Python Programming
Reading from files

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Reading: open, read and close

```python
path = 'data.txt'      # relative path (to running point)
file = open(path, 'r')  # r is the mode argument for reading

for line in file:      # iterate on files
    # notice, each line has \n in its end
    print(line, end='')

file.close()

"""
Observe printed as lines

hello
I am
mostafa


saad ibrahim
12345
"""
```

data.txt × **01.py**

```
1   hello
2   I am
3   mostafa
4
5
6   saad ibrahim
7   12345
```

readline and readlines Methods

- Readlines method read all the file content!

```
2    path = 'data.txt'    # relative path (to running point)
3    file = open(path, 'r')
4    string = file.readline()
5
6    print(string)    # hello
7
8    lines = file.readlines()
9    print(lines)
10   # ['I am\n', 'mostafa\n', '\n', '\n', 'saad ibrahim\n', '12345\n']
11
12   #FileNotFoundError: [Errno 2] No such file or directory: 'notexist.txt'
13   #open('notexist.txt', 'r')
```

Pythonic way

- The with statement guarantees for us the file close
  - Stick to use it. Many guys forget to close or wrongly handle the close with exceptions
  - Leaving too many files not closed may cause problems

```python
# pythonic way: use with statement
# no need for file.close

path = 'data.txt'
lines = []
with open(path, 'r') as file:
    lines = file.readlines()

#['hello\n', 'I am\n', 'mostafa\n', '\n', '\n', 'saad ibrahim\n', '12345\n']
print(lines)
```

.read().splitlines

- One of the very common ways to read the file content
- read() return whole file as a string, then you can do whatever
  - E.g. split based on commas

```
 2
 3    path = 'data.txt'
 4    lines = []
 5    with open(path, 'r') as file:
 6        lines = file.read().splitlines()
 7
 8    # removing the end of line
 9    #['hello', 'I am', 'mostafa', '', '', 'saad ibrahim', '12345']
10    print(lines)
11
12    # you can then do whatever on list
13    # strip, iterate in reversed way, etc
14
```

Encoding: UTF-8

```python
 3    path = 'data_utf8.txt'
 4
 5    with open(path, 'r', encoding='utf-8') as file:
 6        lines = file.read().splitlines()
 7        print(lines)
 8        # ['Dürst. ˈmaʳkʊs', 'ΣᵥxЄℝ H₂ ði ŏ Σὲ ŏτ ʉɰ́']
 9
10
11    # UnicodeDecodeError: 'ascii' codec can't decode
12    # byte 0xc3 in position 1: ordinal not in range(128)
13    with open(path, 'r', encoding='ASCII') as file:
14        lines = file.read().splitlines()
15        print(lines)
16
```

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."