

Homework 3

Due Wednesday, February 15, by 11:59 p.m. Electronic handin.

Please note that with the large number of students in the course, **I am unable to accept handin by email. You must make an electronic submission on Sparky as per the instructions below.**

Reading

- Lecture slides for classes [C5](#) (Feb 7), [C6](#) (Feb 9) & [C7](#) (Feb 14)
- Kernighan & Ritchie, Chapter 1, Sections 1.1, 1.2, & 1.3

Homework

A positive integer is called a **perfect number** if it is equal to the sum of all its positive divisors, excluding itself. For example, 6 is the first perfect number because:

$$6 = 3 + 2 + 1$$

The next is 28: $28 = 14 + 7 + 4 + 2 + 1$. There are four perfect numbers less than 10,000.

Write a C program to find these four numbers (including the two above). For each perfect number that you find, your program should print out the following, **exactly as shown below**, each result on a single line:

The first perfect number is $6 = 1 + 2 + 3$

The second perfect number is $28 = 1 + 2 + 4 + 7 + 14$

and so on.

This homework is not intended to be difficult so far as the programming goes. The aim is to go beyond just having you write a C program that works. Your work will also be graded on:

- Your successfully deploying and using the C environment you will be using on your machine to write, compile, execute and debug your program – see the slides entitled “*Official Course Software Environment*” in the lecture slides for class [C1](#).
- Your testing that your code compiles and executes correctly on Sparky, and then completing the electronic handin there (note: when compiling on Sparky, use the **gcc** command, not **cc**).

Electronic Submission:

- Log into your account on Sparky (using *ssh*, or whatever) and *ftp* the *.c file containing your source code to your account on Sparky (the full name is sparky.ic.stonybrook.edu).
- Test that your code compiles and executes successfully on Sparky (use the **gcc** command to compile, not **cc**).
- From your account on Sparky, submit an electronic copy of your program to the Sparky cse220 account.
 - You have to be logged in on your account on Sparky.

- In the window in which you are logged in, go to the directory in which the file you want to hand in is located.
- Type and execute the command: `~cse220/submit`
- The `submit` command will ask you for a file name.
- Your file will then be copied under your name to a *handin* directory in the *cse220* class account.
- If your submission is successful, you will get an acknowledgement right away.
- If you are having problems, try typing `·/<filename>` (including the `.c` file name extension) when asked for the file name.
- If you submit more than once, each new submission overwrites the previous one, so only the last submission will be retained.