PRG1

WEEK 13

NGEE ANN
SCHOOL OF INFOCOMM TECHNOLOGY

File I/O

Programming I (PRG1)
Diploma in Information Technology
Diploma in Financial Informatics
Diploma in Cybersecurity & Digital Forensics
Common ICT Programme
Year 1 (2019/20), Semester 1

Objectives

At the end of this lecture, you will ….

- **Be able to read and write text files**
  - Build in `open()` function in Python
  - Read files
  - Write files

File I/O

- `open` function is a Python build-in function aims to get a file object.
- `open` function returns a file object.
- *File objects contain methods and attributes that can be used to collect information about the file and can be used to manipulate the file.*

File Type

- **In Python, a file is categorized as either text or binary, and the difference between the two file types is important.**
- **Text files**
  - Structured as a sequence of lines, where each line includes a sequence of characters.
  - Each line is terminated with a special character, called the EOL or **End of Line** character.
- **Binary files**
  - Can only be processed by an application that know or understand the file's structure.

Activity 1

- **Text or Binary File? Take an educated guess**

  - ✓ jpeg or png image files
  - ✓ python.py files
  - ✓ note.txt or menu.text files
  - ✓ MSWord.exe or MSExcel.exe files
  - ✓ mydata.xlsx or mypresentation.pptx files

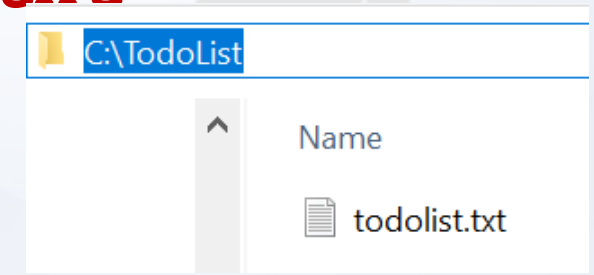
`open()` function

- **Usage** `file_object = open("filename", "mode")`
- **The `modes` are (not exhaustive):**
  - `'r'` – Read mode - used when the file is only being read
  - `'w'` – Write mode - used to edit and write new information to the file
    (any existing files with the same name will be erased when this mode is activated)
  - `'a'` – Appending mode - used to add new data to the end of the file; that is new information is automatically amended to the end

- **Example, read a file, `todolist.txt`**

```
path = "c:\\TodoList\\"
file = open(path + "todolist.txt","r")

for line in file:
    print(line, end='')
```



Reading text from a File

- Number of ways to read a text file in Python
  - ✓ `file.read()` - extract a string that contains all characters in the file.
  - ✓ `file.read(5)` - read the first **five** characters of stored data and return it as a string.
  - ✓ `file.readline()` - return the first line of the file.

Activity 2

- Create a text file that contains a list of classmates using Notepad, save the file in a known directory. For example, c:\mydata\friends.txt

- Read the file line by line using python and print them on the screen.

```
TAN MEI MEI
SAMATHA LIM
SYLVIA ONG
>>>
```

Writing text from a File

- Create a file in a folder.

```
path = "c:\\TodoList\\"
file = open(path + "myexceldata.txt","w")
```

```
file.write("Hello World!")
file.close()
```

File `close()`

- Closes the opened file

```
file = open("date.txt", "r")
....
....
file.close()
```

- A closed file cannot be read or written any more.
- Python automatically closes a file when the reference object of a file is reassigned to another file.
- It is a good practice to use the close() method to close a file.

Activity 3

- Create a text file that contains the data below using Python code, save the file on a known directory. For example, c:\mydata\receipt.txt

```
S/N         Item          Quantity
-------------------------------------
1           Shoes           10
2           Socks           5
3           Gloves          32
```

Summary

- In Python, you do not need to import a library in order to read and write files. It is handled natively in the language.

- The first thing you'll need to do is use Python's built-in `open` function to get a file object.
  - The `open` function opens a file.