

Writing Data to a File

Programming and Algorithms

Lecture by
Dr Daniil Osudin

```
n = 3
for i in range(1,n+1):
    print("Hello World!")
```

Hello World!
Hello World!
Hello World!

What will we Cover?

- Opening and creating files in Python
- Writing to files and modifying data in files

Writing to a Text File I

- `write()` method – used to write to an opened file
- Takes one argument of type string to be written to the file
- One of the following access modes has to be used to be able to write to the file:
 - "w" – used to overwrite the existing file and start from scratch
 - "a" – used to add data to the end of file

Writing to a Text File II

- The end of line is not automatic; an end of line marker (`\n`) is needed to write data on new line
- A new file is created if a file name passed to function `open ()` does not exist

Example I

- Opening a text file that does not exist in the current directory

```
f1 = open("write_here.txt", "w")  
f1.close()
```

| Name | Date Modified | Size | Kind |
|-----------------|---------------|-------|------------|
| File_name.ipynb | Today, 17:06 | 18 KB | Document |
| my_file.txt | Today, 17:05 | 1 KB | Plain Text |

| Name | Type | Size |
|-----------------|---------------|-------|
| File_name.ipynb | IPYNB File | 18 KB |
| my_file.txt | Text Document | 1 KB |

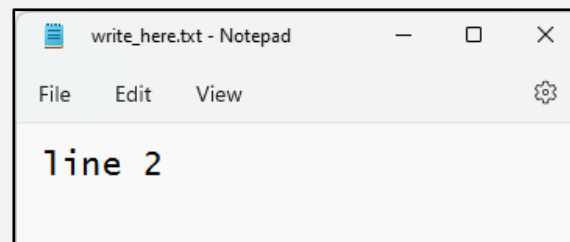
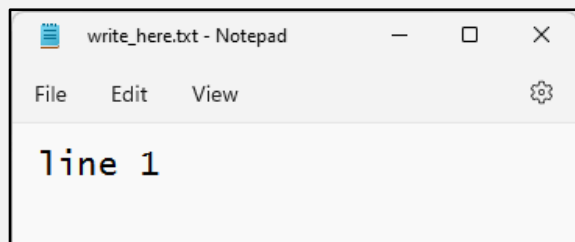
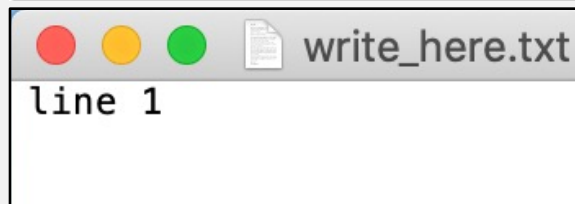
| Name | Date Modified | Size | Kind |
|-----------------|---------------|------------|------------|
| File_name.ipynb | Today, 17:06 | 18 KB | Document |
| my_file.txt | Today, 17:05 | 1 KB | Plain Text |
| write_here.txt | Today, 17:04 | Zero bytes | Plain Text |

| Name | Type | Size |
|-----------------|---------------|-------|
| File_name.ipynb | IPYNB File | 18 KB |
| my_file.txt | Text Document | 1 KB |
| write_here.txt | Text Document | 0 KB |

Example II

- `write()` method used with the "w" access mode

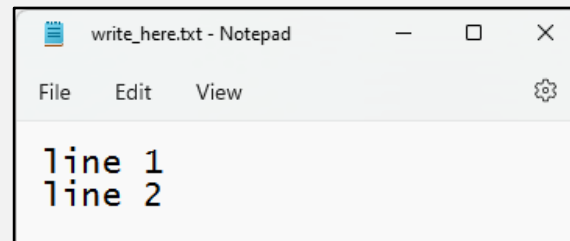
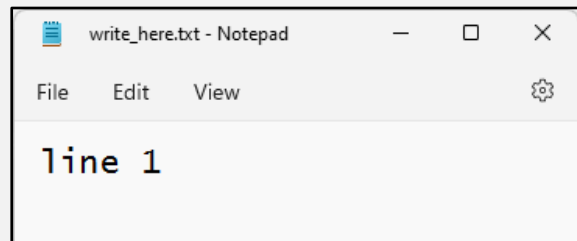
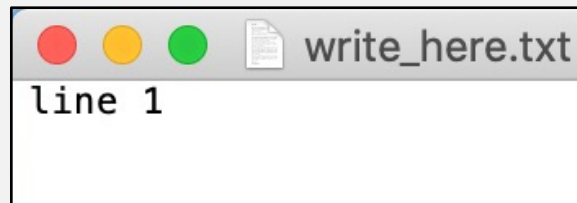
```
f1 = open("write_here.txt", "w")  
f1.write("line 2\n")  
f1.close()
```



Example III

- `write()` method used with the "a" access mode

```
f1 = open("write_here.txt", "a")  
f1.write("line 2\n")  
f1.close()
```



Common Errors in Python

`Write()` method only takes a parameter of type string

```
f1 = open("write_here.txt", "w")
i = 1
f1.write(i)
f1.close()
```

```
-----
TypeError                                Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_3704\332272634.py in <module>
      1 f1 = open("write_here.txt", "w")
      2 i = 1
----> 3 f1.write(i)
      4 f1.close()

TypeError: write() argument must be str, not int
```

Diagram illustrating the error message components:

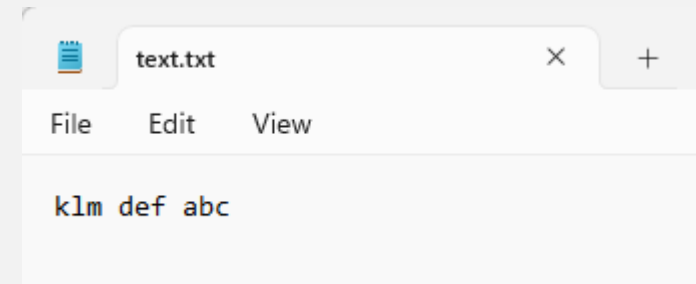
- Error location:** Points to the line number and code causing the error (line 3: `f1.write(i)`).
- Error type:** Points to the error name (`TypeError`).
- Error description:** Points to the error message (`write() argument must be str, not int`).

Example IV

- Write a program that takes text input and appends it with a reversed order of the words

```
text = input("Enter some text: ")
words = text.split(" ")
file = open("text.txt", "a")
for w in range(len(words)):
    file.write(words[len(words)- 1 - w] + " ")
file.write("\n")
file.close()
```

Enter some text: abc def klm

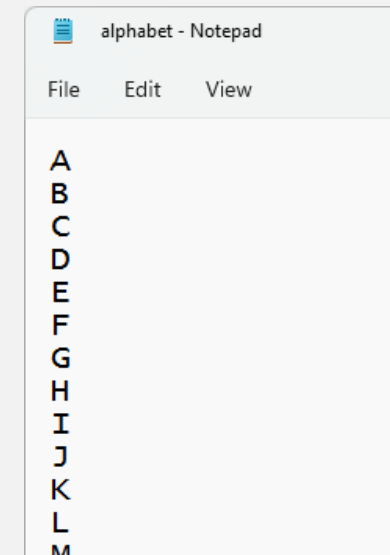


Example V

- Write a program that writes the upper-case letters in the alphabet, one per line, to a file.

```
file_name = input("Enter the name of the text file: ")
file1 = open(file_name, "w")          # open the file
alphabet = "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
for s in range(len(alphabet)):        # loop over the string alphabet
    file1.write(alphabet[s] + "\n")   # write the alphabet a letter per line
file1.close()                        # close the file
```

Enter the name of the text file: alphabet



Try It Yourself

Write a program in python environment that

- reads in a file
- Calculates the number of characters, words and lines in the file
- Writes this information to a different text file