15-112 Fundamentals of Programming

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Life Lesson

"And once the storm is over, you won't remember how you made it through, how you managed to survive. You won't even be sure, whether the storm is really over. But one thing is certain. When you come out of the storm, you won't be the same person who walked in. That's what this storm's all about."
— Haruki Murakami

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Announcements

- Read Pages 183 - 193.
- Midterm on Thursday (Oct 3)

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What are we doing today?

- File IO

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A short detour - So what are True and False?

- True is true
- False is false
- What about 1?
- What about 0?
- What about “”?
- What about “ “?

The bool function

- bool(1) is True
- bool(0) is False
- bool(“”) is False
- bool(“ “) is True

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If and while

- In conditional execution

  if *condition*:

  - condition has to be Boolean – True or False
  - What would happen in:

```
if 0:
        print “testing 0”
if 1:
        print “testing 1”
if “”:
        print “testing empty”
if “ ”:
        print “testing space”
```

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Conditions

- Think of these statements as:

```
if bool( 0 ):
        print “testing 0”
if bool( 1 ):
        print “testing 1”
if bool( “” ):
        print “testing empty”
if bool( “ ” ):
        print “testing space”
```

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Open a file for reading

- open(filename)
  - Opens a file for reading
  - Returns a reference to the file that can be used to perform file operations:
    - read() – read the whole file
    - read(n) – return no more than n characters
    - readline() – return one line of text
    - readlines() – return all the file as a list of strings

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Modes for files

- 'r' : use for reading
- 'w' : use for writing
- 'x' : use for creating and writing to a new file
- 'a' : use for appending to a file
- 'r+' : use for reading and writing to the same file

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Open a file for writing

- open(filename, “w”)
  - Opens a file for writing
  - Returns a reference to the file that can be used to perform file operations:
    - write(s) – write string s to file
    - writelines(lst) – write list lst to file
    - close() – close the file for changes to reflect

Example – Reading a file

```
f = open("myfriends.txt")
line = f.readline()
while line:
    print (line)
    line = f.readline()
f.close()
```

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Example – Writing to a file

```
f = open("words.txt","w")
line = input("Enter some text> ")
while line != "stop":
    f.write(line)
    f.write("\n")
    line = input("Enter some text> ")
f.close()
```

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Dealing with errors

```
reader = open(‘sometext.txt’)
try:
    # read from file
finally:
    reader.close()
```

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Dealing with errors

```
with open('somefile.txt','w") as fileout:
    # Further file processing goes here
```

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Exercise 1

- Read each line from a file called "story.txt" and write each word from story.txt to another file "vocabularyfromstory.txt". Make sure no words are repeated.

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What else can we do with files

- File name:
  - + name function

```
f = open("factorial.py")
print "File name is", f.name
```

- seek function

```
f = open("factorial.py")
print "File name is", f.name
f.seek(5,0)
print f.readline()
```

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Seek function

- Seek (offset, from-what)
  - Offset is number of characters
  - From-what
    - 0 from the beginning
    - 1 from the current location
    - 2 from the end
    - Defaults to 0

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File functions

- mode
  - Which mode was used to open the file
- tell
  - What is the current cursor location

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Working with the OS

- import os
  - chdir(path)
  - getcwd
  - mkdir
  - os.path.isfile
  - os.path.getsize
  - os.system

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What is HTML?

- Hyper Text Markup Language

```
<HTML>

<TITLE> Hello World </TITLE>

<H1> Welcome to My Webpage </H1>

<img src="melatest.jpg“>

</HTML>
```

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How does the www work?

- You enter a URL in the address bar of your web browser
- The web browser fetches the index.html file from that location
- Index.html file has HTML code that is displayed by the web browser

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Reading webpages

- We can read web pages using Python
- We use the library called urllib.request.
- Open a url by using urlopen

```
p = urllib.request.urlopen ("http://www.cnn.com")
line = p.readline()
while line:
        print line
        line = p.readline()
```

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Let's try reading your website

```
import urllib.request
andrewID = input("Enter andrew ID ")
p = urllib.request.urlopen("https://web2.qatar.cmu.edu/~"+andrewID)
line = p.readline()
while line:

    print line
    line = p.readline()
```

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