OLYPIC Q&A ANALYSIS

120 years of Olympic history: atheletes and results

CONTENT

The file athlete_events.csv contains 271116 rows and 15 columns. Each row corresponds to an individual athlete competing in an individual Olympic event (athlete-events). The columns are:

ID - Unique number for each athlete

Name - Athlete's name

Sex - M or F

Age - Integer

Height - In centimeters

Weight - In kilograms

Team - Team name

NOC - National Olympic Committee 3-letter code

Games - Year and season

Year - Integer

Season - Summer or Winter

City - Host city

Sport - Sport

Event - Event

Medal - Gold, Silver, Bronze, or NA

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

```
In [2]:
             df = pd.read_csv('athlete_events.csv')
In [3]:
              df.head()
    Out[3]:
                  ID
                              Sex
                                    Age Height Weight
                                                                   Team NOC
                                                                                              Season
                        Name
                                                                                Games
                                                                                        Year
                                                                                              Summer
               0
                     A Dijiang
                                    24.0
                                           180.0
                                                   0.08
                                                                   China
                                                                         CHN
                                                                                        1992
                  1
                                М
                                                                               Summer
                                                                                  2012
               1
                  2
                                М
                                    23.0
                                           170.0
                                                   60.0
                                                                   China
                                                                         CHN
                                                                                        2012 Summer
                                                                               Summer
                       Lamusi
                       Gunnar
                                                                                  1920
                       Nielsen
                                M 24.0
                                           NaN
                                                   NaN
                                                                Denmark DEN
                                                                                        1920 Summer A
                                                                               Summer
                         Aaby
                        Edgar
                                                                                  1900
               3
                     Lindenau
                                M 34.0
                                           NaN
                                                   NaN
                                                         Denmark/Sweden
                                                                         DEN
                                                                                        1900
                                                                                             Summer
                                                                               Summer
                        Aabye
                      Christine
                                                                                  1988
                                                   82.0
                                                                                        1988
                                 F 21.0
                                           185.0
                                                              Netherlands NED
                                                                                                Winter
                       Jacoba
                                                                                 Winter
                       Aaftink
```

1. How many olympics games have been held?

2. List down all Olympics games held so far.

```
In [5]:  print('The olypic games held are:')
pd.Series(df['Games'].unique().tolist()).to_frame()
```

The olypic games held are:

Out[5]:

- 0
- 0 1992 Summer
- 1 2012 Summer
- 2 1920 Summer
- **3** 1900 Summer
- **4** 1988 Winter
- 5 1992 Winter
- 6 1994 Winter
- **7** 1932 Summer
- 8 2002 Winter
- 9 1952 Summer
- **10** 1980 Winter
- 11 2000 Summer
- **12** 1996 Summer
- **13** 1912 Summer
- **14** 1924 Summer
- **15** 2014 Winter
- **16** 1948 Summer
- **17** 1998 Winter
- **18** 2006 Winter
- 19 2008 Summer
- 20 2016 Summer
- 21 2004 Summer
- 22 1960 Winter
- 23 1964 Winter
- 24 1984 Winter
- 25 1984 Summer
- 26 1968 Summer
- **27** 1972 Summer
- 28 1988 Summer
- **29** 1936 Summer
- **30** 1952 Winter
- **31** 1956 Winter
- **32** 1956 Summer

> 1904 Summer 1928 Winter

> 1908 Summer

1948 Winter

1932 Winter

1936 Winter

1896 Summer

44

46

47

48

49

3. Mention the total no of nations who participated in each olympics game?

In [6]: ► df.groupby('Games').NOC.nunique().to_frame()

Out[6]:

NOC

	NOC
Games	
1896 Summer	12
1900 Summer	31
1904 Summer	15
1906 Summer	21
1908 Summer	22
1912 Summer	29
1920 Summer	29
1924 Summer	45
1924 Winter	19
1928 Summer	46
1928 Winter	25
1932 Summer	47
1932 Winter	17
1936 Summer	49
1936 Winter	28
1948 Summer	59
1948 Winter	28
1952 Summer	69
1952 Winter	30
1956 Summer	72
1956 Winter	32
1960 Summer	84
1960 Winter	30
1964 Summer	93
1964 Winter	36
1968 Summer	112
1968 Winter	37
1972 Summer	121
1972 Winter	35
1976 Summer	92
1976 Winter	37
1980 Summer	80
1980 Winter	37
1984 Summer	140

NOC

Games	
1984 Winter	49
1988 Summer	159
1988 Winter	57
1992 Summer	169
1992 Winter	64
1994 Winter	67
1996 Summer	197
1998 Winter	72
2000 Summer	200
2002 Winter	77
2004 Summer	201
2006 Winter	79
2008 Summer	204
2010 Winter	82
2012 Summer	205
2014 Winter	89
2016 Summer	207

4. Which year saw the highest and lowest no of countries participating in olympics

```
In [7]:
            # country with mininum participation
            df.groupby('Games').NOC.nunique().reset_index().min().to_frame()
   Out[7]:
                             0
                    1896 Summer
             Games
               NOC
                             12
In [8]:
            # country with mininum participation
            df.groupby('Games').NOC.nunique().reset_index().max().to_frame()
   Out[8]:
                             0
             Games 2016 Summer
               NOC
                            207
```

5. Which nation has participated in all of the olympic games

6. Identify the sport which was played in all summer olympics.

In [10]: pd.Series(df[df.Season == 'Summer'].Sport.unique()).to_frame()

Out[10]:		0
•	0	Basketball
	1	Judo
	2	Football
	3	Tug-Of-War
	4	Athletics
	5	Swimming
	6	Badminton
	7	Sailing
	8	Gymnastics
	9	Art Competitions
	10	Handball
	11	Weightlifting
	12	Wrestling
	13	Water Polo
	14	Hockey
	15	Rowing
	16	Fencing
	17	Equestrianism
	18	Shooting
	19	Boxing
	20	Taekwondo
	21	Cycling
	22	Diving
	23	Canoeing
	24	Tennis
	25	Modern Pentathlon
	26	Golf
	27	Softball
	28	Archery
	29	Volleyball
	30	Synchronized Swimming
	31	Table Tennis
	32	Baseball
	33	Rhythmic Gymnastics
	34	Rugby Sevens

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35	Trampolining
36	Beach Volleyball
37	Triathlon
38	Rugby
39	Lacrosse
40	Polo
41	Cricket
42	Ice Hockey
43	Racquets
44	Motorboating
45	Croquet
46	Figure Skating
47	Jeu De Paume
48	Roque
49	Basque Pelota
50	Alpinism
51	Aeronautics

7. Which Sports were just played only once in the olympics.

Sport	
Aeronautics	1
Basque Pelota	1
Cricket	1
Croquet	1
Jeu De Paume	1
Military Ski Patrol	1
Motorboating	1
Racquets	1
Roque	1
Rugby Sevens	1

8. Fetch the total no of sports played in each olympic games.

In [12]: ▶ df.groupby('Games').Sport.nunique().to_frame()

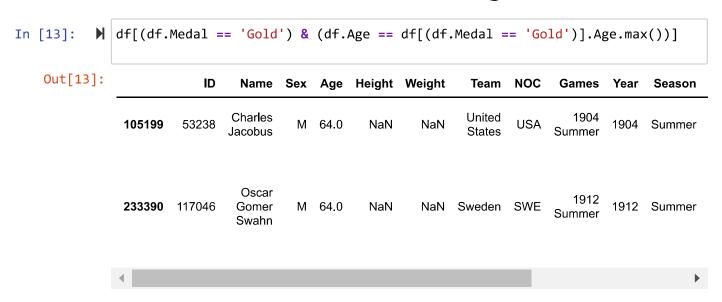
Out[12]:

Sport

	Sport
Games	
1896 Summer	9
1900 Summer	20
1904 Summer	18
1906 Summer	13
1908 Summer	24
1912 Summer	17
1920 Summer	25
1924 Summer	20
1924 Winter	10
1928 Summer	17
1928 Winter	8
1932 Summer	18
1932 Winter	7
1936 Summer	24
1936 Winter	8
1948 Summer	20
1948 Winter	9
1952 Summer	19
1952 Winter	8
1956 Summer	19
1956 Winter	8
1960 Summer	19
1960 Winter	8
1964 Summer	21
1964 Winter	10
1968 Summer	20
1968 Winter	10
1972 Summer	23
1972 Winter	10
1976 Summer	23
1976 Winter	10
1980 Summer	23
1980 Winter	10
1984 Summer	25

	Sport
Games	
1984 Winter	10
1988 Summer	27
1988 Winter	10
1992 Summer	29
1992 Winter	12
1994 Winter	12
1996 Summer	31
1998 Winter	14
2000 Summer	34
2002 Winter	15
2004 Summer	34
2006 Winter	15
2008 Summer	34
2010 Winter	15
2012 Summer	32
2014 Winter	15
2016 Summer	34

9. Fetch oldest athletes to win a gold medal



10. Find the Ratio of male and female athletes participated in all olympic games.

11. Fetch the top 5 athletes who have won the most gold medals.

12. Fetch the top 5 athletes who have won the most medals (gold/silver/bronze).

13. Fetch the top 5 most successful countries in olympics. Success is defined by no of medals won.

14. List down total gold, silver and bronze medals won by each country.

```
In [19]: # country by gold count
gold_count = pd.Series(df[df.Medal == 'Gold'].groupby('NOC').Medal.count(), r
# country by silver count
silver_count = pd.Series(df[df.Medal == 'Silver'].groupby('NOC').Medal.count(
# country by bronze count
bronze_count = pd.Series(df[df.Medal == 'Bronze'].groupby('NOC').Medal.count(
# country by medal count
medal_count = pd.Series(df[df.Medal.notna()].groupby('NOC').Medal.count(), na
```

Out[20]:

In [20]: pd.concat([gold_count, silver_count, bronze_count, medal_count], axis=1)

	gold_count	silver_count	bronze_count	medal_count
NOC				
ALG	5.0	4.0	8.0	17
ANZ	20.0	4.0	5.0	29
ARG	91.0	92.0	91.0	274
ARM	2.0	5.0	9.0	16
AUS	348.0	455.0	517.0	1320
MKD	NaN	NaN	1.0	1
MON	NaN	NaN	1.0	1
MRI	NaN	NaN	1.0	1
TOG	NaN	NaN	1.0	1
WIF	NaN	NaN	5.0	5

¹⁴⁹ rows × 4 columns

15. List down total gold, silver and bronze medals won by each country corresponding to each olympic games.

```
In [21]: # total gold by country in each olympic game
no_gold = pd.Series(df[df.Medal == 'Gold'].groupby(['Games', 'NOC']).Medal.cc
# total silver by country in each olympic game
no_silver = pd.Series(df[df.Medal == 'Silver'].groupby(['Games', 'NOC']).Meda
# total bronze by country in each olympic game
no_bronze = pd.Series(df[df.Medal == 'Bronze'].groupby(['Games', 'NOC']).Meda
pd.concat([no_gold, no_silver, no_bronze], axis = 1)
```

no gold no cilvor no bronzo

Out[21]:

		no_goia	no_silver	no_pronze
Games	NOC			
	AUS	2.0	NaN	1.0
	AUT	2.0	1.0	2.0
1896 Summer	DEN	1.0	2.0	3.0
	FRA	5.0	4.0	2.0
	GBR	3.0	3.0	3.0
	NOR	NaN	NaN	19.0
	POR	NaN	NaN	1.0

NaN

NaN

NaN

1657 rows × 3 columns

TTO

TUN

UAE

2016 Summer

16. Identify which country won the most gold, most silver and most bronze medals in each olympic games.

NaN

NaN

NaN

1.0

3.0

1.0

```
In [23]: # calculation for silver
silver = df[df.Medal == 'Silver'].groupby(['Games', 'NOC']).Medal.count()
silver_group = silver.reset_index()
#silver_group
max_silver = silver.groupby('Games').max().reset_index()
#max_silver
most_silver = pd.merge(silver_group, max_silver, on=['Games', 'Medal'])
most_silver['most_silver'] = most_silver.NOC + ' - ' + most_silver.Medal.asty
most_silver.drop(['NOC', 'Medal'], axis = 1, inplace = True)
#most_silver
```

	most_medal				<u>-</u>
Out[25]:		Games	most_gold	most_silver	most_bronze
	0	1896 Summer	GER - 25	GRE - 18	GRE - 20
	1	1900 Summer	GBR - 59	FRA - 101	FRA - 82
	2	1904 Summer	USA - 128	USA - 141	USA - 125
	3	1906 Summer	GRE - 24	GRE - 48	GRE - 30
	4	1908 Summer	GBR - 147	GBR - 131	GBR - 90
	5	1912 Summer	SWE - 103	GBR - 64	GBR - 59
	6	1920 Summer	USA - 111	FRA - 71	BEL - 66
	7	1924 Summer	USA - 97	FRA - 51	USA - 49
	8	1924 Winter	GBR - 16	USA - 10	GBR - 11
	9	1928 Summer	USA - 47	NED - 29	GER - 41
	10	1928 Winter	CAN - 12	SWE - 13	SUI - 12
	11	1932 Summer	USA - 81	USA - 47	USA - 61
	12	1932 Winter	CAN - 14	USA - 21	GER - 14
	13	1936 Summer	GER - 93	GER - 70	GER - 61
	14	1936 Winter	GBR - 12	CAN - 13	USA - 14
	15	1948 Summer	USA - 87	GBR - 42	USA - 35
	16	1948 Winter	CAN - 13	TCH - 17	SUI - 19
	17	1952 Summer	USA - 83	URS - 62	HUN - 32
	18	1952 Winter	CAN - 16	USA - 25	SWE - 23
	19	1956 Summer	URS - 68	URS - 46	URS - 55
	20	1956 Winter	URS - 26	USA - 19	CAN - 18
	21	1960 Summer	USA - 81	URS - 63	URS - 45
	22	1960 Winter	USA - 19	CAN - 17	URS - 28
	23	1964 Summer	USA - 95	URS - 63	URS - 51
	24	1964 Winter	URS - 30	SWE - 21	TCH - 17
	25	1968 Summer	USA - 99	URS - 63	URS - 64
	26	1968 Winter	URS - 26	TCH - 19	CAN - 18
	27	1972 Summer	URS - 107	GDR - 64	URS - 60
	28	1972 Winter	URS - 36	USA - 18	TCH - 19
	29	1976 Summer	URS - 114	URS - 95	URS - 77
		4070 \4" :	1100 00	TOLL 10	EDO 00

30

32

1976 Winter

1980 Winter

1980 Summer

URS - 38

URS - 187

USA - 24

TCH - 19

URS - 129

URS - 29

FRG - 23

URS - 126

SWE - 20

	Games	most_gold	most_silver	most_bronze
33	1984 Summer	USA - 186	USA - 116	FRG - 53
34	1984 Winter	URS - 29	TCH - 24	SWE - 21
35	1988 Summer	URS - 134	URS - 67	URS - 99
36	1988 Winter	URS - 40	FIN - 22	SWE - 23
37	1992 Summer	EUN - 92	EUN - 61	USA - 85
38	1992 Winter	EUN - 35	CAN - 28	TCH - 27
39	1994 Winter	SWE - 23	CAN - 29	F IN - 29
40	1996 Summer	USA - 159	CHN - 70	AUS - 84
41	1998 Winter	USA - 25	RUS - 32	F I N - 49
42	2000 Summer	USA - 130	AUS - 69	GER - 64
43	2002 Winter	CAN - 52	USA - 58	RUS - 27
44	2004 Summer	USA - 117	AUS - 77	RUS - 95
45	2006 Winter	SWE - 35	FIN - 34	USA - 32
46	2008 Summer	USA - 127	USA - 110	USA - 80
47	2010 Winter	CAN - 67	USA - 63	FIN - 46
48	2012 Summer	USA - 145	USA - 57	AUS - 59
49	2014 Winter	CAN - 59	SWE - 32	FIN - 24
50	2014 Winter	CAN - 59	SWE - 32	USA - 24
51	2016 Summer	USA - 139	FRA - 55	USA - 71
52	2016 Summer	USA - 139	GBR - 55	USA - 71

17. Identify which country won the most gold, most silver, most bronze medals and the most medals in each olympic games.

Out[27]:		Games	most_gold	most_silver	most_bronze	most_medal
	0	1896 Summer	GER - 25	GRE - 18	GRE - 20	GRE - 48
	1	1900 Summer	GBR - 59	FRA - 101	FRA - 82	FRA - 235
	2	1904 Summer	USA - 128	USA - 141	USA - 125	USA - 394
	3	1906 Summer	GRE - 24	GRE - 48	GRE - 30	GRE - 102
	4	1908 Summer	GBR - 147	GBR - 131	GBR - 90	GBR - 368
	5	1912 Summer	SWE - 103	GBR - 64	GBR - 59	SWE - 190
	6	1920 Summer	USA - 111	FRA - 71	BEL - 66	USA - 194
	7	1924 Summer	USA - 97	FRA - 51	USA - 49	USA - 182
	8	1924 Winter	GBR - 16	USA - 10	GBR - 11	GBR - 31
	9	1928 Summer	USA - 47	NED - 29	GER - 41	USA - 88
	10	1928 Winter	CAN - 12	SWE - 13	SUI - 12	SWE - 16
	11	1932 Summer	USA - 81	USA - 47	USA - 61	USA - 189
	12	1932 Winter	CAN - 14	USA - 21	GER - 14	USA - 34
	13	1936 Summer	GER - 93	GER - 70	GER - 61	GER - 224
	14	1936 Winter	GBR - 12	CAN - 13	USA - 14	NOR - 18
	15	1948 Summer	USA - 87	GBR - 42	USA - 35	USA - 152
	16	1948 Winter	CAN - 13	TCH - 17	SUI - 19	SUI - 28
	17	1952 Summer	USA - 83	URS - 62	HUN - 32	USA - 134
	18	1952 Winter	CAN - 16	USA - 25	SWE - 23	USA - 30
	19	1956 Summer	URS - 68	URS - 46	URS - 55	URS - 169
	20	1956 Winter	URS - 26	USA - 19	CAN - 18	URS - 37
	21	1960 Summer	USA - 81	URS - 63	URS - 45	URS - 169
	22	1960 Winter	USA - 19	CAN - 17	URS - 28	URS - 42
	23	1964 Summer	USA - 95	URS - 63	URS - 51	URS - 174
	24	1964 Winter	URS - 30	SWE - 21	TCH - 17	URS - 47
	25	1968 Summer	USA - 99	URS - 63	URS - 64	URS - 192
	26	1968 Winter	URS - 26	TCH - 19	CAN - 18	URS - 37
	27	1972 Summer	URS - 107	GDR - 64	URS - 60	URS - 214
	28	1972 Winter	URS - 36	USA - 18	TCH - 19	URS - 45
	29	1976 Summer	URS - 114	URS - 95	URS - 77	URS - 286
	30	1976 Winter	URS - 38	TCH - 19	FRG - 23	URS - 56
	31	1980 Summer	URS - 187	URS - 129	URS - 126	URS - 442
	32	1980 Winter	USA - 24	URS - 29	SWE - 20	URS - 54
	33	1984 Summer	USA - 186	USA - 116	FRG - 53	USA - 352

	Games	most_gold	most_silver	most_bronze	most_medal
34	1984 Winter	URS - 29	TCH - 24	SWE - 21	URS - 56
35	1988 Summer	URS - 134	URS - 67	URS - 99	URS - 300
36	1988 Winter	URS - 40	FIN - 22	SWE - 23	URS - 66
37	1992 Summer	EUN - 92	EUN - 61	USA - 85	USA - 224
38	1992 Winter	EUN - 35	CAN - 28	TCH - 27	EUN - 59
39	1994 Winter	SWE - 23	CAN - 29	FIN - 29	GER - 40
40	1996 Summer	USA - 159	CHN - 70	AUS - 84	USA - 259
41	1998 Winter	USA - 25	RUS - 32	FIN - 49	FIN - 58
42	2000 Summer	USA - 130	AUS - 69	GER - 64	USA - 242
43	2002 Winter	CAN - 52	USA - 58	RUS - 27	USA - 84
44	2004 Summer	USA - 117	AUS - 77	RUS - 95	USA - 263
45	2006 Winter	SWE - 35	FIN - 34	USA - 32	CAN - 69
46	2008 Summer	USA - 127	USA - 110	USA - 80	USA - 317
47	2010 Winter	CAN - 67	USA - 63	FIN - 46	USA - 97
48	2012 Summer	USA - 145	USA - 57	AUS - 59	USA - 248
49	2014 Winter	CAN - 59	SWE - 32	FIN - 24	CAN - 86
50	2014 Winter	CAN - 59	SWE - 32	USA - 24	CAN - 86
51	2016 Summer	USA - 139	FRA - 55	USA - 71	USA - 264
52	2016 Summer	USA - 139	GBR - 55	USA - 71	USA - 264

18. Which countries have never won gold medal but have won silver/bronze medals?

```
df[df.Medal != 'Gold'].groupby('NOC').Medal.count()[df[df.Medal != 'Gold'].gr
In [28]:
    Out[28]:
                     Medal
               NOC
                        2
               AFG
               AHO
                        1
               ALG
                       12
               ANZ
                        9
               ARG
                       183
                VIE
                WIF
                        5
               YUG
                       260
               ZAM
                        2
                ZIM
                        5
              145 rows × 1 columns
```

19. In which Sport/event, India has won highest medals.

20. Break down all olympic games where India won medal for Hockey and how many medals in each olympic games

5 1980 Summer