```
import os
import pandas as pd
import plotly.express as px
import plotly.offline as pyo

df = pd.read_csv(r'C:\STUDY\DataScience_Course\GDP_Analysis\gdp.csv')
df.head()
```

```
  Country Name Country Code  Year         Value
0   Arab World          ARB  1968  2.576068e+10
1   Arab World          ARB  1969  2.843420e+10
2   Arab World          ARB  1970  3.138550e+10
3   Arab World          ARB  1971  3.642691e+10
4   Arab World          ARB  1972  4.331606e+10
```

Check Description of Each Column

```
df['Country Name'].describe()
```

```
count                    11507
unique                     256
top       Hong Kong SAR, China
freq                        57
Name: Country Name, dtype: object
```

```
df['Country Code'].describe()
```

```
count     11507
unique      256
top         HKG
freq         57
Name: Country Code, dtype: object
```

```
df['Year'].min()
```

```
1960
```

```
df['Year'].max()
```

```
2016
```

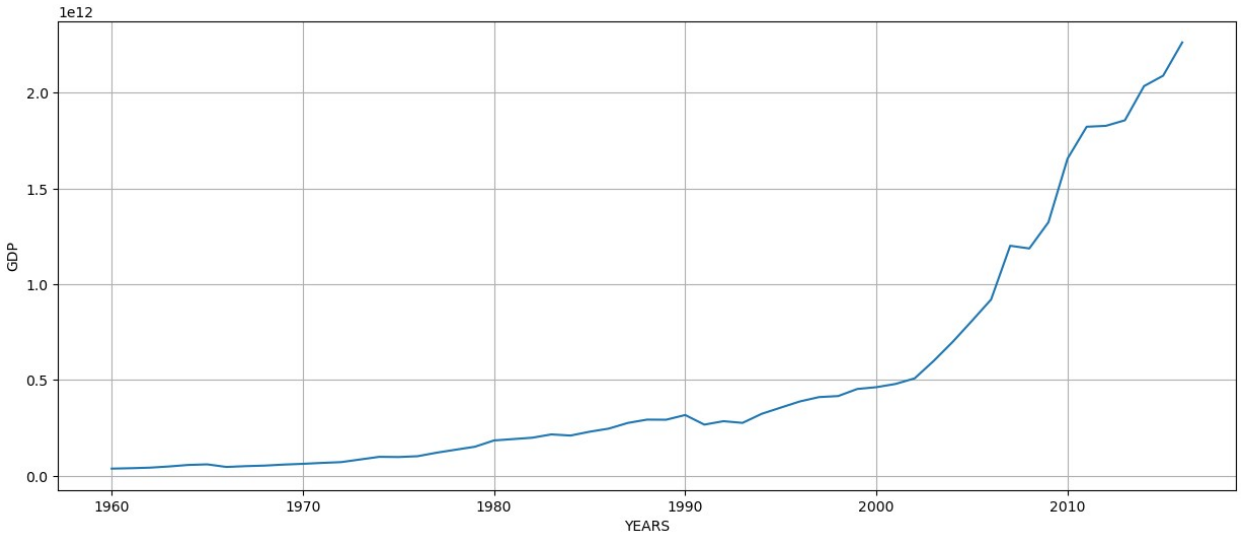
Analysing India

```
df_pr = df[df['Country Name'] == 'India']

df_pr.plot(kind = 'line', x = 'Year', y = 'Value',
           figsize = (15,6),
           legend = False,
```

```
            grid = True,
            ylabel = 'GDP',
            xlabel = 'YEARS')
```

```
<Axes: xlabel='YEARS', ylabel='GDP'>
```




```
df_pr
```

	Country Name	Country Code	Year	Value
6074	India	IND	1960	3.653593e+10
6075	India	IND	1961	3.870910e+10
6076	India	IND	1962	4.159907e+10
6077	India	IND	1963	4.777600e+10
6078	India	IND	1964	5.572687e+10
6079	India	IND	1965	5.876042e+10
6080	India	IND	1966	4.525364e+10
6081	India	IND	1967	4.946617e+10
6082	India	IND	1968	5.237732e+10
6083	India	IND	1969	5.766833e+10
6084	India	IND	1970	6.158980e+10
6085	India	IND	1971	6.645256e+10
6086	India	IND	1972	7.050991e+10
6087	India	IND	1973	8.437454e+10
6088	India	IND	1974	9.819828e+10
6089	India	IND	1975	9.715922e+10
6090	India	IND	1976	1.013470e+11
6091	India	IND	1977	1.198667e+11
6092	India	IND	1978	1.354688e+11
6093	India	IND	1979	1.509508e+11
6094	India	IND	1980	1.838399e+11
6095	India	IND	1981	1.909095e+11
6096	India	IND	1982	1.980377e+11

```
6097        India           IND  1983  2.153508e+11
6098        India           IND  1984  2.093282e+11
6099        India           IND  1985  2.294103e+11
6100        India           IND  1986  2.456647e+11
6101        India           IND  1987  2.753114e+11
6102        India           IND  1988  2.926327e+11
6103        India           IND  1989  2.920933e+11
6104        India           IND  1990  3.166973e+11
6105        India           IND  1991  2.665023e+11
6106        India           IND  1992  2.843639e+11
6107        India           IND  1993  2.755704e+11
6108        India           IND  1994  3.229099e+11
6109        India           IND  1995  3.554760e+11
6110        India           IND  1996  3.876560e+11
6111        India           IND  1997  4.103203e+11
6112        India           IND  1998  4.157309e+11
6113        India           IND  1999  4.527000e+11
6114        India           IND  2000  4.621468e+11
6115        India           IND  2001  4.789655e+11
6116        India           IND  2002  5.080690e+11
6117        India           IND  2003  5.995929e+11
6118        India           IND  2004  6.996889e+11
6119        India           IND  2005  8.089011e+11
6120        India           IND  2006  9.203165e+11
6121        India           IND  2007  1.201112e+12
6122        India           IND  2008  1.186953e+12
6123        India           IND  2009  1.323940e+12
6124        India           IND  2010  1.656617e+12
6125        India           IND  2011  1.823050e+12
6126        India           IND  2012  1.827638e+12
6127        India           IND  2013  1.856722e+12
6128        India           IND  2014  2.035393e+12
6129        India           IND  2015  2.089865e+12
6130        India           IND  2016  2.263792e+12
```

```
round(((5501 - 4331) / 4331)*100,2)
```

```
27.01
```

```
data = df_pr.values

gdp_change = [0]

for i in range(1,len(data)):

    prev = data[i-1][3]
    cur = data[i][3]

    gdp_change.append(round(((cur - prev) / prev)*100,2))
```

```
df_pr.assign(GDP = gdp_change)
```

	Country Name	Country Code	Year	Value	GDP
6074	India	IND	1960	3.653593e+10	0.00
6075	India	IND	1961	3.870910e+10	5.95
6076	India	IND	1962	4.159907e+10	7.47
6077	India	IND	1963	4.777600e+10	14.85
6078	India	IND	1964	5.572687e+10	16.64
6079	India	IND	1965	5.876042e+10	5.44
6080	India	IND	1966	4.525364e+10	-22.99
6081	India	IND	1967	4.946617e+10	9.31
6082	India	IND	1968	5.237732e+10	5.89
6083	India	IND	1969	5.766833e+10	10.10
6084	India	IND	1970	6.158980e+10	6.80
6085	India	IND	1971	6.645256e+10	7.90
6086	India	IND	1972	7.050991e+10	6.11
6087	India	IND	1973	8.437454e+10	19.66
6088	India	IND	1974	9.819828e+10	16.38
6089	India	IND	1975	9.715922e+10	-1.06
6090	India	IND	1976	1.013470e+11	4.31
6091	India	IND	1977	1.198667e+11	18.27
6092	India	IND	1978	1.354688e+11	13.02
6093	India	IND	1979	1.509508e+11	11.43
6094	India	IND	1980	1.838399e+11	21.79
6095	India	IND	1981	1.909095e+11	3.85
6096	India	IND	1982	1.980377e+11	3.73
6097	India	IND	1983	2.153508e+11	8.74
6098	India	IND	1984	2.093282e+11	-2.80
6099	India	IND	1985	2.294103e+11	9.59
6100	India	IND	1986	2.456647e+11	7.09
6101	India	IND	1987	2.753114e+11	12.07
6102	India	IND	1988	2.926327e+11	6.29
6103	India	IND	1989	2.920933e+11	-0.18
6104	India	IND	1990	3.166973e+11	8.42
6105	India	IND	1991	2.665023e+11	-15.85
6106	India	IND	1992	2.843639e+11	6.70
6107	India	IND	1993	2.755704e+11	-3.09
6108	India	IND	1994	3.229099e+11	17.18
6109	India	IND	1995	3.554760e+11	10.09
6110	India	IND	1996	3.876560e+11	9.05
6111	India	IND	1997	4.103203e+11	5.85
6112	India	IND	1998	4.157309e+11	1.32
6113	India	IND	1999	4.527000e+11	8.89
6114	India	IND	2000	4.621468e+11	2.09
6115	India	IND	2001	4.789655e+11	3.64
6116	India	IND	2002	5.080690e+11	6.08
6117	India	IND	2003	5.995929e+11	18.01
6118	India	IND	2004	6.996889e+11	16.69
6119	India	IND	2005	8.089011e+11	15.61
6120	India	IND	2006	9.203165e+11	13.77

```
6121        India          IND  2007  1.201112e+12  30.51
6122        India          IND  2008  1.186953e+12  -1.18
6123        India          IND  2009  1.323940e+12  11.54
6124        India          IND  2010  1.656617e+12  25.13
6125        India          IND  2011  1.823050e+12  10.05
6126        India          IND  2012  1.827638e+12   0.25
6127        India          IND  2013  1.856722e+12   1.59
6128        India          IND  2014  2.035393e+12   9.62
6129        India          IND  2015  2.089865e+12   2.68
6130        India          IND  2016  2.263792e+12   8.32
```

Finding GDP Growth of a country

```
df_pr = df[df['Country Name'] == 'India']

data = df_pr.values

gdp_change = [0]

for i in range(1,len(data)):

    prev = data[i-1][3]
    cur = data[i][3]

    gdp_change.append(round(((cur - prev) / prev)*100,2))

df_pr = df_pr.assign(GDP = gdp_change)
```

Finding GDP Growth of Every country

```
final_data = []

for country_name in df['Country Name'].unique():

    df_pr = df[df['Country Name'] == country_name]

    data = df_pr.values
    gdp_change = [0]

    for i in range(1,len(data)):

        prev = data[i-1][3]
        cur = data[i][3]

        gdp_change.append(round(((cur - prev) / prev)*100,2))
```

```
    df_pr = df_pr.assign(GDP = gdp_change)
    final_data.append(df_pr)

df = pd.concat(final_data, axis = 0)

df.head()
```

	Country Name	Country Code	Year	Value	GDP
0	Arab World	ARB	1968	2.576068e+10	0.00
1	Arab World	ARB	1969	2.843420e+10	10.38
2	Arab World	ARB	1970	3.138550e+10	10.38
3	Arab World	ARB	1971	3.642691e+10	16.06
4	Arab World	ARB	1972	4.331606e+10	18.91

```
df.groupby('Country Name').max()['Value'].sort_values(ascending =
False).head(50)
```

Country Name	
World	7.904923e+13
High income	5.036240e+13
OECD members	4.937008e+13
Post-demographic dividend	4.673504e+13
IDA & IBRD total	2.948247e+13
Low & middle income	2.870476e+13
Middle income	2.829277e+13
IBRD only	2.739661e+13
Europe & Central Asia	2.365470e+13
East Asia & Pacific	2.248043e+13
Upper middle income	2.221220e+13
North America	2.016030e+13
Late-demographic dividend	1.970310e+13
European Union	1.913667e+13
United States	1.862448e+13
Euro area	1.411818e+13
East Asia & Pacific (excluding high income)	1.351244e+13
East Asia & Pacific (IDA & IBRD countries)	1.348649e+13
China	1.119915e+13
Early-demographic dividend	1.052987e+13
Latin America & Caribbean	6.391550e+12
Lower middle income	6.263373e+12
Japan	6.203213e+12
Latin America & the Caribbean (IDA & IBRD countries)	6.171392e+12
Latin America & Caribbean (excluding high income)	5.905518e+12
Europe & Central Asia (IDA & IBRD countries)	4.893444e+12
Europe & Central Asia (excluding high income)	4.369243e+12
Germany	3.890607e+12
Middle East & North Africa	3.563559e+12
United Kingdom	3.074360e+12
France	2.923466e+12
Arab World	2.906616e+12

```
South Asia (IDA & IBRD)                                    2.892481e+12
South Asia                                                 2.892481e+12
Brazil                                                     2.616202e+12
Italy                                                      2.390729e+12
Russian Federation                                         2.297128e+12
India                                                      2.263792e+12
IDA total                                                  2.094666e+12
Canada                                                     1.842628e+12
Sub-Saharan Africa                                         1.780285e+12
Sub-Saharan Africa (IDA & IBRD countries)                  1.780285e+12
Sub-Saharan Africa (excluding high income)                 1.778862e+12
Middle East & North Africa (excluding high income)         1.681555e+12
Middle East & North Africa (IDA & IBRD countries)          1.670274e+12
Spain                                                      1.635015e+12
Australia                                                  1.567179e+12
Central Europe and the Baltics                             1.524160e+12
Pre-demographic dividend                                   1.496971e+12
Korea, Rep.                                                1.411334e+12
Name: Value, dtype: float64
```

Plotting Graphs Using Plotly

```
final_data = []

for country_name in df['Country Name'].unique():

    df_pr = df[df['Country Name'] == country_name]

    data = df_pr.values
    gdp_change = [0]

    for i in range(1,len(data)):

        prev = data[i-1][3]
        cur = data[i][3]

        gdp_change.append(round(((cur - prev) / prev)*100,2))

    df_pr = df_pr.assign(GDP = gdp_change)
    final_data.append(df_pr)

df = pd.concat(final_data, axis = 0)

df.head()
```

```
  Country Name Country Code  Year          Value    GDP
0   Arab World          ARB  1968  2.576068e+10   0.00
1   Arab World          ARB  1969  2.843420e+10  10.38
2   Arab World          ARB  1970  3.138550e+10  10.38
```

```
3   Arab World          ARB  1971  3.642691e+10  16.06
4   Arab World          ARB  1972  4.331606e+10  18.91

df_pr = df[df['Country Name'] == 'World']

fig = px.line(df_pr, x = 'Year', y = 'Value', title = 'World GDP
Analysis')

fig
```


```
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pyo.plot(fig, filename = 'World GDP.html')
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```
'World GDP.html'
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df_pr = df[df['Country Name'] == 'India']

fig = px.line(df_pr, x = 'Year', y = 'Value', title = 'Indian GDP Analysis')


pyo.plot(fig, filename = 'India.html')
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```
'India.html'
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fig = px.line(df_pr, x = 'Year', y = 'Value', title = 'Indian GDP Analysis', range_y = [0, 4000000000000])

fig
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