In [1]:
```
import numpy as np
import pandas as pd
```

In [2]:
```
a=pd.read_csv(r"C:\Users\user\Downloads\2015 - 2015.csv")
a
```

Out[2]:

	Country	Region	Happiness Rank	Happiness Score	Standard Error	Economy (GDP per Capita)	Family	Health (Life Expectancy)	Free
0	Switzerland	Western Europe	1	7.587	0.03411	1.39651	1.34951	0.94143	0.6
1	Iceland	Western Europe	2	7.561	0.04884	1.30232	1.40223	0.94784	0.6
2	Denmark	Western Europe	3	7.527	0.03328	1.32548	1.36058	0.87464	0.6
3	Norway	Western Europe	4	7.522	0.03880	1.45900	1.33095	0.88521	0.6
4	Canada	North America	5	7.427	0.03553	1.32629	1.32261	0.90563	0.6
...	...	...	...	...	...	...	...	...	
153	Rwanda	Sub-Saharan Africa	154	3.465	0.03464	0.22208	0.77370	0.42864	0.5
154	Benin	Sub-Saharan Africa	155	3.340	0.03656	0.28665	0.35386	0.31910	0.4
155	Syria	Middle East and Northern Africa	156	3.006	0.05015	0.66320	0.47489	0.72193	0.1
156	Burundi	Sub-Saharan Africa	157	2.905	0.08658	0.01530	0.41587	0.22396	0.1
157	Togo	Sub-Saharan Africa	158	2.839	0.06727	0.20868	0.13995	0.28443	0.3

158 rows × 12 columns

In [3]:
```
a.mean()
```

Out[3]:
```
Happiness Rank                   79.493671
Happiness Score                   5.375734
Standard Error                    0.047885
Economy (GDP per Capita)          0.846137
Family                            0.991046
Health (Life Expectancy)          0.630259
Freedom                           0.428615
Trust (Government Corruption)     0.143422
Generosity                        0.237296
Dystopia Residual                 2.098977
dtype: float64
```

In [4]:
```
a.median()
```

Out[4]:
```
Happiness Rank                   79.500000
Happiness Score                   5.232500
Standard Error                    0.043940
Economy (GDP per Capita)          0.910245
Family                            1.029510
Health (Life Expectancy)          0.696705
Freedom                           0.435515
Trust (Government Corruption)     0.107220
Generosity                        0.216130
Dystopia Residual                 2.095415
dtype: float64
```

In [5]:
```
a.mode()
```

Out[5]:

	Country	Region	Happiness Rank	Happiness Score	Standard Error	Economy (GDP per Capita)	Family	Health (Life Expectancy)	Free
0	Afghanistan	Sub-Saharan Africa	82.0	5.192	0.03751	0.00000	0.00000	0.92356	0.0
1	Albania	NaN	NaN	NaN	0.03780	0.01530	0.13995	NaN	0.0
2	Algeria	NaN	NaN	NaN	0.04394	0.01604	0.30285	NaN	0.0
3	Angola	NaN	NaN	NaN	0.04934	0.06940	0.35386	NaN	0.1
4	Argentina	NaN	NaN	NaN	0.05051	0.07120	0.38174	NaN	0.1
...	...	...	...	...	...	...	...	...	
153	Venezuela	NaN	NaN	NaN	NaN	1.45900	1.34043	NaN	0.0
154	Vietnam	NaN	NaN	NaN	NaN	1.52186	1.34951	NaN	0.0
155	Yemen	NaN	NaN	NaN	NaN	1.55422	1.36058	NaN	0.0
156	Zambia	NaN	NaN	NaN	NaN	1.56391	1.36948	NaN	0.0
157	Zimbabwe	NaN	NaN	NaN	NaN	1.69042	1.40223	NaN	0.0

158 rows × 12 columns

In [6]:
```
a.describe()
```

Out[6]:

	Happiness Rank	Happiness Score	Standard Error	Economy (GDP per Capita)	Family	Health (Life Expectancy)	Freedom	(Go C
count	158.000000	158.000000	158.000000	158.000000	158.000000	158.000000	158.000000	1
mean	79.493671	5.375734	0.047885	0.846137	0.991046	0.630259	0.428615	
std	45.754363	1.145010	0.017146	0.403121	0.272369	0.247078	0.150693	
min	1.000000	2.839000	0.018480	0.000000	0.000000	0.000000	0.000000	
25%	40.250000	4.526000	0.037268	0.545808	0.856823	0.439185	0.328330	
50%	79.500000	5.232500	0.043940	0.910245	1.029510	0.696705	0.435515	
75%	118.750000	6.243750	0.052300	1.158448	1.214405	0.811013	0.549092	
max	158.000000	7.587000	0.136930	1.690420	1.402230	1.025250	0.669730	

In [7]:
```
a.sum()
```

Out[7]:
```
Country                          SwitzerlandIcelandDenmarkNorwayCanadaFinland
Ne...
Region                           Western EuropeWestern EuropeWestern EuropeWe
st...
Happiness Rank                                                              
12560
Happiness Score                                                          84
9.366
Standard Error                                                            7.
56579
Economy (GDP per Capita)                                                133.
68968
Family                                                                  156.
58526
Health (Life Expectancy)                                                 99.
58098
Freedom                                                                  67.
72116
Trust (Government Corruption)                                            22.
66065
Generosity                                                               37.
49269
Dystopia Residual                                                       331.
63833
dtype: object
```

In [8]:
```
a.cumsum()
```

Out[8]:

	Country	Region	Happiness Rank	Happiness Score	Sta
0	Switzerland	Western Europe	1	7.587	0
1	SwitzerlandIceland	Western EuropeWestern Europe	3	15.148	0.
2	SwitzerlandIcelandDenmark	Western EuropeWestern EuropeWestern Europe	6	22.675	0
3	SwitzerlandIcelandDenmarkNorway	Western EuropeWestern EuropeWestern EuropeWest...	10	30.197	0.
4	SwitzerlandIcelandDenmarkNorwayCanada	Western EuropeWestern EuropeWestern EuropeWest...	15	37.624	0.
...	...	...	...	...	
153	SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...	Western EuropeWestern EuropeWestern EuropeWest...	11934	837.276	7.
154	SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...	Western EuropeWestern EuropeWestern EuropeWest...	12089	840.616	7.
155	SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...	Western EuropeWestern EuropeWestern EuropeWest...	12245	843.622	7
156	SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...	Western EuropeWestern EuropeWestern EuropeWest...	12402	846.527	7.
157	SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...	Western EuropeWestern EuropeWestern EuropeWest...	12560	849.366	7.

158 rows × 12 columns

In [9]:
```
a.count()
```

Out[9]:
```
Country                          158
Region                           158
Happiness Rank                   158
Happiness Score                  158
Standard Error                   158
Economy (GDP per Capita)         158
Family                           158
Health (Life Expectancy)         158
Freedom                          158
Trust (Government Corruption)    158
Generosity                       158
Dystopia Residual                158
dtype: int64
```

In [10]:
```
a.min()
```

Out[10]:
```
Country                                  Afghanistan
Region                       Australia and New Zealand
Happiness Rank                                     1
Happiness Score                                2.839
Standard Error                               0.01848
Economy (GDP per Capita)                         0.0
Family                                           0.0
Health (Life Expectancy)                         0.0
Freedom                                          0.0
Trust (Government Corruption)                    0.0
Generosity                                       0.0
Dystopia Residual                            0.32858
dtype: object
```

In [11]:
```
a.max()
```

Out[11]:
```
Country                            Zimbabwe
Region                       Western Europe
Happiness Rank                          158
Happiness Score                       7.587
Standard Error                      0.13693
Economy (GDP per Capita)            1.69042
Family                              1.40223
Health (Life Expectancy)            1.02525
Freedom                             0.66973
Trust (Government Corruption)       0.55191
Generosity                          0.79588
Dystopia Residual                   3.60214
dtype: object
```

In [12]:
```
from numpy import cov
```

In [15]:
```
d1=a['Happiness Rank']
d2=a['Family']
d1
d2
```

Out[15]:
```
0      1.34951
1      1.40223
2      1.36058
3      1.33095
4      1.32261
        ...
153    0.77370
154    0.35386
155    0.47489
156    0.41587
157    0.13995
Name: Family, Length: 158, dtype: float64
```

In [16]:
```
cov(d1,d2)
```

Out[16]:
```
array([[ 2.09346174e+03, -9.14272003e+00],
       [-9.14272003e+00,  7.41849190e-02]])
```

In [17]:
```
from scipy.stats import pearsonr
print(pearsonr(d1,d2))
```

```
(-0.7336435317250533, 5.779193515088411e-28)
```

In [18]:
```
from scipy.stats import spearmanr
print(spearmanr(d1,d2))
```

```
SpearmanrResult(correlation=-0.7700379625427317, pvalue=2.9384844521125006e-32)
```

In [ ]:
```

```