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File I/O

Read the first line of a file

```
file = open("students.txt", "r")
line = file.readline()

file.close()

print(line)
```

```
FirstName, Surname, Math, English, IT, Biology, PE
```

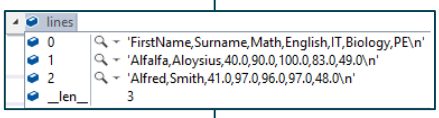
```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
```

Read every line of a file into memory

```
file = open("students.txt", "r")
lines = file.readlines()

file.close()

for line in lines:
    print(line)
```



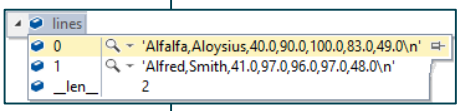

```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
```

Read every line of a file into memory...

```
file = open("students.txt", "r")
header = file.readline()
lines = file.readlines()

file.close()

for line in lines:
    print(line)
```




```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
```

Read a file line by line

```
file = open("students.txt", "r")

for line in file:
    print(line.strip())

file.close()
```

```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
Press any key to continue . . .
```

```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
```

Read all lines into memory – Using with

```
with open("students.txt") as file:
       lines = file.readlines()

for line in lines:
    print(line)
```

```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
```

Read a file line by line – Using with

```
with open("students.txt") as file:
    for line in file:
        print(line)
```

```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
```

Append to a file – Using with

```
with open("students.txt", "a") as file:
    file.write("Bob, Smith, 30, 80, 70, 60\n")
    file.write("Rob, Jones, 20, 60, 80, 90\n")
```

```
FirstName, Surname, Math, English, IT, Biology, PE
Alfalfa, Aloysius, 40.0, 90.0, 100.0, 83.0, 49.0
Alfred, Smith, 41.0, 97.0, 96.0, 97.0, 48.0
Bob, Smith, 30, 80, 70, 60
Rob, Jones, 20, 60, 80, 90
```

Write to a file

```
with open(r"c:\qa\students.txt", "w") as file:
    file.write("Bob, Smith, 30, 80, 70, 60")
```

```
Bob, Smith, 30, 80, 70, 60
```

The only line in the file!

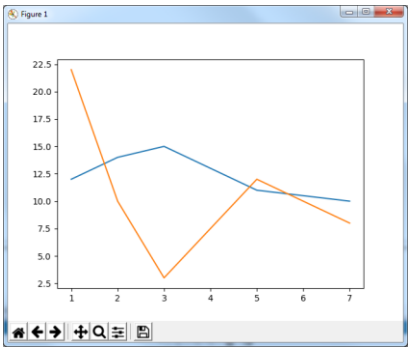

Any Questions?

Plotting values read from a file

```
import matplotlib.pyplot as plt

plt.plot([1, 2, 3, 5, 7], [12, 14, 15, 11, 10])
plt.plot([1, 2, 3, 5, 7], [22, 10, 3, 12, 8])

plt.show()
```



Practical example of graph from a file

```
import matplotlib.pyplot as plt

with open("students.txt") as file:
    for line in file:
        grades = line.replace(' ', '').split(', ')
        grades = list(map(float,  grades[2:7]))
        plt.plot([1, 2, 3, 4, 5, ], grades)

plt.show()
```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Thank you