

Homework #4 C/C++ Programming

Due: February 16, 2014 (Sunday at 7:00 PM)

Population Bar Chart (Programming Challenges #18 on page 297)

Write a program that produces a bar chart showing the population growth of Pairieville, a small town in the Midwest, at 20-year intervals during the past 100 years. The program should read in the population figures (rounded to the nearest 1,000 people) for 1900, 1920, 1940, 1960, 1980, and 2000 from a file. For each year it should display the date and a bar consisting of one asterisk for each 1,000 people. The data can be found in the People.txt file at:

<http://www.cs.uni.edu/~fienup/cs1160s14/homework/People.txt>.

Here is an example of how the chart might begin:

```
PRAIRIEVILLE POPULATION GROWTH
(each * represents 1,000 people)
1900 **
1920 ****
1940 *****
...
```

1900	2033
1910	3033
1920	3945
1930	4123
1940	5499
1950	9235
1960	10999
1970	11432
1980	10349
1990	8749
2000	7491
2010	7396

When you write your program, be sure you:

- use meaningful variable names with good style (i.e., useCamelCase)
- use comments (`//` single-line or `/*` Multi-line Comment `*/`) at the start of the program, to label tricky blocks of code, and to explain the contents of variables
- use global constants where appropriate with good style (`ALL_CAPS_AND_UNDERSCORES`) (Put your global constants after your `#include` compiler-directives and before your main function definition so they can be found and changed easily in future versions of your program.)
- format the user interaction nicely

Submit the single file, hw4.zip containing the following: (see directions on the back as necessary)

- **popChart.cpp** (your C++ program)
- People.txt (my data file)
- out.txt (text file containing a “script” of your program as it runs with a user specified maximum number of 10)

Vague Hint:

- You’ll want to round the population to the nearest 1,000. You’ll need to extrapolate from the below example that rounds to the nearest ten. An easy way to round to the nearest ten is to add 5 before dividing by 10. Consider the following table:

Original value	After adding 5	After dividing (/) by 10
1034	1039	1039 / 10 is 103
1035	1040	1040 / 10 is 104
1039	1044	1044 / 10 is 104
1040	1045	1045 / 10 is 104
1041	1046	1046 / 10 is 104

The steps for the homework submission system are:

1. Design, write, debug, and test your program in a hw4 folder on student.cs.uni.edu. When you are ready to submit your homework:
 - copy the hw4 folder to your local computer using a secure ftp client (e.g., FileZilla, WinSCP, etc.)
 - zip the hw4 folder by right-clicking on it and selecting `Send to | Compressed (zipped) folder`. This will create a new file called `hw4.zip` which you will submit electronically. (This assumes Windows OS....)
 2. Log on to the submission system at: https://www.cs.uni.edu/~schafer/submit/which_course.cgi
Use your CatID user-name and password.
 3. Select the course and section number of "CS 1160, C/C++ Programming, Fienup". Click the "Continue".
 4. Select the homework that you wish to submit: "HW 4: Population Bar Chart". Click "Continue" button.
 5. Specify how many extra files you want to submit. Just leave it at 0. Click the "Continue" button.
 6. Upload your program by Browsing and selecting your `hw4.zip` file. Click the "Continue" button.
 7. The next page reports on the status of the upload(s). You can always continue to upload a better version of the program until the deadline. The newer file will replace an older file of the same name.
- (If you miss the deadline, you'll need to submit it as above, but select "Late Homeworks" in step 4 above.)