```
print("Welcome to Pandas-1")
```

```
Welcome to Pandas-1
```

```
import pandas as pd
```

```
!pip install pandas
```

```
Requirement already satisfied: pandas in /Users/nikhilsanghi/opt/anaconda3/lib/python
Requirement already satisfied: python-dateutil>=2.7.3 in /Users/nikhilsanghi/opt/anac
Requirement already satisfied: pytz>=2017.3 in /Users/nikhilsanghi/opt/anaconda3/lib/
Requirement already satisfied: numpy>=1.17.3 in /Users/nikhilsanghi/opt/anaconda3/lib
Requirement already satisfied: six>=1.5 in /Users/nikhilsanghi/opt/anaconda3/lib/pyth
WARNING: There was an error checking the latest version of pip.
```

```
!gdown 1f1rnGeuNVu_fEUzKQo0tUUW9hDPjj_YN
```

```
Downloading...
From: https://drive.google.com/uc?id=1f1rnGeuNVu_fEUzKQo0tUUW9hDPjj_YN
To: /Users/nikhilsanghi/Downloads/dsml-course-main-live/batches/May-Beg-Aug-Adv/gapmi
100%|████████████████████████████████████████| 83.8k/83.8k [00:00<00:00, 49.7MB/s]
```

```
df=pd.read_csv("/Users/nikhilsanghi/Downloads/dsml-course-main-live/batches/May-Beg-Aug-Ad
```

```
df
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
type(df)
```

```
pandas.core.frame.DataFrame
```

```
df["country"] #method1
```

```
0       Afghanistan
1       Afghanistan
2       Afghanistan
3       Afghanistan
4       Afghanistan
           ...
1699       Zimbabwe
1700       Zimbabwe
1701       Zimbabwe
1702       Zimbabwe
1703       Zimbabwe
Name: country, Length: 1704, dtype: object
```

```
df.country #method2
```

```
0       Afghanistan
1       Afghanistan
2       Afghanistan
3       Afghanistan
4       Afghanistan
           ...
1699       Zimbabwe
1700       Zimbabwe
1701       Zimbabwe
1702       Zimbabwe
1703       Zimbabwe
Name: country, Length: 1704, dtype: object
```

```
# df.name of person
```

```
# df.?
```

```
# df["?"]
```

```
# df.1dsjklad
```

```
df[["country","year"]]
```

	country	year
0	Afghanistan	1952
1	Afghanistan	1957
2	Afghanistan	1962
3	Afghanistan	1967
4	Afghanistan	1972
...	...	...
1699	Zimbabwe	1987
1700	Zimbabwe	1992

```
df
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
df.head()
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106

```
df.tail()
```

	country	year	population	continent	life_exp	gdp_cap
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

```
df.head(12)
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
5	Afghanistan	1977	14880372	Asia	38.438	786.113360
6	Afghanistan	1982	12881816	Asia	39.854	978.011439
7	Afghanistan	1987	13867957	Asia	40.822	852.395945
8	Afghanistan	1992	16317921	Asia	41.674	649.341395
9	Afghanistan	1997	22227415	Asia	41.763	635.341351
10	Afghanistan	2002	25268405	Asia	42.129	726.734055
11	Afghanistan	2007	31889923	Asia	43.828	974.580338

```
df.tail(12)
```

	country	year	population	continent	life_exp	gdp_cap
1692	Zimbabwe	1952	3080907	Africa	48.451	406.884115
1693	Zimbabwe	1957	3646340	Africa	50.469	518.764268
1694	Zimbabwe	1962	4277736	Africa	52.358	527.272182
1695	Zimbabwe	1967	4995432	Africa	53.995	569.795071
1696	Zimbabwe	1972	5861135	Africa	55.635	799.362176

```
df.tail(-10)
```

	country	year	population	continent	life_exp	gdp_cap
10	Afghanistan	2002	25268405	Asia	42.129	726.734055
11	Afghanistan	2007	31889923	Asia	43.828	974.580338
12	Albania	1952	1282697	Europe	55.230	1601.056136
13	Albania	1957	1476505	Europe	59.280	1942.284244
14	Albania	1962	1728137	Europe	64.820	2312.888958
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1694 rows × 6 columns

```
df
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030

```
df.shape
```

```
(1704, 6)
```

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

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623

```
df1=pd.DataFrame([["Afghanistan",1952,8425333,"Asia",28.801,779.445314],
                  ["Afghanistan",1957,9240934,"Asia",30.332,820.853030]],
                 columns=["country","year","population","continent","life_exp","gdp_cap"])
```

```
df1
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030

```
df2= pd.DataFrame({"country":["Afghanistan","Afghanistan"],
                   "year":[1952,1957],
                   "population":[8425333,9240934],
                   "continent":["Asia","Asia"],
                   "life_exp":[28.801,30.332],
                   "gdp_cap":[779.445314,820.853030]})
```

```
df2
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030

```
df
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623

```
df.columns
```

```
Index(['country', 'year', 'population', 'continent', 'life_exp', 'gdp_cap'],
dtype='object')
```

```
df.keys()
```

```
Index(['country', 'year', 'population', 'continent', 'life_exp', 'gdp_cap'],
dtype='object')
```

```
df['country'].head()
```

```
0    Afghanistan
1    Afghanistan
2    Afghanistan
3    Afghanistan
4    Afghanistan
Name: country, dtype: object
```

```
df[['country',"year"]].head()
```

	country	year
0	Afghanistan	1952
1	Afghanistan	1957
2	Afghanistan	1962
3	Afghanistan	1967
4	Afghanistan	1972

```
df[['gdp_cap',"year"]].head()
```

	gdp_cap	year
0	779.445314	1952
1	820.853030	1957
2	853.100710	1962
3	836.197138	1967
4	739.981106	1972

```
df["country"].unique()
```

```
array(['Afghanistan', 'Albania', 'Algeria', 'Angola', 'Argentina',
       'Australia', 'Austria', 'Bahrain', 'Bangladesh', 'Belgium',
       'Benin', 'Bolivia', 'Bosnia and Herzegovina', 'Botswana', 'Brazil',
       'Bulgaria', 'Burkina Faso', 'Burundi', 'Cambodia', 'Cameroon',
       'Canada', 'Central African Republic', 'Chad', 'Chile', 'China',
       'Colombia', 'Comoros', 'Congo, Dem. Rep.', 'Congo, Rep.',
       'Costa Rica', "Cote d'Ivoire", 'Croatia', 'Cuba', 'Czech Republic',
       'Denmark', 'Djibouti', 'Dominican Republic', 'Ecuador', 'Egypt',
       'El Salvador', 'Equatorial Guinea', 'Eritrea', 'Ethiopia',
       'Finland', 'France', 'Gabon', 'Gambia', 'Germany', 'Ghana',
       'Greece', 'Guatemala', 'Guinea', 'Guinea-Bissau', 'Haiti',
       'Honduras', 'Hong Kong, China', 'Hungary', 'Iceland', 'India',
       'Indonesia', 'Iran', 'Iraq', 'Ireland', 'Israel', 'Italy',
       'Jamaica', 'Japan', 'Jordan', 'Kenya', 'Korea, Dem. Rep.',
       'Korea, Rep.', 'Kuwait', 'Lebanon', 'Lesotho', 'Liberia', 'Libya',
       'Madagascar', 'Malawi', 'Malaysia', 'Mali', 'Mauritania',
       'Mauritius', 'Mexico', 'Mongolia', 'Montenegro', 'Morocco',
       'Mozambique', 'Myanmar', 'Namibia', 'Nepal', 'Netherlands',
       'New Zealand', 'Nicaragua', 'Niger', 'Nigeria', 'Norway', 'Oman',
       'Pakistan', 'Panama', 'Paraguay', 'Peru', 'Philippines', 'Poland',
       'Portugal', 'Puerto Rico', 'Reunion', 'Romania', 'Rwanda',
       'Sao Tome and Principe', 'Saudi Arabia', 'Senegal', 'Serbia',
       'Sierra Leone', 'Singapore', 'Slovak Republic', 'Slovenia',
       'Somalia', 'South Africa', 'Spain', 'Sri Lanka', 'Sudan',
       'Swaziland', 'Sweden', 'Switzerland', 'Syria', 'Taiwan',
       'Tanzania', 'Thailand', 'Togo', 'Trinidad and Tobago', 'Tunisia',
       'Turkey', 'Uganda', 'United Kingdom', 'United States', 'Uruguay',
       'Venezuela', 'Vietnam', 'West Bank and Gaza', 'Yemen, Rep.',
       'Zambia', 'Zimbabwe'], dtype=object)
```

```
df["country"].nunique()
```

```
142
```

```
df["country"].unique(
```

```
Object `unique` not found.
```

```
pd.unique?
```

```
df
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1704 entries, 0 to 1703
Data columns (total 6 columns):
 #   Column      Non-Null Count  Dtype  
---  ------      --------------  -----  
 0   country     1704 non-null   object 
 1   year        1704 non-null   int64  
 2   population  1704 non-null   int64  
 3   continent   1704 non-null   object 
 4   life_exp    1704 non-null   float64
 5   gdp_cap     1704 non-null   float64
dtypes: float64(2), int64(2), object(2)
memory usage: 80.0+ KB
```

```
df.describe(include="all")
```

	country	year	population	continent	life_exp	gdp_cap
count	1704	1704.00000	1.704000e+03	1704	1704.000000	1704.000000
unique	142	NaN	NaN	5	NaN	NaN
top	Afghanistan	NaN	NaN	Africa	NaN	NaN
freq	12	NaN	NaN	624	NaN	NaN

```
df["country"].value_counts()
```

```
Afghanistan          12
Pakistan             12
New Zealand          12
Nicaragua            12
Niger                12
                     ..
Eritrea              12
Equatorial Guinea    12
El Salvador          12
Egypt                12
Zimbabwe             12
Name: country, Length: 142, dtype: int64
```

```
df
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
df.rename(columns={"country":"Country"},inplace=True)
```

```
df
```

	Country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

```
df
```

	Country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
df=df.rename(columns={"year":"Year"})
df
```

	Country	Year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960

```
df
```

	Country	Year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
df
```

	country	year	population	continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...

```
df.rename({"year":"Year",
           "population":"Population",
           "continent":"Continent"
          },axis=1,inplace=True)
```

```
df
```

	Country	Year	Population	Continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
df.drop("Continent",axis=1)
```

	Country	Year	Population	life_exp	gdp_cap
0	Afghanistan	1952	8425333	28.801	779.445314
1	Afghanistan	1957	9240934	30.332	820.853030
2	Afghanistan	1962	10267083	31.997	853.100710
3	Afghanistan	1967	11537966	34.020	836.197138
4	Afghanistan	1972	13079460	36.088	739.981106
...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	62.351	706.157306

```
df
```

	Country	Year	Population	Continent	life_exp	gdp_cap
0	Afghanistan	1952	8425333	Asia	28.801	779.445314
1	Afghanistan	1957	9240934	Asia	30.332	820.853030
2	Afghanistan	1962	10267083	Asia	31.997	853.100710
3	Afghanistan	1967	11537966	Asia	34.020	836.197138
4	Afghanistan	1972	13079460	Asia	36.088	739.981106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	Africa	62.351	706.157306
1700	Zimbabwe	1992	10704340	Africa	60.377	693.420786
1701	Zimbabwe	1997	11404948	Africa	46.809	792.449960
1702	Zimbabwe	2002	11926563	Africa	39.989	672.038623
1703	Zimbabwe	2007	12311143	Africa	43.487	469.709298

1704 rows × 6 columns

```
df.drop("Continent",axis=1,inplace=True)
```

```
df
```

	Country	Year	Population	life_exp	gdp_cap
0	Afghanistan	1952	8425333	28.801	779.445314
1	Afghanistan	1957	9240934	30.332	820.853030
2	Afghanistan	1962	10267083	31.997	853.100710
3	Afghanistan	1967	11537966	34.020	836.197138
4	Afghanistan	1972	13079460	36.088	739.981106

```
df.drop(columns=["Population","Year"])
```

	Country	life_exp	gdp_cap
0	Afghanistan	28.801	779.445314
1	Afghanistan	30.332	820.853030
2	Afghanistan	31.997	853.100710
3	Afghanistan	34.020	836.197138
4	Afghanistan	36.088	739.981106
...	...	...	...
1699	Zimbabwe	62.351	706.157306
1700	Zimbabwe	60.377	693.420786
1701	Zimbabwe	46.809	792.449960
1702	Zimbabwe	39.989	672.038623
1703	Zimbabwe	43.487	469.709298

1704 rows × 3 columns

```
df
```

	Country	Year	Population	life_exp	gdp_cap
0	Afghanistan	1952	8425333	28.801	779.445314
1	Afghanistan	1957	9240934	30.332	820.853030
2	Afghanistan	1962	10267083	31.997	853.100710

```
df["new1"] = df["life_exp"]+df["gdp_cap"]
```

```
df
```

	Country	Year	Population	life_exp	gdp_cap	new
0	Afghanistan	1952	8425333	28.801	779.445314	808.246315
1	Afghanistan	1957	9240934	30.332	820.853030	851.185030
2	Afghanistan	1962	10267083	31.997	853.100710	885.097710
3	Afghanistan	1967	11537966	34.020	836.197138	870.217138
4	Afghanistan	1972	13079460	36.088	739.981106	776.069106
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	62.351	706.157306	768.508306
1700	Zimbabwe	1992	10704340	60.377	693.420786	753.797786
1701	Zimbabwe	1997	11404948	46.809	792.449960	839.258960
1702	Zimbabwe	2002	11926563	39.989	672.038623	712.027623
1703	Zimbabwe	2007	12311143	43.487	469.709298	513.196298

1704 rows × 6 columns

```
df
```

	Country	Year	Population	life_exp	gdp_cap	new	new1
0	Afghanistan	1952	8425333	28.801	779.445314	808.246315	808.246315

```
df["new1"] = df["life_exp"]+100
```

2	Afghanistan	1962	10267083	31.997	853.100710	885.097710	885.097710

```
df
```

	Country	Year	Population	life_exp	gdp_cap	new	new1
0	Afghanistan	1952	8425333	28.801	779.445314	808.246315	128.801
1	Afghanistan	1957	9240934	30.332	820.853030	851.185030	130.332
2	Afghanistan	1962	10267083	31.997	853.100710	885.097710	131.997
3	Afghanistan	1967	11537966	34.020	836.197138	870.217138	134.020
4	Afghanistan	1972	13079460	36.088	739.981106	776.069106	136.088
...	...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	62.351	706.157306	768.508306	162.351
1700	Zimbabwe	1992	10704340	60.377	693.420786	753.797786	160.377
1701	Zimbabwe	1997	11404948	46.809	792.449960	839.258960	146.809
1702	Zimbabwe	2002	11926563	39.989	672.038623	712.027623	139.989
1703	Zimbabwe	2007	12311143	43.487	469.709298	513.196298	143.487

1704 rows × 7 columns

```
df.drop(columns=["new","new1"],inplace=True)
```

```
df
```

	Country	Year	Population	life_exp	gdp_cap
0	Afghanistan	1952	8425333	28.801	779.445314
1	Afghanistan	1957	9240934	30.332	820.853030
2	Afghanistan	1962	10267083	31.997	853.100710

```
df["naya"]=[i for i in range(1,1705)]
df
```

	Country	Year	Population	life_exp	gdp_cap	naya
0	Afghanistan	1952	8425333	28.801	779.445314	1
1	Afghanistan	1957	9240934	30.332	820.853030	2
2	Afghanistan	1962	10267083	31.997	853.100710	3
3	Afghanistan	1967	11537966	34.020	836.197138	4
4	Afghanistan	1972	13079460	36.088	739.981106	5
...	...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	62.351	706.157306	1700
1700	Zimbabwe	1992	10704340	60.377	693.420786	1701
1701	Zimbabwe	1997	11404948	46.809	792.449960	1702
1702	Zimbabwe	2002	11926563	39.989	672.038623	1703
1703	Zimbabwe	2007	12311143	43.487	469.709298	1704

1704 rows × 6 columns

```
df.drop(columns=["naya"],inplace=True)
```

```
df
```

	Country	Year	Population	life_exp	gdp_cap
0	Afghanistan	1952	8425333	28.801	779.445314
1	Afghanistan	1957	9240934	30.332	820.853030

```
df.columns
```

```
Index(['Country', 'Year', 'Population', 'life_exp', 'gdp_cap'], dtype='object')
```

```
df.columns[-1]
```

```
'gdp_cap'
```

1700	Zimbabwe	1992	10704340	60.377	693.420786

```
df.columns[3]
```

```
'life_exp'
```

1703	Zimbabwe	2007	12311143	43.487	469.709298

```
Given a dataframe consisting of 5 columns,
which is the correct code to drop the 3rd column from the start?


f.drop(df.columns[-3], axis=1)


df.drop(df.columns[3], axis=1)



df.drop(df.columns[-3], axis=0)


D
df.drop(df.columns[3], axis=0)


df["Country"]
```

```
0       Afghanistan
1       Afghanistan
2       Afghanistan
3       Afghanistan
4       Afghanistan
           ...
1699       Zimbabwe
1700       Zimbabwe
1701       Zimbabwe
1702       Zimbabwe
1703       Zimbabwe
Name: Country, Length: 1704, dtype: object
```

```
type(df["Country"])
```

```
pandas.core.series.Series
```

```
ser=df["Country"]
ser
```

```
0       Afghanistan
1       Afghanistan
2       Afghanistan
3       Afghanistan
4       Afghanistan
           ...
1699       Zimbabwe
1700       Zimbabwe
1701       Zimbabwe
1702       Zimbabwe
1703       Zimbabwe
Name: Country, Length: 1704, dtype: object
```

```
ser[3]
```

```
'Afghanistan'
```

```
ser[3:6]
```

```
3    Afghanistan
4    Afghanistan
5    Afghanistan
Name: Country, dtype: object
```

```
ser.index
```

```
RangeIndex(start=0, stop=1704, step=1)
```

```
ser.index=[i for i in range(1,1705)]
```

```
ser
```

```
1       Afghanistan
2       Afghanistan
3       Afghanistan
4       Afghanistan
5       Afghanistan
           ...
1700       Zimbabwe
1701       Zimbabwe
1702       Zimbabwe
1703       Zimbabwe
```

```
1704       Zimbabwe
Name: Country, Length: 1704, dtype: object
```

```
df
```

	Country	Year	Population	life_exp	gdp_cap
0	Afghanistan	1952	8425333	28.801	779.445314
1	Afghanistan	1957	9240934	30.332	820.853030
2	Afghanistan	1962	10267083	31.997	853.100710
3	Afghanistan	1967	11537966	34.020	836.197138
4	Afghanistan	1972	13079460	36.088	739.981106
...	...	...	...	...	...
1699	Zimbabwe	1987	9216418	62.351	706.157306
1700	Zimbabwe	1992	10704340	60.377	693.420786
1701	Zimbabwe	1997	11404948	46.809	792.449960
1702	Zimbabwe	2002	11926563	39.989	672.038623
1703	Zimbabwe	2007	12311143	43.487	469.709298

1704 rows × 5 columns

```
ser
```

```
1       Afghanistan
2       Afghanistan
3       Afghanistan
4       Afghanistan
5       Afghanistan
           ...
1700       Zimbabwe
1701       Zimbabwe
1702       Zimbabwe
1703       Zimbabwe
1704       Zimbabwe
Name: Country, Length: 1704, dtype: object
```

```
ser[0]
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
~/opt/anaconda3/lib/python3.9/site-packages/pandas/core/indexes/base.py in get_loc(se
   3360             try:
-> 3361                 return self._engine.get_loc(casted_key)
   3362             except KeyError as err:

 5 frames

pandas/_libs/hashtable_class_helper.pxi in pandas._libs.hashtable.Int64HashTable.get_

pandas/_libs/hashtable_class_helper.pxi in pandas._libs.hashtable.Int64HashTable.get_

KeyError: 0

The above exception was the direct cause of the following exception:

KeyError                                  Traceback (most recent call last)
~/opt/anaconda3/lib/python3.9/site-packages/pandas/core/indexes/base.py in get_loc(se
   3361                 return self._engine.get_loc(casted_key)
   3362             except KeyError as err:
-> 3363                 raise KeyError(key) from err
```

```
ser
```

```
1       Afghanistan
2       Afghanistan
3       Afghanistan
4       Afghanistan
5       Afghanistan
           ...
1700       Zimbabwe
1701       Zimbabwe
1702       Zimbabwe
1703       Zimbabwe
1704       Zimbabwe
Name: Country, Length: 1704, dtype: object
```

```
ser[0:3]
```

```
1    Afghanistan
2    Afghanistan
3    Afghanistan
Name: Country, dtype: object
```

```
ser[1:4]
```

```
2    Afghanistan
3    Afghanistan
4    Afghanistan
Name: Country, dtype: object
```

```
ser1=pd.Series(["a","b","c","d","e","f","g","h"])
```

```
ser1
```

```
0    a
1    b
2    c
3    d
4    e
5    f
6    g
7    h
dtype: object
```

```
ser1[0]
```

```
'a'
```

```
ser1[1:4]
```

```
1    b
2    c
3    d
dtype: object
```

```
ser2=pd.Series(["a","b","c","d","e","f","g","h"],index=[1,2,3,4,5,6,7,8])
ser2
```

```
1    a
2    b
3    c
4    d
5    e
6    f
7    g
8    h
dtype: object
```

```
ser2[3] #using explicit indexes
```

```
'c'
```

```
ser2[2:5] #using implicit indexes
```

```
3    c
4    d
5    e
dtype: object
```

```
ser2[1:4]
```

```
2    b
3    c
4    d
dtype: object
```

```
ser3=pd.Series(["a","b","c","d","e","f","g","h"],index=[1.0,2.0,3.0,4.0,5.0,6.0,7.0,8.0])
ser3
```

```
1.0    a
2.0    b
3.0    c
4.0    d
5.0    e
6.0    f
7.0    g
8.0    h
dtype: object
```

```
ser3=pd.Series(["a","b","c","d","e","f","g","h"],index=["b","c","d","e","f","g","h","i"])
ser3
```

```
b    a
c    b
d    c
e    d
f    e
g    f
h    g
i    h
dtype: object
```

```
ser3["d"]
```

```
'c'
```

```
ser3["b":"d"]
```

```
b    a
c    b
d    c
dtype: object
```

```
# loc( explicit) , iloc(implicit)
```

```
ser2
```

```
1    a
2    b
3    c
4    d
5    e
6    f
```

```
7    g
8    h
dtype: object
```

```
ser2.loc[5]
```

```
'e'
```

```
ser2.loc[4:6]
```

```
4    d
5    e
6    f
dtype: object
```

```
ser3
```

```
b    a
c    b
d    c
e    d
f    e
g    f
h    g
i    h
dtype: object
```

```
ser3["f"]
```

```
'e'
```

```
ser3.loc["c":"g"]
```

```
c    b
d    c
e    d
f    e
g    f
dtype: object
```

```
ser2
```

```
1    a
2    b
3    c
4    d
5    e
6    f
7    g
8    h
dtype: object
```

```
ser2.iloc[3]
```

```
'd'
```

```
ser2.iloc[1:4]
```

```
2    b
3    c
4    d
dtype: object
```

```
ser3
```

```
b    a
c    b
d    c
e    d
f    e
g    f
h    g
i    h
dtype: object
```

```
ser3.iloc[4]
```

```
'e'
```

```
ser3.iloc[2:7]
```

```
d    c
e    d
f    e
g    f
h    g
dtype: object
```

```
# ser3.iloc["d":"h"]
```

```
ser3.loc["d":"h"]
```

```
d    c
e    d
f    e
g    f
h    g
dtype: object
```

```
# ser3[2:5]
```

```
# ser3["d":"g"]
```