

ITSE 1430- Fall 2016

Program Set #5

See C# Grading /Program Guide Sheet for directions and grading/submission information.

Note: Create a console application program for each of the following problems. Do not create a windows application (form).

1. Write a C# application that outputs the popularity of baby name rankings in the year 2010. The input file contains 1000 lines. Each line contains a ranking, a boy's name, number for the boy's name, a girl's name, and number for the girl's name. The user will enter a name and gender (check for case) from the keyboard and then displays the popularity ranking for that year. If the name does not exist, state the name is not ranked in the year 2010. Let the user enter the file name from the keyboard. Output should look similar to below:



Popular Baby Names

Top 10 Names for 2010

Rank	Male name	Female name
1	Jacob	Isabella
2	Ethan	Sophia
3	Michael	Emma
4	Jayden	Olivia
5	William	Ava
6	Alexander	Emily
7	Noah	Abigail
8	Daniel	Madison
9	Aiden	Chloe
10	Anthony	Mia

Sample Runs:

Enter the file name: babynames.txt

Enter the name: Javier
Enter the gender: M

Javier is ranked #190 in the year 2010.

Enter the file name: babynames.txt

Enter the name: ABC
Enter the gender: f

The name ABC is not ranked in the year 2010.

Name the program: BabyNames2010XX.cs, where XX are your initials.

2. Write a C# console application that reads a text file character by character, counting letter frequencies, producing counts, percentage figures, and a dynamically-scaled bar chart for each count.

Specifically, the bar chart should have some scaling logic to vary the worth of each asterisk used to build the bar chart. A value sets the maximum length of a bar chart line so it always fits on the page. If the worth of each star is less than 1, make the star worth 1 by default. Let the user enter the file name from the keyboard. Output should look similar to below:

Sample Run:

Enter the file name: sample.txt

Total bytes read = 353
Letters = 248
Non-letters = 105

Letter frequency, each star represents 1 occurrences
Percentages shown where > 2%

a	30	12%	*****
b	5		*****
c	8	3%	*****
d	11	4%	*****
e	26	10%	*****
f	1		*
g	9	3%	*****
h	22	8%	*****
i	19	7%	*****
j	0		
k	3		***
l	13	5%	*****
m	5		*****
n	16	6%	*****
o	11	4%	*****
p	5		*****
q	0		
r	7		*****
s	19	7%	*****
t	19	7%	*****
u	4		****
v	1		*
w	10	4%	*****
x	1		*
y	3		***
z	0		

Test your code on some great works of literature from Project Gutenberg provided by your instructor:

- *Alice in Wonderland* by Lewis Carroll
- *Anne of Green Gables* by Lucy Maud Montgomery

Remember you cannot modify the existing files, so notice about the first 250-300 lines of code are legal language "fine print" from Project Gutenberg-which does not count in the statistics. The actual text begins/ends on lines:

Alice in Wonderland: 0254 begin 3852 finish
Anne of Green Gables: 0288 begin 12107 finish

Name the program: LiteratureStatsXX.cs, where XX are your initials.

3. At the Rio Olympics individual diving competitions took place over three rounds: preliminaries, semifinals, and finals. During each elimination round, divers performed a full list of five (women) or six (men) dives. At the conclusion of each round, the field was reduced. After the preliminaries, the field was reduced to the top 18 divers (plus two reserves, who compete only if needed) who complete, in reverse order of their finish, in the semifinals. At the conclusion of the semifinals, the field again was reduced to the 12 top divers (plus two reserves, who compete only if needed) who will swim in the reverse order of their finish. Divers begin competition in each round with score of zero, and are judged by seven judges. Points for each dive are awarded according to the following procedure:

- Each judge assigns a score between 0.0 and 10.0
- The two highest and lowest scores are eliminated (dropped)
- The three remaining scores are summed then multiplied by the degree of difficulty of the dive (1.2 to 3.6)
- Calculate each dive's final score using the system above. To determine a diver's score for the whole event, add the final scores for each dive.

Example: A diver in the platform competition performs a dive with a degree of difficulty of 2.8, and receives the following scores: 6.5, 7.0, 7.0, 7.5, 7.5, 8.0, and 8.0. The two highest scores (8.0, 8.0) and the two lowest scores (7.0, 6.5) are cancelled, and the total of the remaining scores $7.0 + 7.5 + 7.5 = 22.0$ is multiplied by the degree of difficulty of 2.8. Multiply this by the execution score to get the final score: $22.0 \times 2.8 = 61.6$, the score of one dive. If a diver dives three times with scores of 61.6, 50.9, and 54.3, the diver's total score for the event is $61.6 + 50.9 + 54.3 = 166.8$.

Write a C# console application that outputs diving competition results in table form and determines the top three medals of a particular diving contest. The input file will come from the final round of six dives, and divers will be listed in reverse order from the semifinals. The input file will include the following information:

- The name of the particular diving contest on the first line
- The second line indicates the number of contestants m
- For each of the next m lines
 - The last name of the diver (max 15 characters) followed by a space
 - The NOC (National Olympic Committee) of the diver (max 3 characters) followed by two spaces
 - The degrees of difficulty for each of the six dives (where the first number indicates the DD of dive 1, etc.) separated by one space followed by two spaces

- The judges seven scores separated with a space from each set of six dives (where the first seven numbers indicate the scores from dive 1, the next seven from dive 2, etc.) Each set of scores are separate by two spaces.

Output the scoreboard and rank the divers in the particular event. For each event output:

- Output the name of the event and the heading FINAL STANDINGS
- Print the headers and the divers results, where:
 - RANK- diver order is based on the total calculated points. If the total calculated points for particular divers are the same, it is considered a tie for that particular place. For example, if there was a tie for second place the ranking would go: 1 2 2 4 (no third place).
 - NOC- (National Olympic Committee) or Country
 - DD- Degree of Difficulty
 - The seven judges scores (J1, J2, J3, J4, J5, J6, J7) for all six dives, where a / before the score denotes a dropped score
 - TOT PTS- (Total Points) The total event points of the particular diver after all six dives.
 - PTS BHND- (Points Behind) The number of points behind (difference) between the first diver and each of the divers in the event.

Finally, output the top three divers with the MEDALISTS header on one line, with the GOLD, SILVER and BRONZE titles with the NAME and NOC of each on separate lines.

MEN'S 10M PLATFORM

FINAL STANDINGS

RANK	NAME	NOC	DD	J1	J2	J3	J4	J5	J6	J7	TOT PTS	PTS BHND
1	HORTON	VEN	3.1	7.0	/7.0	/6.5	/6.0	6.5	6.5	/7.0	378.20	
			3.0	/5.0	5.0	5.0	/4.5	5.0	/5.5	/5.5		
			3.2	7.5	/8.0	/7.0	/7.0	7.5	7.0	/7.5		
			3.2	7.5	/7.0	7.5	/7.0	7.5	/7.5	/7.5		
			3.4	6.0	6.0	/6.0	5.5	/5.0	/4.5	/6.0		
			3.3	/7.0	7.0	7.0	7.0	/7.0	/6.5	/7.0		
2	SCHWARTZ	BLR	3.2	5.5	/4.5	/4.0	5.0	/5.5	/6.0	4.5	353.85	24.35
			3.1	7.0	7.0	/7.0	/6.5	/6.5	6.5	/7.0		
			3.0	/8.0	7.5	/6.5	7.5	/7.0	7.0	/7.5		
			3.2	5.5	/2.0	/3.5	5.5	5.0	/5.5	/6.0		
			3.3	/7.5	8.0	8.0	8.0	/8.0	/6.5	/8.0		
			3.4	/5.0	/3.5	/5.0	/4.0	4.5	4.5	4.5		
3	KINGLEKA	COL	3.2	/8.0	/7.5	/7.5	/8.0	7.5	7.5	7.5	350.40	27.80
			3.5	7.0	/7.0	/6.5	/7.0	/6.5	6.5	6.5		
			3.5	6.5	/6.0	6.5	6.0	/6.5	/6.5	/5.0		
			3.7	3.0	/2.5	/2.5	/3.5	3.0	/3.5	3.0		
			3.6	/3.0	/1.5	/2.5	2.5	2.5	2.5	/3.0		
			3.4	/8.0	/8.0	8.0	8.0	8.0	/8.5	/8.0		
4.	THAYER	CHN	3.2	/5.5	5.0	/4.5	4.5	/4.0	/5.5	5.0	347.80	30.40
			3.0	7.5	7.5	7.5	/7.5	/6.5	/7.0	/7.5		
			3.3	/7.0	7.0	/6.0	7.0	7.0	/7.5	/7.0		
			3.2	/7.0	/6.5	7.0	7.0	7.0	/7.5	/7.5		

3.3	/4.0	/4.5	/4.0	4.0	4.0	/5.0	4.0
3.4	6.0	/5.5	/5.5	5.5	/6.0	5.5	/6.0

MEDALISTS:

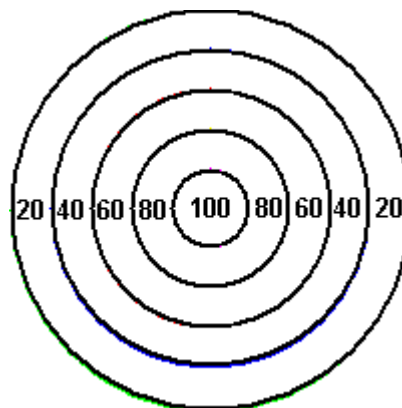
GOLD:	HORTON	VEN
SILVER:	SCHWARTZ	BLR
BRONZE:	KINGLEKA	COL

In the scoreboard above, HORTON ranked number one, thus there is no Points Behind value. In the Olympics there are two panels of seven judges (J1-J7). The first panel judges the first three rounds of dives, and the second panel judges the remaining dives. Thus, two drops from the first panel, and two from the second. For our purposes, just drop the two highest and lowest scores in any order. Format the scoreboard with appropriate spacing so the scoreboard is readable. Let the user input the filename from the keyboard.

Name the program: OlympicDivingXX.cs, where XX are your initials.

Note: Create a console application program for the following problem. Do not create a windows application (form).

4 (**). Write a C# application that computes the scores for two players, and determine who, if anyone, wins a game of darts. Darts are thrown at the board by players in an attempt to hit the center of the dartboard (the Bullseye). The region between each pair of rings (or the center and the first ring) represents a certain point value. The closer the region is to the center of the dartboard, the more points the region is worth, as shown in the diagram below:



Ring radii are at 3", 6", 9", 12" and 15" (the Bullseye has a diameter of 6"). A game of simple darts between two players is played as follows. The first player throws 3 darts at the board. A score is computed by adding up the point values of each region that a dart lands in. The darts are removed. The second player throws 3 darts at the board; the score for player two is computed the same way as it is for player one. The player with the higher score wins. If a dart lands exactly on a ring (region

boundary), the higher point value is awarded. Any dart outside the outer ring receives no points. For the purposes of this problem, you can assume that a dart has an infinitely fine point and cannot land partially on a ring; it is either on the ring or it is not on the ring.

Input will be from a file with the first line determining the number of datasets in the file. A dataset is a line with 12 double values separated by spaces. Each pair of values represents the X and Y distances respectively of a dart from the center of the board in inches. (the center is located at $X = 0$, $Y = 0$). The range of values are: $-20.0 \leq X, Y \leq 20.0$. Player one's darts are represented by the first 3 pairs of values, and player two's by the last 3 pairs of values. For each dataset, print a line of the form:

SCORE: N to M, PLAYER P WINS.

or:

SCORE: N to M, TIE.

N is player one's score, and M is player two's score. P is either 1 or 2 depending on which player wins. All values are non-negative integers. Let the user input the file name from the keyboard. Check for valid/invalid files. Output should look similar to below.

Sample File:

2

-9 0 0 -4.5 -2 2 9 0 0 4.5 2 -2
-19.0 19.0 0 0 0 0 3 3 6 6 12 12

Sample Run:

Enter the data file: darts.txt

SCORE: 240 to 240, TIE.

SCORE: 200 to 140, PLAYER 1 WINS.

Name the program: DartsXX.cs, where XX are your initials.