2^{\text{nd}} \text{ Best Computer Ranking}) + \\ & (1.0 / 3^{\text{rd}} \text{ Best Computer Ranking}) + \\ & (1.0 / 4^{\text{th}} \text{ Best Computer Ranking}) + \\ & (1.0 / 5^{\text{th}} \text{ Best Computer Ranking})) / 4.0) \end{aligned}$$

Example:

Badgers

- USA Today #20
- Harris #18
- Peter Wolfe #20
- Wes Colley #17
- Sagarin #22
- Seattle Times #20
- Richard Billingsley #18
- Kenneth Massey #18

$$\begin{aligned} \text{BCS Ranking Points} &= 1/3 * (1/20) + \\ & 1/3 * (1/18) + \\ & 1/3 * ((1/18) + (1/18) + (1/20) + (1/20)) / 4 \\ &= 1/3 * (.05) + 1/3 * (.05555...) + 1/3 * (.05277....) \\ &= .01666... + .01851... + .01759.... \\ &= .05277... \end{aligned}$$

Expected Program Functionality: (must match exactly)

:~> ./BCS

Please input the Number of Teams: **3**

Please input Team 1's Name: **Wisconsin Badgers**

Please input the Wisconsin Badgers USA Today Ranking: **1**

Please input the Wisconsin Badgers Harris Ranking: **2**

Please input the Wisconsin Badgers Peter Wolfe Ranking: **2**

Please input the Wisconsin Badgers Wes Colley Ranking: **2**

Please input the Wisconsin Badgers Sagarin Ranking: **3**

Please input the Wisconsin Badgers Seattle Times Ranking: **2**

Please input the Wisconsin Badgers Richard Billingsley Ranking: **1**

Please input the Wisconsin Badgers Kenneth Massey Ranking: **1**

Please input Team 2's Name: **USC Trojans**

Please input the USC Trojans USA Today Ranking: **2**

Please input the USC Trojans Harris Ranking: **3**

Please input the USC Trojans Peter Wolfe Ranking: **1**

Please input the USC Trojans Wes Colley Ranking: **1**

Please input the USC Trojans Sagarin Ranking: **2**

Please input the USC Trojans Seattle Times Ranking: **3**

Please input the USC Trojans Richard Billingsley Ranking: **2**

Please input the USC Trojans Kenneth Massey Ranking: **2**

Please input Team 3's Name: **Ohio State Buckeyes**

Please input the Ohio State Buckeyes USA Today Ranking: **3**

Please input the Ohio State Buckeyes Harris Ranking: **1**

Please input the Ohio State Buckeyes Peter Wolfe Ranking: **3**

Please input the Ohio State Buckeyes Wes Colley Ranking: **3**

Please input the Ohio State Buckeyes Sagarin Ranking: **1**

Please input the Ohio State Buckeyes Seattle Times Ranking: **1**

Please input the Ohio State Buckeyes Richard Billingsley Ranking: **3**

Please input the Ohio State Buckeyes Kenneth Massey Ranking: **3**

BCS Championship Game: #1 Wisconsin Badgers vs. #2 Ohio State Buckeyes