Working with CSV (Comma separated values) files in Python

Introduction:

CSV (Comma Separated Values) is a simple *file* ***format*** used to store *tabular data*, such as a *spreadsheet or database*. A *CSV* file stores *tabular data (numbers and text)* in *plain text*. Each line of the file is a data record. Each record consists of one or more fields, separated by commas. The use of the *comma* as a *field separator* is the *source of the name* for this *file format.*
For working *CSV* files in python, there is an *inbuilt module called* **csv**

There are three main modes in which the files can be opened: *Read, Write and Append mode***.**

i) ***Read mode* (denoted by *'r'*):**
It *reads* contents from a *file*. The *file should exist* else it gives an error.

ii) ***Write mode (denoted by *'w'*):***
It writes to a *CSV* file. If the file exists, it clears it and starts writing to it from the first row. Else, if the file does not exist, it is created and then the data is written to it.

iii) ***Append mode (denoted by *'a'*):***
It writes rows to a pre-existing file. It is different from write mode as it does not clear the existing rows of the CSV file, it just adds the rows below them.

Writing into CSV files:

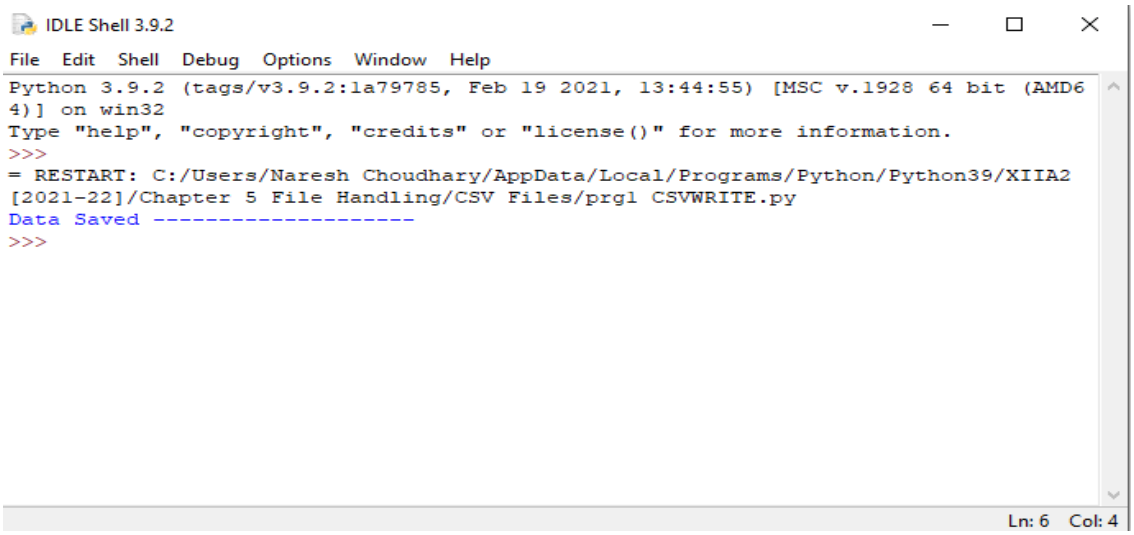
- To saving data to a **CSV file** is done using the *writer object* provided by the **csv module.**
- Let's see how to save Student Details to a CSV file**.**
  - In the given example code, we first *open* the file for *writing*.
  - The *'w'* mode creates a *file* for us *if it hasn't already been created*.
  - Next, we create a *filewriter object* that we use to *add rows using* the *writerow* method.
  - The *writerow* method *takes a list of values* as an *argument*, and then saves them as one line in a **CSV file.**

NOTE:
Please note that writerow method accepts only a single argument which we have given as a list here (notice the '[' and ']' around the contents to be written).

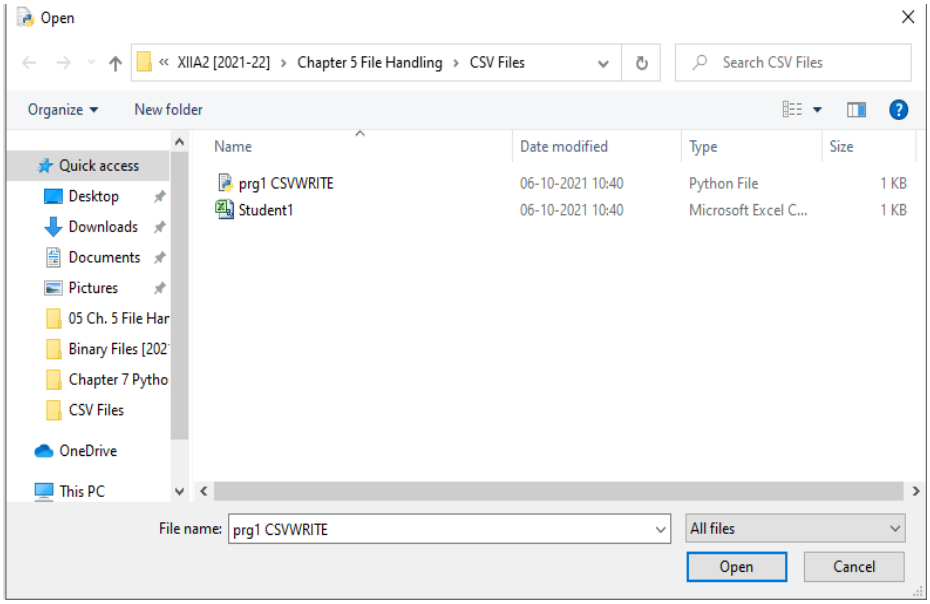
Example:
 # Prg.1: program to write content into a CSV file ('Student.csv')

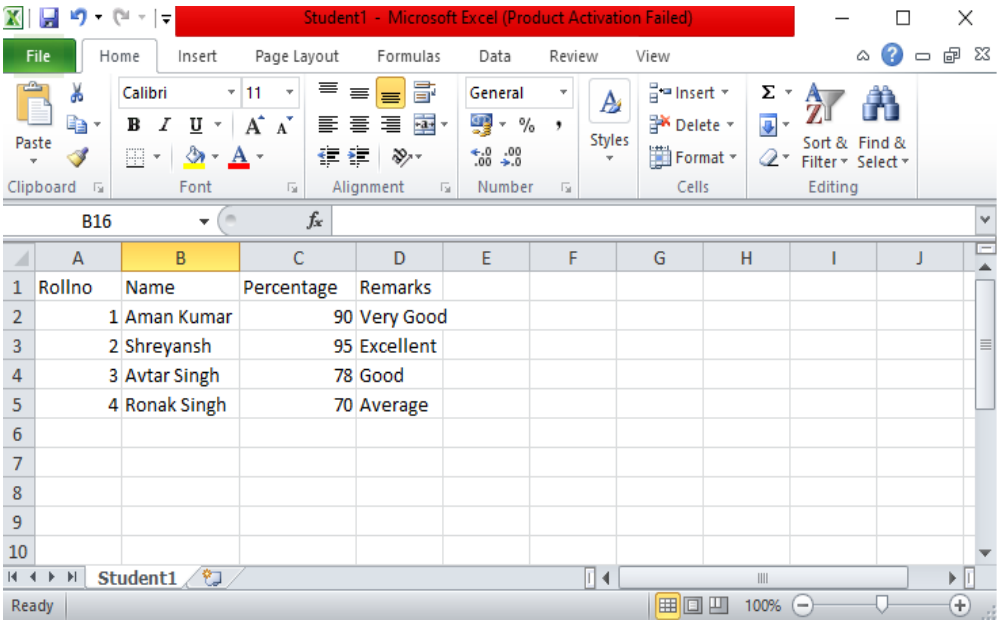
```
import csv
with open('Student1.csv', 'w', newline='') as Myfile:
    filewriter = csv.writer(Myfile, delimiter=',')
    filewriter.writerow(['Rollno', 'Name','Percentage','Remarks'])
    filewriter.writerow(['1','Aman Kumar','90','Very Good'])
    filewriter.writerow(['2', 'Shreyansh','95','Excellent'])
    filewriter.writerow(['3','Avtar Singh', '78','Good'])
    filewriter.writerow(['4','Ronak Singh','70','Average'])
    print("Data Saved ----------")
```

Output:



Content of the file 'Student.csv' display as:





Reading from CSV files:

The *csv.reader()* method returns a *reader object which iterates over lines* in the given *CSV file.*

Step 1: Imports the *csv package* so that you can *use the methods provided by it for easy csv I/O.*

Step 2: Open the file *Student* in read mode and a *file object* called *Myfile,* which points to the file contents.

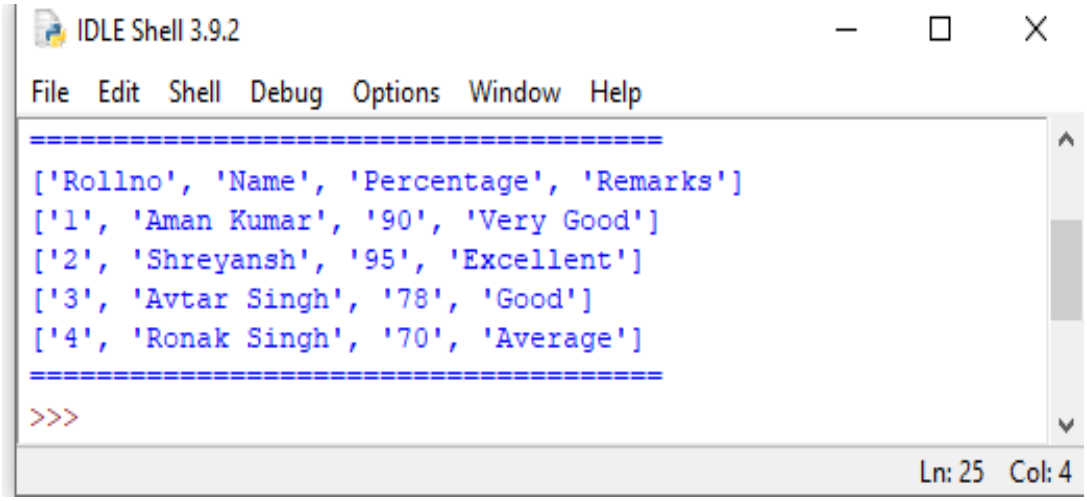
Step 3: *csv.reader* is the object *which iterates over the lines of the* ***CSV file*** through the *File object* ***readcsv***.

Example:

 # Prg.2: program to read content from a CSV file ('Student.csv')

```
import csv
with open('Student1.csv' , 'r' ,newline='') as Myfile:
    readcsv=csv.reader(Myfile, delimiter=',')
    print("\n====================================")
    for i in readcsv:
        print(i)
    print("====================================")
```

Output:



Suppose we want to *add a few lines* to the *"Student1.csv"* file. The *Append mode 'a'* can be of help. The below code appends rows to the existing "*Student1.csv"* file:

```
import csv
with open('Student1.csv', 'a',newline='') as csvfile:
    writecsv=csv.writer(csvfile,delimiter=',')
    choice='y'
    while choice.lower()=='y':
        rl=int(input("Enter Roll No."))
        n=input("Enter Name")
        p=float(input("Enter Percentage"))
        r=input("Enter Remarks")
        writecsv.writerow([rl,n,p,r])
        print(" Data saved in Student Details file..")
        choice=input("Want add more record(y/n).....")
```

***Output*:**