

CS 222-01-08W  
DATA STRUCTURES  
WINTER 2008

Program 1

Due: Monday 28 January 2008 at 1:00 P.M. EST

Cube Root

Write a program in C++ that prompts the user for one non-negative integer. You will read it in as a string, however, so that this integer can be arbitrarily large. Your program should then print out the cube root of the number, rounded down, along with the remainder. (For example, the cube root of 40 is 3 with a remainder of 13, since  $3^3 + 13 = 40$ .) You should also print out appropriate error messages such as invalid integer. Your program should only compute the cube root of one integer (or print one error message). It should never ask the user to enter a second number.

Example:

```
Enter a number: 12345678901234567890
The cube root of 12345678901234567890 is 2311204 with remainder
3860450350226.
```

Be sure your program is divided into appropriate methods and commented well. Also, when you submit your program into the shared folder, submit also an appropriate makefile (called "Makefile") that will compile your program and create an executable entitled "cbrt.exe". You should put all of this into a directory in the root of your shared folder entitled "PG1". Place a (possibly empty) file called "DONE" in this folder when you are ready for your program to be graded.