```
from bs4 import BeautifulSoup
import requests


import openpyxl
excel=openpyxl.Workbook()
sheet=excel.active
sheet.title='Scraped Data USA Senate'
sheet.append(['Person_Name','State_Name','Party_Name','Vote'])
try:
    source=requests.get("https://www.senate.gov/legislative/LIS/roll_call_votes/vote1171/vote_117_1_00094.htm#state")
    source.raise_for_status()
    soup=BeautifulSoup(source.text,'html.parser')
    lists=soup.find_all('div',class_="contenttext")
    names=soup.find_all('div',class_="contenttext responsive_col")
    i=0
    while i<150 :
        k=2
        j=i+1
        while k>0:
            State_name=names[i].text.split(':')[0].strip()
            Vote=names[j].text.split(',')[1].strip()
            Person_Name=names[j].text.split(',')[0].split('(')[0].strip()
            Party_Name=names[j].text.split(',')[0].split('(')[1].split('-')[0].strip()
            sheet.append([Person_Name,State_name,Party_Name,Vote])
            k=k-1
            j=j+1
        i=i+3
    #for name in names:
     #   State_Name=name.b.text
     #   if len(State)!=3 and State!="Not Voting":




except Exception as e:
    print(e)
excel.save('USA Senate Scraped Data.xlsx')


import pandas as pd
ans={}


from google.colab import files
uploaded = files.upload()
```

Choose files No file chosen Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to

```
import pandas as pd
df = pd.read_excel("USA Senate Scraped Data.xlsx")


df
```

	Person_Name	State_Name	Party_Name	Vote
0	Shelby	Alabama	R	Yea
1	Tuberville	Alabama	R	Yea
2	Murkowski	Alaska	R	Yea
3	Sullivan	Alaska	R	Not Voting
4	Kelly	Arizona	D	Nay
...	...	...	...	...
95	Manchin	West Virginia	D	Yea
96	Baldwin	Wisconsin	D	Nay
97	Johnson	Wisconsin	R	Yea
98	Barrasso	Wyoming	R	Yea
99	Lummis	Wyoming	R	Yea

100 rows × 4 columns

```
#Q.1 How many democrats did not vote?
res=df[df['Party_Name']=='D']['Vote']
cnt=0
for i in res:
    if i=='Not Voting':
        cnt=cnt+1
print(cnt)
ans[1]=cnt
```

```
0
```

```
#Q.2 How many republicans voted Yea?
ans[2]=df[df['Party_Name']=='R']['Vote'].value_counts()[0]
print(ans[2])
```

```
49
/tmp/ipython-input-13-3446396955.py:2: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future versi
  ans[2]=df[df['Party_Name']=='R']['Vote'].value_counts()[0]
```

```
#Q.3 What's the total number of Yea votes from all senators whose name starts with "B"?
ans=(df[df['Vote']=="Yea"]['Person_Name'])
cnt=0
for i in ans:
    if i[0]=='B':
        cnt=cnt+1
print(cnt)
ans[3]=cnt
```

```
6
/tmp/ipython-input-14-4221474415.py:8: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[3]=cnt
```

```
#Q.4 How many states voted all Yay?
Res=((df[df['Vote']=="Yea"]['State_Name']))
res=(len(set(Res)))
print(res)
ans[4]=res
```

```
29
/tmp/ipython-input-15-2458915002.py:5: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[4]=res
/tmp/ipython-input-15-2458915002.py:5: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[4]=res
```

```
#Q.5 How many states had at least 1 non-voting senator?
ans[5]=df['Vote'].value_counts()[2]
```

```
/tmp/ipython-input-16-325077420.py:2: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future versio
  ans[5]=df['Vote'].value_counts()[2]
/tmp/ipython-input-16-325077420.py:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[5]=df['Vote'].value_counts()[2]
/tmp/ipython-input-16-325077420.py:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[5]=df['Vote'].value_counts()[2]
```

```
#Q.6 How many states have both Republican senators?
lists=df[df['Party_Name']=='R']['State_Name']
dic={}
cnt=0
for i in lists:
    if i  in dic.keys():
        dic[i]=dic[i]+1
```

```
    else:
        dic[i]=1
for i,j in dic.items():
    if j==2:
        cnt=cnt+1
print(cnt)

ans[6]=cnt
```

```
22
/tmp/ipython-input-17-393673397.py:15: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[6]=cnt
```

```
#Q.7 How many states have both Republican and Democrat senators?
ans[7]=(pd.get_dummies(df,columns=['Party_Name']).groupby(['State_Name']).sum()).query('Party_Name_R == 1 & Party_Name_D == 1').shape[0]


#Q.8 How many Senators have their names starting with W?
res=df['Person_Name']
cnt=0
for i in res:
    if i[0][0]=='W':
        cnt=cnt+1
print(cnt)
ans[8]=cnt
```

```
6
/tmp/ipython-input-19-3788976577.py:8: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[8]=cnt
/tmp/ipython-input-19-3788976577.py:8: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[8]=cnt
```

```
#Q.9 What is the votes ratio of Democrats' major decision to Republican's major decision ?
major_decision = pd.crosstab(df['Party_Name'],df['Vote']).max(axis = 1).loc[['D','R']].values
ans[9]=round(major_decision[0] / major_decision[1],4)
```

```
/tmp/ipython-input-20-3897369906.py:3: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[9]=round(major_decision[0] / major_decision[1],4)
/tmp/ipython-input-20-3897369906.py:3: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[9]=round(major_decision[0] / major_decision[1],4)
```

```
import numpy as np
nayyea = pd.crosstab(df['Party_Name'], df['Vote']).astype(float)
ph = abs(nayyea.Yea - nayyea.Nay) / nayyea.Yea

maximum = 0
for i in ph:
    if i not in [np.nan, np.inf] and i > maximum:
        maximum = i

ans[10] = str(round(maximum, 4) * 100) + '%'
```

```
/tmp/ipython-input-22-2978316250.py:10: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[10] = str(round(maximum, 4) * 100) + '%'
/tmp/ipython-input-22-2978316250.py:10: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[10] = str(round(maximum, 4) * 100) + '%'
```

```
#Q.11 How many Democrats voted Yea?
res=df[df['Party_Name']=='D']['Vote'].value_counts()[1]
print(res)
ans[11]=res
```

```
3
/tmp/ipython-input-23-3091492577.py:2: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future versi
  res=df[df['Party_Name']=='D']['Vote'].value_counts()[1]
/tmp/ipython-input-23-3091492577.py:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[11]=res
/tmp/ipython-input-23-3091492577.py:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[11]=res
```

```
 #Q.12 How many states voted all Nay?
tns=set(df[df['Vote']=='Nay']['State_Name'])
rem=(len(tns))
print(rem)
ans[12]=rem
```

```
26
/tmp/ipython-input-24-1273040421.py:5: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[12]=rem
/tmp/ipython-input-24-1273040421.py:5: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[12]=rem
```

```
# Q.13 How many states have both Democrat senators?
lists=df[df['Party_Name']=='D']['State_Name']
dic={}
cnt=0
for i in lists:
    if i  in dic.keys():
        dic[i]=dic[i]+1
    else:
        dic[i]=1
for i,j in dic.items():
    if j==2:
        cnt=cnt+1
print(cnt)
ans[13]=cnt
```

```
21
/tmp/ipython-input-25-2641107224.py:14: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[13]=cnt
/tmp/ipython-input-25-2641107224.py:14: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[13]=cnt
```

```
#Q.14 How many senators did not vote?
res=df['Vote'].value_counts()[2]
print(res)
ans[14]=res
```

```
1
/tmp/ipython-input-26-2981911789.py:2: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future versi
  res=df['Vote'].value_counts()[2]
/tmp/ipython-input-26-2981911789.py:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[14]=res
/tmp/ipython-input-26-2981911789.py:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
```

```
ans[14]=res
```

```
#Q.15 How many states had at least 1 senator not voted?
res=df['Vote'].value_counts()[2]
print(res)
ans[15]=res
```

```
1
/tmp/ipython-input-27-112922971.py:2: FutureWarning: Series.__getitem__ treating keys as positions is deprecated. In a future versio
  res=df['Vote'].value_counts()[2]
/tmp/ipython-input-27-112922971.py:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[15]=res
/tmp/ipython-input-27-112922971.py:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[15]=res
```

```
#Q.16 Ratio of number of rows to the number of columns in your dataset?
ratio=df.shape[0]/df.shape[1]
print(ratio)
ans[16]=ratio
```

```
25.0
/tmp/ipython-input-28-1888344127.py:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  ans[16]=ratio
```

```
import csv

answers = []
for i in range(1,17):
    answers.append(['Q'+str(i),ans[i]])


filename = "TDS_PROJECT-1.csv"

with open(filename, 'w',newline='') as csvfile:
    csvwriter = csv.writer(csvfile,dialect='excel')
    csvwriter.writerows(answers)
```

```
import pandas as pd
df=pd.read_excel("USA Senate Scraped Data.xlsx")
df
```

	Person_Name	State_Name	Party_Name	Vote
0	Shelby	Alabama	R	Yea
1	Tuberville	Alabama	R	Yea
2	Murkowski	Alaska	R	Yea
3	Sullivan	Alaska	R	Not Voting
4	Kelly	Arizona	D	Nay
...	...	...	...	...
95	Manchin	West Virginia	D	Yea
96	Baldwin	Wisconsin	D	Nay
97	Johnson	Wisconsin	R	Yea
98	Barrasso	Wyoming	R	Yea
99	Lummis	Wyoming	R	Yea

100 rows × 4 columns

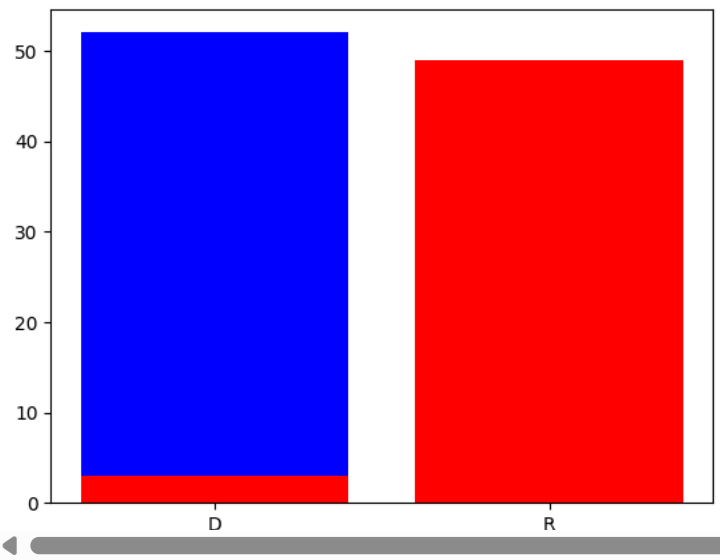
```
import matplotlib.pyplot as plt

# create data
x = ['D','R']
df[df['Party_Name']=='D']['Vote'].value_counts()
```

Vote	count
Nay	45
Yea	3

```
df[df['Party_Name']=='R']['Vote'].value_counts()
```

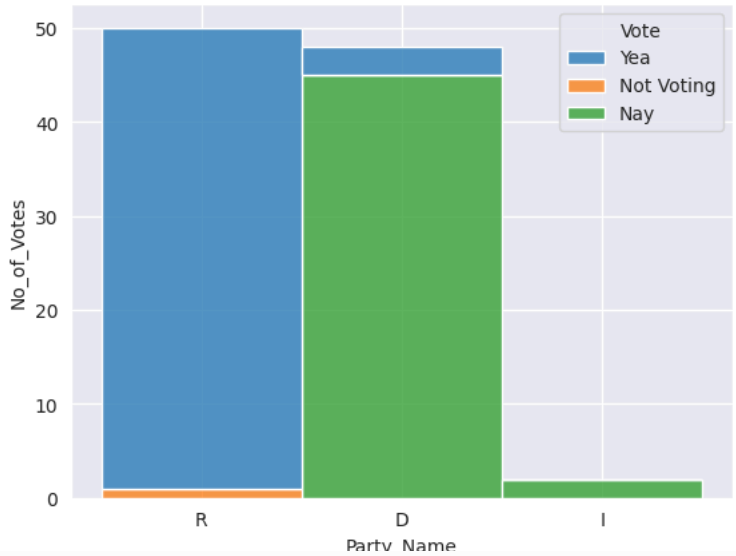
Vote	count
Yea	49
Not Voting	1

```
y1 = [3, 49]
y2 = [49, 0]
plt.bar(x, y1, color='r')
plt.bar(x, y2, bottom=y1, color='b')
plt.show()
```

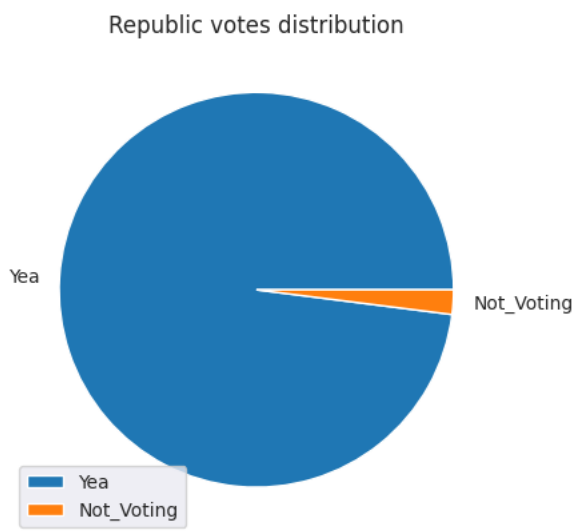



```
import seaborn as sns
sns.set_style(style='darkgrid')
sns.histplot(x='Party_Name',hue='Vote',multiple='stack',data=df)
plt.ylabel('No_of_Votes')
```

```
Text(0, 0.5, 'No_of_Votes')
```




```
import matplotlib.pyplot as plt
import numpy as np

y = np.array([49,1])
mylabels = ["Yea","Not_Voting"]

plt.pie(y, labels = mylabels)
plt.title('Republic votes distribution')
plt.legend()
plt.show()
```




```
crosstable=pd.crosstab(df['Party_Name'],df['Vote'])
crosstable
```

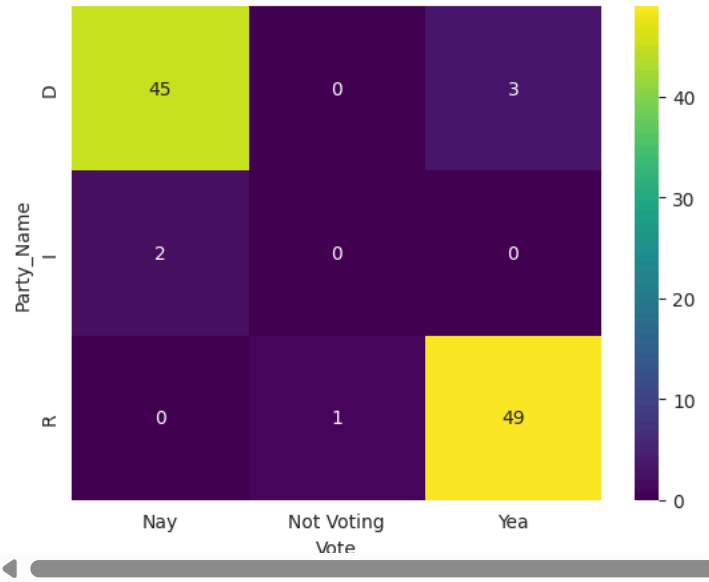
Party_Name	Nay	Not Voting	Yea
D	45	0	3
I	2	0	0
R	0	1	49

```
crosstable.style.background_gradient(cmap='viridis')
```

Party_Name	Vote	Nay	Not Voting	Yea
D		45	0	3
I		2	0	0
R		0	1	49

```
sns.heatmap(crosstable,annot=True,cmap='viridis')
```

```
<Axes: xlabel='Vote', ylabel='Party_Name'>
```




```
df
```

	Person_Name	State_Name	Party_Name	Vote
0	Shelby	Alabama	R	Yea
1	Tuberville	Alabama	R	Yea
2	Murkowski	Alaska	R	Yea
3	Sullivan	Alaska	R	Not Voting
4	Kelly	Arizona	D	Nay
...	...	...	...	...
95	Manchin	West Virginia	D	Yea
96	Baldwin	Wisconsin	D	Nay
97	Johnson	Wisconsin	R	Yea
98	Barrasso	Wyoming	R	Yea
99	Lummis	Wyoming	R	Yea

100 rows × 4 columns

```
lists=df[df['Party_Name']=='D']['State_Name'
dic={}
cnt1=0
for i in lists:
    if i  in dic.keys():
        dic[i]=dic[i]+1
    else:
        dic[i]=1
for i,j in dic.items():
    if j==2:
        cnt1=cnt1+1
print("Democratic Domination:",cnt1)
lists=df[df['Party_Name']=='R']['State_Name'
dic={}
cnt2=0
for i in lists:
    if i  in dic.keys():
        dic[i]=dic[i]+1
    else:
        dic[i]=1
```

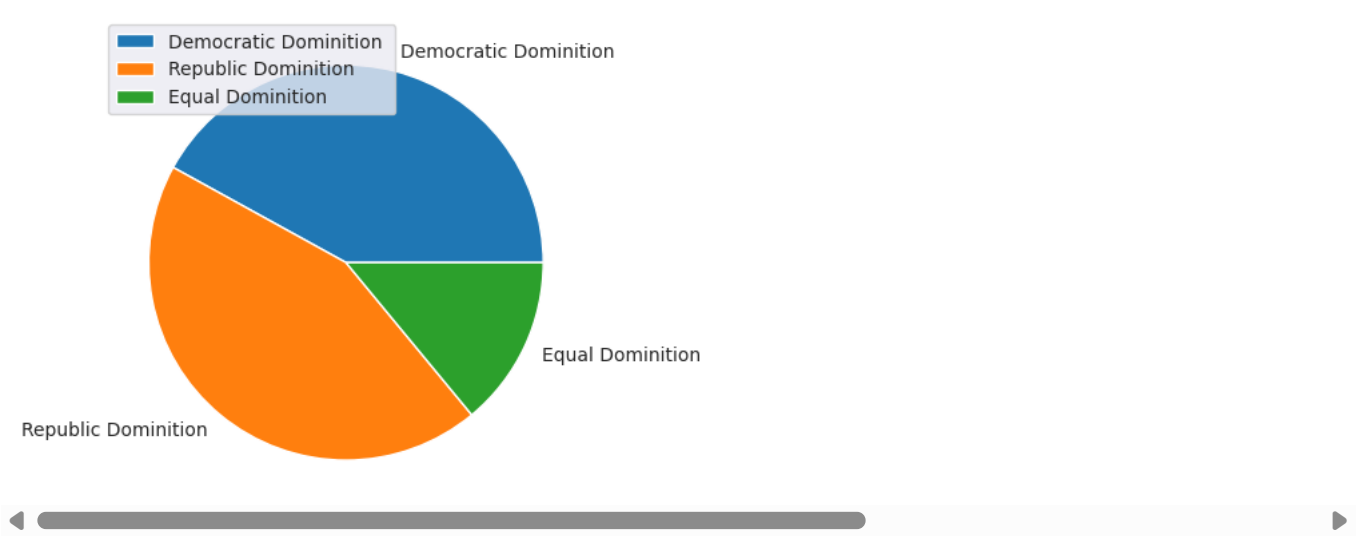
```
for i,j in dic.items():
    if j==2:
        cnt2=cnt2+1

print("Republic Domination:",cnt2)
```

```
Democratic Domination: 21
Republic Domination: 22
```

```
res=len(set(df['State_Name']))
print(res-cnt1-cnt2)
```

```
7
```

```
import matplotlib.pyplot as plt
import numpy as np

y = np.array([21, 22, 7])
mylabels = ["Democratic Domination ", "Republic Domination", "Equal Domination"]

plt.pie(y, labels = mylabels)
plt.legend()
plt.show()
```




```
from matplotlib import pyplot as plt
import numpy as np
fig = plt.figure()
ax = fig.add_axes([0,0,1,1])
ax.axis('equal')
langs = ['Democratic Domination', 'Republic Domination', 'Equal Domination']
students = [21,22,7]
ax.pie(students, labels = langs,autopct='%1.2f%%')
plt.legend()
plt.show()
```

```
WARNING:matplotlib.axes._base:Ignoring fixed x limits to fulfill fixed data aspect with adjustable data limits.
```