

In [1]: `import pandas as pd`

In [3]: `df=pd.read_csv(r'C:\Users\Dell\Downloads\data.csv')`

In [5]: `df`

Out[5]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income
1	Afghanistan	AFG	35.253	5.9	Low income
2	Angola	AGO	45.985	19.1	Upper middle income
3	Albania	ALB	12.877	57.2	Upper middle income
4	United Arab Emirates	ARE	11.044	88.0	High income
...
190	Yemen, Rep.	YEM	32.947	20.0	Lower middle income
191	South Africa	ZAF	20.850	46.5	Upper middle income
192	Congo, Dem. Rep.	COD	42.394	2.2	Low income
193	Zambia	ZMB	40.471	15.4	Lower middle income
194	Zimbabwe	ZWE	35.715	18.5	Low income

195 rows × 5 columns

In [7]: `df.shape`

Out[7]: (195, 5)

In [9]: `df.columns`

Out[9]: Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers', 'IncomeGroup'], dtype='object')

In [11]: `len(df)`

Out[11]: 195

In [13]: `type(df)`

Out[13]: `pandas.core.frame.DataFrame`

In [15]: `pd.__version__`

Out[15]: '2.2.2'

In [17]: `df.info()`

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 195 entries, 0 to 194
Data columns (total 5 columns):
#   Column          Non-Null Count  Dtype
---  -
0   CountryName     195 non-null   object
1   CountryCode     195 non-null   object
2   BirthRate       195 non-null   float64
3   InternetUsers   195 non-null   float64
4   IncomeGroup     195 non-null   object
dtypes: float64(2), object(3)
memory usage: 7.7+ KB
```

In [19]: `df.isnull`

```
Out[19]: <bound method DataFrame.isnull of
CountryName CountryCode BirthR
ate InternetUsers \
0           Aruba      ABW    10.244      78.9
1      Afghanistan    AFG    35.253       5.9
2           Angola    AGO    45.985     19.1
3          Albania    ALB    12.877     57.2
4  United Arab Emirates  ARE    11.044     88.0
..          ...      ...      ...      ...
190      Yemen, Rep.    YEM    32.947     20.0
191      South Africa    ZAF    20.850     46.5
192      Congo, Dem. Rep.  COD    42.394       2.2
193           Zambia    ZMB    40.471     15.4
194          Zimbabwe    ZWE    35.715     18.5

IncomeGroup
0      High income
1      Low income
2  Upper middle income
3  Upper middle income
4      High income
..          ...
190  Lower middle income
191  Upper middle income
192      Low income
193  Lower middle income
194      Low income

[195 rows x 5 columns]>
```

In [21]: `len(df.columns)`

Out[21]: 5

In [25]: `df.head`

```

Out[25]: <bound method NDFrame.head of
InternetUsers \
0          Aruba          ABW      10.244      78.9
1      Afghanistan      AFG      35.253       5.9
2          Angola      AGO      45.985      19.1
3      Albania      ALB      12.877      57.2
4  United Arab Emirates      ARE      11.044      88.0
..          ...          ...          ...
190      Yemen, Rep.      YEM      32.947      20.0
191      South Africa      ZAF      20.850      46.5
192      Congo, Dem. Rep.      COD      42.394       2.2
193          Zambia      ZMB      40.471      15.4
194      Zimbabwe      ZWE      35.715      18.5

          IncomeGroup
0          High income
1          Low income
2  Upper middle income
3  Upper middle income
4          High income
..          ...
190  Lower middle income
191  Upper middle income
192          Low income
193  Lower middle income
194          Low income

[195 rows x 5 columns]>

```

```
In [27]: df.tail()
```

```

Out[27]:
   CountryName CountryCode BirthRate InternetUsers IncomeGroup
190  Yemen, Rep.         YEM    32.947          20.0  Lower middle income
191  South Africa        ZAF    20.850          46.5  Upper middle income
192  Congo, Dem. Rep.    COD    42.394           2.2          Low income
193      Zambia         ZMB    40.471          15.4  Lower middle income
194  Zimbabwe          ZWE    35.715          18.5          Low income

```

```
In [29]: df
```

Out[29]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income
1	Afghanistan	AFG	35.253	5.9	Low income
2	Angola	AGO	45.985	19.1	Upper middle income
3	Albania	ALB	12.877	57.2	Upper middle income
4	United Arab Emirates	ARE	11.044	88.0	High income
...
190	Yemen, Rep.	YEM	32.947	20.0	Lower middle income
191	South Africa	ZAF	20.850	46.5	Upper middle income
192	Congo, Dem. Rep.	COD	42.394	2.2	Low income
193	Zambia	ZMB	40.471	15.4	Lower middle income
194	Zimbabwe	ZWE	35.715	18.5	Low income

195 rows × 5 columns

In [33]: `df.head(2)`

Out[33]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income
1	Afghanistan	AFG	35.253	5.9	Low income

In [35]: `df[:]`

Out[35]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income
1	Afghanistan	AFG	35.253	5.9	Low income
2	Angola	AGO	45.985	19.1	Upper middle income
3	Albania	ALB	12.877	57.2	Upper middle income
4	United Arab Emirates	ARE	11.044	88.0	High income
...
190	Yemen, Rep.	YEM	32.947	20.0	Lower middle income
191	South Africa	ZAF	20.850	46.5	Upper middle income
192	Congo, Dem. Rep.	COD	42.394	2.2	Low income
193	Zambia	ZMB	40.471	15.4	Lower middle income
194	Zimbabwe	ZWE	35.715	18.5	Low income

195 rows × 5 columns

In [37]: df[:5]

Out[37]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income
1	Afghanistan	AFG	35.253	5.9	Low income
2	Angola	AGO	45.985	19.1	Upper middle income
3	Albania	ALB	12.877	57.2	Upper middle income
4	United Arab Emirates	ARE	11.044	88.0	High income

In [39]: df[6:]

Out[39]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
6	Armenia	ARM	13.308	41.9000	Lower middle income
7	Antigua and Barbuda	ATG	16.447	63.4000	High income
8	Australia	AUS	13.200	83.0000	High income
9	Austria	AUT	9.400	80.6188	High income
10	Azerbaijan	AZE	18.300	58.7000	Upper middle income
...
190	Yemen, Rep.	YEM	32.947	20.0000	Lower middle income
191	South Africa	ZAF	20.850	46.5000	Upper middle income
192	Congo, Dem. Rep.	COD	42.394	2.2000	Low income
193	Zambia	ZMB	40.471	15.4000	Lower middle income
194	Zimbabwe	ZWE	35.715	18.5000	Low income

189 rows × 5 columns

In [41]:

df[0:200:10]

Out[41]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.900000	High income
10	Azerbaijan	AZE	18.300	58.700000	Upper middle income
20	Belarus	BLR	12.500	54.170000	Upper middle income
30	Canada	CAN	10.900	85.800000	High income
40	Costa Rica	CRI	15.022	45.960000	Upper middle income
50	Ecuador	ECU	21.070	40.353684	Upper middle income
60	Gabon	GAB	30.555	9.200000	Upper middle income
70	Greenland	GRL	14.500	65.800000	High income
80	India	IND	20.291	15.100000	Lower middle income
90	Kazakhstan	KAZ	22.730	54.000000	Upper middle income
100	Libya	LBY	21.425	16.500000	Upper middle income
110	Moldova	MDA	12.141	45.000000	Lower middle income
120	Mozambique	MOZ	39.705	5.400000	Low income
130	Netherlands	NLD	10.200	93.956400	High income
140	Poland	POL	9.600	62.849200	High income
150	Sudan	SDN	33.477	22.700000	Lower middle income
160	Suriname	SUR	18.455	37.400000	Upper middle income
170	Tajikistan	TJK	30.792	16.000000	Lower middle income
180	Uruguay	URY	14.374	57.690000	High income
190	Yemen, Rep.	YEM	32.947	20.000000	Lower middle income

In [43]: `df.describe() #descriptive data by default numerical data`

Out[43]:

	BirthRate	InternetUsers
count	195.000000	195.000000
mean	21.469928	42.076471
std	10.605467	29.030788
min	7.900000	0.900000
25%	12.120500	14.520000
50%	19.680000	41.000000
75%	29.759500	66.225000
max	49.661000	96.546800

In [45]: `df.describe().transpose()`

Out[45]:

	count	mean	std	min	25%	50%	75%	max
BirthRate	195.0	21.469928	10.605467	7.9	12.1205	19.68	29.7595	49.6610
InternetUsers	195.0	42.076471	29.030788	0.9	14.5200	41.00	66.2250	96.5468

In [47]: `df.columns`

Out[47]: Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers', 'IncomeGroup'], dtype='object')

In [49]: `df.columns=['a','b','c','d','e']#changing the attributes name`

In [51]: `df.columns`

Out[51]: Index(['a', 'b', 'c', 'd', 'e'], dtype='object')

In [53]: `df.head(1)`

Out[53]:

	a	b	c	d	e
0	Aruba	ABW	10.244	78.9	High income

In [57]: `df.columns=['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers', 'IncomeGroup']`
`df.head(1)`

Out[57]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income

In [59]: `df.columns`

Out[59]: Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers', 'IncomeGroup'], dtype='object')

In [61]: `df[['CountryName', 'CountryCode']]`

Out[61]:

	CountryName	CountryCode
0	Aruba	ABW
1	Afghanistan	AFG
2	Angola	AGO
3	Albania	ALB
4	United Arab Emirates	ARE
...
190	Yemen, Rep.	YEM
191	South Africa	ZAF
192	Congo, Dem. Rep.	COD
193	Zambia	ZMB
194	Zimbabwe	ZWE

195 rows × 2 columns

In [63]: `df.isnull().sum()`

```
Out[63]: CountryName    0
CountryCode    0
BirthRate    0
InternetUsers    0
IncomeGroup    0
dtype: int64
```

In [65]: `df.isnull()`

Out[65]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	False	False	False	False	False
1	False	False	False	False	False
2	False	False	False	False	False
3	False	False	False	False	False
4	False	False	False	False	False
...
190	False	False	False	False	False
191	False	False	False	False	False
192	False	False	False	False	False
193	False	False	False	False	False
194	False	False	False	False	False

195 rows × 5 columns

```
In [67]: df.dtypes
```

```
Out[67]: CountryName      object
CountryCode      object
BirthRate      float64
InternetUsers    float64
IncomeGroup      object
dtype: object
```

```
In [73]: df_categorical=df[['CountryName', 'CountryCode','IncomeGroup']]
```

```
In [75]: df_categorical.head()
```

```
Out[75]:
```

	CountryName	CountryCode	IncomeGroup
0	Aruba	ABW	High income
1	Afghanistan	AFG	Low income
2	Angola	AGO	Upper middle income
3	Albania	ALB	Upper middle income
4	United Arab Emirates	ARE	High income

```
In [82]: df_numerical=df[['BirthRate','InternetUsers']]
```

```
In [84]: df_numerical
```

```
Out[84]:
```

	BirthRate	InternetUsers
0	10.244	78.9
1	35.253	5.9
2	45.985	19.1
3	12.877	57.2
4	11.044	88.0
...
190	32.947	20.0
191	20.850	46.5
192	42.394	2.2
193	40.471	15.4
194	35.715	18.5

195 rows × 2 columns

```
In [86]: df_categorical.describe()
```

Out[86]:

	CountryName	CountryCode	IncomeGroup
count	195	195	195
unique	195	195	4
top	Aruba	ABW	High income
freq	1	1	67

In []: