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Division:-A Batch:-A4

Assignment 1

Problem statement : **Take/Prepare any text files for any real-life application. For Ex. "Stud.txt", "Placement.csv" and "Result. csv" files for result Analysis. Combine into "StudentDetails.csv". Perform all statistical analysis (Average, Max, Min, Count, Sum, Percentage) on it**

Source code:

In [1]:
```
#merge 2 data sets
f1 = open("emp.csv","r")
f2 = open("sal.csv","r")
f3 = open("emp_sal.csv","w")

contents1 = f1.read()
contents2 = f2.read()

nm = []
sal = []

lines1 = contents1.split("\n")
lines2 = contents2.split("\n")
for l1 in lines1:
    words1 = l1.split(",")

    for l2 in lines2:
        words2 = l2.split(",")
        if(words1[0]==words2[0]):
            l1 = l1 + "," + words2[1]+","+words2[2] +"\n"
            f3.write(l1)

            nm.append(words1[1])
            sal.append(int(words2[2]))

f1.close()
f2.close()
f3.close()
```

```
#for finding index sal.index(max(sal))

hs = nm[sal.index(max(sal))]
print(hs ,"has the highest salary")

desgn = ["Manager","Sr. Manager","Ast. Manager","Supervisor","Employee"]
print("The employee with designation is Sr. Manager is :")
for i in range(len(desgn)):
    if desgn[i]=="Sr. Manager" or desgn[i]=="sr. Manager":
        print(nm[i],end=" ")
```

Output:

```
['Sanvi', 'Mrunmayee', 'Jayesh', 'Gouri', 'Mahesh']
[100000, 150000, 90500, 100500, 85000]
Largest salary is : 150000
Least salary is : 85000
Average salary is : 105200.0
Mrunmayee has the highest salary
The employee with designation is Sr. Manager is :
Mrunmayee
```

assignment2

May 27, 2023

[ ]:
```
product_details=[]
supplier_details=dict()
customer_details=[]
gender={}
fp1= open("sales.csv","r")
data=fp1.readline()
while(True):
  data=fp1.readline()
  if not data:
    break
  print(data)
  data=  data.replace("\n","")
  temp= data.split(",")
  product_details.append(temp[1])
  customer_details.append(temp[3])
  supplier_details.update({temp[0]:temp[2]})
  gender.update({temp[3]:temp[4]})
```

P00001,Lenovo laptop,Raka Ele.,Kaustoobh Mahajan,male

P00002,Samsung Laptop,Vijay Sales,Siddhi kivale,female

P00003,Realmi 10pro,Gada Ele.,Sanket Kandalkar,male

P00004,Oppo f21,Surya Ele.,Yash mali,male

P00005,Lenovo laptop,Raka Ele.,Yash Bagul,male

P00006,Samsung M31,Gada Ele.,Siddhi kivale,female

P00007,LG TV 32*,Vijay Sales,Sanket Kandalkar,male

P00008,Oppo f21,Surya Ele.,Kaustoobh Mahajan,male

P00009,Lenovo laptop,Raka Ele.,Yash mali,male

P00010,Samsung M31,Gada Ele.,Siddhi kivale,female

P00011,LG TV 32*,Surya Ele.,Sanket Kandalkar,male

P00012,Lenovo laptop,Raka Ele.,Kaustoobh Mahajan,male

P00013,Samsung M31,Surya Ele.,Yash mali,male

P00014,Realmi 10pro,Raka Ele.,Siddhi kivale,female

P00015,Lenovo laptop,Gada Ele.,Tanuja Mali,female

P00016,Oppo f21,Vijay Sales,Kaustoobh Mahajan,male

P00017,LG TV 32*,Deshmukh Sales,Sanket Kandalkar,male

P00018,Lenovo laptop,Raka Ele.,Siddhi kivale,female

P00019,Samsung M21,Deshmukh Sales,Kaustoobh Mahajan,male

P00020,LG TV 32*,Gada Ele.,Yash mali,male

[ ]:
```
fp1.close()
```

[ ]:
```
customer_details= tuple(customer_details)
print(type(customer_details))
print("\nproduct_details\n",product_details,end="")
print("\ncustomer_details\n",customer_details,end="")
print("\nsupplier_details\n",supplier_details,end="")
print("\ngender\n",gender,end="")
```

<class 'tuple'>

product_details
['Lenovo laptop', 'Samsung Laptop', 'Realmi 10pro', 'Oppo f21', 'Lenovo laptop', 'Samsung M31', 'LG TV 32*', 'Oppo f21', 'Lenovo laptop', 'Samsung M31', 'LG TV 32*', 'Lenovo laptop', 'Samsung M31', 'Realmi 10pro', 'Lenovo laptop', 'Oppo f21', 'LG TV 32*', 'Lenovo laptop', 'Samsung M21', 'LG TV 32*']
customer_details
('Kaustoobh Mahajan', 'Siddhi kivale', 'Sanket Kandalkar', 'Yash mali', 'Yash Bagul', 'Siddhi kivale', 'Sanket Kandalkar', 'Kaustoobh Mahajan', 'Yash mali', 'Siddhi kivale', 'Sanket Kandalkar', 'Kaustoobh Mahajan', 'Yash mali', 'Siddhi kivale', 'Tanuja Mali', 'Kaustoobh Mahajan', 'Sanket Kandalkar', 'Siddhi kivale', 'Kaustoobh Mahajan', 'Yash mali')
supplier_details
{'P00001': 'Raka Ele.', 'P00002': 'Vijay Sales', 'P00003': 'Gada Ele.', 'P00004': 'Surya Ele.', 'P00005': 'Raka Ele.', 'P00006': 'Gada Ele.', 'P00007': 'Vijay Sales', 'P00008': 'Surya Ele.', 'P00009': 'Raka Ele.', 'P00010': 'Gada Ele.', 'P00011': 'Surya Ele.', 'P00012': 'Raka Ele.', 'P00013': 'Surya Ele.',

'P00014': 'Raka Ele.', 'P00015': 'Gada Ele.', 'P00016': 'Vijay Sales', 'P00017': 'Deshmukh Sales', 'P00018': 'Raka Ele.', 'P00019': 'Deshmukh Sales', 'P00020': 'Gada Ele.'}
gender
{'Kaustoobh Mahajan': 'male', 'Siddhi kivale': 'female', 'Sanket Kandalkar': 'male', 'Yash mali': 'male', 'Yash Bagul': 'male', 'Tanuja Mali': 'female'}

[ ]:
```
frequency= {}
for item in product_details:
  if item in frequency:
    frequency[item] += 1
  else:
    frequency[item] = 1
print(frequency)
marklist= sorted(frequency.items(), key=lambda x: x[1],reverse=True)
sortdict = dict(marklist)
print(sortdict)
print('The most popular product for sales',list(sortdict.
 ↪keys())[0],'sold',list(sortdict.values())[0],'times')
```

{'Lenovo laptop': 6, 'Samsung Laptop': 1, 'Realmi 10pro': 2, 'Oppo f21': 3, 'Samsung M31': 3, 'LG TV 32*': 4, 'Samsung M21': 1}
{'Lenovo laptop': 6, 'LG TV 32*': 4, 'Oppo f21': 3, 'Samsung M31': 3, 'Realmi 10pro': 2, 'Samsung Laptop': 1, 'Samsung M21': 1}
The most popular product for sales Lenovo laptop sold 6 times

[ ]:
```
from collections import Counter
counter    =    dict(Counter(list(supplier_details.values())))
sorted_counter = sorted(counter.items(), key= lambda x:x[1],reverse=True)
sorted_counter = dict(sorted_counter)
print('The most popular product for sales',list(sorted_counter.keys())[0],␣
 ↪'sold',list(sorted_counter.values())[0],'Items')
```

The most popular product for sales Raka Ele. sold 6 Items

[ ]:
```
frequency= {}
for item in customer_details:
  if item in frequency:
    frequency[item] += 1
  else:
    frequency[item] = 1
print('Frequency is as below:\n',frequency)
marklist= sorted(frequency.items(), key=lambda x: x[1],reverse=True)
sortdict = dict(marklist)
print('\nSorted dict is as below:\n',sortdict)
print('\n\nThe customer who buys most of the products',list(sortdict.
 ↪keys())[0],'buy',list(sortdict.values())[0],'Items')
```

Frequency is as below:
{'Kaustoobh Mahajan': 5, 'Siddhi kivale': 5, 'Sanket Kandalkar': 4, 'Yash mali': 4, 'Yash Bagul': 1, 'Tanuja Mali': 1}

Sorted dict is as below:
{'Kaustoobh Mahajan': 5, 'Siddhi kivale': 5, 'Sanket Kandalkar': 4, 'Yash mali': 4, 'Yash Bagul': 1, 'Tanuja Mali': 1}

The customer who buys most of the products Kaustoobh Mahajan buy 5 Items

[ ]:
```
from collections import Counter
counter = dict(Counter(customer_details))
sorted_counter = sorted(counter.items(), key= lambda x:x[1],reverse=True)
sorted_counter = dict(sorted_counter)
print('The customer who buys most of the products',list(sorted_counter.
 ↪keys())[0], 'buy',list(sorted_counter.values())[0],'Items')
```

The customer who buys most of the products Kaustoobh Mahajan buy 5 Items

[ ]:
```
from collections import Counter
counter = dict(Counter(customer_details))
names = list(counter.keys())
print(names)
male = 0
female = 0
for name in names:
  if gender[name]=='male':
    male = male+1
  if gender[name]=='female':
    female=female+1
print('Total no of Male=',male)
print('Total no of Female=',female)
```

['Kaustoobh Mahajan', 'Siddhi kivale', 'Sanket Kandalkar', 'Yash mali', 'Yash Bagul', 'Tanuja Mali']
Total no of Male= 4
Total no of Female= 2

Ramani Vemula

Div:- A(A4)

Roll no:- 166

```
import numpy as np
array1=np.array([[1,2,3],[4,5,6],[7,8,9]])
print(array1)
```

Output

```
array([[1, 2, 3],
[4, 5, 6],
[7, 8, 9]])
```

```
array2=np.array([[11,12,13],[14,15,16],[17,18,19]])
print(array2)
```

Output

```
array([[11, 12, 13],
[14, 15, 16],
[17, 18, 19]])
```

1. Matrix Operation

1.1 Addition

```
resultarray=array1+array2
print("\nUsing Operator:\n",resultarray)
resultarray=np.add(array1,array2)
print("\nUsing Numpy Function:\n",resultarray)
```

Output

```
Using Operator:
[[12 14 16]
[18 20 22]
[24 26 28]]
```

Using Numpy Function:
[[12 14 16]
[18 20 22]
[24 26 28]]

1.2. Subtraction

```
resultarray=array1-array2
print("\nUsing Operator:\n",resultarray)
resultarray=np.subtract(array1,array2)
print("\nUsing Numpy Function:\n",resultarray)
```

Output

Using Operator:
[[-10 -10 -10]
[-10 -10 -10]
[-10 -10 -10]]
Using Numpy Function:
[[-10 -10 -10]
[-10 -10 -10]
[-10 -10 -10]]

1.3. Multiplication

```
resultarray=array1*array2
print("\nUsing Operator:\n",resultarray)
resultarray=np.multiply(array1,array2)
print("\nUsing Numpy Function:\n",resultarray)
```

Output
Using Operator:
[[11 24 39]
[56 75 96]
[119 144 171]]
Using Numpy Function:
[[11 24 39]

```
[ 56 75 96]
[119 144 171]]
```

1.4. Division

```
resultarray=array1/array2
print("\nUsing Operator:\n",resultarray)
resultarray=np.divide(array1,array2)
print("\nUsing Numpy Function:\n",resultarray)
```

Output

```
Using Operator:
[[0.09090909 0.16666667 0.23076923]
[0.28571429 0.33333333 0.375 ]
[0.41176471 0.44444444 0.47368421]]
Using Numpy Function:
[[0.09090909 0.16666667 0.23076923]
[0.28571429 0.33333333 0.375 ]
[0.41176471 0.44444444 0.47368421]]
```

1.5. Mod

```
resultarray=array1%array2
print("\nUsing Operator:\n",resultarray)
resultarray=np.mod(array1,array2)
print("\nUsing Numpy Function:\n",resultarray)
```

Output

```
Using Operator:
[[1 2 3]
[4 5 6]
[7 8 9]]
Using Numpy Function:
[[1 2 3]
[4 5 6]
[7 8 9]]
```

1.6. dot Product

```
resultarray=np.dot(array1,array2)
print("",resultarray)
```

Output

```
[[ 90 96 102]
[216 231 246]
[342 366 390]]
```

.7. Transpose

```
resultarray=np.transpose(array1)
print(resultarray)
#Or
resultarray=array1.transpose()
print(resultarray)
```

Output

```
[[1 4 7]
[2 5 8]
[3 6 9]]
[[1 4 7]
[2 5 8]
[3 6 9]]
```

2. Horizontal and vertical stacking of Numpy Arrays

2.1. Horizontal Stacking

```
resultarray=np.hstack((array1,array2))
resultarray
```

Output

```
array([[ 1, 2, 3, 11, 12, 13],
[ 4, 5, 6, 14, 15, 16],
```

[7, 8, 9, 17, 18, 19]])

2.2. Vertical Stacking

```
resultarray=np.vstack((array1,array2))
resultarray
```

Output

```
array([[ 1, 2, 3],
[ 4, 5, 6],
[ 7, 8, 9],
[11, 12, 13],
[14, 15, 16],
[17, 18, 19]])
```

3.Custom sequence generation

3.1. Range

```
import numpy as np
nparray=np.arange(0,12,1).reshape(3,4)
nparray
```

Output

```
array([[ 0, 1, 2, 3],
[ 4, 5, 6, 7],
[ 8, 9, 10, 11]])
```

3.2. Linearly Separable

```
nparray=np.linspace(start=0,stop=24,num=12).reshape(3,4)
nparray
```

Output

array([[0. , 2.18181818, 4.36363636, 6.54545455],
[8.72727273, 10.90909091, 13.09090909, 15.27272727],
[17.45454545, 19.63636364, 21.81818182, 24.]])

3.3. Empty Array

```
nparray=np.empty((3,3),int)
nparray
```

Output

array([[11, 24, 39],
[56, 75, 96],
[119, 144, 171]])

3.4. Emply Like Some other array

```
nparray=np.empty_like(array1)
nparray
```

Output

array([[90, 96, 102],
[216, 231, 246],
[342, 366, 390]])

3.5. Identity Matrix

```
nparray=np.identity(3)
nparray
```

Output

array([[1., 0., 0.],
[0., 1., 0.],
[0., 0., 1.]])

4. Arithmetic and Statistical Operations, Mathematical Operations, Bitwise Operators

4.1. Arithmetic Operation

```
array1=np.array([1,2,3,4,5])
array2=np.array([11,12,13,14,15])
print(array1)
print(array2)
```

Output

```
[1 2 3 4 5]
[11 12 13 14 15]
# Addition
print(np.add(array1,array2))
# Subtraction
print(np.subtract(array1,array2))
# Multiplication
print(np.multiply(array1,array2))
# Division
print(np.divide(array1,array2))
```

Output

```
[12 14 16 18 20]
[-10 -10 -10 -10 -10]
[11 24 39 56 75]
[0.09090909 0.16666667 0.23076923 0.28571429
0.33333333]
```

4.2. Statistical and Mathematical Operations

```
array1=np.array([1,2,3,4,5,9,6,7,8,9,9])
# Standard Deviation
print(np.std(array1))
#Minimum
print(np.min(array1))
#Summation
```

```
print(np.sum(array1))
#Median
print(np.median(array1))
#Mean
print(np.mean(array1))
#Mode
from scipy import stats
print("Most Frequent element=",stats.mode(array1)[0])
print("Number of Occarances=",stats.mode(array1)[1])
# Variance
print(np.var(array1))
```

Output

```
2.7990553306073913
1
63
6.0
5.7272727272727275
Most Frequent element= [9]
Number of Occarances= [3]
7.834710743801653
```

4.3. Bitwise Operations

```
array1=np.array([1,2,3],dtype=np.uint8)
array2=np.array([4,5,6])
# AND
resultarray=np.bitwise_and(array1,array2)
print(resultarray)
# OR
resultarray=np.bitwise_or(array1,array2)
print(resultarray)
#LeftShift
resultarray=np.left_shift(array1,2)
print(resultarray)
#RightShift
resultarray=np.right_shift(array1,2)
print(resultarray)
```

Output

```
[0 0 2]
[5 7 7]
[ 4 8 12]
[0 0 0]
```

```
### You can get Binary Representation of Number ######
print(np.binary_repr(10,8))
resultarray=np.left_shift(10,2)
print(resultarray)
print(np.binary_repr(np.left_shift(10,2),8))
```

Output

```
00001010
40
00101000
```

5.Copying and viewing arrays

5.1 Copy

```
array1=np.arange(1,10)
print(array1)
newarray=array1.copy()
print(newarray)
##modification in Original Array
array1[0]=100
print(array1)
print(newarray)
```

Output

```
[1 2 3 4 5 6 7 8 9]
[1 2 3 4 5 6 7 8 9]
[100 2 3 4 5 6 7 8 9]
[1 2 3 4 5 6 7 8 9]
```

5.2 View

```
array1=np.arange(1,10)
print(array1)
newarray=array1.view()
print(newarray)
##modification in Original Array
array1[0]=100
print(array1)
print(newarray)
```

Output

```
[1 2 3 4 5 6 7 8 9]
[1 2 3 4 5 6 7 8 9]
[100 2 3 4 5 6 7 8 9]
[100 2 3 4 5 6 7 8 9]
```

6. Searching

```
array1=np.array([[1,2,3,12,5,7],[94,5,6,7,89,44],[7,8,9,11,13,14]])
print(array1)
```

Output

```
[[ 1 2 3 12 5 7]
[94 5 6 7 89 44]
[ 7 8 9 11 13 14]]
```

```
np.sort(array1,axis=0)
```

Output

```
array([[ 1, 2, 3, 7, 5, 7],
[ 7, 5, 6, 11, 13, 14],
[94, 8, 9, 12, 89, 44]])
```

```
np.sort(array1,axis=1)
```

Output

```
array([[ 1, 2, 3, 5, 7, 12],
[ 5, 6, 7, 44, 89, 94],
[ 7, 8, 9, 11, 13, 14]])
```

7. Searching

```
array1=np.array([1,2,3,12,5,7])
np.searchsorted(array1,7,side="left")#Perform Search After sorting
```

Output

```
3
```

8. Counting

```
array1=np.array([1,2,3,12,5,7,0])
print(np.count_nonzero(array1))#Return total Non Zero element
print(np.nonzero(array1))#Return  Index
print(array1.size)#Total Element
```

Output

```
6
(array([0, 1, 2, 3, 4, 5], dtype=int64),)
7
```

9. Data Stacking

```
array1=np.array(np.arange(1,5).reshape(2,2))
print(array1)
array2=np.array(np.arange(11,15).reshape(2,2))
print(array2)
```

Output

[[1 2]
[3 4]]
[[11 12]
[13 14]]
```
newarray=np.stack([array1,array2],axis=0)
print(newarray)
```
Output
[[1 2]
[3 4]]
[[11 12]
[13 14]]
```
newarray=np.stack([array1,array2],axis=1)
print(newarray)
```
Output
[[1 2]
[11 12]]
[[3 4]
[13 14]]
10. Append
```
array1=np.arange(1,10).reshape(3,3)
print(array1)
array2=np.arange(21,30).reshape(3,3)
print(array2)
```
Output
[[1 2 3]
[4 5 6]
[7 8 9]]

[[21 22 23]
[24 25 26]
[27 28 29]]
np.append(array1,array2,axis=0)

Output

array([[1, 2, 3],
[4, 5, 6],
[7, 8, 9],
[21, 22, 23],
[24, 25, 26],
[27, 28, 29]])
np.append(array1,array2,axis=1)

Output

array([[1, 2, 3, 21, 22, 23],
[4, 5, 6, 24, 25, 26],
[7, 8, 9, 27, 28, 29]])

11. Concat

array1=np.arange(1,10).reshape(3,3)
print(array1)
array2=np.arange(21,30).reshape(3,3)
print(array2)

Output

[[1 2 3]
[4 5 6]

[7 8 9]]
[[21 22 23]
[24 25 26]
[27 28 29]]
np.concatenate((array1,array2),axis=0)

Output

array([[1, 2, 3],
[4, 5, 6],
[7, 8, 9],
[21, 22, 23],
[24, 25, 26],
[27, 28, 29]])
np.concatenate((array1,array2),axis=1)

Output

array([[1, 2, 3, 21, 22, 23],
[4, 5, 6, 24, 25, 26],
[7, 8, 9, 27, 28, 29]])

```
import numpy as np
# using loadtxt()
arr =
np.loadtxt("F:\\ISO\\EDS\\NOTES\\dataset\\testmarks1.csv",delimiter=",",skipr
ows=1)
print(type(arr))
arr.shape
```

Output

<class 'numpy.ndarray'>
(10, 5)
EDS=arr[:,1]
print(EDS)

Output

[43.05 43.47 42.24 39.24 40.9 39.47 41.68 42.19 44.75 46.95]

SON=arr[:,2]
print(SON)

Output

[27.79 28.52 28.16 26.16 26.03 26.31 25.63 27.61 28.35 28.88]

NAME :Ramani Vemula

CLASS : A
BATCH : A4
ROLL NO : 166

```
import pandas as pd
import numpy as np
f1 = open("F:\grainsales.csv","r")
data = pd.read_csv(f1)
df = pd.DataFrame(data)
maindata = df
df['Sales'].describe()
df=df.groupby('Months').sum()
df=df.sort_values (by= [ 'Sales'], ascending=False) df.head(1)
print("Best Month for Sales: July")
print("Revenue Earned was: 16000000")
df
maindata
df = df.groupby("GrainName").sum()
df = df.sort_values(by=["Sales"], ascending = False)
df.head (1)
print("Most Sold Grain is: Wheat")
print("The Best Month for sales is July and this product has occured in July
so this is most sold product with highest sales")
df
maindata
df= df.groupby("City").sum()
df = df.sort_values (by = ['Sales'], ascending= False)
df.head (1)
print("'Asansole' Has sold highest no. of products")
df
maindata
df = df.groupby('State').sum()
df = df.sort_values (by = ['Sales'], ascending = False) print("West
Bengol has highest sales")
```

```
Best Month for Sales: July
Revenue Earned was: 16000000
```

Most Sold Grain is: Wheat

The Best Month for sales is July and this product has occured in July so this is most sold product with highest sales

'Asansole' Has sold highest no. of products

West Bengol has highest sales.

Name –Ramani Vemula

Roll no-166

Batch-A4

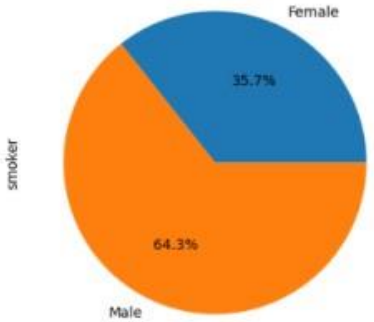
Prn no-202201040011

ASSIGNMENT -5

```
[ ] import pandas as pd
    import matplotlib.pyplot as plt
    d = pd.read_csv('/content/tips.csv')
    print(d)
```

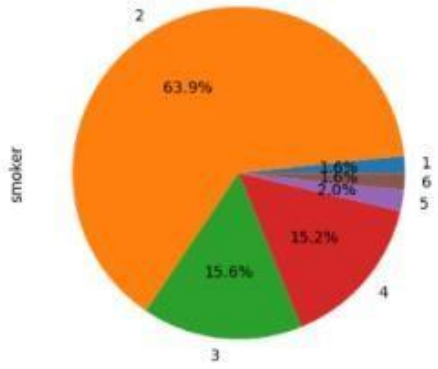
```
     total_bill   tip     sex smoker   day    time  size
0         16.99  1.01  Female     No   Sun  Dinner     2
1         10.34  1.66    Male     No   Sun  Dinner     3
2         21.01  3.50    Male     No   Sun  Dinner     3
3         23.68  3.31    Male     No   Sun  Dinner     2
4         24.59  3.61  Female     No   Sun  Dinner     4
..          ...   ...     ...    ...   ...     ...   ...
239       29.03  5.92    Male     No   Sat  Dinner     3
240       27.18  2.00  Female    Yes   Sat  Dinner     2
241       22.67  2.00    Male    Yes   Sat  Dinner     2
242       17.82  1.75    Male     No   Sat  Dinner     2
243       18.78  3.00  Female     No  Thur  Dinner     2

[244 rows x 7 columns]
```

```
import pandas as pd
import matplotlib.pyplot as plt
d = pd.read_csv('/content/tips.csv')
#print(d)
t1 = d.groupby("sex").count()
t1["smoker"].plot(kind = "pie",autopct = '%1.1f%%')
plt.show()
print(t1)
```



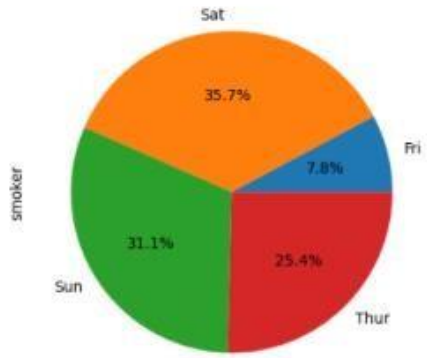

```
        total_bill  tip  smoker  day  time  size
sex
Female          87   87      87   87    87    87
Male           157  157     157  157   157   157
```

```
import pandas as pd
import matplotlib.pyplot as plt
d = pd.read_csv('/content/tips.csv')
#print(d)
t1 = d.groupby("size").count()
t1["smoker"].plot(kind = "pie",autopct = '%1.1f%%')
plt.show()
print(t1)
```



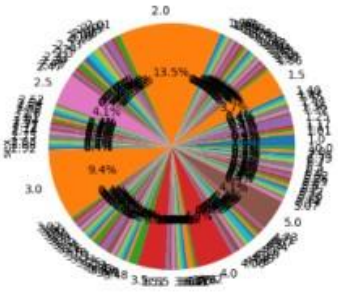
size	total_bill	tip	sex	smoker	day	time
1	4	4	4	4	4	4
2	156	156	156	156	156	156
3	38	38	38	38	38	38
4	37	37	37	37	37	37
5	5	5	5	5	5	5
6	4	4	4	4	4	4

```
import pandas as pd
import matplotlib.pyplot as plt
d = pd.read_csv('/content/tips.csv')
#print(d)
t1 = d.groupby("day").count()
t1["smoker"].plot(kind = "pie",autopct = '%1.1f%%')
plt.show()
print(t1)
```



day	total_bill	tip	sex	smoker	time	size
Fri	19	19	19	19	19	19
Sat	87	87	87	87	87	87
Sun	76	76	76	76	76	76
Thur	62	62	62	62	62	62

```
import pandas as pd
import matplotlib.pyplot as plt
d = pd.read_csv('/content/tips.csv')
#print(d)
t1 = d.groupby("tip").count()
t1["sex"].plot(kind = "pie",autopct = '%1.1f%%')
plt.show()
print(t1)
```

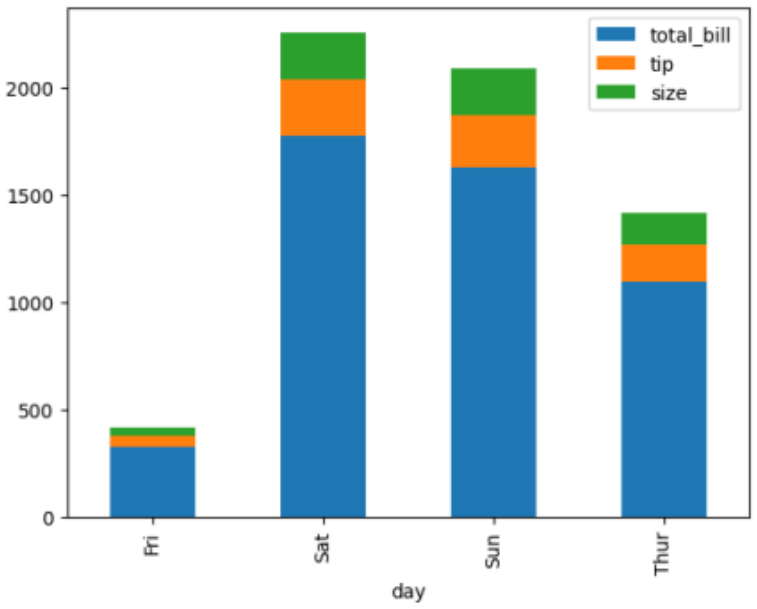


tip	total_bill	sex	smoker	day	time	size
1.00	4	4	4	4	4	4
1.01	1	1	1	1	1	1
1.10	1	1	1	1	1	1
1.17	1	1	1	1	1	1
1.25	3	3	3	3	3	3
...	...	...	...	...	...	...
6.70	1	1	1	1	1	1
6.73	1	1	1	1	1	1
7.58	1	1	1	1	1	1
9.00	1	1	1	1	1	1
10.00	1	1	1	1	1	1

[123 rows x 6 columns]

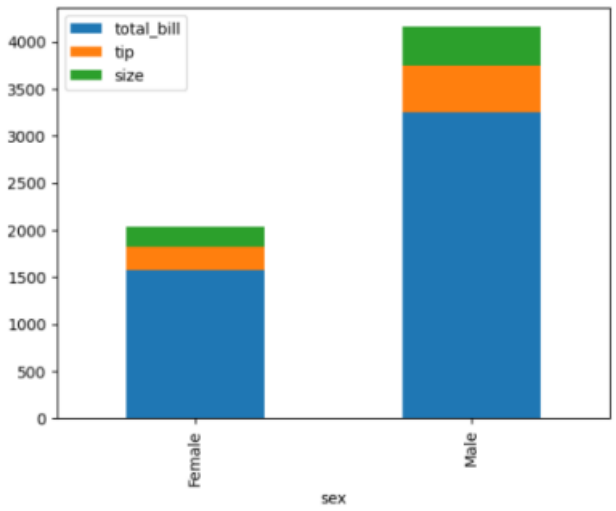
```
t2 = d.groupby("day").sum("total_bill")
t2.plot(kind = "bar",stacked = True)
```

<Axes: xlabel='day'>



```
t2 = d.groupby("sex").sum("smoker")
t2.plot(kind = "bar",stacked = True)
```

```
<Axes: xlabel='sex'>
```

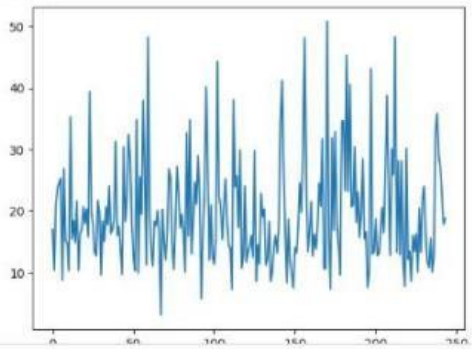



```
import matplotlib.pyplot as plt
d = pd.read_csv('/content/tips.csv')
#print(d)
d1 = d.groupby("total_bill").count()
print(d1)
```

```
             tip  sex  smoker  day  time  size
total_bill
3.07           1    1       1    1     1     1
5.75           1    1       1    1     1     1
7.25           2    2       2    2     2     2
7.51           1    1       1    1     1     1
7.56           1    1       1    1     1     1
...          ...  ...     ...  ...   ...   ...
45.35          1    1       1    1     1     1
48.17          1    1       1    1     1     1
48.27          1    1       1    1     1     1
48.33          1    1       1    1     1     1
50.81          1    1       1    1     1     1

[229 rows x 6 columns]
```

```
d["total_bill"].plot()
```

```
<Axes: >
```

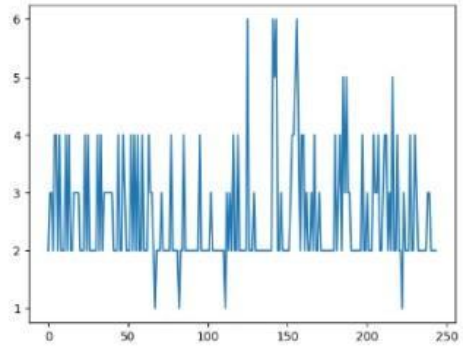


```
import pandas as pd
import matplotlib.pyplot as plt
d = pd.read_csv('/content/tips.csv')
#print(d)
d1 = d.groupby("size").count()
print(d1)
```

```
      total_bill  tip  sex  smoker  day  time
size
1              4    4    4       4    4     4
2            156  156  156     156  156   156
3             38   38   38      38   38    38
4             37   37   37      37   37    37
5              5    5    5       5    5     5
6              4    4    4       4    4     4
```

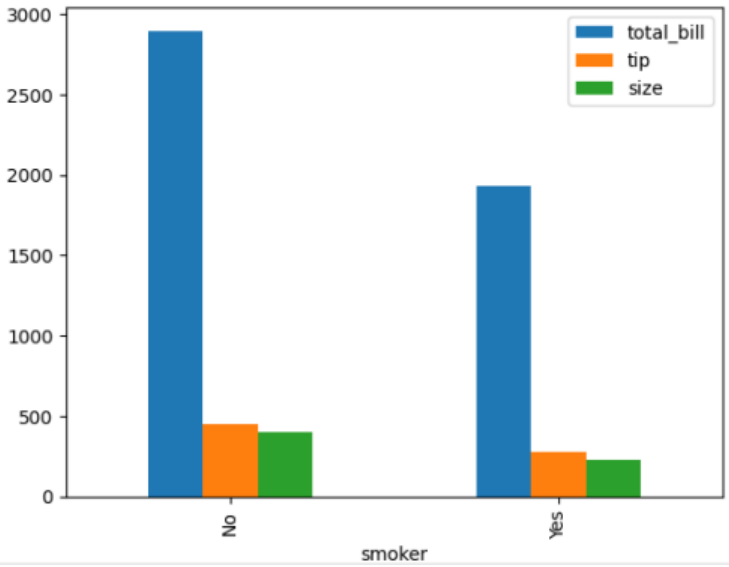
```
d["size"].plot()
```

```
<Axes: >
```



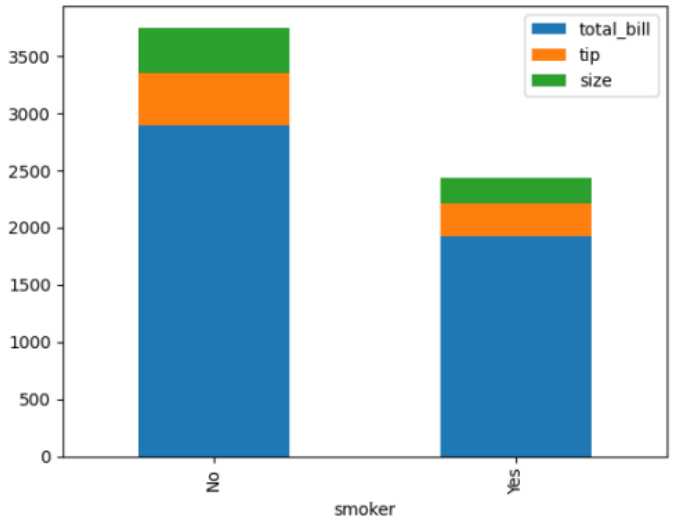

```
t2 = d.groupby("smoker").sum("tip")
t2.plot(kind = "bar",stacked = False)
```

```
<Axes: xlabel='smoker'>
```

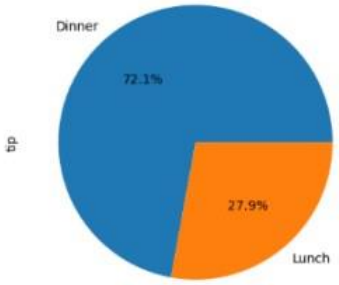


```
t2 = d.groupby("smoker").sum("time")
t2.plot(kind = "bar",stacked = True)
```

```
<Axes: xlabel='smoker'>
```




```
[ ] import pandas as pd
    import matplotlib.pyplot as plt
    d = pd.read_csv('/content/tips.csv')
    #print(d)
    t1 = d.groupby("time").count()
    t1["tip"].plot(kind = "pie",autopct = '%1.1f%%')
    plt.show()
    print(t1)
```




```
        total_bill  tip  sex  smoker  day  size
time
Dinner         176  176  176     176  176   176
Lunch           68   68   68      68   68    68
```