In [2]:
```
#Q1

import pandas as pd
import numpy as np
```

In [5]:
```
data=([4,8,15,16,23,42])
ser=pd.Series(data)
print(ser)
```

```
0     4
1     8
2    15
3    16
4    23
5    42
dtype: int64
```

In [4]:
```
#Q2

import pandas as pd
import numpy as np
data=[1,2,3,4,5,6,7,8,11]
ser=pd.Series(data)
print(ser)
```

```
0     1
1     2
2     3
3     4
4     5
5     6
6     7
7     8
8    11
dtype: int64
```

In [13]:
```
#Q3
import pandas as pd
data={"name":['Alice','Bob','Claire'],
      "age":[25,30,27],
      "Gender":['female','male','female']
     }
df=pd.DataFrame(data)
df.set_index('name',inplace=True)
```

In [14]:
```
df
```

Out[14]:

	age	Gender
name		
Alice	25	female
Bob	30	male
Claire	27	female

In [ ]:

```
#Q4
#A Pandas DataFrame is a 2 dimensional data structure, like a 2 dimensional array,
#DataFrames are one of the most common data structures used in modern data analytic


#A Python one-dimensional labelled array called a Pandas Series may hold any form o
#Each component of a series has a unique identification thanks to an index. It is p
#For actions that only involve one column of data, a Series performs more quickly t

#As noted in the table, a Pandas Series is a 1D array of data, but a single-column
```

In [19]:

```
#EX Series

import pandas as pd

# Create a Pandas Series from a list
data = [1000, 2000, 3000, 4000, 5000]
s = pd.Series(data)

# Print the Series
print(s)
```

```
0    1000
1    2000
2    3000
3    4000
4    5000
dtype: int64
```

In [20]:

```
#EX DataFrame

import pandas as pd

# Create a DataFrame with a single column using a Python list
data = [1000, 2000, 3000, 4000, 5000]
df = pd.DataFrame(data, columns=['Column1'])

# Print the DataFrame
print(df)
```

```
   Column1
0     1000
1     2000
2     3000
3     4000
4     5000
```

Q5

1.Read data:-We can read data in pandas data frame as read_csv(). 2.Head and Tail:- Head returns the first rows, if no input is given it will always show above 5 rows. In contrast to see below rows, we can use df.tail(). 3.Shape size and info:-We can use df.shape, it gives a total number of rows and then columns. df.size() returns the number of rows times number of columns in the data frame. We can also use df.info(), from that we get different information such as rows from RangeIndex, Data columns and then data type of each column.

4.isna():-if one needs to get the total number of null values in a data, we can use df.isna().

5.Describe():-understand basic statistics of variables we can use df.describe(). 6.Nunique():-To get the total unique values of variables, we can use df.nunique(). 7.Columns:-To know the names of all the variables in a data frame, we can use df.columns. 8.

In [21]:
```
#Q6

#DataFrames are both value and size-mutable
#A Series, by contrast, is only value-mutable,not size-mutable. The length of a Ser
# In Panel Data and size are mutable
```

In [28]:
```
#Q7

# Importing Pandas library
import pandas as pd

# Creating two lists
author = ['Jitender', 'Purnima',
          'Arpit', 'Jyoti']
article = [210, 211, 114, 178]

# Creating two Series by passing lists
auth_series = pd.Series(author)
article_series = pd.Series(article)

# Creating a dictionary by passing Series objects as values
frame = {'Author': auth_series,
         'Article': article_series}

# Creating DataFrame by passing Dictionary
result = pd.DataFrame(frame)

# Printing elements of Dataframe
print(result)
```

```
     Author  Article
0  Jitender      210
1   Purnima      211
2     Arpit      114
3     Jyoti      178
```

In [16]:

```
#Q8

t1 = pd.to_datetime('1/1/2015 01:00')
t2 = pd.to_datetime('10/1/2015 03:30')

print(pd.Timedelta(t2 - t1))
print(pd.Timedelta(t2 - t1).seconds/60.0)
print(pd.Timedelta(t2 - t1).seconds/3600.0)
```

```
273 days 02:30:00
150.0
2.5
```

In [8]:

```
#Q9


import pandas as pd
import numpy as np
import seaborn as sns
```

In [9]:

```
df=pd.read_csv("penguins.csv")
```

In [10]:

```
df.head(2)
```

Out[10]:

	species	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex	ye
0	Adelie	Torgersen	39.1	18.7	181.0	3750.0	male	20
1	Adelie	Torgersen	39.5	17.4	186.0	3800.0	female	20

In [11]:

```
df['species'].unique()
```

Out[11]:

```
array(['Adelie', 'Gentoo', 'Chinstrap'], dtype=object)
```

In [12]:

```
df['island'].unique()
```

Out[12]:

```
array(['Torgersen', 'Biscoe', 'Dream'], dtype=object)
```

In [14]:

```
df.columns
```

Out[14]:

```
Index(['species', 'island', 'bill_length_mm', 'bill_depth_mm',
       'flipper_length_mm', 'body_mass_g', 'sex', 'year'],
      dtype='object')
```

In [15]:

```
for col_name in df.columns:
    if(df[col_name].dtype=='object'):
        df[col_name]=df[col_name].astype('category')
        df[col_name]=df[col_name].cat.codes
```

In [16]:

```
df.head(3)
```

Out[16]:

	species	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex	year
0	0	2	39.1	18.7	181.0	3750.0	1	2007
1	0	2	39.5	17.4	186.0	3800.0	0	2007
2	0	2	40.3	18.0	195.0	3250.0	0	2007

In [31]:

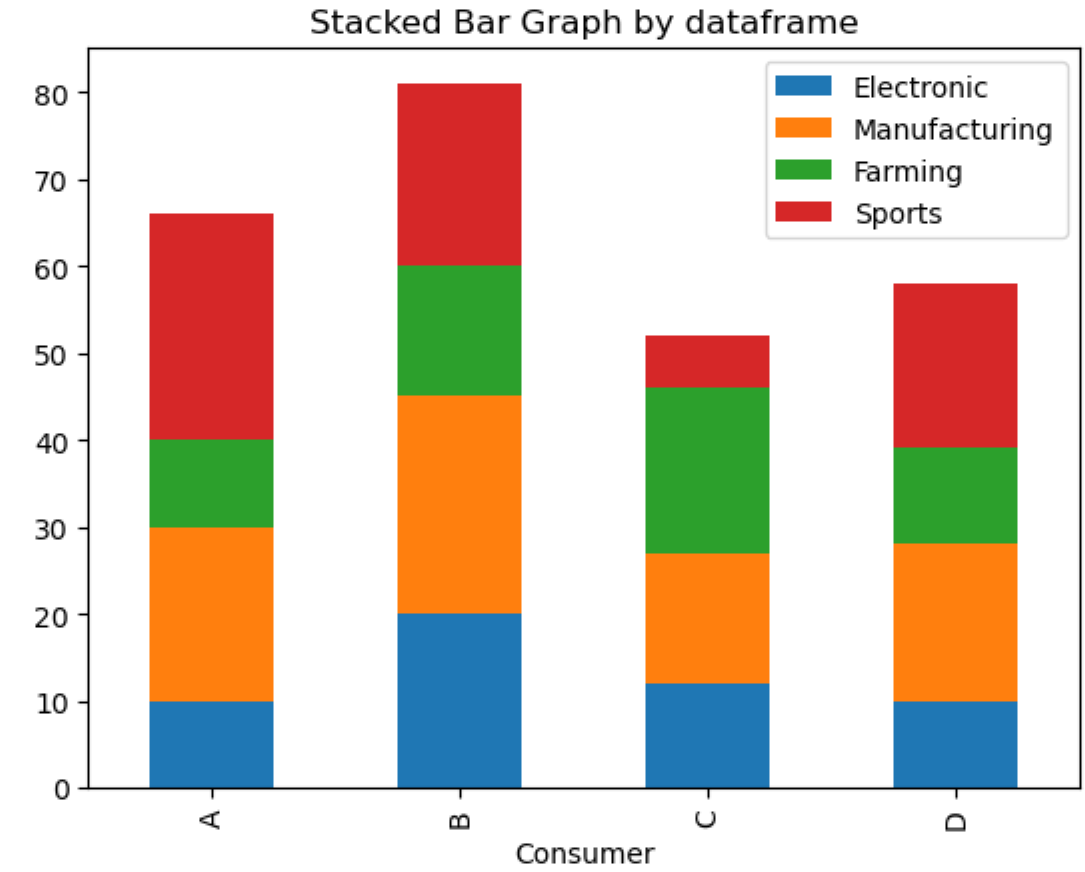
```
#Q10


import matplotlib.pyplot as plt
import numpy as np
import pandas as pd

# create data
df = pd.DataFrame([['A', 10, 20, 10, 26], ['B', 20, 25, 15, 21], ['C', 12, 15, 19,
                   ['D', 10, 18, 11, 19]],
                  columns=['Consumer', 'Electronic', 'Manufacturing', 'Farming', 'S
# view data
print(df)

# plot data in stack manner of bar type
df.plot(x='Consumer', kind='bar', stacked=True,
        title='Stacked Bar Graph by dataframe')
plt.show()
```

```
  Consumer  Electronic  Manufacturing  Farming  Sports
0        A          10             20       10      26
1        B          20             25       15      21
2        C          12             15       19       6
3        D          10             18       11      19
```



```
In [32]: #Q11


         import pandas as pd
         import numpy as np
         import matplotlib.pyplot as plt
         import seaborn as sns
```

```
In [33]: df=pd.read_csv("stud.csv")
```

```
In [35]: df.head(2)
```

Out[35]:

	gender	race_ethnicity	parental_level_of_education	lunch	test_preparation_course	math_scor
0	female	group B	bachelor's degree	standard	none	7
1	female	group C	some college	standard	completed	6

```
In [54]: df[['math_score','reading_score','writing_score']].mean()
```

```
Out[54]: math_score       66.089
         reading_score    69.169
         writing_score    68.054
         dtype: float64
```

```
In [55]: df[['math_score','reading_score','writing_score']].mode()
```

Out[55]:

	math_score	reading_score	writing_score
0	65	72	74

In [56]:

```
df[['math_score','reading_score','writing_score']].median()
```

Out[56]:

```
math_score       66.0
reading_score    70.0
writing_score    69.0
dtype: float64
```

In [72]:

```
dict={'mean':[66.089,69.169,68.054],
      'mode':[65,72,74],
      'median':[66,70,69]
     }
df = pd.DataFrame(dict)
```

In [79]:

```
df
```

Out[79]:

	mean	mode	median
0	66.089	65	66
1	69.169	72	70
2	68.054	74	69

In [ ]:

```

```