Overview

This homework contains two short programming problems due at the start of next week’s lab. Place the source code for each in a separate file and after you have compiled and debugged them submit both together as attachments to a single email. See the earlier handout on homework and programming guidelines for style and grading criteria.

Here is a repeat of the change to the email submission instructions posted on the course website. The subject line should just have Week 2 on it. The email address is

    cs2projsx@cs.rpi.edu

where x should be replaced by your section number. Thus, for example, students in Section 6 address should send mail to

    cs2projs6@cs.rpi.edu

Be sure to include the cs in cs.rpi.edu!

Problems

1. (20 points) Write a program that asks the user for a positive integer, reads it in, and then determines whether or not it is prime. Remember, a positive integer \( n \) is prime if no integer from 2 to \( n - 1 \) divides it evenly. No number less than 2 is prime.

You will need to refer to the text for a discussion of operators.

Here are four examples to illustrate how your program should behave. When a number is not prime, please output its smallest divisor:

Enter a positive integer: -2
-2 is a negative number and therefore is not prime

Enter a positive integer: 1
1 is not prime because it is less than 2

Enter a positive integer: 49
49 is not prime because 7 divides it evenly
Enter a positive integer: 101
101 is prime

2. **(30 points)** Write a program that reads in two names and outputs them side-by-side and diagonally, surrounded by a blank rectangle and a rectangle of asterisks.

Here are two examples of what should appear on the screen after your program is finished running (note that there are two blank spaces between the C and the S):

Please enter your first and last name: Chuck Stewart

```
**************
*           *
* C S      *
* h t      *
* u e      *
* c w      *
* k a      *
*         *
*         *
*         *
**************
```

Please enter your first and last name: Samantha Doe

```
**************
*           *
* S D      *
* a o      *
* m e      *
* a       *
* n       *
* t       *
* h       *
* a       *
*         *
**************
```