

```
In [ ]: #Day-17
#Agenda :   Python Bulit-in Libraries:
          1. Numpy
          2. Pandas
          3. MatPolt Lib

#Numpy:
Numpy is an Open Source Library available in Python.

#It provides High -Level functions to perform mathematical operations on numerical data.
Author: Travis Oliphant
First Release : 1995
Written in- Python Programming,C

#Features
Numpy stands - for Numrical Python (Numpy-num+py)
1. Its contains powerful N-dimensional Object
2. Fourier Transforms and shapes manipulation.
3. Linear Algebra and random number generation.
```

```
In [ ]: #How to Install Numpy Package in your System:
pip install numpy    - #IDLE Users

conda install -c anaconda numpy  - #anaconda users

#How to import and use numpy
import numpy as np
```

```
In [2]: #How to import and use numpy
import numpy as np

#to check version
print(np.__version__)
```

1.16.4

```
In [14]: #how to create Numpy arrays: (single-dimensional arrays)
#We create Numpy arrays using Lists or Nested Lists.
import numpy as np
a = np.array([1,2,3])
print(a)
print(a.shape) #to find the shape of numpy array
print(a.dtype) # to find datatype of numpy array
a
```

```
[1 2 3]
(3,)
int32
```

Out[14]: array([1, 2, 3])

```
In [13]: #numpy arrays with float values
b = np.array([1.1,3.5,6.8])
print(b.dtype)
print(b.shape)
```

```
float64
(3,)
```

```
In [18]: #How to create 2D numpy Arrays:
import numpy as np
d = np.array([[1,2,3],[4,5,6],[7,8,9]])
print(d)
print(d.shape)
print(d.dtype)
```

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
(3, 3)
int32
```

```
In [38]: #Numpy operations:
#zeros: (its used to create a matrix full of zeros)
#syntax:
#numpy.zeros(shape,dtype=float,order="C")
import numpy as np
print(np.zeros((2,2)))
print(np.zeros((4,4)))
```

```
[[0. 0.]
 [0. 0.]]
[[0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]]
```

```
In [32]: #np.ones() functions:
#syntax:
#numpy.zeros(shape,dtype=float,order="C")

print(np.ones([1,2,3])) # To give the rows and coloums order
print(np.ones((1,2,3),dtype=np.int16))
```

```
[[[1. 1. 1.]
   [1. 1. 1.]]]
[[[1 1 1]
   [1 1 1]]]
```

```
In [42]: print(np.ones((2,3)))
print(np.ones((3,2)))
```

```
[[1. 1. 1.]
 [1. 1. 1.]]
[[1. 1.]
 [1. 1.]
 [1. 1.]]
```

```
In [49]: #reshape of numpy arrays
#reshape():
#syntax:
           #numpy.reshape(a,newshape,order="C")
           #a - array that you what to change
import numpy as np
a = np.array([[1,2,3],[5,6,8]])
print(a)
print(a.shape)
b=a.reshape(3,2)
print(b)
print(b.shape)
print(b.flatten())
```

```
[[1 2 3]
 [5 6 8]]
(2, 3)
[[1 2]
 [3 5]
 [6 8]]
(3, 2)
[1 2 3 5 6 8]
```

```
In [52]: #Hstack and Vstack: (for appending the data in horizontal and vertically)
#Hstack:
import numpy as np
a = np.array([[1,3,5]])
b = np.array([[4,6,8]])
print(np.hstack((a,b)))
print(np.vstack((a,b)))
```

```
[[1 3 5 4 6 8]]
[[1 3 5]
 [4 6 8]]
```

```
In [54]: #Generate random numbers:
#numpy.random.normal(loc,scale,size)
# Loc- mean of distribution
#scale - standard deviation
#size- number of returns
# To generate random number from normal distribution.
normal_array = np.random.normal(5,0.5,10)
print(normal_array)
```

```
[4.41895406 5.1965508  4.91275274 4.90870586 4.66131123 5.02896264
 4.55874946 4.73970913 5.27904588 4.63092246]
```

```
In [ ]: #arange() function:
Its used to returns an ndarray(n-dimensional array) object that contains evenly
spaced values within a defined interval.
#syntax:

numpy.arange(start,stop,size)
```

```
In [67]: import numpy as np
print(np.arange(1,11))

print(np.arange(1,11,2))
print(np.linspace(1.0,5.0,num=10,endpoint=False)) #for generationg even spaced samples
print(np.logspace(3.0,4.0,num=4))    #for even space samples on log scale
```

```
[ 1  2  3  4  5  6  7  8  9 10]
[1 3 5 7 9]
[1.  1.4 1.8 2.2 2.6 3.  3.4 3.8 4.2 4.6]
[ 1000.          2154.43469003  4641.58883361 10000.          ]
```

```
In [81]: #slicing on numpy arrays:
import numpy as np
a=np.array([(1,2,3,5),(3,5,6,8),[50,60,90,100]])
print(a[0,2])
print(a[1,3])
print(a[0, 2], a[1, 2])    #boomika Logic
print(a[0:,2])             #my Logic
print(a[0:,1])             #prasanna kumar Logic
print(a[1,1],a[1,3])       #naveen Logic
print(a[0:2,3])
```

3

8

3 6

[3 6 90]

[2 5 60]

5 8

[5 8]

```

In [98]: #Max/min:
import numpy as np
a = np.array([[1,2,3,4,5],[4,5,6,7,8]])
b = np.array([[1,2,3,4,5],[4,5,6,7,8]])
print(a.max())
print(a.min())
print(a.sum())
print(a.sum(axis=0)) #column based
print(a.sum(axis=1)) #row based
print(np.sqrt(a))
print(np.std(a))
print(a+b)
print(a-b)
print(a*b)
print(a/b)

8
1
45
[ 5  7  9 11 13]
[15 30]
[[1.          1.41421356 1.73205081 2.          2.23606798]
 [2.          2.23606798 2.44948974 2.64575131 2.82842712]]
2.0615528128088303
[[ 2  4  6  8 10]
 [ 8 10 12 14 16]]
[[0 0 0 0 0]
 [0 0 0 0 0]]
[[ 1  4  9 16 25]
 [16 25 36 49 64]]
[[1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]]

```

```
In [ ]: #Pandas in Python:
Pandas is an opensource library in python that allows to you perform
        (i)    Data manipulation,
        (ii)   Data analysis
        (iii)  Data Cleaning
1. its built on top of Numpy Packages,Pandas need to Numpy arrays data to operate
2. its a elegant solution for time series Data
    1. Population of Data
    2. any Company production Growth
    #Author : Wes McKinney
    #First Release: version 0.23 July,2018
    #Written in : Python

#Why use pandas?
Data Scientics use pandas for its
    1. easily handles missing data
    2. flexible way to slice the data.
    3. Provides powerful time series tool to work with Data Frames.
```

```
In [ ]: #How to install pandas:
pip install pandas
```

```
In [ ]: #What is Data frame:(Pandas Data Structures (Data Frame and Data Series))
Df is 2d- array ,with labeled axes (rows and columns) to store the data.
its contains tabular data.
    #ex: item    price
         0    A      50
         1    B     100

#Data Series:
A series is a 1- D data structure. It can have any data type values
    like integer, float, and string
    #ex:
         0    1.0
         1    2.0
         2    3.0
    dtype: float64
```



```
In [107]: # How to create Data series:
import pandas as pd
s1 = pd.Series([1,2,3])
s2= pd.Series([1.,2.,3.],index=["a","b","c"])
s3 = pd.Series([1,2,np.nan]) #missing value as "NaN"
print(s1)
print(s2)
print(s3)
```

```
0    1
1    2
2    3
dtype: int64
a    1.0
b    2.0
c    3.0
dtype: float64
0    1.0
1    2.0
2    NaN
dtype: float64
```

```
In [18]: #How to create Data Frames:
#Numpy to Pandas
import numpy as np
#a = [[1,3],[5,6]]
df = pd.DataFrame([[1,3],[5,6]])
print(df)
df
#pandas to numpy
df_to_numpy = np.array(df)
df_to_numpy
```

```
0 1
0 1 3
1 5 6
```

```
Out[18]: array([[1, 3],
               [5, 6]], dtype=int64)
```

```
In [118]: #dataframe with Dictionary Values:
import pandas as pd
dic = {'Name':["surya", "apssdc", "python"], "values": [50, 60, 100]}
pd.DataFrame(data=dic, index=["1", "2", "3"])
```

Out[118]:

	Name	values
1	surya	50
2	apssdc	60
3	python	100

```
In [ ]: #Inspecting the Data:
# we can check the head or tail of the dataset with head(), or tail() functions:
```

```
In [21]: #How to read csv files (Data Sets):  
import pandas as pd  
df = pd.read_csv("Employee_data.csv")  
df
```

Out[21]:

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
0	158108	Mr.	Bernard	N	Weatherly	M	bernard.weatherly@gmail.com	Wilbur Weatherly	Liana Weatherly	Grams	...
1	863655	Ms.	Cordia	M	Knopp	F	cordia.knopp@hotmail.com	Wilson Knopp	Darline Knopp	Diana	...
2	343966	Mr.	Burton	C	Jin	M	burton.jin@yahoo.com	Richard Jin	Willette Jin	Garcia	...
3	389958	Mr.	Lauren	O	Guzzi	M	lauren.guzzi@yahoo.com	Blair Guzzi	Shanika Guzzi	Beerman	...
4	291208	Prof.	Carter	C	Hunt	M	carter.hunt@hotmail.com	Jamal Hunt	Kaila Hunt	Starrett	...
5	636449	Mr.	Isaiah	Y	Magwood	M	isaiah.magwood@comcast.net	Bryan Magwood	Joaquina Magwood	Hu	...
6	731529	Mr.	Hugh	N	Chavira	M	hugh.chavira@yahoo.ca	Don Chavira	Aline Chavira	Blea	...
7	331652	Prof.	Lucius	C	Moorhead	M	lucius.moorhead@yahoo.com	Marcelino Moorhead	Jillian Moorhead	Focht	...
8	930753	Ms.	Deane	I	Keown	F	deane.keown@hotmail.com	Gale Keown	Dia Keown	Benjamin	...
9	212822	Mrs.	Joannie	E	Wolters	F	joannie.wolters@yahoo.co.in	Nicolas Wolters	Margarett Wolters	Rosa	...
10	406273	Ms.	Christene	L	Mccaleb	F	christene.mccaleb@gmail.com	Freddie Mccaleb	Eladia Mccaleb	Clinard	...
11	984721	Mrs.	Aline	V	Kushner	F	alline.kushner@aol.com	Harlan Kushner	Linsey Kushner	Houseman	...

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
12	161868	Hon.	Vicki	Y	Hargrave	F	vicki.hargrave@hotmail.com	Judson Hargrave	Shonda Hargrave	Leib	...
13	948514	Mrs.	Julienne	A	Merkel	F	julienne.merkel@hotmail.com	Jesse Merkel	Deetta Merkel	Canady	...
14	467644	Mr.	Keven	C	Thole	M	keven.thole@gmail.com	Ismael Thole	Jonell Thole	Steigerwald	...
15	439713	Ms.	Eusebia	N	Waldroup	F	eusebia.waldroup@hotmail.com	Shelton Waldroup	Keiko Waldroup	Longmire	...
16	435127	Ms.	Veronique	E	Eccleston	F	veronique.eccleston@aol.com	Stacey Eccleston	Hettie Eccleston	Bangs	...
17	880688	Mrs.	Sean	W	Richman	F	sean.richman@yahoo.com	Earl Richman	Jenise Richman	Handy	...
18	415263	Ms.	Lala	C	Marquez	F	lala.marquez@aol.com	Landon Marquez	Domitila Marquez	Pleasants	...
19	697769	Hon.	Derick	A	Macey	M	derick.macey@walmart.com	Kelley Macey	Dierdre Macey	Gelb	...
20	469336	Mrs.	Eda	O	Brase	F	eda.braser@earthlink.net	Von Brase	Mittie Brase	Lawhorn	...
21	352932	Mr.	Willis	D	Weissman	M	willis.weissman@gmail.com	Robert Weissman	Pauline Weissman	Luker	...
22	829478	Ms.	Mariam	F	Pinheiro	F	mariam.pinheiro@gmail.com	Bruno Pinheiro	Kati Pinheiro	Watanabe	...
23	517840	Mr.	Malcom	L	Meister	M	malcom.meister@apple.com	Ty Meister	Travis Meister	Mosser	...

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
24	709861	Mrs.	Holli	G	Ethridge	F	holli.ethridge@gmail.com	Thomas Ethridge	Tabitha Ethridge	Popa	...
25	751367	Dr.	Cole	N	Poling	M	cole.poling@hotmail.com	Chase Poling	Pilar Poling	Farfan	...
26	940813	Dr.	Ahmad	V	Lynde	M	ahmad.lynde@gmail.com	Vance Lynde	Loni Lynde	Fussell	...
27	930580	Dr.	Mariano	F	Leary	M	mariano.leary@aol.com	Duncan Leary	Minh Leary	Williamson	...
28	120297	Ms.	Tawanda	E	Buchanon	F	tawanda.buchanon@gmail.com	Zane Buchanon	Ashlyn Buchanon	Siems	...
29	796317	Hon.	Nickolas	G	Grossi	M	nickolas.grossi@aol.com	Santos Grossi	Calista Grossi	Sayre	...
...
49970	786901	Mr.	Stewart	Z	Mantz	M	stewart.mantz@gmail.com	Jerrold Mantz	Jinny Mantz	Geren	...
49971	279036	Prof.	Dewitt	U	Ekstrom	M	dewitt.ekstrom@gmail.com	Willard Ekstrom	Shamika Ekstrom	Strothers	...
49972	525884	Ms.	Candyce	Z	Gardea	F	candyce.gardea@aol.com	Armando Gardea	Erma Gardea	Saxon	...
49973	226692	Mr.	Ezra	P	Loman	M	ezra.loman@gmail.com	Jarrod Loman	Elnora Loman	Stefanski	...
49974	189099	Mr.	Raymundo	T	Hagar	M	raymundo.hagar@aol.com	Darrick Hagar	Jennine Hagar	Laine	...
49975	162936	Mr.	Norberto	X	Basham	M	norberto.basham@bp.com	Denver Basham	Karl Basham	Sands	...

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
49976	602698	Mrs.	Desire	R	Keefe	F	desire.keefe@comcast.net	Cruz Keefe	Manie Keefe	Schipper	...
49977	144035	Hon.	Serena	X	Fussell	F	serena.fussell@aol.com	Andreas Fussell	Earlean Fussell	Lamberson	...
49978	215934	Hon.	William	Z	Amen	M	william.amen@bellsouth.net	Henry Amen	Yuko Amen	Cawley	...
49979	968064	Ms.	Ginette	Z	Holden	F	ginette.holden@gmail.com	Rigoberto Holden	Fleta Holden	Anchondo	...
49980	197081	Ms.	Pei	D	Fey	F	pei.fey@msn.com	Filiberto Fey	Cuc Fey	Cheng	...
49981	887146	Drs.	Leanne	J	Uecker	F	leanne.uecker@gmail.com	Edison Uecker	Crysta Uecker	Pickrell	...
49982	518937	Mr.	Jarod	C	Rech	M	jarod.rech@bp.com	Ferdinand Rech	Lourdes Rech	Mathison	...
49983	684273	Ms.	Hiroko	L	Holton	F	hiroko.holton@aol.com	Laverne Holton	Letitia Holton	Miler	...
49984	283912	Mr.	Theo	T	Blanford	M	theo.blanford@gmail.com	Garrett Blanford	Hermila Blanford	Mathew	...
49985	475827	Ms.	Beverly	D	Jewell	F	beverly.jewell@exxonmobil.com	Tristan Jewell	Lucinda Jewell	Dunkelberger	...
49986	649810	Mr.	Juan	L	Coury	M	juan.coury@gmail.com	Bernard Coury	Alisia Coury	Castelli	...
49987	267565	Ms.	Lenora	S	Kulick	F	lenora.kulick@aol.com	Randy Kulick	Kiana Kulick	Furrow	...

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
49988	939635	Hon.	Delora	H	Corle	F	delora.corle@gmail.com	Darrin Corle	Michaela Corle	Nielsen	...
49989	514084	Prof.	Rolando	S	Oestreich	M	rolando.oestreich@yahoo.com	Brenton Oestreich	Helene Oestreich	Abad	...
49990	963209	Mrs.	Billy	I	Phillip	F	billy.phillip@gmail.com	Lupe Phillip	Georgie Phillip	Fava	...
49991	931753	Ms.	Grayce	J	Vella	F	grayce.vella@gmail.com	Ernie Vella	Terrie Vella	Markus	...
49992	578366	Mrs.	Nicolasa	I	Hearns	F	nicolasa.hearns@hotmail.com	Tommy Hearns	Roxy Hearns	Sotomayor	...
49993	481787	Ms.	Estella	N	Gelinas	F	estella.gelinas@gmail.com	Terence Gelinas	Diann Gelinas	Chamberlin	...
49994	186184	Mr.	Donald	J	Hunsberger	M	donald.hunsberger@aol.com	Milford Hunsberger	Pinkie Hunsberger	Seltzer	...
49995	773461	Hon.	Felton	J	Hohl	M	felton.hohl@yahoo.com	Gustavo Hohl	Eric Hohl	Caison	...
49996	743563	Ms.	Launa	N	Staudt	F	launa.staudt@aol.com	Dee Staudt	Laurice Staudt	Carnell	...
49997	248566	Ms.	Caryl	S	Ezzell	F	caryl.ezzell@aol.com	Maxwell Ezzell	Coralie Ezzell	Cruise	...
49998	320960	Mr.	Xavier	U	Deberry	M	xavier.deberry@hotmail.com	Alfred Deberry	Jeannette Deberry	Hamner	...
49999	508239	Mrs.	Blanch	I	Tarleton	F	blanch.tarleton@ntlworld.com	Landon Tarleton	Roseanne Tarleton	Heim	...

50000 rows × 37 columns


```
In [23]: #head(): its reads the data rows from top  
df.head(3)  
df.head(15)
```

Out[23]:

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	SSN	Phone Number
0	158108	Mr.	Bernard	N	Weatherly	M	bernard.weatherly@gmail.com	Wilbur Weatherly	Liana Weatherly	Grams	...	701-18-3166	423-283-587
1	863655	Ms.	Cordia	M	Knopp	F	cordia.knopp@hotmail.com	Wilson Knopp	Darline Knopp	Diana	...	115-98-5006	205-200-656
2	343966	Mr.	Burton	C	Jin	M	burton.jin@yahoo.com	Richard Jin	Willette Jin	Garcia	...	176-86-8865	479-568-562
3	389958	Mr.	Lauren	O	Guzzi	M	lauren.guzzi@yahoo.com	Blair Guzzi	Shanika Guzzi	Beerman	...	258-99-4279	216-582-046
4	291208	Prof.	Carter	C	Hunt	M	carter.hunt@hotmail.com	Jamal Hunt	Kaila Hunt	Starrett	...	469-57-4080	231-981-502
5	636449	Mr.	Isaiah	Y	Magwood	M	isaiah.magwood@comcast.net	Bryan Magwood	Joaquina Magwood	Hu	...	474-55-7066	212-550-922
6	731529	Mr.	Hugh	N	Chavira	M	hugh.chavira@yahoo.ca	Don Chavira	Aline Chavira	Blea	...	434-99-1950	218-249-108
7	331652	Prof.	Lucius	C	Moorhead	M	lucius.moorhead@yahoo.com	Marcelino Moorhead	Jillian Moorhead	Focht	...	157-23-2905	210-461-119
8	930753	Ms.	Deane	I	Keown	F	deane.keown@hotmail.com	Gale Keown	Dia Keown	Benjamin	...	613-87-9535	209-670-974
9	212822	Mrs.	Joannie	E	Wolters	F	joannie.wolters@yahoo.co.in	Nicolas Wolters	Margarett Wolters	Rosa	...	198-84-6571	304-464-610
10	406273	Ms.	Christene	L	Mccaleb	F	christene.mccaleb@gmail.com	Freddie Mccaleb	Eladia Mccaleb	Clinard	...	454-99-1093	236-360-082
11	984721	Mrs.	Alline	V	Kushner	F	alline.kushner@aol.com	Harlan Kushner	Linsey Kushner	Houseman	...	007-11-7619	503-656-014

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	SSN	Phone Number
12	161868	Hon.	Vicki	Y	Hargrave	F	vicki.hargrave@hotmail.com	Judson Hargrave	Shonda Hargrave	Leib	...	481-41-3855	206-408-305
13	948514	Mrs.	Julienne	A	Merkel	F	julienne.merkel@hotmail.com	Jesse Merkel	Deetta Merkel	Canady	...	223-99-2411	480-729-084
14	467644	Mr.	Keven	C	Thole	M	keven.thole@gmail.com	Ismael Thole	Jonell Thole	Steigerwald	...	247-99-6318	319-820-908

15 rows × 37 columns

```
In [24]: #tail(): it can return the data from bottom  
df.tail(15)
```

Out[24]:

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	State
49985	475827	Ms.	Beverly	D	Jewell	F	beverly.jewell@exxonmobil.com	Tristan Jewell	Lucinda Jewell	Dunkelberger	...	58 6 47
49986	649810	Mr.	Juan	L	Coury	M	juan.coury@gmail.com	Bernard Coury	Alisia Coury	Castelli	...	34 ' 87
49987	267565	Ms.	Lenora	S	Kulick	F	lenora.kulick@aol.com	Randy Kulick	Kiana Kulick	Furrow	...	49 2 18
49988	939635	Hon.	Delora	H	Corle	F	delora.corle@gmail.com	Darrin Corle	Michaela Corle	Nielsen	...	38 3 68
49989	514084	Prof.	Rolando	S	Oestreich	M	rolando.oestreich@yahoo.com	Brenton Oestreich	Helene Oestreich	Abad	...	39 3 29
49990	963209	Mrs.	Billy	I	Phillip	F	billy.phillip@gmail.com	Lupe Phillip	Georgie Phillip	Fava	...	20 8 20
49991	931753	Ms.	Grayce	J	Vella	F	grayce.vella@gmail.com	Ernie Vella	Terrie Vella	Markus	...	59 9 66
49992	578366	Mrs.	Nicolasa	I	Hearns	F	nicolasa.hearns@hotmail.com	Tommy Hearns	Roxy Hearns	Sotomayor	...	08 0 28
49993	481787	Ms.	Estella	N	Gelinas	F	estella.gelinas@gmail.com	Terence Gelinas	Diann Gelinas	Chamberlin	...	60 8 17
49994	186184	Mr.	Donald	J	Hunsberger	M	donald.hunsberger@aol.com	Milford Hunsberger	Pinkie Hunsberger	Seltzer	...	00 ' 01
49995	773461	Hon.	Felton	J	Hohl	M	felton.hohl@yahoo.com	Gustavo Hohl	Eric Hohl	Caison	...	73 2 69
49996	743563	Ms.	Launa	N	Staudt	F	launa.staudt@aol.com	Dee Staudt	Laurice Staudt	Carnell	...	24 9 26

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	Salary
49997	248566	Ms.	Caryl	S	Ezzell	F	caryl.ezzell@aol.com	Maxwell Ezzell	Coralie Ezzell	Cruise	...	24926
49998	320960	Mr.	Xavier	U	Deberry	M	xavier.deberry@hotmail.com	Alfred Deberry	Jeannette Deberry	Hamner	...	12956
49999	508239	Mrs.	Blanch	I	Tarleton	F	blanch.tarleton@ntlworld.com	Landon Tarleton	Roseanne Tarleton	Heim	...	48255

15 rows × 37 columns

In [25]: *#describe(): (its performs the counting, means,std,min,max and percebtile of the dataset.)*
df.describe()

Out[25]:

	Emp ID	Age in Yrs.	Weight in Kgs.	Year of Joining	Month of Joining	Day of Joining	Age in Company (Years)	Salary	Zip
count	50000.000000	50000.000000	50000.000000	50000.000000	50000.000000	50000.000000	50000.000000	50000.000000	50000.000000
mean	555457.763620	40.561104	59.982920	2007.306600	6.480380	15.736820	9.775455	120265.632920	49768.949760
std	255906.633279	11.272835	13.711586	8.602125	3.415472	8.780311	8.596988	46233.935072	27767.576800
min	111112.000000	21.000000	40.000000	1978.000000	1.000000	1.000000	0.000000	40002.000000	210.000000
25%	334764.250000	30.790000	50.000000	2002.000000	4.000000	8.000000	2.680000	80215.000000	26301.750000
50%	554324.500000	40.560000	57.000000	2010.000000	6.000000	16.000000	7.320000	120201.500000	48787.000000
75%	776663.250000	50.340000	70.000000	2014.000000	9.000000	23.000000	14.940000	160361.250000	73073.250000
max	999982.000000	60.000000	90.000000	2017.000000	12.000000	31.000000	38.700000	199998.000000	99950.000000

```
In [31]: #Slicing the Data:(you can use the coloumn name to extract data in a particular column)  
         #df[["Emp ID","Salary"]]  
         df[0:5]  
         df[0:50]
```


Out[31]:

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	SSN
0	158108	Mr.	Bernard	N	Weatherly	M	bernard.weatherly@gmail.com	Wilbur Weatherly	Liana Weatherly	Grams	...	701-18-3166
1	863655	Ms.	Cordia	M	Knopp	F	cordia.knopp@hotmail.com	Wilson Knopp	Darline Knopp	Diana	...	115-98-5006
2	343966	Mr.	Burton	C	Jin	M	burton.jin@yahoo.com	Richard Jin	Willette Jin	Garcia	...	176-86-8865
3	389958	Mr.	Lauren	O	Guzzi	M	lauren.guzzi@yahoo.com	Blair Guzzi	Shanika Guzzi	Beerman	...	258-99-4279
4	291208	Prof.	Carter	C	Hunt	M	carter.hunt@hotmail.com	Jamal Hunt	Kaila Hunt	Starrett	...	469-57-4080
5	636449	Mr.	Isaiah	Y	Magwood	M	isaiah.magwood@comcast.net	Bryan Magwood	Joaquina Magwood	Hu	...	474-55-7066
6	731529	Mr.	Hugh	N	Chavira	M	hugh.chavira@yahoo.ca	Don Chavira	Aline Chavira	Blea	...	434-99-1950
7	331652	Prof.	Lucius	C	Moorhead	M	lucius.moorhead@yahoo.com	Marcelino Moorhead	Jillian Moorhead	Focht	...	157-23-2905
8	930753	Ms.	Deane	I	Keown	F	deane.keown@hotmail.com	Gale Keown	Dia Keown	Benjamin	...	613-87-9535
9	212822	Mrs.	Joannie	E	Wolters	F	joannie.wolters@yahoo.co.in	Nicolas Wolters	Margarett Wolters	Rosa	...	198-84-6571
10	406273	Ms.	Christene	L	Mccaleb	F	christene.mccaleb@gmail.com	Freddie Mccaleb	Eladia Mccaleb	Clinard	...	454-99-1093
11	984721	Mrs.	Alline	V	Kushner	F	alline.kushner@aol.com	Harlan Kushner	Linsey Kushner	Houseman	...	007-11-7619

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	SSN
12	161868	Hon.	Vicki	Y	Hargrave	F	vicki.hargrave@hotmail.com	Judson Hargrave	Shonda Hargrave	Leib	...	481-41-3855
13	948514	Mrs.	Julienne	A	Merkel	F	julienne.merkel@hotmail.com	Jesse Merkel	Deetta Merkel	Canady	...	223-99-2411
14	467644	Mr.	Keven	C	Thole	M	keven.thole@gmail.com	Ismael Thole	Jonell Thole	Steigerwald	...	247-99-6318
15	439713	Ms.	Eusebia	N	Waldroup	F	eusebia.waldroup@hotmail.com	Shelton Waldroup	Keiko Waldroup	Longmire	...	530-99-8643
16	435127	Ms.	Veronique	E	Eccleston	F	veronique.eccleston@aol.com	Stacey Eccleston	Hettie Eccleston	Bangs	...	525-99-9016
17	880688	Mrs.	Sean	W	Richman	F	sean.richman@yahoo.com	Earl Richman	Jenise Richman	Handy	...	111-98-2385
18	415263	Ms.	Lala	C	Marquez	F	lala.marquez@aol.com	Landon Marquez	Domitila Marquez	Pleasants	...	527-99-7807
19	697769	Hon.	Derick	A	Macey	M	derick.macey@walmart.com	Kelley Macey	Dierdre Macey	Gelb	...	729-28-7601
20	469336	Mrs.	Eda	O	Brase	F	eda.braser@earthlink.net	Von Brase	Mittie Brase	Lawhorn	...	056-02-9652
21	352932	Mr.	Willis	D	Weissman	M	willis.weissman@gmail.com	Robert Weissman	Pauline Weissman	Luker	...	372-37-8195
22	829478	Ms.	Mariam	F	Pinheiro	F	mariam.pinheiro@gmail.com	Bruno Pinheiro	Kati Pinheiro	Watanabe	...	497-29-0897
23	517840	Mr.	Malcom	L	Meister	M	malcom.meister@apple.com	Ty Meister	Travis Meister	Mosser	...	145-23-2527

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	SSN
24	709861	Mrs.	Holli	G	Ethridge	F	holli.ethridge@gmail.com	Thomas Ethridge	Tabitha Ethridge	Popa	...	225-99-8053
25	751367	Dr.	Cole	N	Poling	M	cole.poling@hotmail.com	Chase Poling	Pilar Poling	Farfan	...	160-86-0455
26	940813	Dr.	Ahmad	V	Lynde	M	ahmad.lynde@gmail.com	Vance Lynde	Loni Lynde	Fussell	...	081-02-1080
27	930580	Dr.	Mariano	F	Leary	M	mariano.leary@aol.com	Duncan Leary	Minh Leary	Williamson	...	374-37-2858
28	120297	Ms.	Tawanda	E	Buchanon	F	tawanda.buchanon@gmail.com	Zane Buchanon	Ashlyn Buchanon	Siems	...	293-15-9165
29	796317	Hon.	Nickolas	G	Grossi	M	nickolas.grossi@aol.com	Santos Grossi	Calista Grossi	Sayre	...	290-15-3678
30	866076	Mr.	Bradford	K	Marlatt	M	bradford.marlatt@hotmail.com	Neville Marlatt	Cherise Marlatt	Hedstrom	...	695-16-9006
31	307787	Prof.	Carlton	P	Bose	M	carlton.bose@gmail.com	Lon Bose	Maricruz Bose	Lindeman	...	530-99-4439
32	307470	Mrs.	Asuncion	X	Braunstein	F	asuncion.braunstein@hotmail.co.uk	Gordon Braunstein	Lashanda Braunstein	Derryberry	...	624-85-5591
33	167307	Mr.	Theron	T	Kramer	M	theron.kramer@gmail.com	Waylon Kramer	Loida Kramer	Gunning	...	257-99-1289
34	511136	Prof.	Jeramy	F	Metoyer	M	jeramy.metoyer@aol.com	Clement Metoyer	Jonna Metoyer	Dean	...	698-16-5481
35	320739	Hon.	Sol	K	Roger	F	sol.roger@msn.com	Roy Roger	Cythia Roger	Stansfield	...	279-15-4521

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	SSN
36	979767	Mr.	Earnest	H	Birkholz	M	earnest.birkholz@yahoo.co.uk	Earnest Birkholz	Paris Birkholz	Ducharme	...	417-67-2590
37	683618	Ms.	Amada	J	Knouse	F	amada.knouse@ibm.com	Gordon Knouse	Ji Knouse	Westling	...	462-99-0616
38	473705	Mr.	Gregorio	H	Hottinger	M	gregorio.hottinger@hotmail.com	Sebastian Hottinger	Rickie Hottinger	Piazza	...	698-16-6467
39	565194	Mr.	Lawerence	W	Abernethy	M	lawerence.abernethy@aol.com	Jefferson Abernethy	Elenor Abernethy	Money	...	572-99-6761
40	961028	Ms.	Marina	X	Quayle	F	marina.quayle@yahoo.com	Vaughn Quayle	Contessa Quayle	Falzone	...	758-12-3077
41	595955	Mr.	Whitney	N	Wasinger	M	whitney.wasinger@hotmail.com	Darryl Wasinger	Sigrid Wasinger	Dingle	...	712-18-7894
42	501666	Prof.	Roy	W	Wilkie	M	roy.wilkie@gmail.com	Bobbie Wilkie	Kendra Wilkie	Belmonte	...	542-81-8081
43	519722	Ms.	Hyun	Z	Bynoe	F	hyun.bynoe@gmail.com	Rickey Bynoe	Leora Bynoe	Guillotte	...	646-23-6224
44	315542	Ms.	Katelin	F	Coney	F	katelin.coney@aol.com	Derick Coney	Sammie Coney	Grajeda	...	008-94-2622
45	655893	Mrs.	Jennifer	Z	Pridgen	F	jennifer.pridgen@cox.net	Titus Pridgen	Riva Pridgen	Perrault	...	236-55-3267
46	840300	Mr.	Zachary	U	Breeden	M	zachary.breeden@shell.com	Joaquin Breeden	Obdulia Breeden	Berrian	...	019-94-1600
47	837373	Mr.	Deon	U	Mounce	M	deon.mounce@ibm.com	Jasper Mounce	Genevie Mounce	Lamy	...	286-15-4378

	Emp ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	E Mail	Father's Name	Mother's Name	Mother's Maiden Name	...	SSN
48	917497	Dr.	Buddy	G	Steinbeck	M	buddy.steinbeck@yahoo.com	Yong Steinbeck	Devin Steinbeck	Madsen	...	764-29-4454
49	629761	Dr.	Julius	N	Bakker	M	julius.bakker@gmail.com	Sylvester Bakker	Ciera Bakker	Etzel	...	695-16-5780

50 rows × 37 columns

```
In [37]: #loc(): This function is used to select multiple columns by names.  
         #mul col  
         df.loc[:,["Emp ID","Salary","E Mail"]]  
         #mul row - iloc():  
         #df.iloc[:5,:5]
```

Out[37]:

	Emp ID	Salary	E Mail
0	158108	81323	bernard.weatherly@gmail.com
1	863655	169367	cordia.knopp@hotmail.com
2	343966	142688	burton.jin@yahoo.com
3	389958	100371	lauren.guzzi@yahoo.com
4	291208	104383	carter.hunt@hotmail.com
5	636449	171165	isaiah.magwood@comcast.net
6	731529	124363	hugh.chavira@yahoo.ca
7	331652	74133	lucius.moorhead@yahoo.com
8	930753	146728	deane.keown@hotmail.com
9	212822	193233	joannie.wolters@yahoo.co.in
10	406273	130856	christene.mccaleb@gmail.com
11	984721	196569	alline.kushner@aol.com
12	161868	193680	vicki.hargrave@hotmail.com
13	948514	129602	julienne.merkel@hotmail.com
14	467644	130067	keven.thole@gmail.com
15	439713	173975	eusebia.waldroup@hotmail.com
16	435127	56343	veronique.eccleston@aol.com
17	880688	76964	sean.richman@yahoo.com
18	415263	121928	lala.marquez@aol.com
19	697769	96558	derick.macey@walmart.com
20	469336	154102	eda.brase@earthlink.net
21	352932	67163	willis.weissman@gmail.com
22	829478	140901	mariam.pinho@gmail.com
23	517840	110929	malcom.meister@apple.com
24	709861	97123	holli.ethridge@gmail.com
25	751367	159702	cole.poling@hotmail.com

	Emp ID	Salary	E Mail
26	940813	138480	ahmad.lynde@gmail.com
27	930580	132605	mariano.leary@aol.com
28	120297	188854	tawanda.buchanon@gmail.com
29	796317	94238	nickolas.grossi@aol.com
...
49970	786901	179135	stewart.mantz@gmail.com
49971	279036	50248	dewitt.ekstrom@gmail.com
49972	525884	77093	candyce.gardea@aol.com
49973	226692	146003	ezra.loman@gmail.com
49974	189099	40944	raymundo.hagar@aol.com
49975	162936	161109	norberto.basham@bp.com
49976	602698	55646	desire.keefe@comcast.net
49977	144035	116944	serena.fussell@aol.com
49978	215934	128314	william.amen@bellsouth.net
49979	968064	98414	ginette.holden@gmail.com
49980	197081	165487	pei.fey@msn.com
49981	887146	62149	leanne.uecker@gmail.com
49982	518937	148519	jarod.rech@bp.com
49983	684273	190340	hiroko.holton@aol.com
49984	283912	112093	theo.blanford@gmail.com
49985	475827	75182	beverly.jewell@exxonmobil.com
49986	649810	110865	juan.coury@gmail.com
49987	267565	178965	lenora.kulick@aol.com
49988	939635	79224	delora.corle@gmail.com
49989	514084	94764	rolando.oestreich@yahoo.com
49990	963209	169191	billy.phillip@gmail.com
49991	931753	172777	grayce.vella@gmail.com

	Emp ID	Salary	E Mail
49992	578366	111423	nicolasa.hearns@hotmail.com
49993	481787	157271	estella.gelinas@gmail.com
49994	186184	184366	donald.hunsberger@aol.com
49995	773461	199167	felton.hohl@yahoo.com
49996	743563	176510	launa.staudt@aol.com
49997	248566	49236	caryl.ezzell@aol.com
49998	320960	126789	xavier.deberry@hotmail.com
49999	508239	116935	blanch.tarleton@ntlworld.com

50000 rows × 3 columns

```
In [45]: #Drop a Column: (you can drop columns using pd.drop())
#df.drop(columns=["Emp ID", "Salary"])
#sort the values:
df.sort_values("Salary")
df.sort_values("Emp ID")
```

```
In [53]: #rename: change of Index name:  
df1=df.rename(columns={"Emp ID":"MY ID","Salary":"Credit","E Mail":"G Mail"})  
df1
```

Out[53]:

	MY ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	G Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
0	158108	Mr.	Bernard	N	Weatherly	M	bernard.weatherly@gmail.com	Wilbur Weatherly	Liana Weatherly	Grams	...
1	863655	Ms.	Cordia	M	Knopp	F	cordia.knopp@hotmail.com	Wilson Knopp	Darline Knopp	Diana	...
2	343966	Mr.	Burton	C	Jin	M	burton.jin@yahoo.com	Richard Jin	Willette Jin	Garcia	...
3	389958	Mr.	Lauren	O	Guzzi	M	lauren.guzzi@yahoo.com	Blair Guzzi	Shanika Guzzi	Beerman	...
4	291208	Prof.	Carter	C	Hunt	M	carter.hunt@hotmail.com	Jamal Hunt	Kaila Hunt	Starrett	...
5	636449	Mr.	Isaiah	Y	Magwood	M	isaiah.magwood@comcast.net	Bryan Magwood	Joaquina Magwood	Hu	...
6	731529	Mr.	Hugh	N	Chavira	M	hugh.chavira@yahoo.ca	Don Chavira	Aline Chavira	Blea	...
7	331652	Prof.	Lucius	C	Moorhead	M	lucius.moorhead@yahoo.com	Marcelino Moorhead	Jillian Moorhead	Focht	...
8	930753	Ms.	Deane	I	Keown	F	deane.keown@hotmail.com	Gale Keown	Dia Keown	Benjamin	...
9	212822	Mrs.	Joannie	E	Wolters	F	joannie.wolters@yahoo.co.in	Nicolas Wolters	Margarett Wolters	Rosa	...
10	406273	Ms.	Christene	L	Mccaleb	F	christene.mccaleb@gmail.com	Freddie Mccaleb	Eladia Mccaleb	Clinard	...
11	984721	Mrs.	Aline	V	Kushner	F	alline.kushner@aol.com	Harlan Kushner	Linsey Kushner	Houseman	...

	MY ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	G Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
12	161868	Hon.	Vicki	Y	Hargrave	F	vicki.hargrave@hotmail.com	Judson Hargrave	Shonda Hargrave	Leib	...
13	948514	Mrs.	Julienne	A	Merkel	F	julienne.merkel@hotmail.com	Jesse Merkel	Deetta Merkel	Canady	...
14	467644	Mr.	Keven	C	Thole	M	keven.thole@gmail.com	Ismael Thole	Jonell Thole	Steigerwald	...
15	439713	Ms.	Eusebia	N	Waldroup	F	eusebia.waldroup@hotmail.com	Shelton Waldroup	Keiko Waldroup	Longmire	...
16	435127	Ms.	Veronique	E	Eccleston	F	veronique.eccleston@aol.com	Stacey Eccleston	Hettie Eccleston	Bangs	...
17	880688	Mrs.	Sean	W	Richman	F	sean.richman@yahoo.com	Earl Richman	Jenise Richman	Handy	...
18	415263	Ms.	Lala	C	Marquez	F	lala.marquez@aol.com	Landon Marquez	Domitila Marquez	Pleasants	...
19	697769	Hon.	Derick	A	Macey	M	derick.macey@walmart.com	Kelley Macey	Dierdre Macey	Gelb	...
20	469336	Mrs.	Eda	O	Brase	F	eda.braser@earthlink.net	Von Brase	Mittie Brase	Lawhorn	...
21	352932	Mr.	Willis	D	Weissman	M	willis.weissman@gmail.com	Robert Weissman	Pauline Weissman	Luker	...
22	829478	Ms.	Mariam	F	Pinheiro	F	mariam.pinheiro@gmail.com	Bruno Pinheiro	Kati Pinheiro	Watanabe	...
23	517840	Mr.	Malcom	L	Meister	M	malcom.meister@apple.com	Ty Meister	Travis Meister	Mosser	...

	MY ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	G Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
24	709861	Mrs.	Holli	G	Ethridge	F	holli.ethridge@gmail.com	Thomas Ethridge	Tabitha Ethridge	Popa	...
25	751367	Dr.	Cole	N	Poling	M	cole.poling@hotmail.com	Chase Poling	Pilar Poling	Farfan	...
26	940813	Dr.	Ahmad	V	Lynde	M	ahmad.lynde@gmail.com	Vance Lynde	Loni Lynde	Fussell	...
27	930580	Dr.	Mariano	F	Leary	M	mariano.leary@aol.com	Duncan Leary	Minh Leary	Williamson	...
28	120297	Ms.	Tawanda	E	Buchanon	F	tawanda.buchanon@gmail.com	Zane Buchanon	Ashlyn Buchanon	Siems	...
29	796317	Hon.	Nickolas	G	Grossi	M	nickolas.grossi@aol.com	Santos Grossi	Calista Grossi	Sayre	...
...
49970	786901	Mr.	Stewart	Z	Mantz	M	stewart.mantz@gmail.com	Jerrold Mantz	Jinny Mantz	Geren	...
49971	279036	Prof.	Dewitt	U	Ekstrom	M	dewitt.ekstrom@gmail.com	Willard Ekstrom	Shamika Ekstrom	Strothers	...
49972	525884	Ms.	Candyce	Z	Gardea	F	candyce.gardea@aol.com	Armando Gardea	Erma Gardea	Saxon	...
49973	226692	Mr.	Ezra	P	Loman	M	ezra.loman@gmail.com	Jarrod Loman	Elnora Loman	Stefanski	...
49974	189099	Mr.	Raymundo	T	Hagar	M	raymundo.hagar@aol.com	Darrick Hagar	Jennine Hagar	Laine	...
49975	162936	Mr.	Norberto	X	Basham	M	norberto.basham@bp.com	Denver Basham	Karl Basham	Sands	...

	MY ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	G Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
49976	602698	Mrs.	Desire	R	Keefe	F	desire.keefe@comcast.net	Cruz Keefe	Manie Keefe	Schipper	...
49977	144035	Hon.	Serena	X	Fussell	F	serena.fussell@aol.com	Andreas Fussell	Earlean Fussell	Lamberson	...
49978	215934	Hon.	William	Z	Amen	M	william.amen@bellsouth.net	Henry Amen	Yuko Amen	Cawley	...
49979	968064	Ms.	Ginette	Z	Holden	F	ginette.holden@gmail.com	Rigoberto Holden	Fleta Holden	Anchondo	...
49980	197081	Ms.	Pei	D	Fey	F	pei.fey@msn.com	Filiberto Fey	Cuc Fey	Cheng	...
49981	887146	Drs.	Leanne	J	Uecker	F	leanne.uecker@gmail.com	Edison Uecker	Crysta Uecker	Pickrell	...
49982	518937	Mr.	Jarod	C	Rech	M	jarod.rech@bp.com	Ferdinand Rech	Lourdes Rech	Mathison	...
49983	684273	Ms.	Hiroko	L	Holton	F	hiroko.holton@aol.com	Laverne Holton	Letitia Holton	Miler	...
49984	283912	Mr.	Theo	T	Blanford	M	theo.blanford@gmail.com	Garrett Blanford	Hermila Blanford	Mathew	...
49985	475827	Ms.	Beverly	D	Jewell	F	beverly.jewell@exxonmobil.com	Tristan Jewell	Lucinda Jewell	Dunkelberger	...
49986	649810	Mr.	Juan	L	Coury	M	juan.coury@gmail.com	Bernard Coury	Alisia Coury	Castelli	...
49987	267565	Ms.	Lenora	S	Kulick	F	lenora.kulick@aol.com	Randy Kulick	Kiana Kulick	Furrow	...

	MY ID	Name Prefix	First Name	Middle Initial	Last Name	Gender	G Mail	Father's Name	Mother's Name	Mother's Maiden Name	...
49988	939635	Hon.	Delora	H	Corle	F	delora.corle@gmail.com	Darrin Corle	Michaele Corle	Nielsen	...
49989	514084	Prof.	Rolando	S	Oestreich	M	rolando.oestreich@yahoo.com	Brenton Oestreich	Helene Oestreich	Abad	...
49990	963209	Mrs.	Billy	I	Phillip	F	billy.phillip@gmail.com	Lupe Phillip	Georgie Phillip	Fava	...
49991	931753	Ms.	Grayce	J	Vella	F	grayce.vella@gmail.com	Ernie Vella	Terrie Vella	Markus	...
49992	578366	Mrs.	Nicolasa	I	Hearns	F	nicolasa.hearns@hotmail.com	Tommy Hearns	Roxy Hearns	Sotomayor	...
49993	481787	Ms.	Estella	N	Gelinas	F	estella.gelinas@gmail.com	Terence Gelinas	Diann Gelinas	Chamberlin	...
49994	186184	Mr.	Donald	J	Hunsberger	M	donald.hunsberger@aol.com	Milford Hunsberger	Pinkie Hunsberger	Seltzer	...
49995	773461	Hon.	Felton	J	Hohl	M	felton.hohl@yahoo.com	Gustavo Hohl	Eric Hohl	Caison	...
49996	743563	Ms.	Launa	N	Staudt	F	launa.staudt@aol.com	Dee Staudt	Laurice Staudt	Carnell	...
49997	248566	Ms.	Caryl	S	Ezzell	F	caryl.ezzell@aol.com	Maxwell Ezzell	Coralie Ezzell	Cruise	...
49998	320960	Mr.	Xavier	U	Deberry	M	xavier.deberry@hotmail.com	Alfred Deberry	Jeannette Deberry	Hamner	...
49999	508239	Mrs.	Blanch	I	Tarleton	F	blanch.tarleton@ntlworld.com	Landon Tarleton	Roseanne Tarleton	Heim	...

50000 rows × 37 columns


```
In [23]: #random sequence: (user created Data Frame)
import numpy as np
import pandas as pd
random = np.random.randn(6,4)
random1 = np.random.randn(6,4)

normal = np.array([[1,2,3,4,5,6],[6,7,8,9]])

df = pd.DataFrame(random,index=["A","B","C","D","E","F"],columns=list('ABCD'))

df2 = pd.DataFrame(normal)
df3 = pd.DataFrame(random1,index=["A","B","C","D","E","F"],columns=list('AXYZ'))
print(df)
print(df.head(3))
print(df.tail(3))
print(df.describe())
print(df[0:5])
print(df+df3)
```

```

      A      B      C      D
A  0.897205  1.095330  0.481321  0.173243
B  0.546013 -1.389014  0.771836  0.171945
C -0.478982 -0.665200  0.252498 -1.116795
D  0.665520  0.532133  0.010674 -1.472808
E  0.125223  0.260278  0.595309 -0.081466
F -0.208724 -0.862542  1.414820 -0.624277

      A      B      C      D
A  0.897205  1.095330  0.481321  0.173243
B  0.546013 -1.389014  0.771836  0.171945
C -0.478982 -0.665200  0.252498 -1.116795

      A      B      C      D
D  0.665520  0.532133  0.010674 -1.472808
E  0.125223  0.260278  0.595309 -0.081466
F -0.208724 -0.862542  1.414820 -0.624277

      A      B      C      D
count  6.000000  6.000000  6.000000  6.000000
mean   0.257709 -0.171502  0.587743 -0.491693
std     0.535950  0.947630  0.484712  0.695954
min    -0.478982 -1.389014  0.010674 -1.472808
25%    -0.125237 -0.813207  0.309704 -0.993665
50%     0.335618 -0.202461  0.538315 -0.352871
75%     0.635644  0.464170  0.727705  0.108592
max     0.897205  1.095330  1.414820  0.173243

      A      B      C      D
A  0.897205  1.095330  0.481321  0.173243
B  0.546013 -1.389014  0.771836  0.171945
C -0.478982 -0.665200  0.252498 -1.116795
D  0.665520  0.532133  0.010674 -1.472808
E  0.125223  0.260278  0.595309 -0.081466

      A      B      C      D      X      Y      Z
A -0.662694 NaN NaN NaN NaN NaN NaN
B  1.639832 NaN NaN NaN NaN NaN NaN
C -0.513119 NaN NaN NaN NaN NaN NaN
D  0.544547 NaN NaN NaN NaN NaN NaN
E -0.448320 NaN NaN NaN NaN NaN NaN
F  0.254432 NaN NaN NaN NaN NaN NaN

```

In []: