



Queen Mary
University of London

QHP4701

Introduction to Data Science Programming

More on File Handling

Lecturer: Nikesh Bajaj, PhD

School of Physical and Chemical Sciences

<http://nikeshbajaj.in>

Lecture Outline

More on File Handling

- Text files
- Numpy files
- Pickle file

Doubts and questions session

Coursework 1 and 2: Expectations

Text file: writing

For reading and writing text file (.txt) in Python, open() method is used

File_object = open("File_Name","Access_Mode")

Writing mode

```
fileObj = open('file_path.txt','w')  
fileObj.writelines(Lines)  
fileObj.close()
```

Lines is a list of
strings

Appending mode

```
with open('file_path.txt','a') as file:  
    file.writelines(Lines)
```

Text file: reading

- There are multiple ways to read contents of a text file

File_object = open("File_Name","Access_Mode")

Reading mode

```
fileObj = open('file_path.txt','r')  
file_contents = fileObj.readlines()  
fileObj.close()
```

file_contents is a list
of lines in the file.

```
with open('file_path.txt','r') as file:  
    file_contents = file.readlines()
```

File can be read one line
at a time too.

```
file_contents = open('file_path.txt','r').readlines()
```

Text file

- There are multiple ways to read/write contents from/to text file

```
File_object = open("File_Name","Access_Mode")
```

- *Access_Mode:*
 - *'w' writing mode*
 - *'r' reading mode*
 - *'a' appending mode*

- There is more details on reading and writing text files in python.

For details check - <https://docs.python.org/3/tutorial/inputoutput.html>

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Numpy File: writing

Numpy arrays can directly be written as `.npy` or `.npz` file, which can be read later

Writing one array

```
import numpy as np

X = np.array([1,2,3,5,5])
np.save('data/myArrayX.npy', X)
```

Writing multiple arrays

```
X = np.array([1,2,3,5,5])
Y = np.array([1.1,0.1,2,10,1])
np.save('data/myArrayX.npz', X=X, Y=Y)
```

```
np.save('file_name.npy', array)
np.savez('file_name.npz', x=x, y=y)
np.savez_compressed('file_name.npz', x=x, y=y)
```

Numpy File: reading

`.npy` and `.npz` can be read using `np.load`

Reading one array file

```
X = np.load('data/myArrayX.npy')  
print(X)  
array([1,2,3,5,5])
```

Reading multiple arrays

```
FileXY = np.load('data/myArrayX.npz')  
  
X = FileXY['X']  
Y = FileXY['Y']  
FileXY.files
```


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Pickle File: writing

Pickle files are versatile, that support many other types of data, such as dictionaries, sets, or any other kind of objects.

```
import pickle
```

Writing

```
data = {'A':[1,2,3], 'B':X, 'C':np.random.rand(10)}  
pickle.dump(data, open('data/myData.pkl', 'wb'))
```

Reading

```
data = pickle.load(open('data/myData.pkl', 'rb'))
```

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Revision

Let's go through each week lessons to see if you have any doubts or questions

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Coursework 1 and 2: Expectations

Coursework: Expectations

Assignment 1 (Coursework 1)

- Assignment 1 is already assigned. Deadline to submit your assignment is Friday (16/06/23) mid-night
- Read everything carefully
- In 'Your Explanation' sections of each question, you are asked to write down your logical approach or explain the results.

Coursework 2

- Coursework 2 will be in similar format as Assignment 1, with more of work.

- Next !!!
 - 5.2: Lab session on doubts and questions

This will be our last session!



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