Exercise 16: Reading and Writing Files

If you did the Study Drills from the last exercise you should have seen all sorts of commands (methods/functions) you can give to files. Here's the list of commands I want you to remember:

- close -- Closes the file. Like `File->Save..` in your editor.
- read -- Reads the contents of the file. You can assign the result to a variable.
- readline -- Reads just one line of a text file.
- truncate -- Empties the file. Watch out if you care about the file.
- write(stuff) -- Writes stuff to the file.

For now these are the important commands you need to know. Some of them take parameters, but we do not really care about that. You only need to remember that `write` takes a parameter of a string you want to write to the file.

Let's use some of this to make a simple little text editor:

```
 1  from sys import argv
 2
 3  script, filename = argv
 4
 5  print "We're going to erase %r." % filename
 6  print "If you don't want that, hit CTRL-C (^C)."
 7  print "If you do want that, hit RETURN."
 8
 9  raw_input("?")
10
11  print "Opening the file..."
12  target = open(filename, 'w')
13
```

```
14   print "Truncating the file.  Goodbye!"
15   target.truncate()
16
17   print "Now I'm going to ask you for three lines."
18
19   line1 = raw_input("line 1: ")
20   line2 = raw_input("line 2: ")
21   line3 = raw_input("line 3: ")
22
23   print "I'm going to write these to the file."
24
25   target.write(line1)
26   target.write("\n")
27   target.write(line2)
28   target.write("\n")
29   target.write(line3)
30   target.write("\n")
31
32   print "And finally, we close it."
33   target.close()
```

That's a large file, probably the largest you have typed in. So go slow, do your checks, and make it run. One trick is to get bits of it running at a time. Get lines 1-8 running, then five more, then a few more, etc., until it's all done and running.

What You Should See

There are actually two things you will see. First the output of your new script:

```
$ python ex16.py test.txt
We're going to erase 'test.txt'.
If you don't want that, hit CTRL-C (^C).
If you do want that, hit RETURN.
?
Opening the file...
Truncating the file.  Goodbye!
Now I'm going to ask you for three lines.
line 1:  Mary had a little lamb
line 2:  It's fleece was white as snow
line 3:  It was also tasty
I'm going to write these to the file.
And finally, we close it.
```

Now, open up the file you made (in my case test.txt) in your editor and

check it out. Neat, right?

Study Drills

1. If you feel you do not understand this, go back through and use the comment trick to get it squared away in your mind. One simple English comment above each line will help you understand or at least let you know what you need to research more.
2. Write a script similar to the last exercise that uses `read` and `argv` to read the file you just created.
3. There's too much repetition in this file. Use strings, formats, and escapes to print out `line1`, `line2`, and `line3` with just one `target.write()` command instead of six.
4. Find out why we had to pass a `'w'` as an extra parameter to `open`. Hint: `open` tries to be safe by making you explicitly say you want to write a file.
5. If you open the file with `'w'` mode, then do you really need the `target.truncate()`? Go read the docs for Python's `open` function and see if that's true.

Common Student Questions

Is the `truncate()` necessary with the `'w'` parameter?
See Study Drills #5.

What does `'w'` mean?
It's really just a string with a character in it for the kind of mode for the file. If you use `'w'` then you're saying "open this file in 'write' mode," thus the `'w'` character. There's also `'r'` for "read," `'a'` for append, and modifiers on these.

What are the modifiers to the file modes we can use?
The most important one to know for now is the `+` modifier, so you can do

`'w+'`, `'r+'`, and `'a+'`. This will open the file in both read and write mode, and depending on the character use position the file in different ways.

Does just doing `open(filename)` open it in `'r'` (read) mode?

Yes, that's the default for the `open()` function.

Purchase The Videos For $29.59

For just $29.59 you can get access to all the videos for Learn Python The Hard Way, **plus** a PDF of the book and no more popups all in this one location. For $29.59 you get:

- All 52 videos, 1 per exercise, almost 2G of video.
- A PDF of the book.
- Email help from the author.
- See a list of everything you get before you buy.

When you buy the videos they will immediately show up **right here** without any hassles.

Already Paid? Reactivate Your Purchase Right Now!

Buying Is Easy

Buying is easy. Just fill out the form below and we'll get started.

Full Name

Email Address

VISA MasterCard AMERICAN EXPRESS   Pay With Credit Card (by Stripe™)

PayPal   Use your PayPal™ account.

Buy Learn Python The Hard Way, 3rd Edition