

Filtering and Ordering

In [1]: `import pandas as pd`

In [2]: `df = pd.read_csv(r"D:\COURSES\YOUTUBE\ALEX THE ANALYST\PYTHON\world_population.csv")`

In [3]: `df`

Out[3]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	Pop
0	36	AFG	Afghanistan	Kabul	Asia	41128771.0	38972230.0	33753499.0	28189672.0	1954
1	138	ALB	Albania	Tirana	Europe	2842321.0	2866849.0	2882481.0	2913399.0	318
2	34	DZA	Algeria	Algiers	Africa	44903225.0	43451666.0	39543154.0	35856344.0	3077
3	213	ASM	American Samoa	Pago Pago	Oceania	44273.0	46189.0	51368.0	54849.0	5
4	203	AND	Andorra	Andorra la Vella	Europe	79824.0	77700.0	71746.0	71519.0	6
...
229	226	WLF	Wallis and Futuna	Mata-Utu	Oceania	11572.0	11655.0	12182.0	13142.0	1
230	172	ESH	Western Sahara	El Aaiún	Africa	575986.0	556048.0	491824.0	413296.0	27
231	46	YEM	Yemen	Sanaa	Asia	33696614.0	32284046.0	28516545.0	24743946.0	1862
232	63	ZMB	Zambia	Lusaka	Africa	20017675.0	18927715.0	NaN	13792086.0	989
233	74	ZWE	Zimbabwe	Harare	Africa	16320537.0	15669666.0	14154937.0	12839771.0	1183

234 rows × 17 columns

In [4]: `df[df['Rank'] <= 10]`

Out[4]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	Pop
16	8	BGD	Bangladesh	Dhaka	Asia	1.711864e+08	1.674210e+08	1.578300e+08	1.4839
27	7	BRA	Brazil	Brasilia	South America	2.153135e+08	2.131963e+08	2.051882e+08	1.9635
41	1	CHN	China	Beijing	Asia	1.425887e+09	1.424930e+09	1.393715e+09	1.3481
92	2	IND	India	New Delhi	Asia	1.417173e+09	1.396387e+09	1.322867e+09	1.2406
93	4	IDN	Indonesia	Jakarta	Asia	2.755013e+08	2.718580e+08	2.590920e+08	2.4401
131	10	MEX	Mexico	Mexico City	North America	1.275041e+08	1.259983e+08	1.201499e+08	1.1253
149	6	NGA	Nigeria	Abuja	Africa	2.185412e+08	2.083274e+08	1.839958e+08	1.6095
156	5	PAK	Pakistan	Islamabad	Asia	2.358249e+08	2.271967e+08	2.109693e+08	1.9445
171	9	RUS	Russia	Moscow	Europe	1.447133e+08	1.456173e+08	1.446684e+08	1.4324
221	3	USA	United States	Washington, D.C.	North America	3.382899e+08	3.359420e+08	3.246078e+08	3.1118

In [5]: `specific_countries = ['Bangladesh', 'Brazil']
df[df['Country'].isin(specific_countries)]`

Out[5]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population
16	8	BGD	Bangladesh	Dhaka	Asia	171186372.0	167420951.0	157830000.0	148391139.0
27	7	BRA	Brazil	Brasilia	South America	215313498.0	213196304.0	205188205.0	196353492.0

In [6]: `df[df['Country'].str.contains('United')]`

Out[6]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population
219	97	ARE	United Arab Emirates	Abu Dhabi	Asia	9441129.0	9287289.0	8916899.0	8481771.0
220	21	GBR	United Kingdom	London	Europe	67508936.0	67059474.0	65224364.0	62760039.0
221	3	USA	United States	Washington, D.C.	North America	338289857.0	335942003.0	324607776.0	311182845.0
222	200	VIR	United States Virgin Islands	Charlotte Amalie	North America	99465.0	100442.0	102803.0	106142.0

```
In [7]: df2 = df.set_index('Country')
df2
```

Out[7]:

	Rank	CCA3	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	2000 Population
Country									
Afghanistan	36	AFG	Kabul	Asia	41128771.0	38972230.0	33753499.0	28189672.0	19542982.0
Albania	138	ALB	Tirana	Europe	2842321.0	2866849.0	2882481.0	2913399.0	3182021.0
Algeria	34	DZA	Algiers	Africa	44903225.0	43451666.0	39543154.0	35856344.0	30774621.0
American Samoa	213	ASM	Pago Pago	Oceania	44273.0	46189.0	51368.0	54849.0	58230.0
Andorra	203	AND	Andorra la Vella	Europe	79824.0	77700.0	71746.0	71519.0	66097.0
...
Wallis and Futuna	226	WLF	Mata-Utu	Oceania	11572.0	11655.0	12182.0	13142.0	14723.0
Western Sahara	172	ESH	El Aaiún	Africa	575986.0	556048.0	491824.0	413296.0	270375.0
Yemen	46	YEM	Sanaa	Asia	33696614.0	32284046.0	28516545.0	24743946.0	18628700.0
Zambia	63	ZMB	Lusaka	Africa	20017675.0	18927715.0	NaN	13792086.0	9891136.0
Zimbabwe	74	ZWE	Harare	Africa	16320537.0	15669666.0	14154937.0	12839771.0	11834676.0

234 rows × 16 columns



```
In [8]: df2.filter(items = ['Continent', 'CCA3'])
```

Out[8]:

	Continent	CCA3
Country		
Afghanistan	Asia	AFG
Albania	Europe	ALB
Algeria	Africa	DZA
American Samoa	Oceania	ASM
Andorra	Europe	AND
...
Wallis and Futuna	Oceania	WLF
Western Sahara	Africa	ESH
Yemen	Asia	YEM
Zambia	Africa	ZMB
Zimbabwe	Africa	ZWE

234 rows × 2 columns

```
In [9]: df2.filter(items = ['Zimbabwe'], axis = 0)
```

Out[9]:

	Rank	CCA3	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	2000 Population
Zimbabwe	74	ZWE	Harare	Africa	16320537.0	15669666.0	14154937.0	12839771.0	11834676.0

```
In [10]: df2.filter(like = 'United',axis = 0)
```

Out[10]:

	Rank	CCA3	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	Pe
Country									
United Arab Emirates	97	ARE	Abu Dhabi	Asia	9441129.0	9287289.0	8916899.0	8481771.0	3
United Kingdom	21	GBR	London	Europe	67508936.0	67059474.0	65224364.0	62760039.0	58
United States	3	USA	Washington, D.C.	North America	338289857.0	335942003.0	324607776.0	311182845.0	282
United States Virgin Islands	200	VIR	Charlotte Amalie	North America	99465.0	100442.0	102803.0	106142.0	

```
In [13]: df2.loc['United States']
```

Out[13]:

Rank	3
CCA3	USA
Capital	Washington, D.C.
Continent	North America
2022 Population	338289857.0
2020 Population	335942003.0
2015 Population	324607776.0
2010 Population	311182845.0
2000 Population	282398554.0
1990 Population	248083732.0
1980 Population	223140018.0
1970 Population	200328340.0
Area (km ²)	9372610.0
Density (per km ²)	36.0935
Growth Rate	1.0038
World Population Percentage	4.24

Name: United States, dtype: object

In [15]: `df2.iloc[3]`

Out[15]:

Rank	213
CCA3	ASM
Capital	Pago Pago
Continent	Oceania
2022 Population	44273.0
2020 Population	46189.0
2015 Population	51368.0
2010 Population	54849.0
2000 Population	58230.0
1990 Population	47818.0
1980 Population	32886.0
1970 Population	27075.0
Area (km ²)	199.0
Density (per km ²)	222.4774
Growth Rate	0.9831
World Population Percentage	0.0

Name: American Samoa, dtype: object

In [16]: `df[df['Rank'] < 10].sort_values(by='Rank')`

Out[16]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	Pop
41	1	CHN	China	Beijing	Asia	1.425887e+09	1.424930e+09	1.393715e+09	1.3481
92	2	IND	India	New Delhi	Asia	1.417173e+09	1.396387e+09	1.322867e+09	1.2406
221	3	USA	United States	Washington, D.C.	North America	3.382899e+08	3.359420e+08	3.246078e+08	3.1118
93	4	IDN	Indonesia	Jakarta	Asia	2.755013e+08	2.718580e+08	2.590920e+08	2.4401
156	5	PAK	Pakistan	Islamabad	Asia	2.358249e+08	2.271967e+08	2.109693e+08	1.9445
149	6	NGA	Nigeria	Abuja	Africa	2.185412e+08	2.083274e+08	1.839958e+08	1.6095
27	7	BRA	Brazil	Brasilia	South America	2.153135e+08	2.131963e+08	2.051882e+08	1.9635
16	8	BGD	Bangladesh	Dhaka	Asia	1.711864e+08	1.674210e+08	1.578300e+08	1.4839
171	9	RUS	Russia	Moscow	Europe	1.447133e+08	1.456173e+08	1.446684e+08	1.4324

```
In [17]: df[df['Rank']<10].sort_values(by='Rank',ascending=False)
```

Out[17]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	Pop
171	9	RUS	Russia	Moscow	Europe	1.447133e+08	1.456173e+08	1.446684e+08	1.4324
16	8	BGD	Bangladesh	Dhaka	Asia	1.711864e+08	1.674210e+08	1.578300e+08	1.4839
27	7	BRA	Brazil	Brasilia	South America	2.153135e+08	2.131963e+08	2.051882e+08	1.9635
149	6	NGA	Nigeria	Abuja	Africa	2.185412e+08	2.083274e+08	1.839958e+08	1.6095
156	5	PAK	Pakistan	Islamabad	Asia	2.358249e+08	2.271967e+08	2.109693e+08	1.9445
93	4	IDN	Indonesia	Jakarta	Asia	2.755013e+08	2.718580e+08	2.590920e+08	2.4401
221	3	USA	United States	Washington, D.C.	North America	3.382899e+08	3.359420e+08	3.246078e+08	3.1118
92	2	IND	India	New Delhi	Asia	1.417173e+09	1.396387e+09	1.322867e+09	1.2406
41	1	CHN	China	Beijing	Asia	1.425887e+09	1.424930e+09	1.393715e+09	1.3481

```
In [18]: df[df['Rank']<10].sort_values(by=['Rank','Country'],ascending=False)
```

Out[18]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	Pop
171	9	RUS	Russia	Moscow	Europe	1.447133e+08	1.456173e+08	1.446684e+08	1.4324
16	8	BGD	Bangladesh	Dhaka	Asia	1.711864e+08	1.674210e+08	1.578300e+08	1.4839
27	7	BRA	Brazil	Brasilia	South America	2.153135e+08	2.131963e+08	2.051882e+08	1.9635
149	6	NGA	Nigeria	Abuja	Africa	2.185412e+08	2.083274e+08	1.839958e+08	1.6095
156	5	PAK	Pakistan	Islamabad	Asia	2.358249e+08	2.271967e+08	2.109693e+08	1.9445
93	4	IDN	Indonesia	Jakarta	Asia	2.755013e+08	2.718580e+08	2.590920e+08	2.4401
221	3	USA	United States	Washington, D.C.	North America	3.382899e+08	3.359420e+08	3.246078e+08	3.1118
92	2	IND	India	New Delhi	Asia	1.417173e+09	1.396387e+09	1.322867e+09	1.2406
41	1	CHN	China	Beijing	Asia	1.425887e+09	1.424930e+09	1.393715e+09	1.3481

```
In [19]: df[df['Rank']<10].sort_values(by=['Country','Rank'],ascending=False)
```

Out[19]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	Pop
221	3	USA	United States	Washington, D.C.	North America	3.382899e+08	3.359420e+08	3.246078e+08	3.1118
171	9	RUS	Russia	Moscow	Europe	1.447133e+08	1.456173e+08	1.446684e+08	1.4324
156	5	PAK	Pakistan	Islamabad	Asia	2.358249e+08	2.271967e+08	2.109693e+08	1.9445
149	6	NGA	Nigeria	Abuja	Africa	2.185412e+08	2.083274e+08	1.839958e+08	1.6095
93	4	IDN	Indonesia	Jakarta	Asia	2.755013e+08	2.718580e+08	2.590920e+08	2.4401
92	2	IND	India	New Delhi	Asia	1.417173e+09	1.396387e+09	1.322867e+09	1.2406
41	1	CHN	China	Beijing	Asia	1.425887e+09	1.424930e+09	1.393715e+09	1.3481
27	7	BRA	Brazil	Brasilia	South America	2.153135e+08	2.131963e+08	2.051882e+08	1.9635
16	8	BGD	Bangladesh	Dhaka	Asia	1.711864e+08	1.674210e+08	1.578300e+08	1.4839

```
In [20]: df[df['Rank']<10].sort_values(by=['Continent','Country'],ascending=False)
```

Out[20]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	Pop
27	7	BRA	Brazil	Brasilia	South America	2.153135e+08	2.131963e+08	2.051882e+08	1.9635
221	3	USA	United States	Washington, D.C.	North America	3.382899e+08	3.359420e+08	3.246078e+08	3.1118
171	9	RUS	Russia	Moscow	Europe	1.447133e+08	1.456173e+08	1.446684e+08	1.4324
156	5	PAK	Pakistan	Islamabad	Asia	2.358249e+08	2.271967e+08	2.109693e+08	1.9445
93	4	IDN	Indonesia	Jakarta	Asia	2.755013e+08	2.718580e+08	2.590920e+08	2.4401
92	2	IND	India	New Delhi	Asia	1.417173e+09	1.396387e+09	1.322867e+09	1.2406
41	1	CHN	China	Beijing	Asia	1.425887e+09	1.424930e+09	1.393715e+09	1.3481
16	8	BGD	Bangladesh	Dhaka	Asia	1.711864e+08	1.674210e+08	1.578300e+08	1.4839
149	6	NGA	Nigeria	Abuja	Africa	2.185412e+08	2.083274e+08	1.839958e+08	1.6095

In [21]: `df[df['Rank']<10].sort_values(by=['Continent','Country'],ascending=[False,True])`

Out[21]:

	Rank	CCA3	Country	Capital	Continent	2022 Population	2020 Population	2015 Population	Pop
27	7	BRA	Brazil	Brasilia	South America	2.153135e+08	2.131963e+08	2.051882e+08	1.9635
221	3	USA	United States	Washington, D.C.	North America	3.382899e+08	3.359420e+08	3.246078e+08	3.1118
171	9	RUS	Russia	Moscow	Europe	1.447133e+08	1.456173e+08	1.446684e+08	1.4324
16	8	BGD	Bangladesh	Dhaka	Asia	1.711864e+08	1.674210e+08	1.578300e+08	1.4839
41	1	CHN	China	Beijing	Asia	1.425887e+09	1.424930e+09	1.393715e+09	1.3481
92	2	IND	India	New Delhi	Asia	1.417173e+09	1.396387e+09	1.322867e+09	1.2406
93	4	IDN	Indonesia	Jakarta	Asia	2.755013e+08	2.718580e+08	2.590920e+08	2.4401
156	5	PAK	Pakistan	Islamabad	Asia	2.358249e+08	2.271967e+08	2.109693e+08	1.9445
149	6	NGA	Nigeria	Abuja	Africa	2.185412e+08	2.083274e+08	1.839958e+08	1.6095

In []: