

```
In [2]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

```
In [3]: world_population = pd.read_csv(r'C:\Users\Denij\OneDrive\Desktop\world_population 2022.c
```

```
In [4]: world_population.head(10)
```

Out[4]:

	Rank	CCA3	Country/Territory	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	2000 Populatio
0	36	AFG	Afghanistan	Kabul	Asia	41128771	38972230	33753499	28189672	1954296
1	138	ALB	Albania	Tirana	Europe	2842321	2866849	2882481	2913399	318202
2	34	DZA	Algeria	Algiers	Africa	44903225	43451666	39543154	35856344	3077462
3	213	ASM	American Samoa	Pago Pago	Oceania	44273	46189	51368	54849	5823
4	203	AND	Andorra	Andorra la Vella	Europe	79824	77700	71746	71519	6605
5	42	AGO	Angola	Luanda	Africa	35588987	33428485	28127721	23364185	1639406
6	224	AIA	Anguilla	The Valley	North America	15857	15585	14525	13172	1104
7	201	ATG	Antigua and Barbuda	Saint John's	North America	93763	92664	89941	85695	7505
8	33	ARG	Argentina	Buenos Aires	South America	45510318	45036032	43257065	41100123	3707077
9	140	ARM	Armenia	Yerevan	Asia	2780469	2805608	2878595	2946293	316852

```
In [5]: world_population.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 234 entries, 0 to 233
Data columns (total 17 columns):
 #   Column                                Non-Null Count  Dtype
---  -
 0   Rank                                  234 non-null    int64
 1   CCA3                                  234 non-null    object
 2   Country/Territory                    234 non-null    object
 3   Capital                              234 non-null    object
 4   Continent                            234 non-null    object
 5   2022 Population                      234 non-null    int64
 6   2020 Population                      234 non-null    int64
 7   2015 Population                      234 non-null    int64
 8   2010 Population                      234 non-null    int64
 9   2000 Population                      234 non-null    int64
10   1990 Population                      234 non-null    int64
11   1980 Population                      234 non-null    int64
12   1970 Population                      234 non-null    int64
13   Area (km²)                          234 non-null    int64
14   Density (per km²)                   234 non-null    float64
15   Growth Rate                         234 non-null    float64
16   World Population Percentage         234 non-null    float64
dtypes: float64(3), int64(10), object(4)
memory usage: 31.2+ KB
```

In [6]: world_population.describe()

Out[6]:

	Rank	2022 Population	2020 Population	2015 Population	2010 Population	2000 Population	1990 Population	Popu
count	234.000000	2.340000e+02	2.340000e+02	2.340000e+02	2.340000e+02	2.340000e+02	2.340000e+02	2.34000
mean	117.500000	3.407441e+07	3.350107e+07	3.172996e+07	2.984524e+07	2.626947e+07	2.271022e+07	1.89846
std	67.694165	1.367664e+08	1.355899e+08	1.304050e+08	1.242185e+08	1.116982e+08	9.783217e+07	8.17851
min	1.000000	5.100000e+02	5.200000e+02	5.640000e+02	5.960000e+02	6.510000e+02	7.000000e+02	7.33000
25%	59.250000	4.197385e+05	4.152845e+05	4.046760e+05	3.931490e+05	3.272420e+05	2.641158e+05	2.29614
50%	117.500000	5.559944e+06	5.493074e+06	5.307400e+06	4.942770e+06	4.292907e+06	3.825410e+06	3.14114
75%	175.750000	2.247650e+07	2.144798e+07	1.973085e+07	1.915957e+07	1.576230e+07	1.186923e+07	9.82605
max	234.000000	1.425887e+09	1.424930e+09	1.393715e+09	1.348191e+09	1.264099e+09	1.153704e+09	9.82372

In [7]: world_population.isnull().sum()

Out[7]:

Rank	0
CCA3	0
Country/Territory	0
Capital	0
Continent	0
2022 Population	0
2020 Population	0
2015 Population	0
2010 Population	0
2000 Population	0
1990 Population	0
1980 Population	0
1970 Population	0
Area (km²)	0
Density (per km²)	0
Growth Rate	0
World Population Percentage	0

dtype: int64

In [8]: mostly_populated = world_population.groupby('Country/Territory')['2022 Population'].sum(

In [9]: var = mostly_populated.sort_values(ascending=False).head(20)
var

Out[9]:

Country/Territory	
China	1425887337
India	1417173173
United States	338289857
Indonesia	275501339
Pakistan	235824862
Nigeria	218541212
Brazil	215313498
Bangladesh	171186372
Russia	144713314
Mexico	127504125
Japan	123951692
Ethiopia	123379924
Philippines	115559009
Egypt	110990103
DR Congo	99010212
Vietnam	98186856
Iran	88550570

```
Turkey      85341241
Germany     83369843
Thailand     71697030
Name: 2022 Population, dtype: int64
```

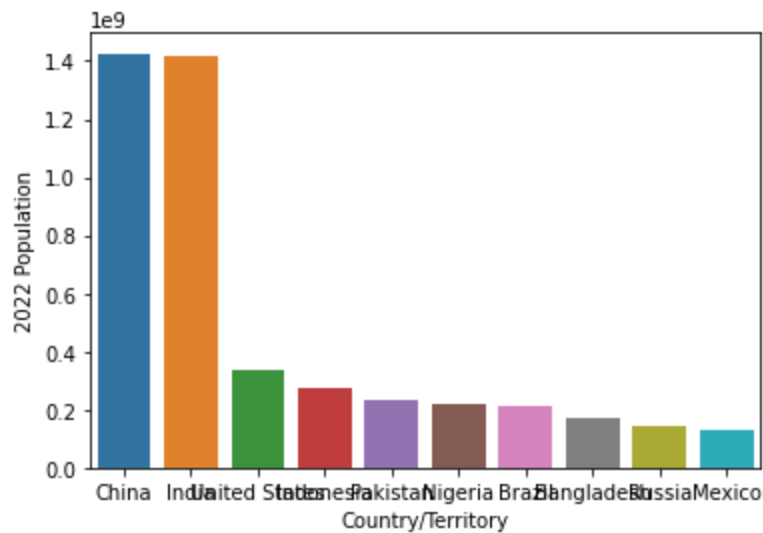
```
In [10]: df = world_population[['2022 Population', 'Country/Territory']].sort_values(by='2022 Population')
df
```

```
Out[10]:
```

	2022 Population	Country/Territory
41	1425887337	China
92	1417173173	India
221	338289857	United States
93	275501339	Indonesia
156	235824862	Pakistan
149	218541212	Nigeria
27	215313498	Brazil
16	171186372	Bangladesh
171	144713314	Russia
131	127504125	Mexico

```
In [11]: sns.barplot(data=df, x = 'Country/Territory', y = '2022 Population')
```

```
Out[11]: <AxesSubplot:xlabel='Country/Territory', ylabel='2022 Population'>
```



```
In [12]: df = world_population[['2022 Population', 'Country/Territory']].sort_values(by='2022 Population')
df
```

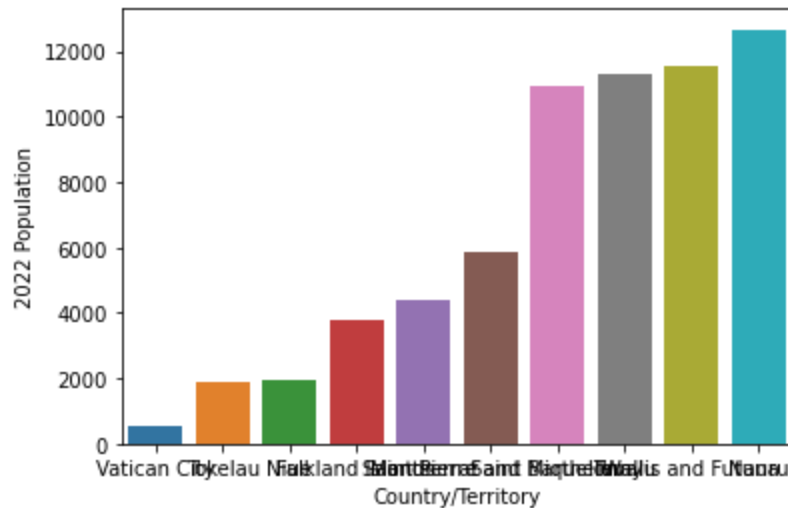
```
Out[12]:
```

	2022 Population	Country/Territory
226	510	Vatican City
209	1871	Tokelau
150	1934	Niue
64	3780	Falkland Islands
137	4390	Montserrat
177	5862	Saint Pierre and Miquelon

173	10967	Saint Barthelemy
216	11312	Tuvalu
229	11572	Wallis and Futuna
142	12668	Nauru

```
In [13]: sns.barplot(data=df, x = 'Country/Territory', y = '2022 Population')
```

```
Out[13]: <AxesSubplot:xlabel='Country/Territory', ylabel='2022 Population'>
```



```
In [14]: df = world_population[['2022 Population', 'Continent']].sort_values(by='2022 Population',
df
```

```
Out[14]:
```

	2022 Population	Continent
226	510	Europe
209	1871	Oceania
150	1934	Oceania
64	3780	South America
137	4390	North America
...
156	235824862	Asia
93	275501339	Asia
221	338289857	North America
92	1417173173	Asia
41	1425887337	Asia

234 rows × 2 columns

```
In [15]: dc = world_population['Continent'].unique()
dc
```

```
Out[15]: array(['Asia', 'Europe', 'Africa', 'Oceania', 'North America',
'South America'], dtype=object)
```

```
In [16]: da = world_population['Continent']
da
```

```
Out[16]: 0      Asia
1      Europe
2      Africa
3      Oceania
4      Europe
...
229    Oceania
230    Africa
231     Asia
232    Africa
233    Africa
Name: Continent, Length: 234, dtype: object
```

```
In [17]: dz = world_population[['2022 Population','Continent']]
dz
```

Out[17]:

	2022 Population	Continent
0	41128771	Asia
1	2842321	Europe
2	44903225	Africa
3	44273	Oceania
4	79824	Europe
...
229	11572	Oceania
230	575986	Africa
231	33696614	Asia
232	20017675	Africa
233	16320537	Africa

234 rows × 2 columns

```
In [18]: dz.groupby(['Continent'])['2022 Population'].sum()
```

Out[18]:

Continent	
Africa	1426730932
Asia	4721383274
Europe	743147538
North America	600296136
Oceania	45038554
South America	436816608

Name: 2022 Population, dtype: int64

```
In [19]: da=pd.DataFrame({
        'Continent':['Africa','Asia','Europe','North America','Oceania','South America'],
        'Population':[1426730932,4721383274,743147538,600296136,45038554,436816608]
    })
dz
```

Out[19]:

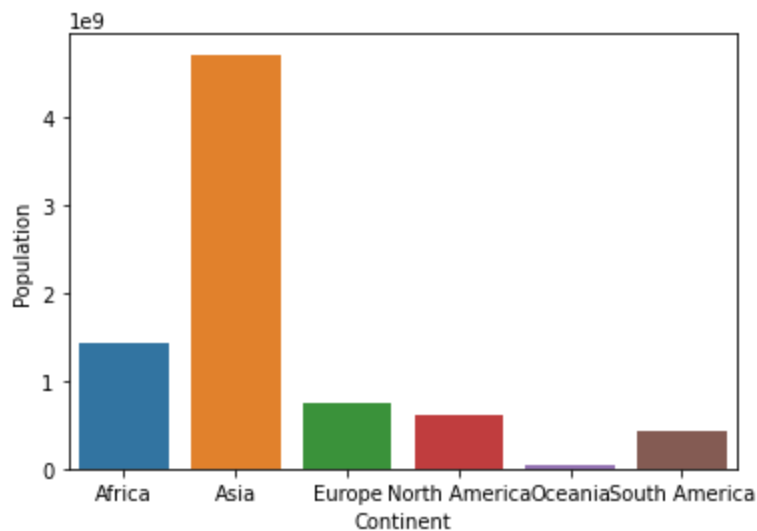
	2022 Population	Continent
0	41128771	Asia
1	2842321	Europe
2	44903225	Africa
3	44273	Oceania

4	79824	Europe
...
229	11572	Oceania
230	575986	Africa
231	33696614	Asia
232	20017675	Africa
233	16320537	Africa

234 rows × 2 columns

```
In [20]: sns.barplot(data=da, x = 'Continent' , y = 'Population')
```

```
Out[20]: <AxesSubplot:xlabel='Continent', ylabel='Population'>
```



```
In [32]: dz = world_population[world_population['Continent'] == 'Asia'].sort_values(by='2022 Population')
dz.head(10)
```

```
Out[32]:
```

	Rank	CCA3	Country/Territory	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	Pop
41	1	CHN	China	Beijing	Asia	1425887337	1424929781	1393715448	1348191368	126
92	2	IND	India	New Delhi	Asia	1417173173	1396387127	1322866505	1240613620	105
93	4	IDN	Indonesia	Jakarta	Asia	275501339	271857970	259091970	244016173	21
156	5	PAK	Pakistan	Islamabad	Asia	235824862	227196741	210969298	194454498	15
16	8	BGD	Bangladesh	Dhaka	Asia	171186372	167420951	157830000	148391139	12
102	11	JPN	Japan	Tokyo	Asia	123951692	125244761	127250933	128105431	12
163	13	PHL	Philippines	Manila	Asia	115559009	112190977	103031365	94636700	7
228	16	VNM	Vietnam	Hanoi	Asia	98186856	96648685	92191398	87411012	7
94	17	IRN	Iran	Tehran	Asia	88550570	87290193	81790841	75373855	6
213	18	TUR	Turkey	Ankara	Asia	85341241	84135428	79646178	73195345	6

```
In [34]: dz=dz[['2022 Population','Country/Territory']]
```

```
dz.head(10)
```

Out[34]:

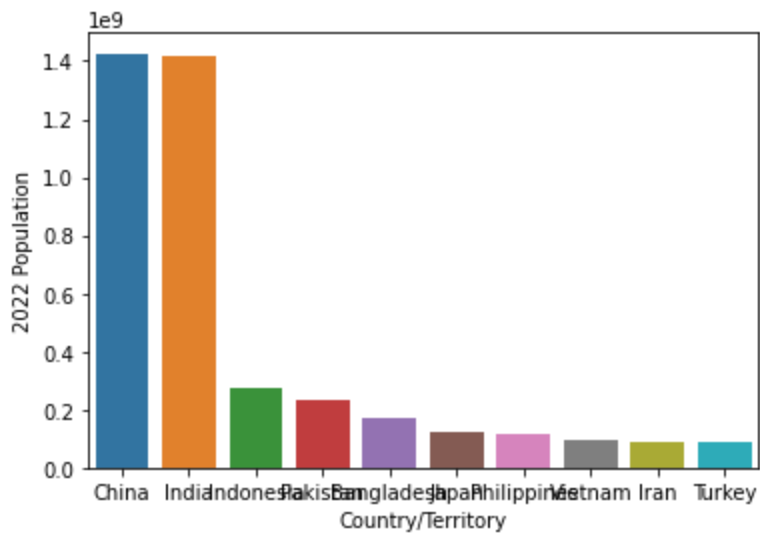
	2022 Population	Country/Territory
41	1425887337	China
92	1417173173	India
93	275501339	Indonesia
156	235824862	Pakistan
16	171186372	Bangladesh
102	123951692	Japan
163	115559009	Philippines
228	98186856	Vietnam
94	88550570	Iran
213	85341241	Turkey

In [36]:

```
sns.barplot (data = dz.head(10), x = 'Country/Territory' , y = '2022 Population')
```

Out[36]:

<AxesSubplot:xlabel='Country/Territory', ylabel='2022 Population'>



In [37]:

```
dz = world_population[world_population['Continent'] == 'Africa'].sort_values(by='2022 Po  
dz.head(10)
```

Out[37]:

	Rank	CCA3	Country/Territory	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	Popu
149	6	NGA	Nigeria	Abuja	Africa	218541212	208327405	183995785	160952853	1228
63	12	ETH	Ethiopia	Addis Ababa	Africa	123379924	117190911	102471895	89237791	670
57	14	EGY	Egypt	Cairo	Africa	110990103	107465134	97723799	87252413	713
55	15	COD	DR Congo	Kinshasa	Africa	99010212	92853164	78656904	66391257	486
205	22	TZA	Tanzania	Dodoma	Africa	65497748	61704518	52542823	45110527	344
193	24	ZAF	South Africa	Pretoria	Africa	59893885	58801927	55876504	51784921	468
106	27	KEN	Kenya	Nairobi	Africa	54027487	51985780	46851488	41517895	308
217	31	UGA	Uganda	Kampala	Africa	47249585	44404611	37477356	32341728	240

198	32	SDN	Sudan	Khartoum	Africa	46874204	44440486	38171178	33739933	262
2	34	DZA	Algeria	Algiers	Africa	44903225	43451666	39543154	35856344	307

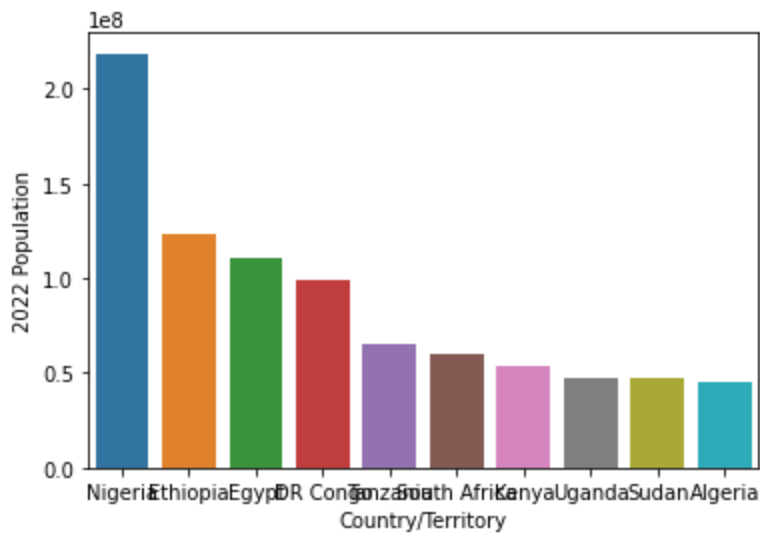
```
In [38]: dz=dz[['2022 Population','Country/Territory']]
dz.head(10)
```

Out[38]:

	2022 Population	Country/Territory
149	218541212	Nigeria
63	123379924	Ethiopia
57	110990103	Egypt
55	99010212	DR Congo
205	65497748	Tanzania
193	59893885	South Africa
106	54027487	Kenya
217	47249585	Uganda
198	46874204	Sudan
2	44903225	Algeria

```
In [39]: sns.barplot (data = dz.head(10), x = 'Country/Territory' , y = '2022 Population')
```

```
Out[39]: <AxesSubplot:xlabel='Country/Territory', ylabel='2022 Population'>
```



```
In [40]: dz = world_population[world_population['Continent'] == 'South America'].sort_values(by='2022 Population')
dz.head(10)
```

Out[40]:

	Rank	CCA3	Country/Territory	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	Pop
27	7	BRA	Brazil	Brasilia	South America	215313498	213196304	205188205	196353492	175
42	28	COL	Colombia	Bogota	South America	51874024	50930662	47119728	44816108	35
8	33	ARG	Argentina	Buenos Aires	South America	45510318	45036032	43257065	41100123	31

162	44	PER		Peru	Lima	South America	34049588	33304756	30711863	29229572	28
227	51	VEN		Venezuela	Caracas	South America	28301696	28490453	30529716	28715022	24
40	65	CHL		Chile	Santiago	South America	19603733	19300315	17870124	17004162	19
56	67	ECU		Ecuador	Quito	South America	18001000	17588595	16195902	14989585	16
24	80	BOL		Bolivia	Sucre	South America	12224110	11936162	11090085	10223270	8
161	109	PRY		Paraguay	Asunción	South America	6780744	6618695	6177950	5768613	5
223	133	URY		Uruguay	Montevideo	South America	3422794	3429086	3402818	3352651	3

In [43]:

dz = world_population[world_population['Continent'] == 'North America'].sort_values(by='dz').head(10)

Out[43]:

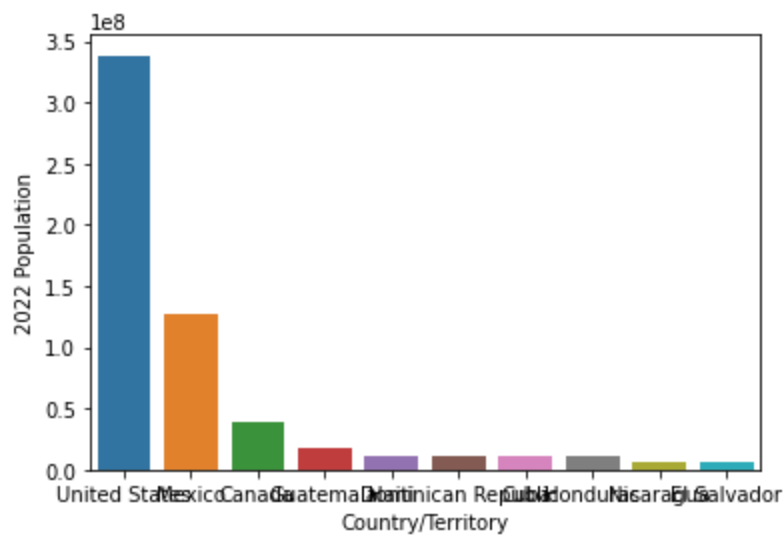
	Rank	CCA3	Country/Territory	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	Po
221	3	USA	United States	Washington, D.C.	North America	338289857	335942003	324607776	311182845	28
131	10	MEX	Mexico	Mexico City	North America	127504125	125998302	120149897	112532401	9
35	39	CAN	Canada	Ottawa	North America	38454327	37888705	35732126	33963412	3
82	68	GTM	Guatemala	Guatemala City	North America	17843908	17362718	16001107	14543121	1
87	82	HTI	Haiti	Port-au-Prince	North America	11584996	11306801	10563757	9842880	
54	84	DOM	Dominican Republic	Santo Domingo	North America	11228821	10999664	10405832	9775755	
47	85	CUB	Cuba	Havana	North America	11212191	11300698	11339894	11290417	1
88	89	HND	Honduras	Tegucigalpa	North America	10432860	10121763	9294505	8450933	
147	106	NIC	Nicaragua	Managua	North America	6948392	6755895	6298598	5855734	
58	112	SLV	El Salvador	San Salvador	North America	6336392	6292731	6231066	6114034	

In [45]:

sns.barplot (data = dz.head(10), x = 'Country/Territory' , y = '2022 Population')

Out[45]:

<AxesSubplot:xlabel='Country/Territory', ylabel='2022 Population'>



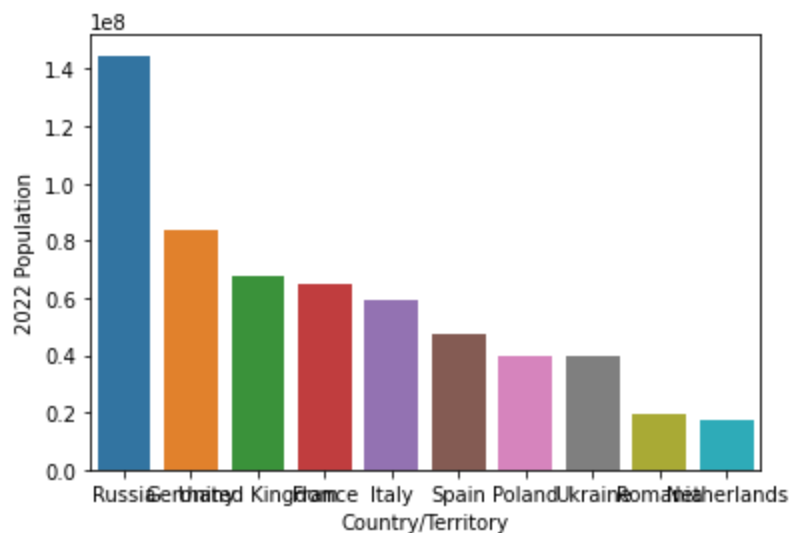
```
In [46]: dz = world_population[world_population['Continent'] == 'Europe'].sort_values(by='2022 Population')
dz.head(10)
```

Out[46]:

	Rank	CCA3	Country/Territory	Capital	Continent	2022 Population	2020 Population	2015 Population	2010 Population	Pop
171	9	RUS	Russia	Moscow	Europe	144713314	145617329	144668389	143242599	146
74	19	DEU	Germany	Berlin	Europe	83369843	83328988	82073226	81325090	81
220	21	GBR	United Kingdom	London	Europe	67508936	67059474	65224364	62760039	58
68	23	FRA	France	Paris	Europe	64626628	64480053	63809769	62444567	58
99	25	ITA	Italy	Rome	Europe	59037474	59500579	60232906	59822450	56
196	30	ESP	Spain	Madrid	Europe	47558630	47363807	46431342	46572772	40
164	37	POL	Poland	Warsaw	Europe	39857145	38428366	38553146	38597353	38
218	38	UKR	Ukraine	Kiev	Europe	39701739	43909666	44982564	45683020	48
170	64	ROU	Romania	Bucharest	Europe	19659267	19442038	19906079	20335211	21
144	71	NLD	Netherlands	Amsterdam	Europe	17564014	17434557	17041107	16617116	15

```
In [47]: sns.barplot (data = dz.head(10), x = 'Country/Territory' , y = '2022 Population')
```

Out[47]: <AxesSubplot:xlabel='Country/Territory', ylabel='2022 Population'>



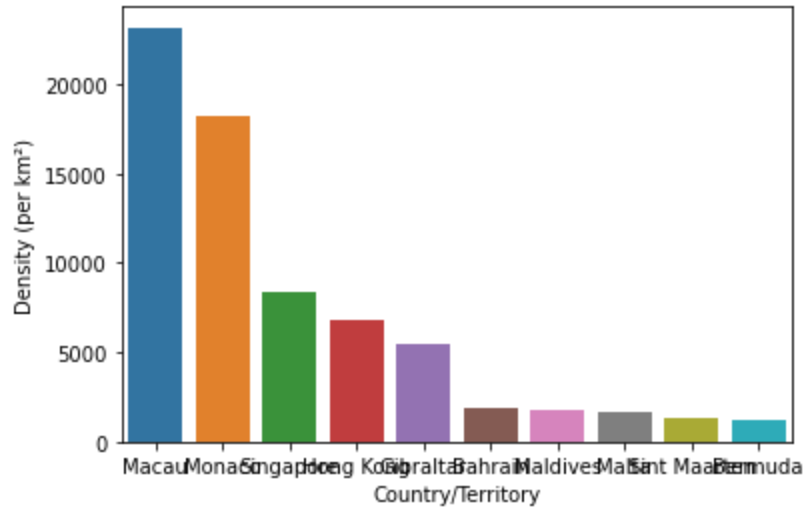
```
In [51]: df = world_population[['Density (per km²)', 'Country/Territory']].sort_values(by='Density', ascending=True)
```

Out[51]:

	Density (per km²)	Country/Territory
119	23172.2667	Macau
134	18234.5000	Monaco
187	8416.4634	Singapore
89	6783.3922	Hong Kong
76	5441.5000	Gibraltar
...
141	3.1092	Namibia
135	2.1727	Mongolia
230	2.1654	Western Sahara
64	0.3105	Falkland Islands
78	0.0261	Greenland

234 rows × 2 columns

```
In [52]: sns.barplot (data = df.head(10), x = 'Country/Territory' , y = 'Density (per km²)')
Out[52]: <AxesSubplot:xlabel='Country/Territory', ylabel='Density (per km²)'
```



```
In [53]: df = world_population[['Density (per km²)', 'Country/Territory']].sort_values(by='Density', ascending=True)
```

Out[53]:

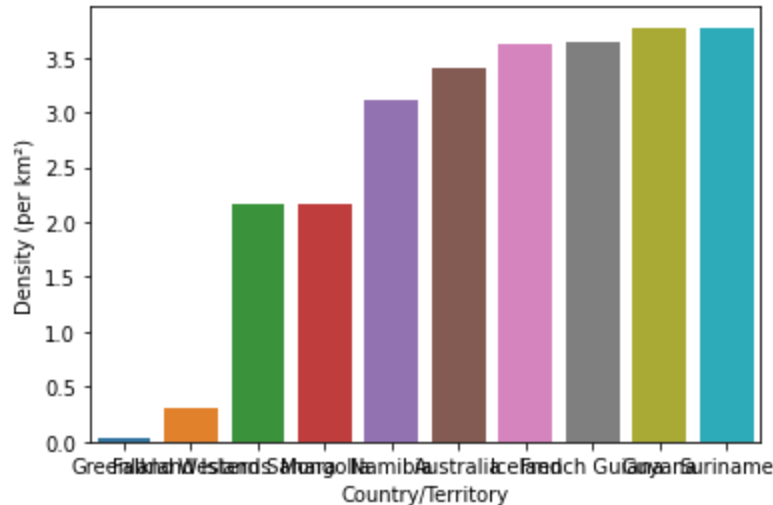
	Density (per km²)	Country/Territory
78	0.0261	Greenland
64	0.3105	Falkland Islands
230	2.1654	Western Sahara
135	2.1727	Mongolia
141	3.1092	Namibia
...
76	5441.5000	Gibraltar

89	6783.3922	Hong Kong
187	8416.4634	Singapore
134	18234.5000	Monaco
119	23172.2667	Macau

234 rows × 2 columns

```
In [54]: sns.barplot (data = df.head(10), x = 'Country/Territory' , y = 'Density (per km²)')
```

```
Out[54]: <AxesSubplot:xlabel='Country/Territory', ylabel='Density (per km²)'
```



```
In [56]: dz = world_population[world_population['Continent'] == 'Europe'].sum()
dz
```

```
Out[56]: Rank                                     6225
CCA3      ALBANDAUTBLRBLBELBIHBGRHRVCYPCZEDNKESTFROFINFRAD...
Country/Territory  AlbaniaAndorraAustriaBelarusBelgiumBosnia and ...
Capital      TiranaAndorra la VellaViennaMinskBrusselsSaraj...
Continent      EuropeEuropeEuropeEuropeEuropeEuropeEuropeEuro...
2022 Population                                     743147538
2020 Population                                     745792196
2015 Population                                     741535608
2010 Population                                     735613934
2000 Population                                     726093423
1990 Population                                     720320797
1980 Population                                     692527159
1970 Population                                     655923991
Area (km²)      23010411
Density (per km²) 33166.2371
Growth Rate      50.1128
World Population Percentage  9.33
dtype: object
```

```
In [65]: dz = world_population[world_population['Continent'] == 'Asia'].sum()
dz
```

```
Out[65]: Rank                                     3878
CCA3      AFGARMAZEBHRBGDBTNBRNKHMCNHGEOHKGINDIDNIRNIRQI...
Country/Territory  AfghanistanArmeniaAzerbaijanBahrainBangladeshB...
Capital      KabulYerevanBakuManamaDhakaThimphuBandar Seri ...
Continent      AsiaAsiaAsiaAsiaAsiaAsiaAsiaAsiaAsiaAsiaAsiaAs...
2022 Population                                     4721383274
2020 Population                                     4663086535
2015 Population                                     4458250182
2010 Population                                     4220041327
```

2000 Population	3735089604
1990 Population	3210563577
1980 Population	2635334228
1970 Population	2144906290
Area (km ²)	32138141
Density (per km ²)	51251.2068
Growth Rate	50.4692
World Population Percentage	59.19
dtype: object	

```
In [66]: dz = world_population[world_population['Continent'] == 'North America'].sum()  
dz
```

Out[66]:	Rank	6437
	CCA3	AIAATGABWBHSBRBBLZBMUVGBCANCYMCRICUBCUWDMADOMS...
	Country/Territory	AnguillaAntigua and BarbudaArubaBahamasBarbado...
	Capital	The ValleySaint John'sOranjestadNassauBridgeto...
	Continent	North AmericaNorth AmericaNorth AmericaNorth A...
	2022 Population	600296136
	2020 Population	594236593
	2015 Population	570383850
	2010 Population	542720651
	2000 Population	486069584
	1990 Population	421266425
	1980 Population	368293361
	1970 Population	315434606
	Area (km ²)	24244178
	Density (per km ²)	10910.4703
	Growth Rate	40.167
	World Population Percentage	7.51
	dtype: object	

```
In [68]: dz = world_population[world_population['Continent'] == 'South America'].sum()  
dz
```

Out[68]:	Rank	1366
	CCA3	ARGBOLBRACHLCOLECUFLKGUGUYPRYPERSURURYVEN
	Country/Territory	ArgentinaBoliviaBrazilChileColombiaEcuadorFalk...
	Capital	Buenos AiresSucreBrasiliaSantiagoBogotaQuitoSt...
	Continent	South AmericaSouth AmericaSouth AmericaSouth A...
	2022 Population	436816608
	2020 Population	431530043
	2015 Population	413134396
	2010 Population	393078250
	2000 Population	349634282
	1990 Population	297146415
	1980 Population	241789006
	1970 Population	192947156
	Area (km ²)	17833382
	Density (per km ²)	293.6077
	Growth Rate	14.1114
	World Population Percentage	5.48
	dtype: object	

```
In [69]: dz = world_population[world_population['Continent'] == 'Africa'].sum()  
dz
```

Out[69]:	Rank	5253
	CCA3	DZAAGOBENBWABFBABDICMRCPVCAFTCDCOMDJICODEGYGNQE...
	Country/Territory	AlgeriaAngolaBeninBotswanaBurkina FasoBurundiC...
	Capital	AlgiersLuandaPorto-NovoGaboroneOuagadougouBuju...
	Continent	AfricaAfricaAfricaAfricaAfricaAfricaAfricaAfri...
	2022 Population	1426730932
	2020 Population	1360671810
	2015 Population	1201102442
	2010 Population	1055228072

```

2000 Population      818946032
1990 Population      638150629
1980 Population      481536377
1970 Population      365444348
Area (km²)           30317963
Density (per km²)    7127.7158
Growth Rate          58.2109
World Population Percentage 17.87
dtype: object

```

```

In [71]: da=pd.DataFrame({
    'Population Year':['1970 Population ', '1980 Population ', '1990 Population ', '2000 Po
    'Population Europe':[655923991, 692527159, 720320797, 726093423, 735613934, 741535608, 74
    'Population Asia':[ 315434606, 2635334228, 3210563577, 3735089604, 393078250, 413134396,
    'Population North America':[315434606, 368293361, 421266425, 486069584, 542720651, 57038
    'Population South America':[192947156, 241789006, 297146415, 349634282, 393078250, 413134
    'Population Africa': [ 365444348, 481536377, 638150629, 818946032, 1055228072, 120110244
    })
da

```

Out[71]:	Population Year	Population Europe	Population Asia	Population North America	Population South America	Population Africa
0	1970 Population	655923991	315434606	315434606	192947156	365444348
1	1980 Population	692527159	2635334228	368293361	241789006	481536377
2	1990 Population	720320797	3210563577	421266425	297146415	638150629
3	2000 Population	726093423	3735089604	486069584	349634282	818946032
4	2010 Population	735613934	393078250	542720651	393078250	1055228072
5	2015 Population	741535608	413134396	570383850	413134396	1201102442
6	2020 Population	745792196	4663086535	594236593	431530043	1360671810
7	2022 Population	743147538	4721383274	600296136	436816608	1426730932

```

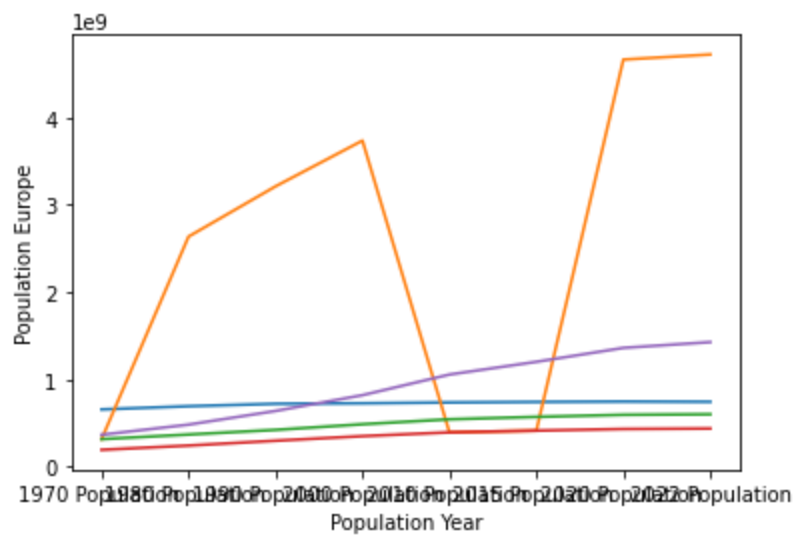
In [77]: sns.lineplot(data = da , x ='Population Year', y = 'Population Europe')
sns.lineplot(data = da , x ='Population Year', y = 'Population Asia')
sns.lineplot(data = da , x ='Population Year', y = 'Population North America')
sns.lineplot(data = da , x ='Population Year', y = 'Population South America')
sns.lineplot(data = da , x ='Population Year', y = 'Population Africa')

```

```

Out[77]: <AxesSubplot:xlabel='Population Year', ylabel='Population Europe'>

```



In []: