SI 506: Programming I
Fall 2019
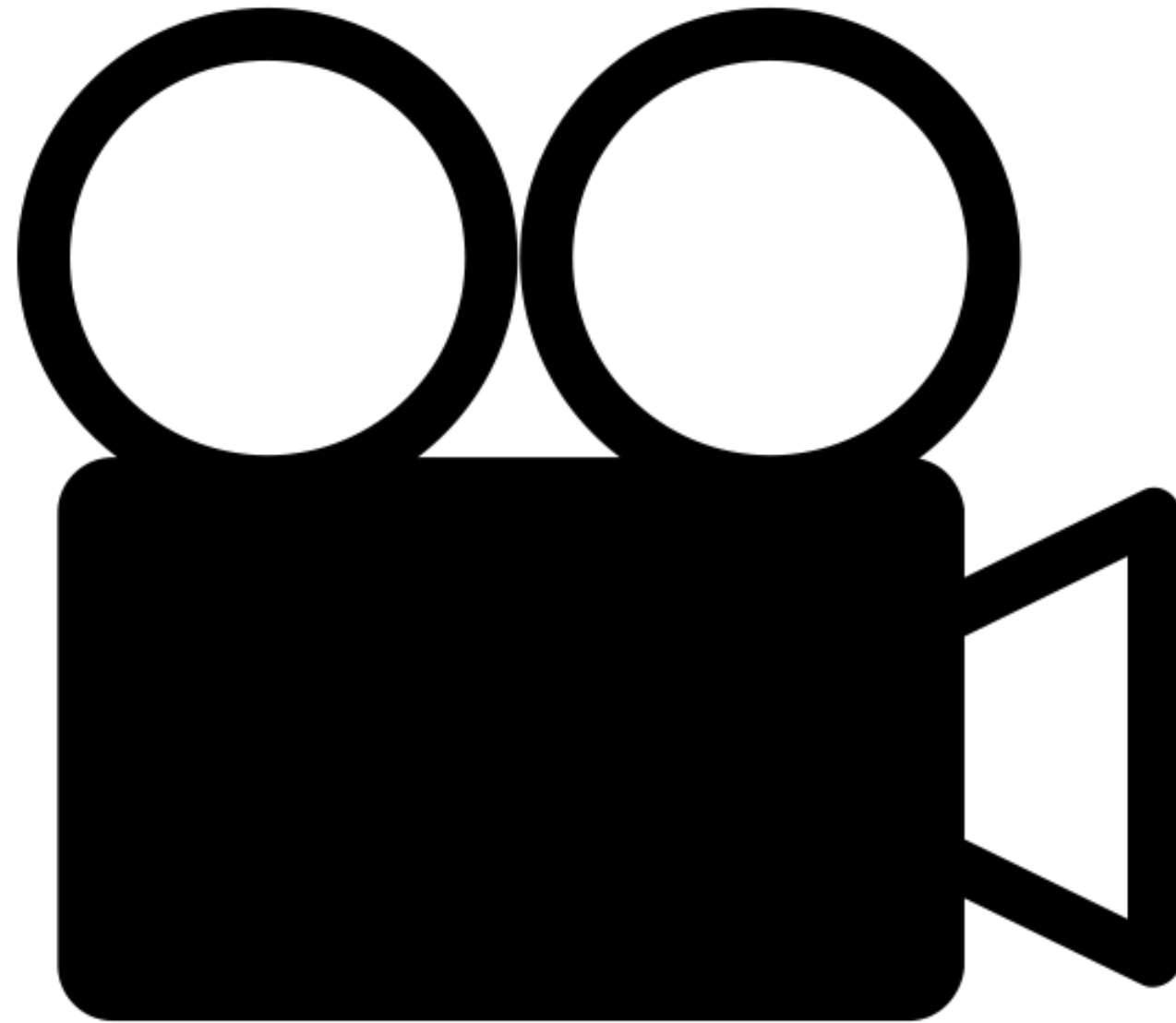
Lecture 13

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preliminaries

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Lecture recordings
noise in the audio

sounds like an old movie projector

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VS Code

Microsoft source-code editor (free)

https://code.visualstudio.com/

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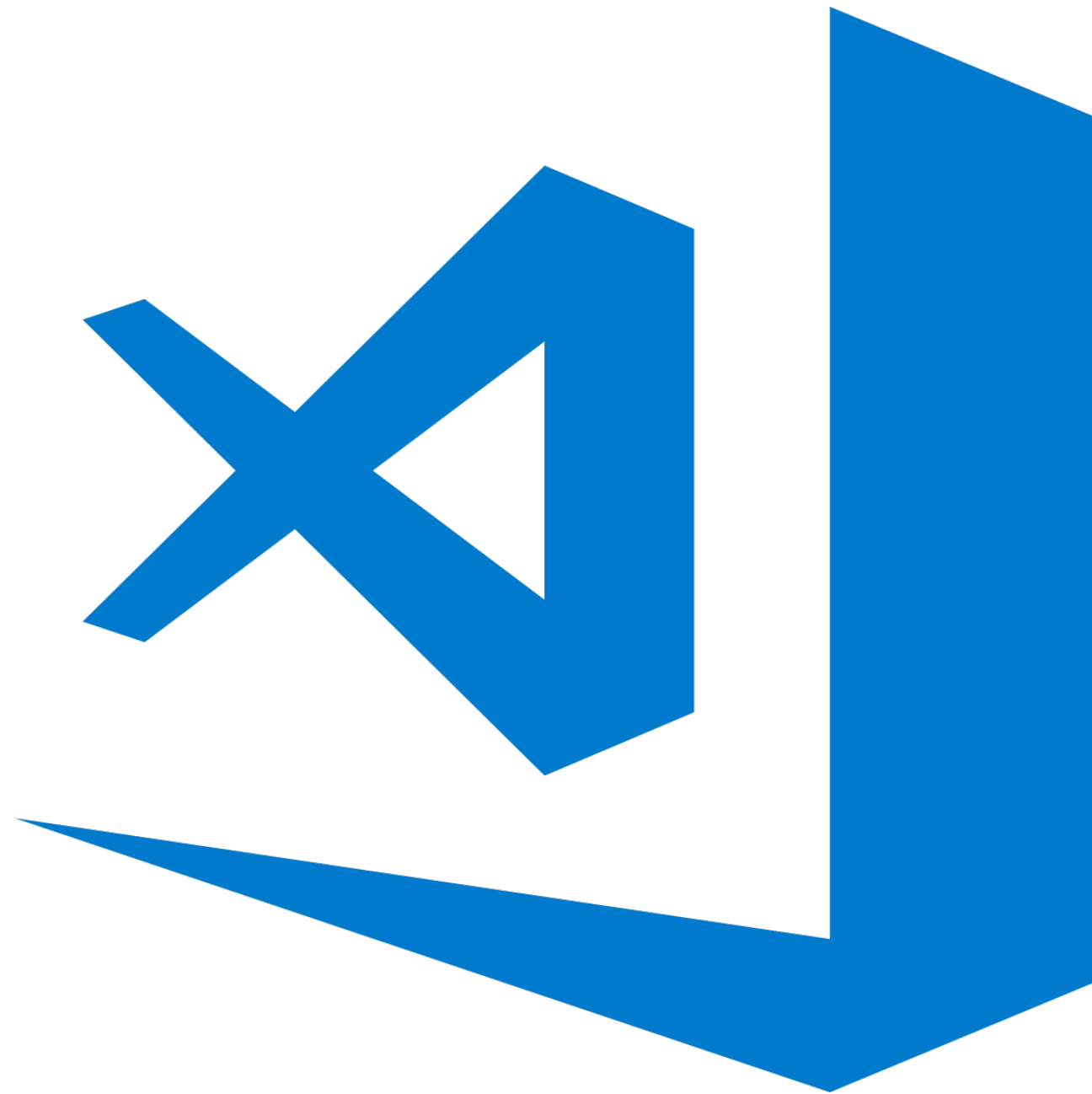
Midterm

quiz results: 11/12 or 12/12 questions correct

>84%

+ over half the class earned a perfect score on the quiz

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Midterm
problem submissions: auto grader success

>75%

0 point scores are being graded manually

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2nd Half
topics

TODO

Python and VS Code install guides

http://bit.ly/33TvVro

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installing python

installing VS Code

pathlib module

pathlib module: Path class

cross platform solution: use it to return path objects

```python
import pathlib

path = pathlib.Path('lecture_13_pathlib.py')

print(f"data type = {type(path)}\n")
```

```
Mac:
data type = <class 'pathlib.PosixPath'>

Windows:
data type = <class 'pathlib.WindowsPath'>
```

pathlib module: methods

check if path exists, is a directory, or is a file

```python
import pathlib

path = pathlib.Path('lecture_13_pathlib.py')

path_exists = path.exists()
is_file = path.is_file()
is_dir = path.is_dir() # False

if path.exists():
    print(f"path exists.\n")
```

pathlib module: methods
home directory: .home()

```python
import pathlib

path = pathlib.Path('lecture_13_pathlib.py')

home_directory = path.home()

print(f"Home directory = {home_directory}\n")
```

Mac:
Home directory = /Users/arwhyte

Windows:
Home directory = C:\users\arwhyte

pathlib module: methods

current working directory: .cwd()

```python
import pathlib

path = pathlib.Path('lecture_13_pathlib.py')

cwd = path.cwd()

print(f"cwd = {cwd}\n")
```

```
Mac:
cwd = /Users/arwhyte/lectures/lecture_13

Windows:
cwd = C:\users\arwhyte\lectures\lecture_13
```

pathlib module: methods

path components

```python
import pathlib

path = pathlib.Path('lecture_13_pathlib.py')

print(
    f"path.anchor = {path.anchor}",
    f"path.name = {path.name}",
    f"path.stem = {path.stem}",
    f"path.suffix = {path.suffix}",
    f"path.parent = {path.parent}",
    sep='\n'
)
```

pathlib module: methods

path components: name

```python
import pathlib

path = pathlib.Path('lecture_13_pathlib.py')

file_name = path.name

print(f"File name = {file_name}\n")
```

Mac:
`cwd = lecture_13_pathlib.py`

Windows:
`cwd = lecture_13_pathlib.py`

pathlib module: methods

absolute file path: .absolute()

```python
import pathlib

path = pathlib.Path('lecture_13_pathlib.py')

file_path_abs = path.absolute()

print( f"Absolute file path = {file_path_abs}\n")
```

Mac:
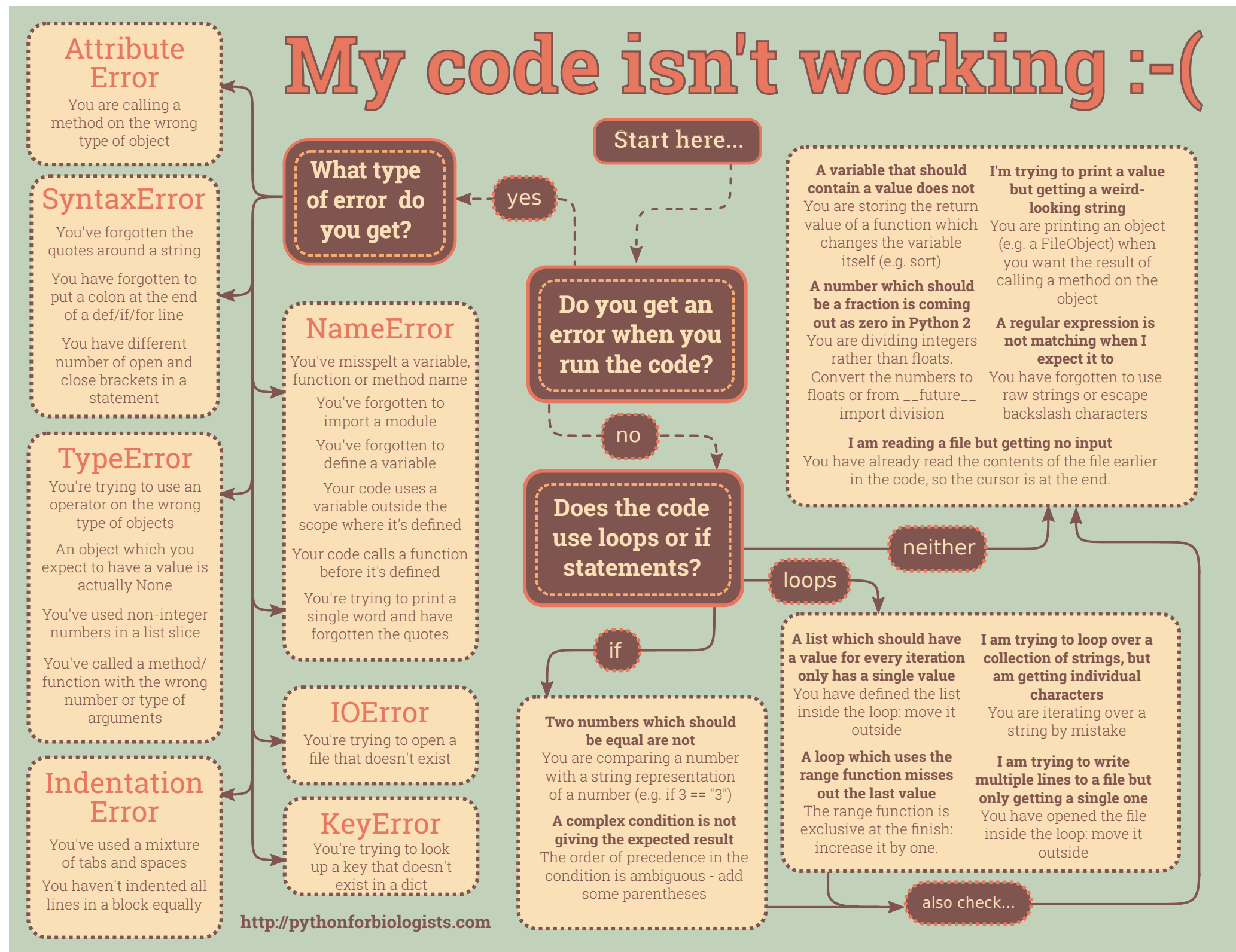cwd = /Users/arwhyte/lectures/lecture_13/lecture_13_pathlib.py

Windows:
cwd = C:\users\arwhyte\lectures\lecture_13\lecture_13_pathlib.py

finis

directors cut

When your code misbehaves
debug flowchart

My code isn't working :-(

Start here...

What type of error do you get? — yes

Do you get an error when you run the code? — no

Attribute Error
You are calling a method on the wrong type of object

SyntaxError
You've forgotten the quotes around a string

You have forgotten to put a colon at the end of a def/if/for line

You have different number of open and close brackets in a statement

NameError
You've misspelt a variable, function or method name

You've forgotten to import a module

You've forgotten to define a variable

Your code uses a variable outside the scope where it's defined

Your code calls a function before it's defined

You're trying to print a single word and have forgotten the quotes

TypeError
You're trying to use an operator on the wrong type of objects

An object which you expect to have a value is actually None

You've used non-integer numbers in a list slice

You've called a method/function with the wrong number or type of arguments

IOError
You're trying to open a file that doesn't exist

KeyError
You're trying to look up a key that doesn't exist in a dict

Indentation Error
You've used a mixture of tabs and spaces

You haven't indented all lines in a block equally

http://pythonforbiologists.com

Does the code use loops or if statements? — neither / loops / if

A variable that should contain a value does not
You are storing the return value of a function which changes the variable itself (e.g. sort)

A number which should be a fraction is coming out as zero in Python 2
You are dividing integers rather than floats. Convert the numbers to floats or from __future__ import division

I'm trying to print a value but getting a weird-looking string
You are printing an object (e.g. a FileObject) when you want the result of calling a method on the object

A regular expression is not matching when I expect it to
You have forgotten to use raw strings or escape backslash characters

I am reading a file but getting no input
You have already read the contents of the file earlier in the code, so the cursor is at the end.

Two numbers which should be equal are not
You are comparing a number with a string representation of a number (e.g. if 3 == "3")

A complex condition is not giving the expected result
The order of precedence in the condition is ambiguous - add some parentheses

A list which should have a value for every iteration only has a single value
You have defined the list inside the loop: move it outside

A loop which uses the range function misses out the last value
The range function is exclusive at the finish: increase it by one.

I am trying to loop over a collection of strings, but am getting individual characters
You are iterating over a string by mistake

I am trying to write multiple lines to a file but only getting a single one
You have opened the file inside the loop: move it outside

also check...

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Slide deck revisions
errata: corrections and other changes

Slide no(s).	Fix ver.	Description
	v1p1	

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