CSCE 451/851 Operating Systems Principles

Fall 1999
Steve Goddard

Programming Assignment 1 (`PA1`), August 26

Due: 6:00pm September 8

Did You Order this Product?: Two positive integers are read from standard input. These two integers are multiplied giving a product that is still a valid integer for your compiler (i.e., do not worry about overflow when you multiply). The digits are then sorted in increasing order and printed. For instance, given 110 and 121, the product is 13310. After sorting the digits 1, 3, 3, 1 and 0, we get 01133.

Write a C or C++ program to read in multiple cases from standard input (*i.e.*, the keyboard) and write the results to standard output (*i.e.*, the "screen"). For each case, the input contains a single line with two integers. The input test cases are terminated be either an End-Of-File (EOF) or a line that contains two negative integers.

For each input case that consists of two non-negative integers, multiply the integers, sort the digits of the resulting product and display result (as described above). For example, sample input might be:

Sample Input
```
110 121
34 5
75 250
27 237
101 304
101 303
-1 -1
```

Expected Output
```
01133
017
01578
3699
00347
00336
```

Your program should **not** output user prompts, debugging information, status messages, *etc*. Also, if the input data is entered from the keyboard, the output will be interspersed with the input. For example, if the above input was entered from the keyboard, the screen may look like this

```
goddard> PA1
   110 121
   01133
   34 5
   017
   75 250
   01578
   27 237
   3699
   101 304
   00347
   101 303
   00336
   -1 -1
goddard>
```

This programming assignment is not meant to be difficult. Its purpose is to familiarize you with the basic problem and the UNIX environment here. The next programming assignment will also be based on this problem. However, that assignment will require a client server solution.

Grading

For this (and all other programming) assignments you will turn in your program electronically for grading via the handin program on `cse`. This is programming assignment `PA1`.

If you are unfamiliar with the UNIX handin program the following is a simple way to hand in a program. If your program is in a file called "pa1.c," then simply enter the command

```
handin cse451 1 MySolutionToPA1.c
```

If your program is handed in after 6:00 pm on September 8 it will considered late. You may also want to read the man page for the handin program. You may test the handin program by turning in a test file:

```
handin cse451 0 TestFile
```

The program should be neatly formatted (*i.e.*, easy to read) and well documented. In general, 50% of your grade for a program will be for correctness, 25% for "programming style" (appropriate use of language features, including variable/procedure/class names), and 25% for documentation.