**import** numpy **as** np

In [2]:

print("Hello world")

Hello world

In [3]:

a**=**int(input())

b**=**int(input())

c**=**a**+**b

print("The sum",c)

5

6

The sum 11

**numpy - numerical analysis and calculations**

In [4]:

a**=**np**.**array([1,2,3])

print (a)

[1 2 3]

In [5]:

b**=**np**.**array([[10,20,30],[40,50,60]])

print(b)

[[10 20 30]

[40 50 60]]

In [6]:

c**=**np**.**ones(3)

print(c)

[1. 1. 1.]

In [7]:

e**=**np**.**arange(5)

print(e)

[0 1 2 3 4]

In [9]:

g**=**np**.**arange(20,1,**-**2)

print(g)

[20 18 16 14 12 10 8 6 4 2]

In [10]:

print(np**.**ones(4,dtype**=**np**.**int64))

[1 1 1 1]

In [11]:

x **=** np**.**linspace(0,18,num**=**100)

print(x)

[ 0. 0.18181818 0.36363636 0.54545455 0.72727273 0.90909091

1.09090909 1.27272727 1.45454545 1.63636364 1.81818182 2.

2.18181818 2.36363636 2.54545455 2.72727273 2.90909091 3.09090909

3.27272727 3.45454545 3.63636364 3.81818182 4. 4.18181818

4.36363636 4.54545455 4.72727273 4.90909091 5.09090909 5.27272727

5.45454545 5.63636364 5.81818182 6. 6.18181818 6.36363636

6.54545455 6.72727273 6.90909091 7.09090909 7.27272727 7.45454545

7.63636364 7.81818182 8. 8.18181818 8.36363636 8.54545455

8.72727273 8.90909091 9.09090909 9.27272727 9.45454545 9.63636364

9.81818182 10. 10.18181818 10.36363636 10.54545455 10.72727273

10.90909091 11.09090909 11.27272727 11.45454545 11.63636364 11.81818182

12. 12.18181818 12.36363636 12.54545455 12.72727273 12.90909091

13.09090909 13.27272727 13.45454545 13.63636364 13.81818182 14.

14.18181818 14.36363636 14.54545455 14.72727273 14.90909091 15.09090909

15.27272727 15.45454545 15.63636364 15.81818182 16. 16.18181818

16.36363636 16.54545455 16.72727273 16.90909091 17.09090909 17.27272727

17.45454545 17.63636364 17.81818182 18. ]

In [12]:

**import** numpy **as** np

**import** pandas **as** pd

In [13]:

data **=**pd**.**read\_csv(r"C:\Users\user\Desktop\2015.csv")

In [14]:

data**.**head(7)

Out[14]:

|  | **Country** | **Region** | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | Switzerland | Western Europe | 1 | 7.587 | 0.03411 | 1.39651 | 1.34951 | 0.94143 | 0.66557 | 0.41978 | 0.29678 | 2.51738 |
| **1** | Iceland | Western Europe | 2 | 7.561 | 0.04884 | 1.30232 | 1.40223 | 0.94784 | 0.62877 | 0.14145 | 0.43630 | 2.70201 |
| **2** | Denmark | Western Europe | 3 | 7.527 | 0.03328 | 1.32548 | 1.36058 | 0.87464 | 0.64938 | 0.48357 | 0.34139 | 2.49204 |
| **3** | Norway | Western Europe | 4 | 7.522 | 0.03880 | 1.45900 | 1.33095 | 0.88521 | 0.66973 | 0.36503 | 0.34699 | 2.46531 |
| **4** | Canada | North America | 5 | 7.427 | 0.03553 | 1.32629 | 1.32261 | 0.90563 | 0.63297 | 0.32957 | 0.45811 | 2.45176 |
| **5** | Finland | Western Europe | 6 | 7.406 | 0.03140 | 1.29025 | 1.31826 | 0.88911 | 0.64169 | 0.41372 | 0.23351 | 2.61955 |
| **6** | Netherlands | Western Europe | 7 | 7.378 | 0.02799 | 1.32944 | 1.28017 | 0.89284 | 0.61576 | 0.31814 | 0.47610 | 2.46570 |

In [15]:

data**.**tail(6)

Out[15]:

|  | **Country** | **Region** | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **152** | Afghanistan | Southern Asia | 153 | 3.575 | 0.03084 | 0.31982 | 0.30285 | 0.30335 | 0.23414 | 0.09719 | 0.36510 | 1.95210 |
| **153** | Rwanda | Sub-Saharan Africa | 154 | 3.465 | 0.03464 | 0.22208 | 0.77370 | 0.42864 | 0.59201 | 0.55191 | 0.22628 | 0.67042 |
| **154** | Benin | Sub-Saharan Africa | 155 | 3.340 | 0.03656 | 0.28665 | 0.35386 | 0.31910 | 0.48450 | 0.08010 | 0.18260 | 1.63328 |
| **155** | Syria | Middle East and Northern Africa | 156 | 3.006 | 0.05015 | 0.66320 | 0.47489 | 0.72193 | 0.15684 | 0.18906 | 0.47179 | 0.32858 |
| **156** | Burundi | Sub-Saharan Africa | 157 | 2.905 | 0.08658 | 0.01530 | 0.41587 | 0.22396 | 0.11850 | 0.10062 | 0.19727 | 1.83302 |
| **157** | Togo | Sub-Saharan Africa | 158 | 2.839 | 0.06727 | 0.20868 | 0.13995 | 0.28443 | 0.36453 | 0.10731 | 0.16681 | 1.56726 |

In [16]:

data**.**dropna(axis**=**1)

Out[16]:

|  | **Country** | **Region** | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | Switzerland | Western Europe | 1 | 7.587 | 0.03411 | 1.39651 | 1.34951 | 0.94143 | 0.66557 | 0.41978 | 0.29678 | 2.51738 |
| **1** | Iceland | Western Europe | 2 | 7.561 | 0.04884 | 1.30232 | 1.40223 | 0.94784 | 0.62877 | 0.14145 | 0.43630 | 2.70201 |
| **2** | Denmark | Western Europe | 3 | 7.527 | 0.03328 | 1.32548 | 1.36058 | 0.87464 | 0.64938 | 0.48357 | 0.34139 | 2.49204 |
| **3** | Norway | Western Europe | 4 | 7.522 | 0.03880 | 1.45900 | 1.33095 | 0.88521 | 0.66973 | 0.36503 | 0.34699 | 2.46531 |
| **4** | Canada | North America | 5 | 7.427 | 0.03553 | 1.32629 | 1.32261 | 0.90563 | 0.63297 | 0.32957 | 0.45811 | 2.45176 |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **153** | Rwanda | Sub-Saharan Africa | 154 | 3.465 | 0.03464 | 0.22208 | 0.77370 | 0.42864 | 0.59201 | 0.55191 | 0.22628 | 0.67042 |
| **154** | Benin | Sub-Saharan Africa | 155 | 3.340 | 0.03656 | 0.28665 | 0.35386 | 0.31910 | 0.48450 | 0.08010 | 0.18260 | 1.63328 |
| **155** | Syria | Middle East and Northern Africa | 156 | 3.006 | 0.05015 | 0.66320 | 0.47489 | 0.72193 | 0.15684 | 0.18906 | 0.47179 | 0.32858 |
| **156** | Burundi | Sub-Saharan Africa | 157 | 2.905 | 0.08658 | 0.01530 | 0.41587 | 0.22396 | 0.11850 | 0.10062 | 0.19727 | 1.83302 |
| **157** | Togo | Sub-Saharan Africa | 158 | 2.839 | 0.06727 | 0.20868 | 0.13995 | 0.28443 | 0.36453 | 0.10731 | 0.16681 | 1.56726 |

158 rows × 12 columns

In [17]:

data**.**dropna()

Out[17]:

|  | **Country** | **Region** | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | Switzerland | Western Europe | 1 | 7.587 | 0.03411 | 1.39651 | 1.34951 | 0.94143 | 0.66557 | 0.41978 | 0.29678 | 2.51738 |
| **1** | Iceland | Western Europe | 2 | 7.561 | 0.04884 | 1.30232 | 1.40223 | 0.94784 | 0.62877 | 0.14145 | 0.43630 | 2.70201 |
| **2** | Denmark | Western Europe | 3 | 7.527 | 0.03328 | 1.32548 | 1.36058 | 0.87464 | 0.64938 | 0.48357 | 0.34139 | 2.49204 |
| **3** | Norway | Western Europe | 4 | 7.522 | 0.03880 | 1.45900 | 1.33095 | 0.88521 | 0.66973 | 0.36503 | 0.34699 | 2.46531 |
| **4** | Canada | North America | 5 | 7.427 | 0.03553 | 1.32629 | 1.32261 | 0.90563 | 0.63297 | 0.32957 | 0.45811 | 2.45176 |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **153** | Rwanda | Sub-Saharan Africa | 154 | 3.465 | 0.03464 | 0.22208 | 0.77370 | 0.42864 | 0.59201 | 0.55191 | 0.22628 | 0.67042 |
| **154** | Benin | Sub-Saharan Africa | 155 | 3.340 | 0.03656 | 0.28665 | 0.35386 | 0.31910 | 0.48450 | 0.08010 | 0.18260 | 1.63328 |
| **155** | Syria | Middle East and Northern Africa | 156 | 3.006 | 0.05015 | 0.66320 | 0.47489 | 0.72193 | 0.15684 | 0.18906 | 0.47179 | 0.32858 |
| **156** | Burundi | Sub-Saharan Africa | 157 | 2.905 | 0.08658 | 0.01530 | 0.41587 | 0.22396 | 0.11850 | 0.10062 | 0.19727 | 1.83302 |
| **157** | Togo | Sub-Saharan Africa | 158 | 2.839 | 0.06727 | 0.20868 | 0.13995 | 0.28443 | 0.36453 | 0.10731 | 0.16681 | 1.56726 |

158 rows × 12 columns

In [18]:

data**.**isna()

Out[18]:

|  | **Country** | **Region** | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | False | False | False | False | False | False | False | False | False | False | False | False |
| **1** | False | False | False | False | False | False | False | False | False | False | False | False |
| **2** | False | False | False | False | False | False | False | False | False | False | False | False |
| **3** | False | False | False | False | False | False | False | False | False | False | False | False |
| **4** | False | False | False | False | False | False | False | False | False | False | False | False |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **153** | False | False | False | False | False | False | False | False | False | False | False | False |
| **154** | False | False | False | False | False | False | False | False | False | False | False | False |
| **155** | False | False | False | False | False | False | False | False | False | False | False | False |
| **156** | False | False | False | False | False | False | False | False | False | False | False | False |
| **157** | False | False | False | False | False | False | False | False | False | False | False | False |

158 rows × 12 columns

In [20]:

data**.**iloc[300:500]

Out[20]:

|  | **Country** | **Region** | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

In [23]:

data**.**loc[100:200]

Out[23]:

|  | **Country** | **Region** | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **100** | Swaziland | Sub-Saharan Africa | 101 | 4.867 | 0.08742 | 0.71206 | 1.07284 | 0.07566 | 0.30658 | 0.03060 | 0.18259 | 2.48676 |
| **101** | Greece | Western Europe | 102 | 4.857 | 0.05062 | 1.15406 | 0.92933 | 0.88213 | 0.07699 | 0.01397 | 0.00000 | 1.80101 |
| **102** | Lebanon | Middle East and Northern Africa | 103 | 4.839 | 0.04337 | 1.02564 | 0.80001 | 0.83947 | 0.33916 | 0.04582 | 0.21854 | 1.57059 |
| **103** | Hungary | Central and Eastern Europe | 104 | 4.800 | 0.06107 | 1.12094 | 1.20215 | 0.75905 | 0.32112 | 0.02758 | 0.12800 | 1.24074 |
| **104** | Honduras | Latin America and Caribbean | 105 | 4.788 | 0.05648 | 0.59532 | 0.95348 | 0.69510 | 0.40148 | 0.06825 | 0.23027 | 1.84408 |
| **105** | Tajikistan | Central and Eastern Europe | 106 | 4.786 | 0.03198 | 0.39047 | 0.85563 | 0.57379 | 0.47216 | 0.15072 | 0.22974 | 2.11399 |
| **106** | Tunisia | Middle East and Northern Africa | 107 | 4.739 | 0.03589 | 0.88113 | 0.60429 | 0.73793 | 0.26268 | 0.06358 | 0.06431 | 2.12466 |
| **107** | Palestinian Territories | Middle East and Northern Africa | 108 | 4.715 | 0.04394 | 0.59867 | 0.92558 | 0.66015 | 0.24499 | 0.12905 | 0.11251 | 2.04384 |
| **108** | Bangladesh | Southern Asia | 109 | 4.694 | 0.03077 | 0.39753 | 0.43106 | 0.60164 | 0.40820 | 0.12569 | 0.21222 | 2.51767 |
| **109** | Iran | Middle East and Northern Africa | 110 | 4.686 | 0.04449 | 1.00880 | 0.54447 | 0.69805 | 0.30033 | 0.05863 | 0.38086 | 1.69440 |
| **110** | Ukraine | Central and Eastern Europe | 111 | 4.681 | 0.04412 | 0.79907 | 1.20278 | 0.67390 | 0.25123 | 0.02961 | 0.15275 | 1.57140 |
| **111** | Iraq | Middle East and Northern Africa | 112 | 4.677 | 0.05232 | 0.98549 | 0.81889 | 0.60237 | 0.00000 | 0.13788 | 0.17922 | 1.95335 |
| **112** | South Africa | Sub-Saharan Africa | 113 | 4.642 | 0.04585 | 0.92049 | 1.18468 | 0.27688 | 0.33207 | 0.08884 | 0.11973 | 1.71956 |
| **113** | Ghana | Sub-Saharan Africa | 114 | 4.633 | 0.04742 | 0.54558 | 0.67954 | 0.40132 | 0.42342 | 0.04355 | 0.23087 | 2.30919 |
| **114** | Zimbabwe | Sub-Saharan Africa | 115 | 4.610 | 0.04290 | 0.27100 | 1.03276 | 0.33475 | 0.25861 | 0.08079 | 0.18987 | 2.44191 |
| **115** | Liberia | Sub-Saharan Africa | 116 | 4.571 | 0.11068 | 0.07120 | 0.78968 | 0.34201 | 0.28531 | 0.06232 | 0.24362 | 2.77729 |
| **116** | India | Southern Asia | 117 | 4.565 | 0.02043 | 0.64499 | 0.38174 | 0.51529 | 0.39786 | 0.08492 | 0.26475 | 2.27513 |
| **117** | Sudan | Sub-Saharan Africa | 118 | 4.550 | 0.06740 | 0.52107 | 1.01404 | 0.36878 | 0.10081 | 0.14660 | 0.19062 | 2.20857 |
| **118** | Haiti | Latin America and Caribbean | 119 | 4.518 | 0.07331 | 0.26673 | 0.74302 | 0.38847 | 0.24425 | 0.17175 | 0.46187 | 2.24173 |
| **119** | Congo (Kinshasa) | Sub-Saharan Africa | 120 | 4.517 | 0.03680 | 0.00000 | 1.00120 | 0.09806 | 0.22605 | 0.07625 | 0.24834 | 2.86712 |
| **120** | Nepal | Southern Asia | 121 | 4.514 | 0.03607 | 0.35997 | 0.86449 | 0.56874 | 0.38282 | 0.05907 | 0.32296 | 1.95637 |
| **121** | Ethiopia | Sub-Saharan Africa | 122 | 4.512 | 0.03780 | 0.19073 | 0.60406 | 0.44055 | 0.43450 | 0.15048 | 0.24325 | 2.44876 |
| **122** | Sierra Leone | Sub-Saharan Africa | 123 | 4.507 | 0.07068 | 0.33024 | 0.95571 | 0.00000 | 0.40840 | 0.08786 | 0.21488 | 2.51009 |
| **123** | Mauritania | Sub-Saharan Africa | 124 | 4.436 | 0.03947 | 0.45407 | 0.86908 | 0.35874 | 0.24232 | 0.17461 | 0.21900 | 2.11773 |
| **124** | Kenya | Sub-Saharan Africa | 125 | 4.419 | 0.04734 | 0.36471 | 0.99876 | 0.41435 | 0.42215 | 0.05839 | 0.37542 | 1.78555 |
| **125** | Djibouti | Sub-Saharan Africa | 126 | 4.369 | 0.08096 | 0.44025 | 0.59207 | 0.36291 | 0.46074 | 0.28105 | 0.18093 | 2.05125 |
| **126** | Armenia | Central and Eastern Europe | 127 | 4.350 | 0.04763 | 0.76821 | 0.77711 | 0.72990 | 0.19847 | 0.03900 | 0.07855 | 1.75873 |
| **127** | Botswana | Sub-Saharan Africa | 128 | 4.332 | 0.04934 | 0.99355 | 1.10464 | 0.04776 | 0.49495 | 0.12474 | 0.10461 | 1.46181 |
| **128** | Myanmar | Southeastern Asia | 129 | 4.307 | 0.04351 | 0.27108 | 0.70905 | 0.48246 | 0.44017 | 0.19034 | 0.79588 | 1.41805 |
| **129** | Georgia | Central and Eastern Europe | 130 | 4.297 | 0.04221 | 0.74190 | 0.38562 | 0.72926 | 0.40577 | 0.38331 | 0.05547 | 1.59541 |
| **130** | Malawi | Sub-Saharan Africa | 131 | 4.292 | 0.06130 | 0.01604 | 0.41134 | 0.22562 | 0.43054 | 0.06977 | 0.33128 | 2.80791 |
| **131** | Sri Lanka | Southern Asia | 132 | 4.271 | 0.03751 | 0.83524 | 1.01905 | 0.70806 | 0.53726 | 0.09179 | 0.40828 | 0.67108 |
| **132** | Cameroon | Sub-Saharan Africa | 133 | 4.252 | 0.04678 | 0.42250 | 0.88767 | 0.23402 | 0.49309 | 0.05786 | 0.20618 | 1.95071 |
| **133** | Bulgaria | Central and Eastern Europe | 134 | 4.218 | 0.04828 | 1.01216 | 1.10614 | 0.76649 | 0.30587 | 0.00872 | 0.11921 | 0.89991 |
| **134** | Egypt | Middle East and Northern Africa | 135 | 4.194 | 0.03260 | 0.88180 | 0.74700 | 0.61712 | 0.17288 | 0.06324 | 0.11291 | 1.59927 |
| **135** | Yemen | Middle East and Northern Africa | 136 | 4.077 | 0.04367 | 0.54649 | 0.68093 | 0.40064 | 0.35571 | 0.07854 | 0.09131 | 1.92313 |
| **136** | Angola | Sub-Saharan Africa | 137 | 4.033 | 0.04758 | 0.75778 | 0.86040 | 0.16683 | 0.10384 | 0.07122 | 0.12344 | 1.94939 |
| **137** | Mali | Sub-Saharan Africa | 138 | 3.995 | 0.05602 | 0.26074 | 1.03526 | 0.20583 | 0.38857 | 0.12352 | 0.18798 | 1.79293 |
| **138** | Congo (Brazzaville) | Sub-Saharan Africa | 139 | 3.989 | 0.06682 | 0.67866 | 0.66290 | 0.31051 | 0.41466 | 0.11686 | 0.12388 | 1.68135 |
| **139** | Comoros | Sub-Saharan Africa | 140 | 3.956 | 0.04797 | 0.23906 | 0.79273 | 0.36315 | 0.22917 | 0.19900 | 0.17441 | 1.95812 |
| **140** | Uganda | Sub-Saharan Africa | 141 | 3.931 | 0.04317 | 0.21102 | 1.13299 | 0.33861 | 0.45727 | 0.07267 | 0.29066 | 1.42766 |
| **141** | Senegal | Sub-Saharan Africa | 142 | 3.904 | 0.03608 | 0.36498 | 0.97619 | 0.43540 | 0.36772 | 0.10713 | 0.20843 | 1.44395 |
| **142** | Gabon | Sub-Saharan Africa | 143 | 3.896 | 0.04547 | 1.06024 | 0.90528 | 0.43372 | 0.31914 | 0.11091 | 0.06822 | 0.99895 |
| **143** | Niger | Sub-Saharan Africa | 144 | 3.845 | 0.03602 | 0.06940 | 0.77265 | 0.29707 | 0.47692 | 0.15639 | 0.19387 | 1.87877 |
| **144** | Cambodia | Southeastern Asia | 145 | 3.819 | 0.05069 | 0.46038 | 0.62736 | 0.61114 | 0.66246 | 0.07247 | 0.40359 | 0.98195 |
| **145** | Tanzania | Sub-Saharan Africa | 146 | 3.781 | 0.05061 | 0.28520 | 1.00268 | 0.38215 | 0.32878 | 0.05747 | 0.34377 | 1.38079 |
| **146** | Madagascar | Sub-Saharan Africa | 147 | 3.681 | 0.03633 | 0.20824 | 0.66801 | 0.46721 | 0.19184 | 0.08124 | 0.21333 | 1.85100 |
| **147** | Central African Republic | Sub-Saharan Africa | 148 | 3.678 | 0.06112 | 0.07850 | 0.00000 | 0.06699 | 0.48879 | 0.08289 | 0.23835 | 2.72230 |
| **148** | Chad | Sub-Saharan Africa | 149 | 3.667 | 0.03830 | 0.34193 | 0.76062 | 0.15010 | 0.23501 | 0.05269 | 0.18386 | 1.94296 |
| **149** | Guinea | Sub-Saharan Africa | 150 | 3.656 | 0.03590 | 0.17417 | 0.46475 | 0.24009 | 0.37725 | 0.12139 | 0.28657 | 1.99172 |
| **150** | Ivory Coast | Sub-Saharan Africa | 151 | 3.655 | 0.05141 | 0.46534 | 0.77115 | 0.15185 | 0.46866 | 0.17922 | 0.20165 | 1.41723 |
| **151** | Burkina Faso | Sub-Saharan Africa | 152 | 3.587 | 0.04324 | 0.25812 | 0.85188 | 0.27125 | 0.39493 | 0.12832 | 0.21747 | 1.46494 |
| **152** | Afghanistan | Southern Asia | 153 | 3.575 | 0.03084 | 0.31982 | 0.30285 | 0.30335 | 0.23414 | 0.09719 | 0.36510 | 1.95210 |
| **153** | Rwanda | Sub-Saharan Africa | 154 | 3.465 | 0.03464 | 0.22208 | 0.77370 | 0.42864 | 0.59201 | 0.55191 | 0.22628 | 0.67042 |
| **154** | Benin | Sub-Saharan Africa | 155 | 3.340 | 0.03656 | 0.28665 | 0.35386 | 0.31910 | 0.48450 | 0.08010 | 0.18260 | 1.63328 |
| **155** | Syria | Middle East and Northern Africa | 156 | 3.006 | 0.05015 | 0.66320 | 0.47489 | 0.72193 | 0.15684 | 0.18906 | 0.47179 | 0.32858 |
| **156** | Burundi | Sub-Saharan Africa | 157 | 2.905 | 0.08658 | 0.01530 | 0.41587 | 0.22396 | 0.11850 | 0.10062 | 0.19727 | 1.83302 |
| **157** | Togo | Sub-Saharan Africa | 158 | 2.839 | 0.06727 | 0.20868 | 0.13995 | 0.28443 | 0.36453 | 0.10731 | 0.16681 | 1.56726 |

In [24]:

data**.**describe()

Out[24]:

|  | **Happiness Rank** | **Happiness Score** | **Standard Error** | **Economy (GDP per Capita)** | **Family** | **Health (Life Expectancy)** | **Freedom** | **Trust (Government Corruption)** | **Generosity** | **Dystopia Residual** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **count** | 158.000000 | 158.000000 | 158.000000 | 158.000000 | 158.000000 | 158.000000 | 158.000000 | 158.000000 | 158.000000 | 158.000000 |
| **mean** | 79.493671 | 5.375734 | 0.047885 | 0.846137 | 0.991046 | 0.630259 | 0.428615 | 0.143422 | 0.237296 | 2.098977 |
| **std** | 45.754363 | 1.145010 | 0.017146 | 0.403121 | 0.272369 | 0.247078 | 0.150693 | 0.120034 | 0.126685 | 0.553550 |
| **min** | 1.000000 | 2.839000 | 0.018480 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.328580 |
| **25%** | 40.250000 | 4.526000 | 0.037268 | 0.545808 | 0.856823 | 0.439185 | 0.328330 | 0.061675 | 0.150553 | 1.759410 |
| **50%** | 79.500000 | 5.232500 | 0.043940 | 0.910245 | 1.029510 | 0.696705 | 0.435515 | 0.107220 | 0.216130 | 2.095415 |
| **75%** | 118.750000 | 6.243750 | 0.052300 | 1.158448 | 1.214405 | 0.811013 | 0.549092 | 0.180255 | 0.309883 | 2.462415 |
| **max** | 158.000000 | 7.587000 | 0.136930 | 1.690420 | 1.402230 | 1.025250 | 0.669730 | 0.551910 | 0.795880 | 3.602140 |

In [2]:

**import** numpy **as** np

**import** pandas **as** pd

**import** matplotlib.pyplot **as** pp

In [24]:

data **=**pd**.**read\_csv(r"C:\Users\user\Desktop\2015.csv")

In [25]:

df**=**pd**.**DataFrame(data)

df1**=**df**.**loc[[0,1,2,3,4,5,6,7,8,9,10]]

print(df1)

Country Region Happiness Rank \

0 Switzerland Western Europe 1

1 Iceland Western Europe 2

2 Denmark Western Europe 3

3 Norway Western Europe 4

4 Canada North America 5

5 Finland Western Europe 6

6 Netherlands Western Europe 7

7 Sweden Western Europe 8

8 New Zealand Australia and New Zealand 9

9 Australia Australia and New Zealand 10

10 Israel Middle East and Northern Africa 11

Happiness Score Standard Error Economy (GDP per Capita) Family \

0 7.587 0.03411 1.39651 1.34951

1 7.561 0.04884 1.30232 1.40223

2 7.527 0.03328 1.32548 1.36058

3 7.522 0.03880 1.45900 1.33095

4 7.427 0.03553 1.32629 1.32261

5 7.406 0.03140 1.29025 1.31826

6 7.378 0.02799 1.32944 1.28017

7 7.364 0.03157 1.33171 1.28907

8 7.286 0.03371 1.25018 1.31967

9 7.284 0.04083 1.33358 1.30923

10 7.278 0.03470 1.22857 1.22393

Health (Life Expectancy) Freedom Trust (Government Corruption) \

0 0.94143 0.66557 0.41978

1 0.94784 0.62877 0.14145

2 0.87464 0.64938 0.48357

3 0.88521 0.66973 0.36503

4 0.90563 0.63297 0.32957

5 0.88911 0.64169 0.41372

6 0.89284 0.61576 0.31814

7 0.91087 0.65980 0.43844

8 0.90837 0.63938 0.42922

9 0.93156 0.65124 0.35637

10 0.91387 0.41319 0.07785

Generosity Dystopia Residual

0 0.29678 2.51738

1 0.43630 2.70201

2 0.34139 2.49204

3 0.34699 2.46531

4 0.45811 2.45176

5 0.23351 2.61955

6 0.47610 2.46570

7 0.36262 2.37119

8 0.47501 2.26425

9 0.43562 2.26646

10 0.33172 3.08854

In [26]:

x**=**df1**.**mean()

print(x)

Happiness Rank 6.000000

Happiness Score 7.420000

Standard Error 0.035524

Economy (GDP per Capita) 1.324848

Family 1.318746

Health (Life Expectancy) 0.909215

Freedom 0.624316

Trust (Government Corruption) 0.343013

Generosity 0.381286

Dystopia Residual 2.518563

dtype: float64

In [27]:

y**=**df1**.**median()

print(y)

Happiness Rank 6.00000

Happiness Score 7.40600

Standard Error 0.03411

Economy (GDP per Capita) 1.32629

Family 1.31967

Health (Life Expectancy) 0.90837

Freedom 0.64169

Trust (Government Corruption) 0.36503

Generosity 0.36262

Dystopia Residual 2.46570

dtype: float64

In [28]:

z**=**df1**.**mode()

print(z)

Country Region Happiness Rank Happiness Score \

0 Australia Western Europe 1 7.278

1 Canada NaN 2 7.284

2 Denmark NaN 3 7.286

3 Finland NaN 4 7.364

4 Iceland NaN 5 7.378

5 Israel NaN 6 7.406

6 Netherlands NaN 7 7.427

7 New Zealand NaN 8 7.522

8 Norway NaN 9 7.527

9 Sweden NaN 10 7.561

10 Switzerland NaN 11 7.587

Standard Error Economy (GDP per Capita) Family \

0 0.02799 1.22857 1.22393

1 0.03140 1.25018 1.28017

2 0.03157 1.29025 1.28907

3 0.03328 1.30232 1.30923

4 0.03371 1.32548 1.31826

5 0.03411 1.32629 1.31967

6 0.03470 1.32944 1.32261

7 0.03553 1.33171 1.33095

8 0.03880 1.33358 1.34951

9 0.04083 1.39651 1.36058

10 0.04884 1.45900 1.40223

Health (Life Expectancy) Freedom Trust (Government Corruption) \

0 0.87464 0.41319 0.07785

1 0.88521 0.61576 0.14145

2 0.88911 0.62877 0.31814

3 0.89284 0.63297 0.32957

4 0.90563 0.63938 0.35637

5 0.90837 0.64169 0.36503

6 0.91087 0.64938 0.41372

7 0.91387 0.65124 0.41978

8 0.93156 0.65980 0.42922

9 0.94143 0.66557 0.43844

10 0.94784 0.66973 0.48357

Generosity Dystopia Residual

0 0.23351 2.26425

1 0.29678 2.26646

2 0.33172 2.37119

3 0.34139 2.45176

4 0.34699 2.46531

5 0.36262 2.46570

6 0.43562 2.49204

7 0.43630 2.51738

8 0.45811 2.61955

9 0.47501 2.70201

10 0.47610 3.08854

In [29]:

a**=**df1**.**sum()

print(a)

Country SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...

Region Western EuropeWestern EuropeWestern EuropeWest...

Happiness Rank 66

Happiness Score 81.62

Standard Error 0.39076

Economy (GDP per Capita) 14.57333

Family 14.50621

Health (Life Expectancy) 10.00137

Freedom 6.86748

Trust (Government Corruption) 3.77314

Generosity 4.19415

Dystopia Residual 27.70419

dtype: object

In [30]:

b**=**df1**.**cumsum()

print(b)

Country \

0 Switzerland

1 SwitzerlandIceland

2 SwitzerlandIcelandDenmark

3 SwitzerlandIcelandDenmarkNorway

4 SwitzerlandIcelandDenmarkNorwayCanada

5 SwitzerlandIcelandDenmarkNorwayCanadaFinland

6 SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...

7 SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...

8 SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...

9 SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...

10 SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...

Region Happiness Rank \

0 Western Europe 1

1 Western EuropeWestern Europe 3

2 Western EuropeWestern EuropeWestern Europe 6

3 Western EuropeWestern EuropeWestern EuropeWest... 10

4 Western EuropeWestern EuropeWestern EuropeWest... 15

5 Western EuropeWestern EuropeWestern EuropeWest... 21

6 Western EuropeWestern EuropeWestern EuropeWest... 28

7 Western EuropeWestern EuropeWestern EuropeWest... 36

8 Western EuropeWestern EuropeWestern EuropeWest... 45

9 Western EuropeWestern EuropeWestern EuropeWest... 55

10 Western EuropeWestern EuropeWestern EuropeWest... 66

Happiness Score Standard Error Economy (GDP per Capita) Family \

0 7.587 0.03411 1.39651 1.34951

1 15.148 0.08295 2.69883 2.75174

2 22.675 0.11623 4.02431 4.11232

3 30.197 0.15503 5.48331 5.44327

4 37.624 0.19056 6.80960 6.76588

5 45.030 0.22196 8.09985 8.08414

6 52.408 0.24995 9.42929 9.36431

7 59.772 0.28152 10.76100 10.65338

8 67.058 0.31523 12.01118 11.97305

9 74.342 0.35606 13.34476 13.28228

10 81.620 0.39076 14.57333 14.50621

Health (Life Expectancy) Freedom Trust (Government Corruption) \

0 0.94143 0.66557 0.41978

1 1.88927 1.29434 0.56123

2 2.76391 1.94372 1.04480

3 3.64912 2.61345 1.40983

4 4.55475 3.24642 1.73940

5 5.44386 3.88811 2.15312

6 6.33670 4.50387 2.47126

7 7.24757 5.16367 2.90970

8 8.15594 5.80305 3.33892

9 9.08750 6.45429 3.69529

10 10.00137 6.86748 3.77314

Generosity Dystopia Residual

0 0.29678 2.51738

1 0.73308 5.21939

2 1.07447 7.71143

3 1.42146 10.17674

4 1.87957 12.62850

5 2.11308 15.24805

6 2.58918 17.71375

7 2.95180 20.08494

8 3.42681 22.34919

9 3.86243 24.61565

10 4.19415 27.70419

In [31]:

c**=**df1**.**count()

print(c)

Country 11

Region 11

Happiness Rank 11

Happiness Score 11

Standard Error 11

Economy (GDP per Capita) 11

Family 11

Health (Life Expectancy) 11

Freedom 11

Trust (Government Corruption) 11

Generosity 11

Dystopia Residual 11

dtype: int64

In [32]:

d**=**df1**.**min()

print(d)

Country Australia

Region Australia and New Zealand

Happiness Rank 1

Happiness Score 7.278

Standard Error 0.02799

Economy (GDP per Capita) 1.22857

Family 1.22393

Health (Life Expectancy) 0.87464

Freedom 0.41319

Trust (Government Corruption) 0.07785

Generosity 0.23351

Dystopia Residual 2.26425

dtype: object

In [33]:

d**=**df1**.**min()

print(d)

Country Switzerland

Region Western Europe

Happiness Rank 11

Happiness Score 7.587

Standard Error 0.04884

Economy (GDP per Capita) 1.459

Family 1.40223

Health (Life Expectancy) 0.94784

Freedom 0.66973

Trust (Government Corruption) 0.48357

Generosity 0.4761

Dystopia Residual 3.08854

dtype: object

In [ ]: