

41 – Text Files

Lesson Notes

from the
Teach Python Programming With Confidence Masterclass
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So far, all our programs have been unable to save any data when the program stops. Data that you want to store needs to be saved to an external source and the easiest way to do that is with a text file.

Text files are great at storing simple 1D lists. You can use them to store 2D lists but there are better options for 2D lists.

Linking to a text file

When using text files, you need to link your program to that file. There are three ways you can do that:

Write mode (w): This will create a new text file that you are linking to and any previous text files with the same name will be overwritten.

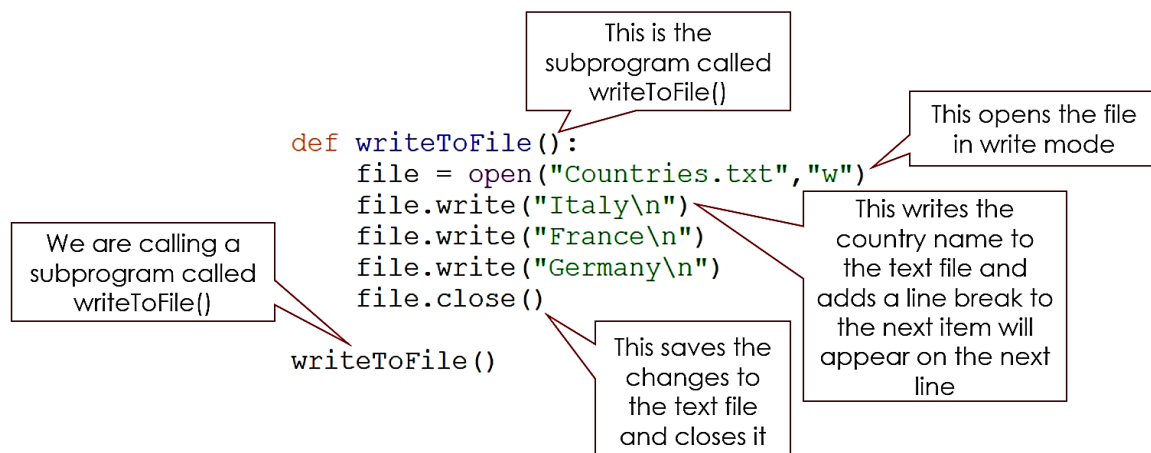
Read mode (r): This will allow you to read the data from an existing text file, but you will not be able to write anything to it.

Append mode (a): This allows you to add data to the end of an existing text file.


Please note: You cannot change a single element of existing data in a text file without overwriting the whole file which means if you need to change one element you read the whole thing and bring it into Python, change it there and then use the write mode to overwrite the old file.

Writing to a text file

Let's start off by creating a new text file.

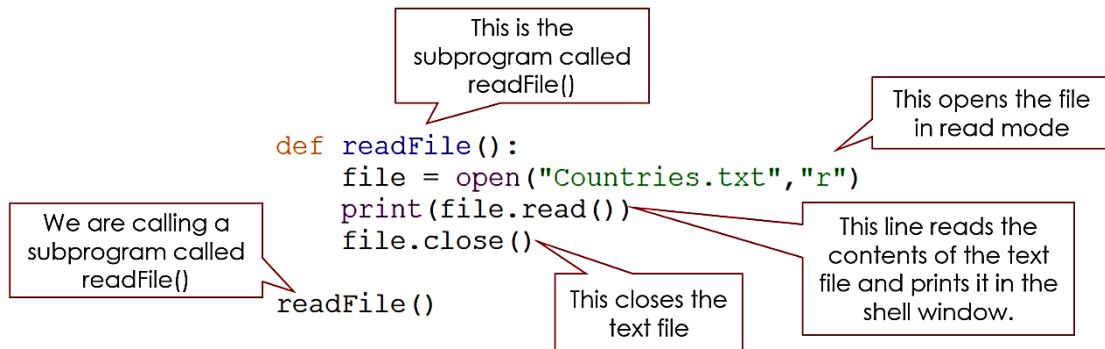


In order to see the text file, it will be saved in the same folder your program is stored and you can read it using Notepad or other similar package.

 Countries.txt

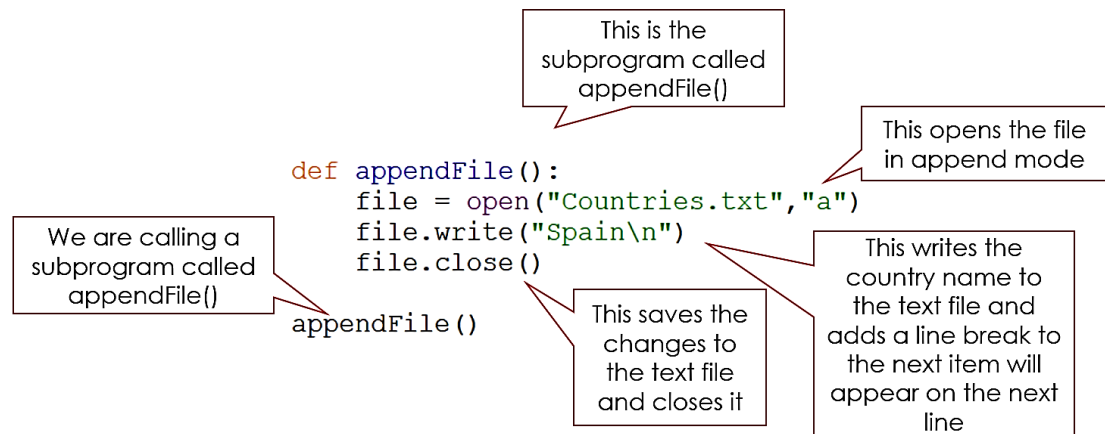
Reading from a text file

To read the contents from a text file into the Python shell we need to use the following code:



Adding to a text file

If you want to add data to an existing text file you need to use the following code:



On the next page you will see a program that incorporates all three of these elements using a menu system.

So, let's put that all together into one large program:

```
def writeToFile():
    file = open("Countries.txt", "w")
    file.write("Italy\n")
    file.write("France\n")
    file.write("Germany\n")
    file.close()

def appendFile():
    file = open("Countries.txt", "a")
    newCountry = input("Name a country: ")
    newCountry = newCountry+"\n"
    file.write(newCountry)
    file.close()

def readfile():
    file = open("Countries.txt", "r")
    print(file.read())
    file.close()

again = True
while again == True:
    print("1) Create new list of 3 countries")
    print("2) Add a new country")
    print("3) Display list of countries")
    print("4) Quit")
    selection = input("Enter selection: ")
    if selection == "1":
        writeToFile()
    elif selection == "2":
        appendFile()
    elif selection == "3":
        readfile()
    elif selection == "4":
        again = False
    else:
        print("Invalid selection")
```

You can see that there are three subprograms, `writeToFile()`, `appendFile()` and `readfile()`. Now look at the main program. The user is shown a menu with 4 options available. If they select 1 it will create a new file, overwriting any other files called Countries in that folder. If they select 2 they can input a new country and that will get added to the end of the list and if they select 3 they will see the list in the Python shell window. If they select 4 it will stop the loop and quit the program and if they enter anything else, it will tell them they made an invalid selection.