

Reading from Files





One: Open
the file

Step 1: Open the file

- Uses the `open()` function.
- Always done the same way no matter how the file is organized.

```
file = open("filename.txt", "r")
```

`open()` returns a "file object," which is a data type like `int`, `float`, or `string`.

Replace this string with the real name of your file (don't forget the quotes!)

The "r" means open the file for reading.



Two: loop
over the file.

Step 2: Loop over the file

```
file = open("filename.txt", "r")  
for line in file:
```

line can be any string variable you want. This variable will store each line of the file as it is read.



Step 2: Loop over the file

```
file = open("filename.txt", "r")  
while [there are more lines in the  
file that we haven't read]:  
    line = [read the next line  
from the file]
```

- The "magic" for loop operates similarly to the pseudocode above.
- You only have access to one line of the file at a time.

Step 2: Loop over the file

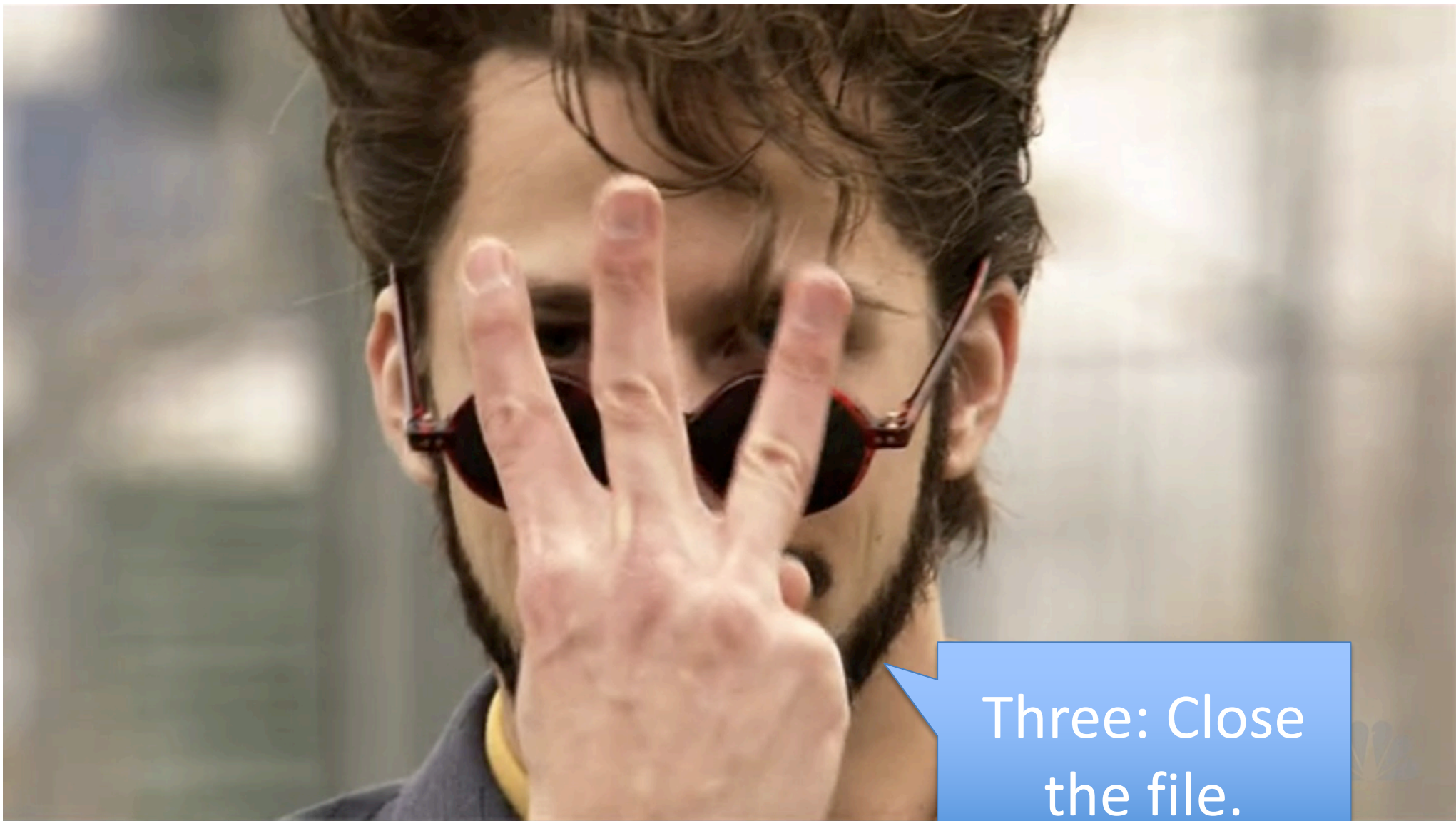
- Inside the loop, do whatever you need to do with the string variable.

```
file = open("filename.txt", "r")  
for line in file:  
    print(line)
```


Step 2: Loop over the file

- Usually a good idea to "strip" the newline character from the line before processing:

```
file = open("filename.txt", "r")
for line in file:
    line = line.rstrip()
    print(line)
```



Three: Close
the file.

Step 3: Close the file

- After you are done reading from the file, you should close the file:

```
file = open("filename.txt", "r")
for line in file:
    line = line.rstrip()
    print(line)
file.close()
```

Complete file-reading loop

- Use this as a template for file reading:

```
file = open("filename.txt", "r")
for line in file:
    line = line.rstrip()
    [process the line]
file.close()
```

Reminders



- Each line of the file is always read as a **string**.
- If you want to process each line as an int or a float, you must do the conversion manually.

```
file = open("filename.txt", "r")
for line in file:
    line = line.rstrip()
    num = int(line)
    print("this is a number:", num)
```

- When initially writing code to read from a file, always print the lines from the file as you read them.
 - Incredibly helpful for debugging.
 - Remove the print part when you're convinced the program works otherwise.

```
file = open("filename.txt", "r")
for line in file:
    line = line.rstrip()
    # Keep this print stmt for debugging.
    print(line)
```

- The "magic" for loop stops automatically at the end of the file. It will never read past the end of the file.
- However, blank lines at the end of the file (often put there by accident) can cause weird errors.

Examples

