

- CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader( )
- Python libraries: creating python libraries

by  
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### CSV files

CSV (Comma Separated Values) is a file format used to store tabular data in plain text. Each line of the file is a record. Record consists of one or more fields, separated by commas. The use of field separator comma is the mystery behind the name of this type of file. In python, there is an inbuilt module called csv that is imported to work with this type of file.

**Look at the code below, it writes 3 rows of data(records) and a header into a csv file carmaster.csv**

```
import csv
fields = ['Company','Model','RatePerHour']
rows = [ ['Telsa','2019 Model 3','56'], ['Volvo','2020 XC 60','59'], ['BMW','2019 BMW 5 Series','62']]
filename = "carmaster.csv"
with open(filename, 'w') as csvfile:
    csvwriter = csv.writer(csvfile)
    csvwriter.writerow(fields)
    csvwriter.writerows(rows)
    csvfile.close()
```

```
import csv
```

The above statement imports the CSV module

```
fields = ['Company','Model','RatePerHour']
```

The above statement stores the field names in a list

```
rows = [['Telsa','2019 Model 3','56'], ['Volvo','2020 XC 60','59'], ['BMW','2019 BMW 5 Series','62']]
```

The above statement stores all records in a list. The individual records are itself in a list. So it's an iterative list, **the parameter for the function writerows()**.

```
filename = "carmaster.csv"
```

The above statement tells the name of the csv file

```
with open(filename, 'w') as csvfile:
```

```
    csvwriter = csv.writer(csvfile)
```

The above statement opens the csv file in write mode which is then converted into csv.writer object. The entire information is stored in variable csvwriter.

```
csvwriter.writerow(fields)
```

In the above statement writerow method writes the column headings

```
csvwriter.writerows(rows)
```

In the above statement writerows method writes multiple rows

**Now we will read back the data**

```
>>> import csv
```

```
>>> file="carmaster.csv"
```

```
>>> with open(file,"r") as csvfile:
```

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```
z=csv.reader(csvfile)
for i in z:
    print(i)
```

```
['Company', 'Model', 'RatePerHour']
[]
['Telsa', '2019 Model 3', '56']
[]
['Volvo', '2020 XC 60', '59']
[]
['BMW', '2019 BMW 5 Series', '62']
[]
```

We can install pandas modules and read a csv file using pandas read\_csv function

We first upgrade our pip

```
C:\Users\Som\AppData\Local\Programs\Python\Python38\Scripts>python -m pip instal
l --upgrade pip --user
Requirement already satisfied: pip in c:\users\som\appdata\roaming\python\python
38\site-packages (21.1.1)
Collecting pip
  Downloading pip-21.1.2-py3-none-any.whl (1.5 MB)
    |#####| 1.5 MB 595 kB/s
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 21.1.1
    Uninstalling pip-21.1.1:
      Successfully uninstalled pip-21.1.1
Successfully installed pip-21.1.2

C:\Users\Som\AppData\Local\Programs\Python\Python38\Scripts>
```

Then install pandas by giving the command where pip is located

```
C:\Users\Som>cd appdata\local\programs\python\python38\scripts
C:\Users\Som\AppData\Local\Programs\Python\Python38\Scripts>dir p*
Volume in drive C has no label.
Volume Serial Number is C0F0-4D97

Directory of C:\Users\Som\AppData\Local\Programs\Python\Python38\Scripts
30-05-2021  12:54          314,222  pandemic_second.wave_India.ipynb
17-07-2020  16:33           15,139  perc_positive.png
20-06-2020  18:55          103,295  pip.exe
20-06-2020  18:55          103,295  pip3.8.exe
20-06-2020  18:55          103,295  pip3.exe
           5 File(s)          639,246 bytes
           0 Dir(s)  213,924,335,616 bytes free

C:\Users\Som\AppData\Local\Programs\Python\Python38\Scripts>
```

Command using pip to install pandas

```
python -m pip install pandas --user
```

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```
C:\Users\Som\AppData\Local\Programs\Python\Python38\Scripts>python -m pip install pandas --user
Requirement already satisfied: pandas in c:\users\som\appdata\roaming\python\python38\site-packages (1.0.5)
Requirement already satisfied: pytz>=2017.2 in c:\users\som\appdata\roaming\python\python38\site-packages (from pandas) (2020.1)
Requirement already satisfied: numpy>=1.13.3 in c:\users\som\appdata\roaming\python\python38\site-packages (from pandas) (1.19.5)
Requirement already satisfied: python-dateutil>=2.6.1 in c:\users\som\appdata\roaming\python\python38\site-packages (from pandas) (2.8.1)
Requirement already satisfied: six>=1.5 in c:\users\som\appdata\roaming\python\python38\site-packages (from python-dateutil>=2.6.1->pandas) (1.15.0)

C:\Users\Som\AppData\Local\Programs\Python\Python38\Scripts>
```

Now we can use pandas module to read the csv file

```
>>> import pandas as pd
>>> df=pd.read_csv("carmaster.csv")
>>> df
   Company  Model  RatePerHour
0  Telsa    2019 Model 3      56
1  Volvo   2020 XC 60      59
2  BMW     2019 BMW 5 Series  62
```

If we want to add more records like this we modify the code as shown below,  
The output is shown below, note the file mode (a for append)

```
>>> rows = [ ['Lexus','2020 LS','77'],['Mercedes','2019 Mercedes S Class','95'],['Audi','2019 Audi A8','88']]
>>> with open(file,"a") as csvfile:
        csvwriter=csv.writer(csvfile)
        csvwriter.writerows(rows)

>>> with open(file,"r") as csvfile:
        z=csv.reader(csvfile)
        for i in z:
            print(i)
```

```
['Company', 'Model', 'RatePerHour']
[]
['Telsa', '2019 Model 3', '56']
[]
['Volvo', '2020 XC 60', '59']
[]
['BMW', '2019 BMW 5 Series', '62']
[]
```

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```
['Lexus', '2020 LS', '77']  
[]  
['Mercedes', '2019 Mercedes S Class', '95']  
[]  
['Audi', '2019 Audi A8', '88']  
[]
```

or read using pandas module

```
>>> import pandas as pd  
>>> df=pd.read_csv("carmaster.csv")  
>>> df  
   Company      Model  RatePerHour  
0  Telsa      2019 Model 3         56  
1  Volvo      2020 XC 60         59  
2  BMW        2019 BMW 5 Series      62  
3  Lexus      2020 LS             77  
4  Mercedes  2019 Mercedes S Class  95  
5  Audi       2019 Audi A8         88
```

Merging two csv files using pandas

Let us place the csv files in the current working directory and merge them on the basis of a column

```
>>> import os  
>>> os.chdir(r'c:\py01')  
>>> import pandas as pd  
>>> df1=pd.read_csv("item01.csv")  
>>> df1  
   Itemno ItemName  
0  i001  paneer  
1  i002  butter  
2  i003  milk  
3  i004  ghee  
4  i005  pickle  
>>> df2=pd.read_csv("item02.csv")  
>>> df2  
   Itemno ItemPrice  
0  i001      300  
1  i002      235  
2  i003      840  
3  i004      350  
4  i005      120  
>>> df=df1.merge(df2, on="Itemno")  
>>> df  
   Itemno ItemName  ItemPrice  
0  i001  paneer      300
```

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```
1 i002 butter 235
2 i003 milk 840
3 i004 ghee 350
4 i005 pickle 120
>>>
```

Python libraries

Lets create two pyton files and store them in the default folder , the name given is myfirstm.py and myfirstm1.py respectively

myfirstm.py

```
def hello(name):
    print("Hello, " + name)
```

myfirstm1.py

```
dict01={"name":"Sri Raj","phone":"9596"}
```

now we will import myfirstm.py and myfirstm1.py using import statements

```
>>> import myfirstm
>>> myfirstm.hello("Somnath PaulChoudhury")
Hello, Somnath PaulChoudhury
```

```
>>> import myfirstm as qq
>>> qq.hello("SPC")
Hello, SPC
```

```
>>> import myfirstm1 as ee
>>> ee.dict01["name"]
'Sri Raj'
>>> ee.dict01["phone"]
'9596'
>>>
```

The above codes shows how we can create python modules and import them.

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