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COMMA SEPARATED VALUE

CSV FILE

- **CSV** is a simple **file format** used to store tabular data, such as a spreadsheet or database.
- **Files** in the **CSV format** can be imported to and exported from programs that store data in tables, such as Microsoft Excel or OpenOffice Calc.
- **CSV** stands for "comma-separated values".
- A comma-separated values file is a delimited text file that uses a comma to separate values.
- 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

CSV file handling in Python

- To perform read and write operation with CSV file, we must import **CSV** module.
- `open()` function is used to open file, and return file object.

Reading from CSV file

- ❑ import csv module
- ❑ Use open() to open csv file, it will return file object.
- ❑ Pass this file object to reader object.
- ❑ Perform operation you want

Example : Reading from CSV File

1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000

myfile.csv

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
```

EMPNO	EMP NAME	SALARY
1	Amit	6000
2	Suresh Kumar	8000
3	Gabbar	75000

OUTPUT

GO TO NEXT SLIDE TO UNDERSTAND THE CODE LINE BY LINE

Example : Reading from CSV File

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
```

First line :- is to import csv module, this is necessary to perform operations on csv file
Second line :- is to open file to read using “with” block, this block will ensure opened file will be closed automatically after this block even in case of runtime error also.

Example : Reading from CSV File

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
```

Third line: to create reader object, to perform read operation on csv file, the first parameter is the name of csv file, and second parameter is delimiter i.e. on what basis value of different field to read, by default it is comma(,) so this is optional if not given it will be by default comma, however if any other character is used in file then we must specify this. myreader will become csv reader object to read csv file.

Example : Reading from CSV File

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
```

Fourth line : this is formatted string to specify width of each column, so that output appears properly aligned in their width, here %10s means 10 space for EMPNO, and so on. This is helpful in printing output in formatted way.

Sixth line :- this line is used to read each row from file one by one and store in row variable. i.e. all the comma separated values will be stored in row in different index

Example : Reading from CSV File

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
```

Seventh Line :- this line is simply printing all the values in row variable by specifying index i.e. index 0 will be for (according to first row in file) 1, 1 for 'Amit', 2 for 6000. here also we used same width as for heading so that both heading and data are aligned properly

Example : Reading from CSV File

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile, delimiter=',')
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
```

EMPNO	EMP NAME	SALARY
1	Amit	6000
2	Suresh Kumar	8000
3	Gabbar	75000

OUTPUT

Here you can see the output is properly aligned in their assigned width

GO TO NEXT SLIDE TO KNOW HOW TO CREATE CSV FILE

How to create CSV file

- Method 1 (From MS-Excel):
 - Open Excel, delete all the sheet except sheet 1
 - Type all the data, in separate cells
 - Save it as **CSV** file in your desired location.
 - If any warning comes, click on 'YES'
 - When you close the excel, choose 'NO'
 - Now file is created at your desired location, go and double click or open with notepad to check the content

A	B	C
1	Amit	6000
2	Suresh Kumar	8000
3	Gabbar	75000

How to create CSV file

□ Method 2 (From Notepad):

- Open Notepad
- Type record by separating each column value by comma(,)
- Every record in separate line
- Save it by giving extension .csv (PUT THE NAME IN DOUBLE QUOTES TO ENSURE .TXT WILL NOT BE APPENDED WITH FILE NAME FOR E.G. if you want it to save with name emp then give name as “emp.csv” in double quotes)
- File is created close it and double click to open and check

```
1,Amit,6000  
2,Suresh Kumar,8000  
3,Gabbar,75000
```

Example : Counting number of records

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    count=0
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
        count+=1
    print("=====")
    print("%30s"% "TOTAL RECORDS :", count)
    print("=====")
```

EMPNO	EMP NAME	SALARY
1	Amit	6000
2	Suresh Kumar	8000
3	Gabbar	75000
TOTAL RECORDS : 3		

OUTPUT

Example : Sum of Salary and counting employee getting more than 70000

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    count=0
    sum=0
    print("%10s"% "EMPNO", "%20s"% "EMP NAME", "%10s"% "SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0], "%20s"%row[1], "%10s"%row[2])
        sum+=int(row[2])
        if int(row[2])>70000:
            count+=1

    print("=====")
    print("%30s"% "SUM OF SALARY :", sum)
    print("%40s"% "#EMPLOYEE GETTING SALARY >70000 :", count)
    print("=====")
```

Example : Sum of Salary and counting employee getting more than 7000

```
import csv
with open('myfile.csv') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    count=0
    sum=0
    print("%10s"%EMPNO,"%20s"%EMP NAME,"%10s"%SALARY")
    print("=====")
    for row in myreader:
        print("%10s"%row[0],"%20s"%row[1],"%10s"%row[2])
        sum+=int(row[2])
        if int(row[2])>70000:
            count+=1

    print("=====")
    print("%30s"%SUM OF SALARY :",sum)
    print("%40s"%#EMPLOYEE GETTING SALARY >70000 :",count)
    print("=====")
```

1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000

myfile.csv

EMPNO	EMP NAME	SALARY
1	Amit	6000
2	Suresh Kumar	8000
3	Gabbar	75000

=====

SUM OF SALARY : 89000

#EMPLOYEE GETTING SALARY >70000 : 1

=====

OUTPUT

Writing date in CSV file

- import csv module
- Use open() to open CSV file by specifying mode “w” or “a”, it will return file object.
- “w” will overwrite previous content
- “a” will add content to the end of previous content.
- Pass the file object to writer object with delimiter.
- Then use writerow() to send data in CSV file

Example : Writing data to CSV file

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

```
import csv
with open('myfile.csv',mode='a') as csvfile:
    mywriter = csv.writer(csvfile,delimiter=',')
    ans='y'
    while ans.lower()=='y':
        eno=int(input("Enter Employee Number "))
        name=input("Enter Employee Name ")
        salary=int(input("Enter Employee Salary :"))
        mywriter.writerow([eno,name,salary])
        print("## Data Saved... ##")
        ans=input("Add More ?")
```

Example : Writing data to CSV file

```
import csv
with open('myfile.csv',mode='a') as csvfile:
    mywriter = csv.writer(csvfile,delimiter=',')
    ans='y'
    while ans.lower()=='y':
        eno=int(input("Enter Employee Number "))
        name=input("Enter Employee Name ")
        salary=int(input("Enter Employee Salary :"))
        mywriter.writerow([eno,name,salary])
        print("## Data Saved... ##")
        ans=input("Add More ?")
```

First line : importing csv module to perform operation on csv file.

Second line: to open file for writing in append mode using “with” block, already discussed with read program.

Third line: to create csv writer object to write in csv file, first parameter is the name of file object, second one is optional parameter i.e. delimiter. Here mywriter will be the writer object to write in csv file

Example : Writing data to CSV file

```
import csv
with open('myfile.csv',mode='a') as csvfile:
    mywriter = csv.writer(csvfile,delimiter=',')
    ans='y'
    while ans.lower()=='y':
        eno=int(input("Enter Employee Number "))
        name=input("Enter Employee Name ")
        salary=int(input("Enter Employee Salary :"))
        mywriter.writerow([eno,name,salary])
        print("## Data Saved... ##")
        ans=input("Add More ?")
```

Fourth line: we have take a variable ans='y' so that loop will iterate as long as ans value is 'y'

Fifth line: we have create a while loop using ans i.e. as long as ans is 'y' loop will iterate.

Next 3 lines : we have taken input for eno, name and salary

Example : Writing data to CSV file

```
import csv
with open('myfile.csv',mode='a') as csvfile:
    mywriter = csv.writer(csvfile,delimiter=',')
    ans='y'
    while ans.lower()=='y':
        eno=int(input("Enter Employee Number "))
        name=input("Enter Employee Name ")
        salary=int(input("Enter Employee Salary :"))
        mywriter.writerow([eno,name,salary])
        print("## Data Saved... ##")
        ans=input("Add More ?")
```

Ninth line : in this line we are writing data to csv file using `writerow()` of `mywriter` in the form of list. This function takes any iterable object to write like list, tuples, etc. So we have passed all the input in the form of list.

Another function is `writerows()` which is used when we want to write multiple rows.

Next two lines are simple printing message and taking input in `ans` to continue or not.

Example : Writing data to CSV file

```
import csv
with open('myfile.csv',mode='a') as csvfile:
    mywriter = csv.writer(csvfile,delimiter=',')
    ans='y'
    while ans.lower()=='y':
        eno=int(input("Enter Employee Number "))
        name=input("Enter Employee Name ")
        salary=int(input("Enter Employee Salary :"))
        mywriter.writerow([eno,name,salary])
        print("## Data Saved... ##")
        ans=input("Add More ?")
```

```
Enter Employee Number 4
Enter Employee Name AMAN
Enter Employee Salary :80000
## Data Saved... ##
Add More ?Y
Enter Employee Number 5
Enter Employee Name JACKY
Enter Employee Salary :60000
## Data Saved... ##
Add More ?N
```

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
```

myfile.csv

BEFORE EXECUTION

```
1,Amit,6000
2,Suresh Kumar,8000
3,Gabbar,75000
4,AMAN,80000
5,JACKY,60000
```

myfile.csv

AFTER EXECUTION

OUTPUT

Program to create CSV file and store empno,name,salary and search any empno and display name, salary and if not found appropriate message.

```
import csv
with open('myfile.csv',mode='a') as csvfile:
    mywriter = csv.writer(csvfile,delimiter=',')
    ans='y'
    while ans.lower()=='y':
        eno=int(input("Enter Employee Number "))
        name=input("Enter Employee Name ")
        salary=int(input("Enter Employee Salary :"))
        mywriter.writerow([eno,name,salary])
        print("### Data Saved... ###")
        ans=input("Add More ?")
ans='y'
```

```
with open('myfile.csv',mode='r') as csvfile:
    myreader = csv.reader(csvfile,delimiter=',')
    while ans=='y':
        found=False
        e = int(input("Enter Employee Number to search :"))
        for row in myreader:
            if len(row)!=0:
                if int(row[0])==e:
                    print("=====")
                    print("NAME :",row[1])
                    print("SALARY :",row[2])
                    found=True
                    break
        if not found:
            print("=====")
            print("  EMPNO NOT FOUND")
            print("=====")
        ans = input("Search More ? (Y)")
```

OUTPUT

```
Enter Employee Number 1
Enter Employee Name Amit
Enter Employee Salary :90000
## Data Saved... ##
Add More ?y
Enter Employee Number 2
Enter Employee Name Sunil
Enter Employee Salary :80000
## Data Saved... ##
Add More ?y
Enter Employee Number 3
Enter Employee Name Satya
Enter Employee Salary :75000
## Data Saved... ##
Add More ?n
```

```
Enter Employee Number to search :2
=====
NAME   : Sunil
SALARY : 80000
Search More ? (Y)y
Enter Employee Number to search :3
=====
NAME   : Satya
SALARY : 75000
Search More ? (Y)y
Enter Employee Number to search :4
=====
                EMPNO NOT FOUND
=====
Search More ? (Y)n
```