LARSON—MATH 255–CLASSROOM WORKSHEET 26
Files and Data.

1. (a) Start the Chrome browser.
   (b) Go to `http://cocalc.com`
   (c) Login using **your VCU email address** .
   (d) Click on our class Project.
   (e) Click "New", then "Worksheets", then call it **c26**.
   (f) For each problem number, label it in the Sage cell where the work is. So for Problem 2, the first line of the cell should be `#Problem 2`.

Working with Files

Reading in, and working with, data files is an important ability. First we will create a data file. Then we will read it in line-by-line, and then we will work with the data.

An important thing to know/note is that a file is actually a big *string*. You can read the lines of a file with `readline()`. Those lines are also strings (and not numbers - despite how they look). If you want numbers they must be converted to numbers.

2. Now we will create a file `testio.txt` in *write* mode (hence the "w"), and write something to it. The *close* command forces the writing to happen and flushes the *buffer*. Now you can't write anything else to the file without reopening it.

```
datafile=open("testio.txt","w")
datafile.write("hello world!")
datafile.close()
```

3. Go to Files, find `testio.txt` and click on it to see what's in there.

   Now try:

```
datafile=open("testio.txt","w")
datafile.write("hello again!")
datafile.close()
```

4. Go back and take a look at `testio.txt`. The old data is gone. It was overwritten. To add data you need to open the file for *appending* (with an "a"). Try:

```
datafile=open("testio.txt","a")
datafile.write("hello again again!")
datafile.close()
```

5. Go back and take a look at `testio.txt`. The new data got mushed together with the old data. Let's start over and give a new line for each input string.

```
datafile=open("testio.txt","w")
datafile.write("2nd try \n")
datafile.write("hello world! \n")
datafile.close()
```

6. Go back and take a look at `testio.txt`. Now let's open up the file to read its contents—without having any danger of modifying the data (hence the "r") and see what's in there.

```
datafile=open("testio.txt","r")
dline=datafile.readline()
```

Evaluate `dline` to see what that variable holds. Now repeat the last line of the code and reevaluate `dline`.

7. (**Challenge**) Use `open` to create a file "primes.txt" and write the first one hundred primes to that file, one per line, and close the file. Remember to check if your file exists and has the data you expect!

Getting your classwork recorded

When you are done, before you leave class...

(a) Click the "Make pdf" (Adobe symbol) icon and make a pdf of this worksheet. (If Cocalc hangs, click the printer icon, then "Open", then print or make a pdf using your browser).

(b) Send me an email with an informative header like "Math 255 - c26 worksheet attached" (so that it will be properly recorded).

(c) Remember to attach today's classroom worksheet!