COSC 2306
Data Programming

Python Basics

Where are these files?

- On the hard drive (or flash drive), hierarchically organized in folders/directories

- Your program needs to specify the path:
- absolute file path:
  `C:\Users\feng\Desktop\myfile.txt`

  `/home/feng/myfile.txt`
- relative file path: `./feng/myfile.txt` (relative to execution location)

Reading files in Python

- *#reading the content in file as a string*

```
fh= open('./myfile.txt', 'r')
content = fh.read()
print(content)
fh.close()
```

```
line1
line2
line3
…
```

Note: The file content string will contain newline (\n) characters

Reading files in Python

- *#reading file as a list of strings – each representing one line in the file*

```
fh= open('./myfile.txt', 'r')
lines = fh.readlines() #['line1\n', 'line2\n', 'line3\n' …]
for aline in lines:
    print(aline)
fh.close()
```

```
line1

line2

Line3

…
```

Reading files in Python

```
#reading one line at a time as a string

fh= open('./myfile.txt', 'r')
line1 = fh.readline()
line2 = fh.readline()
line3 = fh.readline()
print(line1, line2, line3)
fh.close()

line1
line2
line3
…
```

Reading files in Python

#reading one line at a time in a loop

```
fh= open('./myfile.txt', 'r')
line = fh.readline()
while line:
   print(line)
   line = fh.readline()
fh.close()
```

```
line1

line2

Line3

…
```

Reading files in Python

Pay attention to:

- If the file doesn't exist or is not in the path specified python will throw an error
- Content from the file is read as String
  - use type conversion when needed
- Remember to close the file once you're done!

Writing to a file

- To write data to a file you need to:
  1. Open a file in writing mode:

```
fileHandle = open('newfile.txt', 'w')
```

  2. Use the write method to send data to the file:

```
fileHandle.write("We won")
```

  3. Close file when you're done!

```
fileHandle.close()
```

- Note:
  - Need to add your own newline characters (\n)

Writing to a file

- To append data to a file you need to:
  1. Open a file in append mode:

```
fileHandle = open('newfile.txt', 'a')
```

  2. Use the write method to send data to the file:

```
fileHandle.write("We won")
```

  3. Close file when you're done!

```
fileHandle.close()
```

- Note:
  - String data is simply appended to the end of the file

Writing to a file

Pay attention to:

- If the file already exists, it will be rewritten/append, if it doesn't it will be created
- The write method takes only strings as arguments, so when needed, use type conversion
- Remember to close the file when done!

Iterating over lines in a file

```
allines = filehandle.readlines()
for aline in allines:
      print(aline)
      mylist = aline.split()
```

Write a program that reads a filename and a string and prints the number of occurrences of the string in each line of the file

Iterating over lines in a file

```
filename = input ("What file?")
str = input("What string?")
fh = open(filename, 'r')
lines = fh.readlines()
for aline in lines:
    count=0
    mylist=aline.split()
    for name in mylist:
     if (name == string):
            count = count+1
    print("It occurs", count, "times")
fh.close()
```