Homework 05

CS-102

Spring 2022

Homework 5A
Average PG&E Rate Increase

- When deciding about whether or not to install Solar Panels on your house, it becomes useful to project ahead as to how much you can expect Pacific Gas & Electric (PG&E) to raise its electric rates each year.
- The lifetime of a solar installation is about 30 years, so you will want to know how much you'll be saving over the next 30 years.
- If we Google the PG&E electric rates (A6 schedule) for 2001, we find that the average cost of a KiloWatt Hour (KWHr), then was 9.92 cents per KWHr.
- If we check for the rate in 2015, we find it is 20.34 cents per KWHr.
- What we want to find out is, over the intervening 14 years, what is the average rate of increase of the cost of a KWHr, per year?

Homework 05A

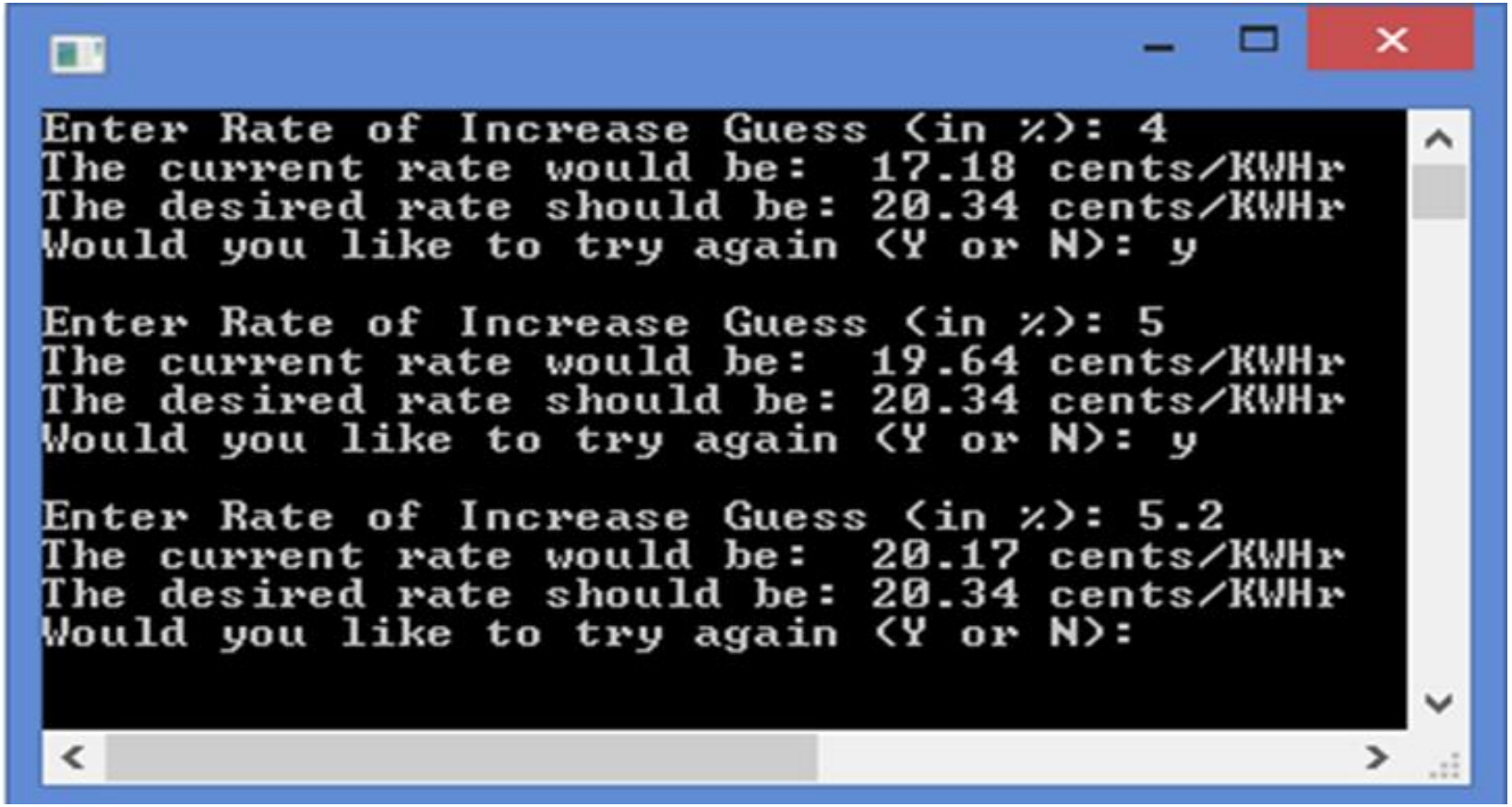
- It is easy to project the new year's cost per kilowatt (cpk) from the old year's rate, we can simply use the formula:

newYearCPK = (1 + averageRateOfIncrease) * oldYearCPK;

- If we use a loop to do this for 14 years, then we can test out guesses as to what the averageRateOfIncrease (roi) should be. We may be a bit off on the first guess, so we can make a correction and then try again.
- Using another loop, give yourself the option of continuing on with another try, or quitting, once you're satisfied that you are close enough.

Homework 5A

- Below is a sample input and output that your program should produce. Name your program: *YourName*-Hwrk05A.cpp

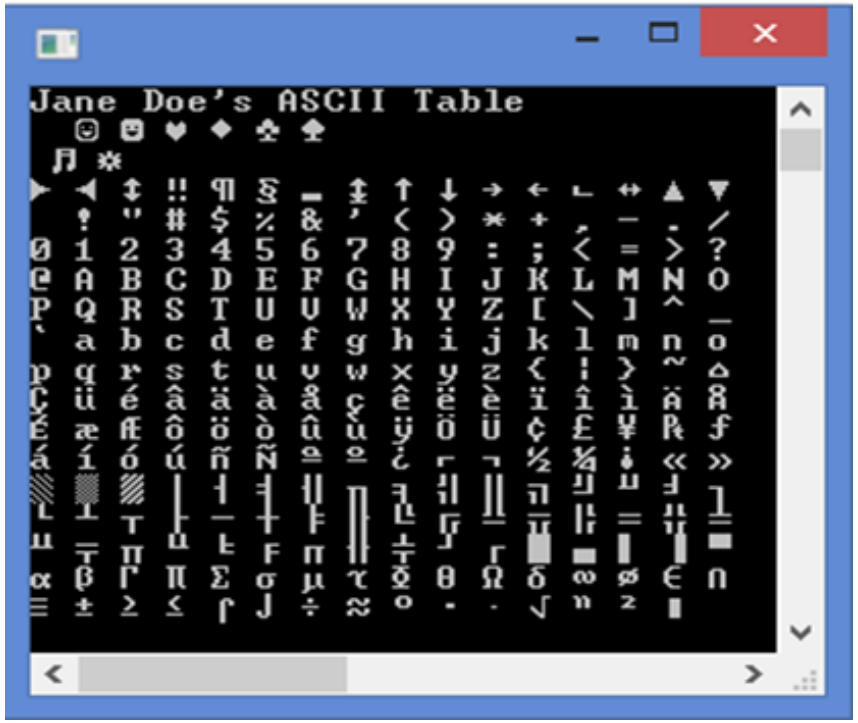


Homework 05A

- Repeat this procedure until you can determine to 4 digits (that would be 5.2xy%, where you need to determine, by trial and error what the values of x and y are) the Average Rate of Increase per year.
- When you have your answer, record it, along with your name, in a text file called: *YourName*-Hwrk05A.txt.
- Submit both: *YourName*-Hwrk05A.cpp as well as: *YourName*-Hwrk05A.txt to your dropbox for Homework 05 in Canvas.

Homework 05B

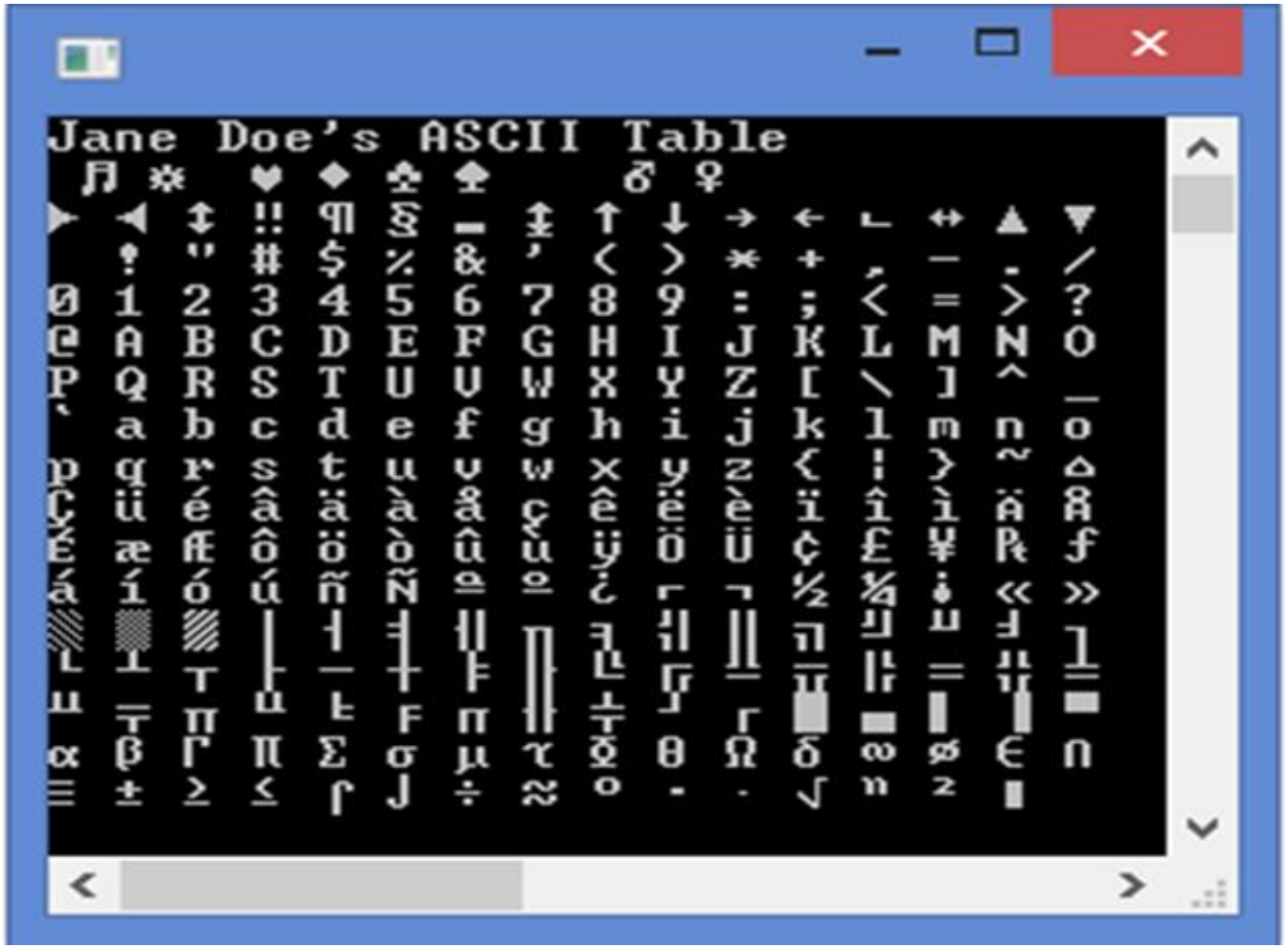
- Write a program, called *YourName*-Hwrk05B.cpp, that uses two loops to display the characters for the extended ASCII codes, 0 through 255.
  - (Strictly speaking, ASCII codes range from 0 to 127, but we're going to do all 256 of the one byte codes belonging to the system font on your computer). Display 16 characters per line.
- When you first do this, your output should look like this.



Homework 05B

- Notice that the first line wrapped to the second line part way through.
  - This is because one of those characters is the ‘\n’ character which causes a “carriage return” to occur.
  - Test for this character, and when it occurs, don’t display it (so you don’t get the “carriage return”).
- Don’t be satisfied with this result. See if you can skip displaying this character and win a couple of more points.
- When you do that, you should get the result shown as follows.
  - Note that all ASCII characters don’t display.

Homework 05B



- Be sure to put your name at the top of your ASCII Table display