ECE 20875

Python for Data Science

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(Adapted from material developed by Profs. Milind Kulkarni, Stanley Chan, Chris Brinton, David Inouye, Qiang Qiu)

File I/O

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- In Python, we can read and write from files

- In Python (and most programming languages), file operation takes place in the following order:

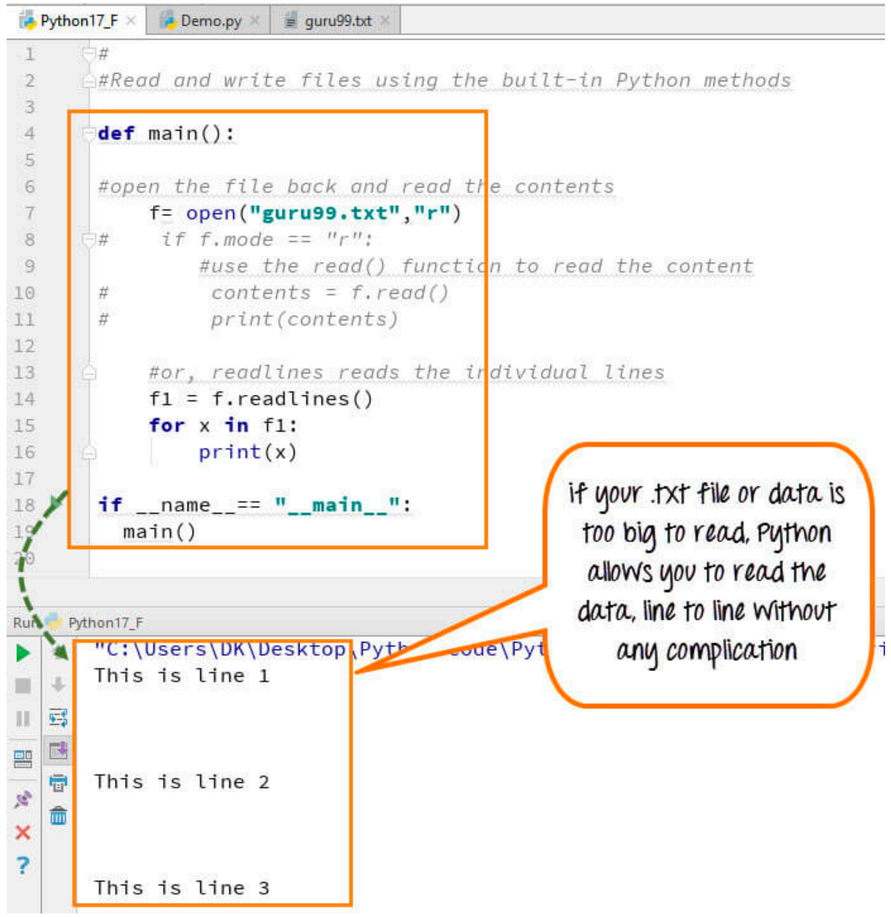
  1. Open a file

  2. Read or write (perform operation)

  3. Close the file

opening a file

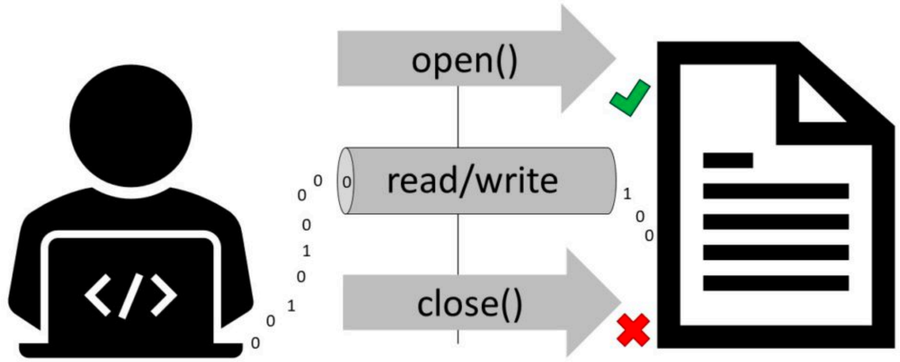
- Use the open( ) method
- Returns a **file object** (**handle**) used to read or write
- Specify the mode: most common are read ‘r’, write ‘w’, append ‘a’
- f = open(“test.txt", 'w') # write in text mode



closing a file

- Closing a file: `close()` method
- Free up resources that were tied up with the file
- Exception handling: Use `try ... finally` block

```
try:
  f = open(“test.txt", 'w')
  # perform file operations
finally:
  f.close()
```



writing a file

- Writing files: open in `write` or `append` mode
  - ‘w’ will overwrite existing file, while ‘a’ will add to the end of it
  - The `write(“text”)` method will write text to the file

```
with open(“test.txt", ‘w') as f:
    f.write(“my first file\n”)
    f.write(“This file\n\n”)
    f.write(“contains three lines\n”)
```

reading a file

- Reading files: open in `read` mode
- Can optionally specify the number of characters to read

```
f = open(“test.txt”,’r’)
f.read(4)   # read the first 4 characters
f.read(4)   # read the next 4 characters
f.read()    # read in the rest until the end
f.close()

f = open(“test.txt”,’r’)
f.readline()   # reads the first line (delimited by \n)
f.readlines()  # reads the remaining lines, returns as list
f.close()
```