Olympic Data Analysis from 1896 to 2016

Importing necessary libraries.

In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

Reading both The CSV files and converting them to DataFrames using The Pandas library.

In [2]:

```
athlete = pd.DataFrame(pd.read_csv("A:/Olympic Dataset/athlete_events.csv"))
region = pd.DataFrame(pd.read_csv("A:/Olympic Dataset/noc_regions.csv"))
```

Viewing the athlete DataFrame to analyse the attrubutes.

In [3]:

```
athlete.head()
```

Out[3]:

	ID	Name	Sex	Age	Height	Weight	Team	NOC	Games	Year	Season
0	1	A Dijiang	M	24.0	180.0	80.0	China	CHN	1992 Summer	1992	Summer
1	2	A Lamusi	M	23.0	170.0	60.0	China	CHN	2012 Summer	2012	Summer
2	3	Gunnar Nielsen Aaby	M	24.0	NaN	NaN	Denmark	DEN	1920 Summer	1920	Summer
3	4	Edgar Lindenau Aabye	M	34.0	NaN	NaN	Denmark/Sweden	DEN	1900 Summer	1900	Summer
4	5	Christine Jacoba Aaftink	F	21.0	185.0	82.0	Netherlands	NED	1988 Winter	1988	Winter

Viewing the region DataFrame to analyse the attrubutes.

In [4]:

```
region.head()
```

Out[4]:

	NOC	region	notes
0	AFG	Afghanistan	NaN
1	AHO	Curacao	Netherlands Antilles
2	ALB	Albania	NaN
3	ALG	Algeria	NaN
4	AND	Andorra	NaN

Merginng the athlete and region DataFrames to create one DataFrame with all the Data we have and storing the new DataFrame.

In [5]:

```
athlete = athlete.merge((region.rename(columns = {"region": "Region", "notes": "Notes"})), how = "left", on = "NOC")
```

Checking if the merge happened correctly.

In [6]:

```
athlete.head()
```

Out[6]:

	ID	Name	Sex	Age	Height	Weight	Team	NOC	Games	Year	Season
0	1	A Dijiang	M	24.0	180.0	80.0	China	CHN	1992 Summer	1992	Summer
1	2	A Lamusi	M	23.0	170.0	60.0	China	CHN	2012 Summer	2012	Summer
2	3	Gunnar Nielsen Aaby	M	24.0	NaN	NaN	Denmark	DEN	1920 Summer	1920	Summer
3	4	Edgar Lindenau Aabye	M	34.0	NaN	NaN	Denmark/Sweden	DEN	1900 Summer	1900	Summer
4	5	Christine Jacoba Aaftink	F	21.0	185.0	82.0	Netherlands	NED	1988 Winter	1988	Winter

Viewing the shape, info and description of the dataset to analyse the spread of data.

In [7]:

```
athlete.shape
```

Out[7]:

(271116, 17)

In [8]:

```
athlete.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 271116 entries, 0 to 271115
Data columns (total 17 columns):
 #   Column  Non-Null Count   Dtype  
---  ------  --------------   -----  
 0   ID      271116 non-null  int64  
 1   Name    271116 non-null  object 
 2   Sex     271116 non-null  object 
 3   Age     261642 non-null  float64
 4   Height  210945 non-null  float64
 5   Weight  208241 non-null  float64
 6   Team    271116 non-null  object 
 7   NOC     271116 non-null  object 
 8   Games   271116 non-null  object 
 9   Year    271116 non-null  int64  
 10  Season  271116 non-null  object 
 11  City    271116 non-null  object 
 12  Sport   271116 non-null  object 
 13  Event   271116 non-null  object 
 14  Medal   39783 non-null   object 
 15  Region  270746 non-null  object 
 16  Notes   5039 non-null    object 
dtypes: float64(3), int64(2), object(12)
memory usage: 37.2+ MB
```

In [9]:

```
athlete.describe()
```

Out[9]:

	ID	Age	Height	Weight	Year
count	271116.000000	261642.000000	210945.000000	208241.000000	271116.000000
mean	68248.954396	25.556898	175.338970	70.702393	1978.378480
std	39022.286345	6.393561	10.518462	14.348020	29.877632
min	1.000000	10.000000	127.000000	25.000000	1896.000000
25%	34643.000000	21.000000	168.000000	60.000000	1960.000000
50%	68205.000000	24.000000	175.000000	70.000000	1988.000000
75%	102097.250000	28.000000	183.000000	79.000000	2002.000000
max	135571.000000	97.000000	226.000000	214.000000	2016.000000

Checking for null values if any and if present then how many and in which columns?

In [10]:

```
athlete.isna().any()
```

Out[10]:

```
ID       False
Name     False
Sex      False
Age       True
Height    True
Weight    True
Team     False
NOC      False
Games    False
Year     False
Season   False
City     False
Sport    False
Event    False
Medal     True
Region    True
Notes     True
dtype: bool
```

In [11]:

```
athlete.isnull().sum()
```

Out[11]:

```
ID          0
Name        0
Sex         0
Age      9474
Height  60171
Weight  62875
Team        0
NOC         0
Games       0
Year        0
Season      0
City        0
Sport       0
Event       0
Medal  231333
Region    370
Notes  266077
dtype: int64
```

In [12]:

```
null_columns = []
for i in athlete:
    if athlete[i].isna().any():
        null_columns.append(i)
print(null_columns)
```

['Age', 'Height', 'Weight', 'Medal', 'Region', 'Notes']

Athlete data from Team India.

In [13]:

```
athlete[athlete['Team'] == "India"]
```

Out[13]:

	ID	Name	Sex	Age	Height	Weight	Team	NOC	Games	Year	Seas
505	281	S. Abdul Hamid	M	NaN	NaN	NaN	India	IND	1928 Summer	1928	Sumı
506	281	S. Abdul Hamid	M	NaN	NaN	NaN	India	IND	1928 Summer	1928	Sumı
895	512	Shiny Kurisingal Abraham-Wilson	F	19.0	167.0	53.0	India	IND	1984 Summer	1984	Sumı
896	512	Shiny Kurisingal Abraham-Wilson	F	19.0	167.0	53.0	India	IND	1984 Summer	1984	Sumı
897	512	Shiny Kurisingal Abraham-Wilson	F	23.0	167.0	53.0	India	IND	1988 Summer	1988	Sumı
...	...	...	...	...	...	...	...	...	...	...	
264139	132177	Mohammad Anas Yahiya	M	21.0	177.0	69.0	India	IND	2016 Summer	2016	Sumı
265876	133029	Thyadathuvilla Chandrapillai "T. C." Yohannan	M	29.0	174.0	62.0	India	IND	1976 Summer	1976	Sumı
266934	133554	Sayed Muhammad Yusuf	M	NaN	NaN	NaN	India	IND	1928 Summer	1928	Sumı
270912	135480	Geeta Zutshi	F	23.0	167.0	51.0	India	IND	1980 Summer	1980	Sumı
270913	135480	Geeta Zutshi	F	27.0	167.0	51.0	India	IND	1984 Summer	1984	Sumı

1400 rows × 17 columns

Athlete data from Team United States.

In [14]:

```
athlete[athlete['Team'] == "United States"]
```

Out[14]:

	ID	Name	Sex	Age	Height	Weight	Team	NOC	Games	Year	Season
10	6	Per Knut Aaland	M	31.0	188.0	75.0	United States	USA	1992 Winter	1992	Winter
11	6	Per Knut Aaland	M	31.0	188.0	75.0	United States	USA	1992 Winter	1992	Winter
12	6	Per Knut Aaland	M	31.0	188.0	75.0	United States	USA	1992 Winter	1992	Winter
13	6	Per Knut Aaland	M	31.0	188.0	75.0	United States	USA	1992 Winter	1992	Winter
14	6	Per Knut Aaland	M	33.0	188.0	75.0	United States	USA	1994 Winter	1994	Winter
...	...	...	...	...	...	...	...	...	...	...	...
270850	135458	Rami Zur	M	27.0	175.0	77.0	United States	USA	2004 Summer	2004	Summer
270851	135458	Rami Zur	M	31.0	175.0	77.0	United States	USA	2008 Summer	2008	Summer
270852	135458	Rami Zur	M	31.0	175.0	77.0	United States	USA	2008 Summer	2008	Summer
271044	135543	Victor Andrew "Vic" Zwolak	M	25.0	175.0	64.0	United States	USA	1964 Summer	1964	Summer
271107	135566	James Francis "Jim" Zylker	M	21.0	175.0	75.0	United States	USA	1972 Summer	1972	Summer

17847 rows × 17 columns

Athlete data from Team Great Britain.

In [15]:

```
athlete[athlete['Team'] == "Great Britain"]
```

Out[15]:

	ID	Name	Sex	Age	Height	Weight	Team	NOC	Games	Year	Seasor
785	453	Leslie Ablett	M	24.0	NaN	NaN	Great Britain	GBR	1928 Summer	1928	Summe
786	453	Leslie Ablett	M	32.0	NaN	NaN	Great Britain	GBR	1936 Summer	1936	Summe
888	509	Gary Abraham	M	17.0	175.0	64.0	Great Britain	GBR	1976 Summer	1976	Summe
889	509	Gary Abraham	M	17.0	175.0	64.0	Great Britain	GBR	1976 Summer	1976	Summe
890	509	Gary Abraham	M	21.0	175.0	64.0	Great Britain	GBR	1980 Summer	1980	Summe
...	...	...	...	...	...	...	...	...	...	...	..
269996	135072	Anna Katrina Zinkeisen (-Heseltine)	F	46.0	NaN	NaN	Great Britain	GBR	1948 Summer	1948	Summe
269997	135072	Anna Katrina Zinkeisen (-Heseltine)	F	46.0	NaN	NaN	Great Britain	GBR	1948 Summer	1948	Summe
269998	135073	Doris Clare Zinkeisen (-Johnstone)	F	49.0	NaN	NaN	Great Britain	GBR	1948 Summer	1948	Summe
269999	135073	Doris Clare Zinkeisen (-Johnstone)	F	49.0	NaN	NaN	Great Britain	GBR	1948 Summer	1948	Summe
270011	135080	Francesca Zino	F	25.0	180.0	72.0	Great Britain	GBR	2000 Summer	2000	Summe

11404 rows × 17 columns

Top 10 Teams with the highest participation count.

In [16]:

```
athlete.Team.value_counts().head(10)
```

Out[16]:

```
United States    17847
France           11988
Great Britain    11404
Italy            10260
Germany           9326
Canada            9279
Japan             8289
Sweden            8052
Australia         7513
Hungary           6547
Name: Team, dtype: int64
```

Top 10 teams with the lowest participation count.

In [17]:

```
athlete.Team.value_counts().tail(10)
```

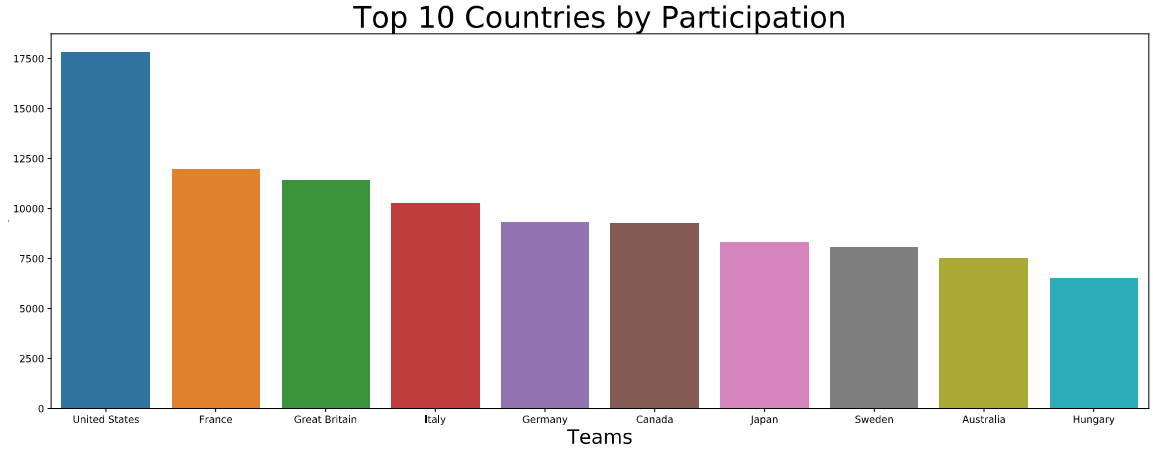
Out[17]:

```
Laurea-1         1
Dick-8           1
Brentina         1
Carabinier-15    1
Crabe I-2        1
Nrnberg          1
Verveine-41      1
Bremen           1
Cuxhaven         1
Femur-18         1
Name: Team, dtype: int64
```

Plotting a bar graph for the top 10 teams with most number of participation using the matplotlib ans seaborn libraries.

In [18]:

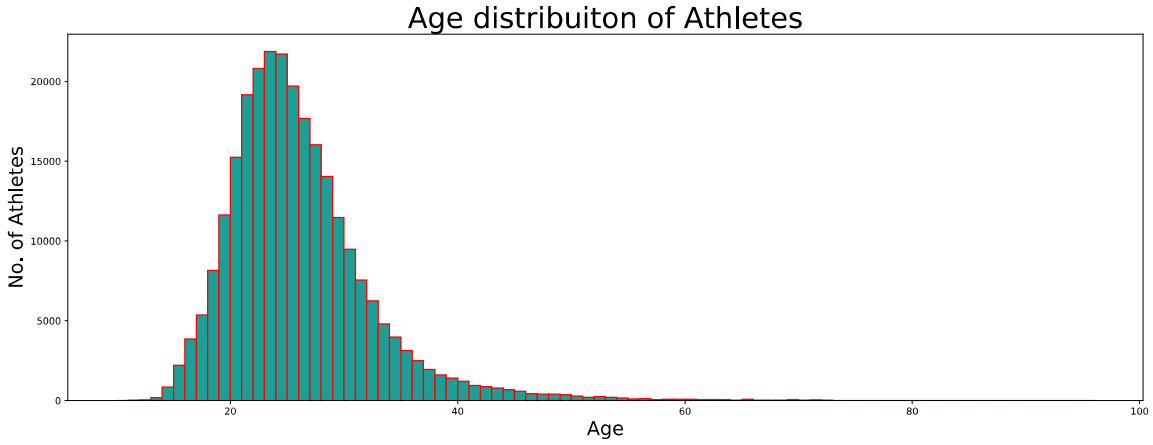
```
plt.figure(figsize=(20,7))
plt.title("Top 10 Countries by Participation", size = 30)
plt.xticks(rotation = 0)
plt.yticks(rotation = 0)
plt.xlabel("Teams", size = 20)
plt.ylabel("No. of Participations", size = 0)
sns.barplot(x = athlete.Team.value_counts().head(10).index, y = athlete.Team.value_counts().head(10))
plt.show()
```



Plotting the age distribution of the athletes using a histogram from the matplotlib library.

In [19]:

```
plt.figure(figsize=(20, 7))
plt.title("Age distribuiton of Athletes", size = 30)
plt.xlabel("Age", size = 20)
plt.ylabel("No. of Athletes", size = 20)
plt.hist(athlete['Age'], bins = np.arange(10, 97, 1), color = ('#1BA098FF'), edgecolor = ('#FF0000FF'))
plt.show()
```



Finding all the sports played in the summer olympics.

In [20]:

```
athlete[athlete['Season'] == 'Summer']['Sport'].unique()
```

Out[20]:

```
array(['Basketball', 'Judo', 'Football', 'Tug-Of-War', 'Athletics',
       'Swimming', 'Badminton', 'Sailing', 'Gymnastics',
       'Art Competitions', 'Handball', 'Weightlifting', 'Wrestling',
       'Water Polo', 'Hockey', 'Rowing', 'Fencing', 'Equestrianism',
       'Shooting', 'Boxing', 'Taekwondo', 'Cycling', 'Diving', 'Canoeing',
       'Tennis', 'Modern Pentathlon', 'Golf', 'Softball', 'Archery',
       'Volleyball', 'Synchronized Swimming', 'Table Tennis', 'Baseball',
       'Rhythmic Gymnastics', 'Rugby Sevens', 'Trampolining',
       'Beach Volleyball', 'Triathlon', 'Rugby', 'Lacrosse', 'Polo',
       'Cricket', 'Ice Hockey', 'Racquets', 'Motorboating', 'Croquet',
       'Figure Skating', 'Jeu De Paume', 'Roque', 'Basque Pelota',
       'Alpinism', 'Aeronautics'], dtype=object)
```

Finding all the sports played in the winter olympics.

In [21]:

```
athlete[athlete['Season'] == 'Winter']['Sport'].unique()
```

Out[21]:

```
array(['Speed Skating', 'Cross Country Skiing', 'Ice Hockey', 'Biathlon',
       'Alpine Skiing', 'Luge', 'Bobsleigh', 'Figure Skating',
       'Nordic Combined', 'Freestyle Skiing', 'Ski Jumping', 'Curling',
       'Snowboarding', 'Short Track Speed Skating', 'Skeleton',
       'Military Ski Patrol', 'Alpinism'], dtype=object)
```

Count of Athletes by Gender.

In [22]:

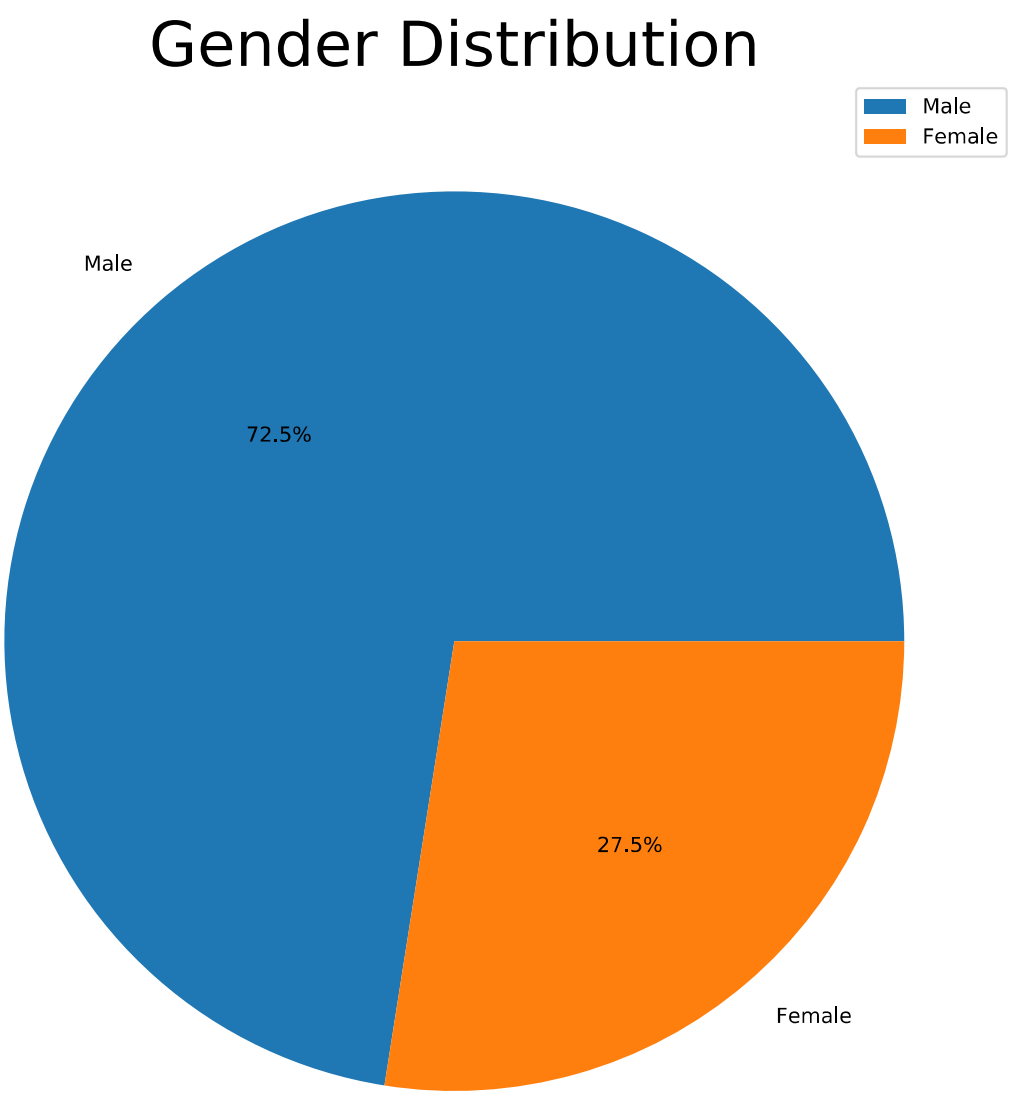
```
athlete['Sex'].value_counts()
```

Out[22]:

```
M    196594
F     74522
Name: Sex, dtype: int64
```

In [23]:

```
plt.figure(figsize=(20, 10))
plt.title('Gender Distribution', size = 30)
plt.pie(athlete['Sex'].value_counts(), labels = ['Male', 'Female'], autopct="%1.1f%%")
plt.legend()
plt.show()
```



Count of Female athletes.

Count of participants in each sport catogory.

In [24]:

```
print("{:<26s}|{:>6s}".format("Sport", "Count"))
print("-"*26+"|"+"-"*6)
for i in athlete['Sport'].unique():
   print("{:<26s}|{:>6d}" .format(i, athlete[athlete['Sport'] == i]['Sport'].count()))
```

Sport	Count
Basketball	4536
Judo	3801
Football	6745
Tug-Of-War	170
Speed Skating	5613
Cross Country Skiing	9133
Athletics	38624
Ice Hockey	5516
Swimming	23195
Badminton	1457
Sailing	6586
Biathlon	4893
Gymnastics	26707
Art Competitions	3578
Alpine Skiing	8829
Handball	3665
Weightlifting	3937
Wrestling	7154
Luge	1479
Water Polo	3846
Hockey	5417
Rowing	10595
Bobsleigh	3058
Fencing	10735
Equestrianism	6344
Shooting	11448
Boxing	6047
Taekwondo	606
Cycling	10859
Diving	2842
Canoeing	6171
Tennis	2862
Modern Pentathlon	1677
Figure Skating	2298
Golf	247
Softball	478
Archery	2334
Volleyball	3404
Synchronized Swimming	909
Table Tennis	1955
Nordic Combined	1344
Baseball	894
Rhythmic Gymnastics	658
Freestyle Skiing	937
Rugby Sevens	299
Trampolining	152
Beach Volleyball	564
Triathlon	529
Ski Jumping	2401
Curling	463
Snowboarding	936
Rugby	162
Short Track Speed Skating	1534
Skeleton	199
Lacrosse	60
Polo	95
Cricket	24
Racquets	12
Motorboating	17

Military Ski Patrol | 24
Croquet | 19
Jeu De Paume | 11
Roque | 4
Alpinism | 25
Basque Pelota | 2
Aeronautics | 1

Count of participants in each summer sport.

In [25]:

```
print("{:<20s}|{:>6s}".format("Sport", "Count"))
print("-"*20+"|"+"-"*6)
for i in athlete[athlete['Season'] == 'Summer']['Sport'].unique():
    print("{:<20s}|{:>6d}" .format(i, athlete[athlete['Sport'] == i]['Sport'].count()))
```

Sport	Count
Basketball	4536
Judo	3801
Football	6745
Tug-Of-War	170
Athletics	38624
Swimming	23195
Badminton	1457
Sailing	6586
Gymnastics	26707
Art Competitions	3578
Handball	3665
Weightlifting	3937
Wrestling	7154
Water Polo	3846
Hockey	5417
Rowing	10595
Fencing	10735
Equestrianism	6344
Shooting	11448
Boxing	6047
Taekwondo	606
Cycling	10859
Diving	2842
Canoeing	6171
Tennis	2862
Modern Pentathlon	1677
Golf	247
Softball	478
Archery	2334
Volleyball	3404
Synchronized Swimming	909
Table Tennis	1955
Baseball	894
Rhythmic Gymnastics	658
Rugby Sevens	299
Trampolining	152
Beach Volleyball	564
Triathlon	529
Rugby	162
Lacrosse	60
Polo	95
Cricket	24
Ice Hockey	5516
Racquets	12
Motorboating	17
Croquet	19
Figure Skating	2298
Jeu De Paume	11
Roque	4
Basque Pelota	2
Alpinism	25
Aeronautics	1

Count of participants in each winter sport.

In [26]:

```
print("{:<26s}|{:>6s}".format("Sport", "Count"))
print("-"*26+"|"+"-"*6)
for i in athlete[athlete['Season'] == 'Winter']['Sport'].unique():
  print("{:<26s}|{:>6d}" .format(i, athlete[athlete['Sport'] == i]['Sport'].count()))
```

```
Sport                     | Count
--------------------------|------
Speed Skating             |  5613
Cross Country Skiing      |  9133
Ice Hockey                |  5516
Biathlon                  |  4893
Alpine Skiing             |  8829
Luge                      |  1479
Bobsleigh                 |  3058
Figure Skating            |  2298
Nordic Combined           |  1344
Freestyle Skiing          |   937
Ski Jumping               |  2401
Curling                   |   463
Snowboarding              |   936
Short Track Speed Skating |  1534
Skeleton                  |   199
Military Ski Patrol       |    24
Alpinism                  |    25
```

Count of Male and Female participants in each sport category.

In [27]:

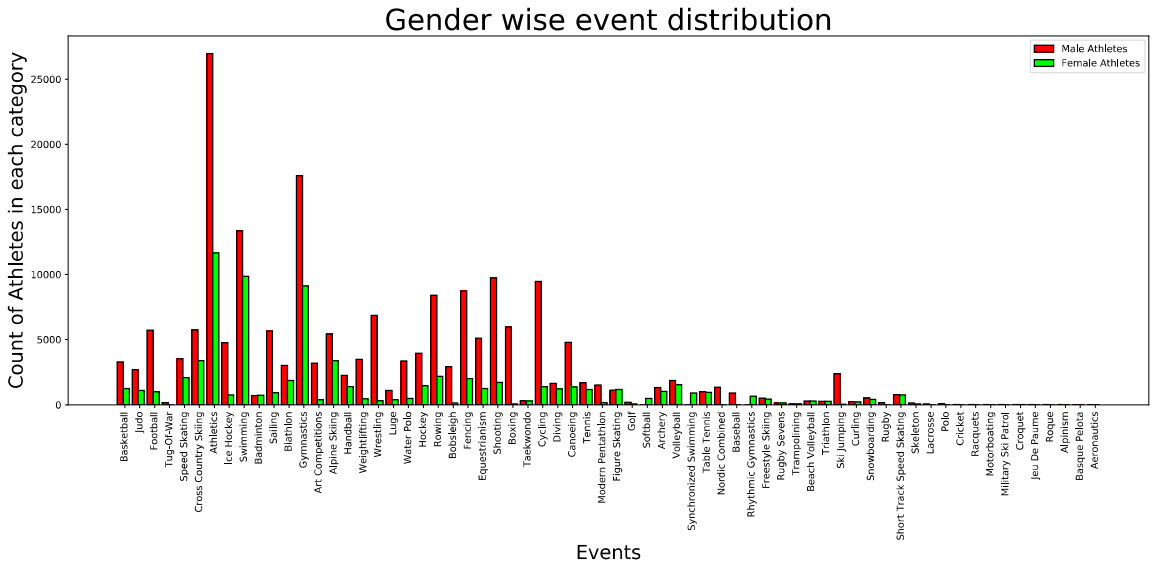
```
gender_count = {}
print("{:<26s}|{:>14s}|{:>14s}".format("Sport", " Male Count", "Female Count"))
print("-"*26 + "|" + "-"*14 + "|" + "-"*14)
for i in athlete['Sport'].unique():
    gender_count[i] = [athlete[(athlete['Sex'] == 'M') & (athlete['Sport'] == i)]['Sport'].count(), athlete[(athlete['Sex'] ==
'F') & (athlete['Sport'] == i)]['Sport'].count()]
    print("{:<26s}|{:>14d}|{:>14d}" .format(i, athlete[(athlete['Sex'] == 'M') & (athlete['Sport'] == i)]['Sport'].count(), athl
ete[(athlete['Sex'] == 'F') & (athlete['Sport'] == i)]['Sport'].count()))
```

Sport	Male Count	Female Count
Basketball	3280	1256
Judo	2708	1093
Football	5733	1012
Tug-Of-War	170	0
Speed Skating	3532	2081
Cross Country Skiing	5748	3385
Athletics	26958	11666
Ice Hockey	4762	754
Swimming	13345	9850
Badminton	717	740
Sailing	5660	926
Biathlon	3030	1863
Gymnastics	17578	9129
Art Competitions	3201	377
Alpine Skiing	5431	3398
Handball	2264	1401
Weightlifting	3474	463
Wrestling	6850	304
Luge	1102	377
Water Polo	3358	488
Hockey	3958	1459
Rowing	8402	2193
Bobsleigh	2915	143
Fencing	8735	2000
Equestrianism	5098	1246
Shooting	9724	1724
Boxing	5975	72
Taekwondo	307	299
Cycling	9465	1394
Diving	1632	1210
Canoeing	4791	1380
Tennis	1684	1178
Modern Pentathlon	1513	164
Figure Skating	1126	1172
Golf	177	70
Softball	0	478
Archery	1319	1015
Volleyball	1861	1543
Synchronized Swimming	0	909
Table Tennis	1002	953
Nordic Combined	1344	0
Baseball	894	0
Rhythmic Gymnastics	0	658
Freestyle Skiing	504	433
Rugby Sevens	151	148
Trampolining	76	76
Beach Volleyball	288	276
Triathlon	266	263
Ski Jumping	2371	30
Curling	241	222
Snowboarding	520	416
Rugby	162	0
Short Track Speed Skating	773	761
Skeleton	133	66
Lacrosse	60	0
Polo	95	0
Cricket	24	0
Racquets	12	0
Motorboating	16	1

Military Ski Patrol	24	0
Croquet	13	6
Jeu De Paume	11	0
Roque	4	0
Alpinism	24	1
Basque Pelota	2	0
Aeronautics	1	0

In [28]:

```
plt.figure(figsize=(20,7))
plt.title("Gender wise event distribution", size = 30)
plt.xlabel("Events", size = 20)
plt.ylabel("Count of Athletes in each category", size = 20)
x = np.arange(len(list(gender_count.values())))
plt.bar(x-0.2,list(list(zip(*list(gender_count.values())))[0]), 0.4, label="Male Athletes", color = ('#FF0000FF'), edgecolor = ('#000000FF'))
plt.bar(x+0.2,list(list(zip(*list(gender_count.values())))[1]), 0.4, label="Female Athletes", color = ('#00FF00FF'), edgecolor = ('#000000FF'))
plt.xticks(x+0.1, gender_count.keys(), rotation = 90)
plt.legend()
plt.show()
```



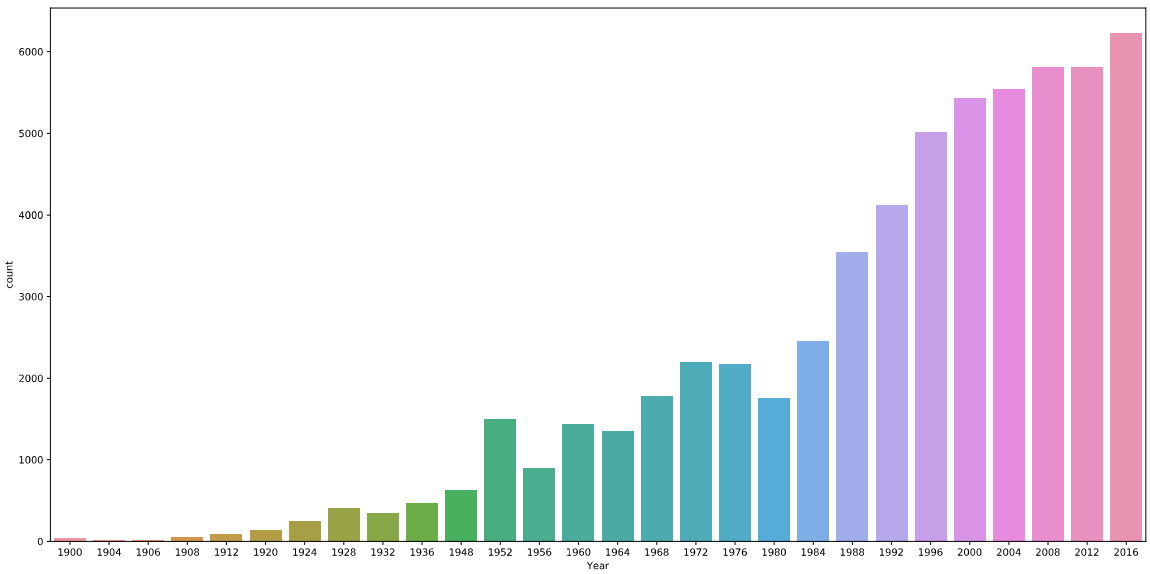
Athlete count each year since the inception of the Olympics.

In [29]:

```
plt.figure(figsize=(20,10))
sns.lineplot(x = 'Year', y = 'Male', data = athlete[(athlete['Sex'] == 'M') & (athlete['Season'] == 'Summer')][['Sex', 'Year']].
groupby('Year').count().reset_index().rename(columns={'Sex':'Male'}), color = '#FF0000FF')
sns.lineplot(x = 'Year', y = 'Female', data = athlete[(athlete['Sex'] == 'F') & (athlete['Season'] == 'Summer')][['Sex', 'Year'
]].groupby('Year').count().reset_index().rename(columns={'Sex':'Female'}), color = '#00FF00FF')
plt.legend(labels = ['Male', 'Female'])
plt.show()
```

In [30]:

```
plt.figure(figsize=(20,10))
sns.countplot(x = 'Year', data = athlete[(athlete['Sex'] == 'F') & (athlete['Season'] == 'Summer')])
plt.show()
```



In [31]:

```
athlete[athlete['Medal'] == 'Gold']['Region'].value_counts().reset_index(name='Medal').head(50)
```

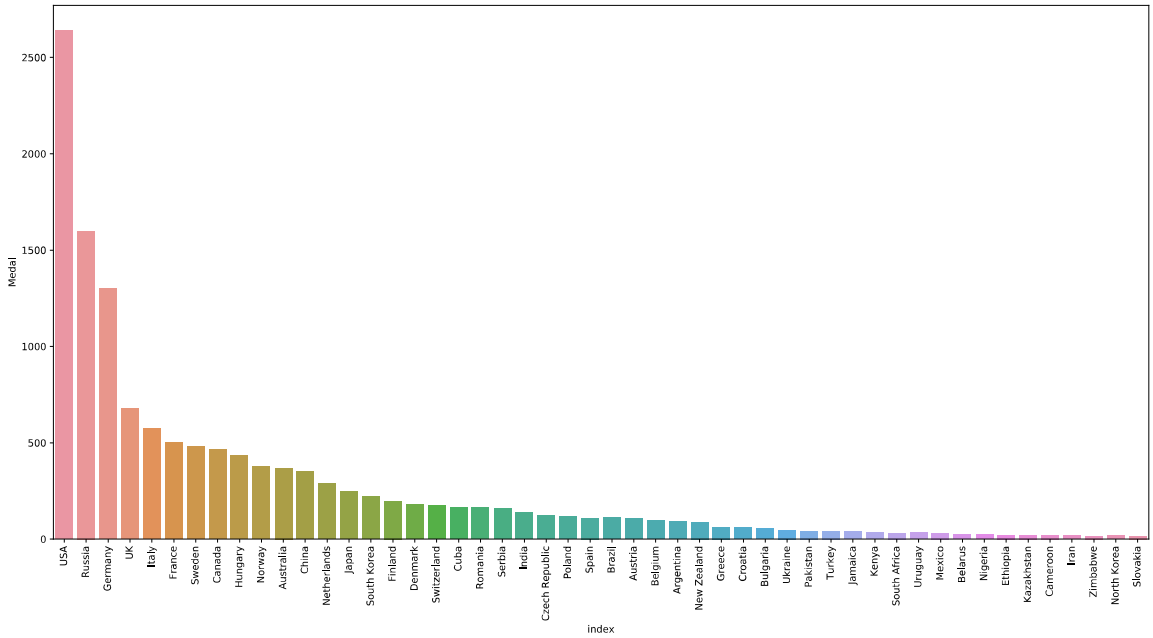
Out[31]:

	index	Medal
0	USA	2638
1	Russia	1599
2	Germany	1301
3	UK	678
4	Italy	575
5	France	501
6	Sweden	479
7	Canada	463
8	Hungary	432
9	Norway	378
10	Australia	368
11	China	351
12	Netherlands	287
13	Japan	247
14	South Korea	221
15	Finland	198
16	Denmark	179
17	Switzerland	175
18	Cuba	164
19	Romania	161
20	Serbia	157
21	India	138
22	Czech Republic	123
23	Poland	117
24	Spain	110
25	Brazil	109
26	Austria	108
27	Belgium	98
28	Argentina	91
29	New Zealand	90
30	Greece	62
31	Croatia	58
32	Bulgaria	54
33	Ukraine	47
34	Pakistan	42
35	Turkey	40
36	Jamaica	38

	index	Medal
37	Kenya	34
38	South Africa	32
39	Uruguay	31
40	Mexico	30
41	Belarus	24
42	Nigeria	23
43	Ethiopia	22
44	Kazakhstan	20
45	Cameroon	20
46	Iran	18
47	Zimbabwe	17
48	North Korea	16
49	Slovakia	15

In [32]:

```
plt.figure(figsize=(20, 10))
sns.barplot(x = 'index', y = 'Medal', data = athlete[athlete['Medal'] == 'Gold']['Region'].value_counts().reset_index(name='Medal').head(50))
plt.xticks(rotation = 90)
plt.show()
```



In [33]:

```
athlete[(athlete['Year'] == max(athlete['Year'])) & (athlete['Medal'] == 'Gold')]['Region'].value_counts().reset_index(na
me='Medals')
```

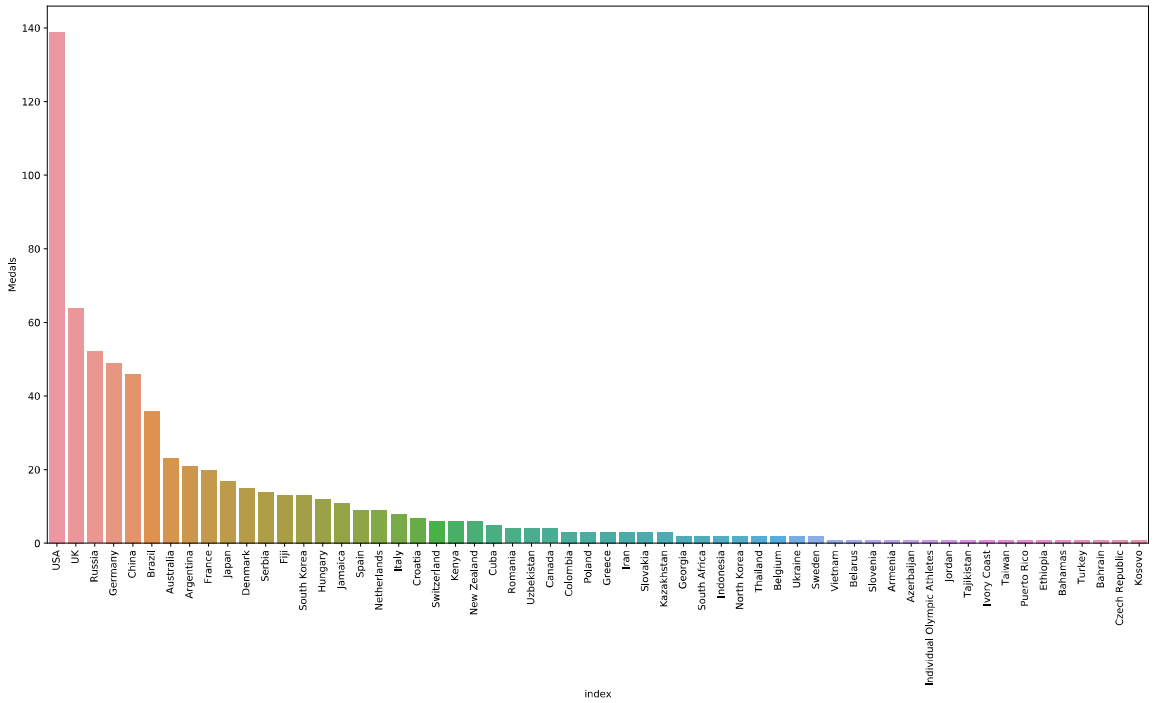
Out[33]:

	index	Medals
0	USA	139
1	UK	64
2	Russia	52
3	Germany	49
4	China	46
5	Brazil	36
6	Australia	23
7	Argentina	21
8	France	20
9	Japan	17
10	Denmark	15
11	Serbia	14
12	Fiji	13
13	South Korea	13
14	Hungary	12
15	Jamaica	11
16	Spain	9
17	Netherlands	9
18	Italy	8
19	Croatia	7
20	Switzerland	6
21	Kenya	6
22	New Zealand	6
23	Cuba	5
24	Romania	4
25	Uzbekistan	4
26	Canada	4
27	Colombia	3
28	Poland	3
29	Greece	3
30	Iran	3
31	Slovakia	3
32	Kazakhstan	3
33	Georgia	2
34	South Africa	2
35	Indonesia	2
36	North Korea	2

	index	Medals
37	Thailand	2
38	Belgium	2
39	Ukraine	2
40	Sweden	2
41	Vietnam	1
42	Belarus	1
43	Slovenia	1
44	Armenia	1
45	Azerbaijan	1
46	Individual Olympic Athletes	1
47	Jordan	1
48	Tajikistan	1
49	Ivory Coast	1
50	Taiwan	1
51	Puerto Rico	1
52	Ethiopia	1
53	Bahamas	1
54	Turkey	1
55	Bahrain	1
56	Czech Republic	1
57	Kosovo	1

In [34]:

```
plt.figure(figsize=(20, 10))
sns.barplot(x = 'index', y = 'Medals', data = athlete[(athlete['Year'] == max(athlete['Year'])) & (athlete['Medal'] == 'Gold'
)]['Region'].value_counts().reset_index(name='Medals'))
plt.xticks(rotation=90)
plt.show()
```



In [ ]:

```
```