What is Pandas?

The pandas package is the most important tool at the disposal of Data Scientists and Analysts working in Python today. The powerful machine learning and glamorous visualization tools may get all the attention, but pandas is the backbone of most data projects.

Cheat sheet

http://http://pandas.pydata.org/Pandas_Cheat_Sheet.pdf
(http://http://pandas.pydata.org/Pandas_Cheat_Sheet.pdf)

A set of lesson for new pandas users

https://bitbucket.org/hrojas/learn-pandas/src/master (https://bitbucket.org/hrojas/learn-pandas/src/master)

Import libraries

In [1]:

```
import pandas as pd
```

Read dataset

In [2]:

```
df = pd.read_csv('datasets_121_280_Pokemon.csv')
```

Print the dataset

In [3]:

```
df
```

Out[3]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65
5	5	Charmeleon	Fire	NaN	405	58	64	58	80	65	80
6	6	Charizard	Fire	Flying	534	78	84	78	109	85	100
7	6	CharizardMega Charizard X	Fire	Dragon	634	78	130	111	130	85	100
8	6	CharizardMega Charizard Y	Fire	Flying	634	78	104	78	159	115	100
9	7	Squirtle	Water	NaN	314	44	48	65	50	64	43
10	8	Wartortle	Water	NaN	405	59	63	80	65	80	58
11	9	Blastoise	Water	NaN	530	79	83	100	85	105	78
12	9	BlastoiseMega Blastoise	Water	NaN	630	79	103	120	135	115	78
13	10	Caterpie	Bug	NaN	195	45	30	35	20	20	45
14	11	Metapod	Bug	NaN	205	50	20	55	25	25	30
15	12	Butterfree	Bug	Flying	395	60	45	50	90	80	70
16	13	Weedle	Bug	Poison	195	40	35	30	20	20	50
17	14	Kakuna	Bug	Poison	205	45	25	50	25	25	35
18	15	Beedrill	Bug	Poison	395	65	90	40	45	80	75
19	15	BeedrillMega Beedrill	Bug	Poison	495	65	150	40	15	80	145
20	16	Pidgey	Normal	Flying	251	40	45	40	35	35	56
21	17	Pidgeotto	Normal	Flying	349	63	60	55	50	50	71
22	18	Pidgeot	Normal	Flying	479	83	80	75	70	70	101
23	18	PidgeotMega Pidgeot	Normal	Flying	579	83	80	80	135	80	121
24	19	Rattata	Normal	NaN	253	30	56	35	25	35	72
25	20	Raticate	Normal	NaN	413	55	81	60	50	70	97
26	21	Spearow	Normal	Flying	262	40	60	30	31	31	70
27	22	Fearow	Normal	Flying	442	65	90	65	61	61	100
28	23	Ekans	Poison	NaN	288	35	60	44	40	54	55
29	24	Arbok	Poison	NaN	438	60	85	69	65	79	80
...	...	...	...	...	...	...	...	...	...	...	...
770	700	Sylveon	Fairy	NaN	525	95	65	65	110	130	60
771	701	Hawlucha	Fighting	Flying	500	78	92	75	74	63	118

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
772	702	Dedenne	Electric	Fairy	431	67	58	57	81	67	10
773	703	Carbink	Rock	Fairy	500	50	50	150	50	150	5
774	704	Goomy	Dragon	NaN	300	45	50	35	55	75	4
775	705	Sliggoo	Dragon	NaN	452	68	75	53	83	113	6
776	706	Goodra	Dragon	NaN	600	90	100	70	110	150	8
777	707	Klefki	Steel	Fairy	470	57	80	91	80	87	7
778	708	Phantump	Ghost	Grass	309	43	70	48	50	60	3
779	709	Trevenant	Ghost	Grass	474	85	110	76	65	82	5
780	710	PumpkabooAverage Size	Ghost	Grass	335	49	66	70	44	55	5
781	710	PumpkabooSmall Size	Ghost	Grass	335	44	66	70	44	55	5
782	710	PumpkabooLarge Size	Ghost	Grass	335	54	66	70	44	55	4
783	710	PumpkabooSuper Size	Ghost	Grass	335	59	66	70	44	55	4
784	711	GourgeistAverage Size	Ghost	Grass	494	65	90	122	58	75	8
785	711	GourgeistSmall Size	Ghost	Grass	494	55	85	122	58	75	9
786	711	GourgeistLarge Size	Ghost	Grass	494	75	95	122	58	75	6
787	711	GourgeistSuper Size	Ghost	Grass	494	85	100	122	58	75	5
788	712	Bergmite	Ice	NaN	304	55	69	85	32	35	2
789	713	Avalugg	Ice	NaN	514	95	117	184	44	46	2
790	714	Noibat	Flying	Dragon	245	40	30	35	45	40	5
791	715	Noivern	Flying	Dragon	535	85	70	80	97	80	12
792	716	Xerneas	Fairy	NaN	680	126	131	95	131	98	9
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	9
794	718	Zygarde50% Forme	Dragon	Ground	600	108	100	121	81	95	9
795	719	Diancie	Rock	Fairy	600	50	100	150	100	150	5
796	719	DiancieMega Diancie	Rock	Fairy	700	50	160	110	160	110	11
797	720	HoopaHoopa Confined	Psychic	Ghost	600	80	110	60	150	130	7
798	720	HoopaHoopa Unbound	Psychic	Dark	680	80	160	60	170	130	8
799	721	Volcanion	Fire	Water	600	80	110	120	130	90	7

800 rows × 13 columns

Count total rows

In [4]:

```
print(str(len(df)))
```

```
800
```

Print first five row

In [5]:

```
df.head(5)
```

Out[5]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

Print last five rows

In [6]:

```
df.tail(5)
```

Out[6]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
795	719	Diancie	Rock	Fairy	600	50	100	150	100	150	50	
796	719	DiancieMega Diancie	Rock	Fairy	700	50	160	110	160	110	110	
797	720	HoopaHoopa Confined	Psychic	Ghost	600	80	110	60	150	130	70	
798	720	HoopaHoopa Unbound	Psychic	Dark	680	80	160	60	170	130	80	
799	721	Volcanion	Fire	Water	600	80	110	120	130	90	70	

Read data size

In [7]:

```
df.shape
```

Out[7]:

```
(800, 13)
```

Read headers

In [8]:

```
df.columns
```

Out[8]:

```
Index(['#', 'Name', 'Type 1', 'Type 2', 'Total', 'HP', 'Attack', 'De
fense',
       'Sp. Atk', 'Sp. Def', 'Speed', 'Generation', 'Legendary'],
      dtype='object')
```

Check the types of each column

In [9]:

```
df.dtypes
```

Out[9]:

```
#              int64
Name          object
Type 1        object
Type 2        object
Total          int64
HP             int64
Attack         int64
Defense        int64
Sp. Atk        int64
Sp. Def        int64
Speed          int64
Generation     int64
Legendary       bool
dtype: object
```

Read each Columns

In [10]:

```
df['Name']
```

Out[10]:

```
0                      Bulbasaur
1                        Ivysaur
2                       Venusaur
3          VenusaurMega Venusaur
4                     Charmander
5                     Charmeleon
6                      Charizard
7      CharizardMega Charizard X
8      CharizardMega Charizard Y
9                       Squirtle
10                     Wartortle
11                     Blastoise
12       BlastoiseMega Blastoise
13                      Caterpie
14                       Metapod
15                    Butterfree
16                        Weedle
17                        Kakuna
18                      Beedrill
19         BeedrillMega Beedrill
20                        Pidgey
21                     Pidgeotto
22                       Pidgeot
23           PidgeotMega Pidgeot
24                       Rattata
25                     Raticate
26                       Spearow
27                        Fearow
28                         Ekans
29                         Arbok
                ...
770                      Sylveon
771                     Hawlucha
772                      Dedenne
773                      Carbink
774                        Goomy
775                      Sliggoo
776                       Goodra
777                       Klefki
778                     Phantump
779                    Trevenant
780        PumpkabooAverage Size
781          PumpkabooSmall Size
782          PumpkabooLarge Size
783          PumpkabooSuper Size
784        GourgeistAverage Size
785          GourgeistSmall Size
786          GourgeistLarge Size
787          GourgeistSuper Size
788                     Bergmite
789                      Avalugg
790                       Noibat
791                      Noivern
792                      Xerneas
793                      Yveltal
794           Zygarde50% Forme
795                      Diancie
796          DiancieMega Diancie
797          HoopaHoopa Confined
```

```
798           HoopaHoopa Unbound
799                    Volcanion
Name: Name, Length: 800, dtype: object
```

Read first five names

In [11]:

```
df['Name'][0:5]
```

Out[11]:

```
0                Bulbasaur
1                  Ivysaur
2                 Venusaur
3    VenusaurMega Venusaur
4               Charmander
Name: Name, dtype: object
```

In [12]:

```
df[['Name', 'Generation', 'Speed']]
```

Out[12]:

	Name	Generation	Speed
0	Bulbasaur	1	45
1	Ivysaur	1	60
2	Venusaur	1	80
3	VenusaurMega Venusaur	1	80
4	Charmander	1	65
5	Charmeleon	1	80
6	Charizard	1	100
7	CharizardMega Charizard X	1	100
8	CharizardMega Charizard Y	1	100
9	Squirtle	1	43
10	Wartortle	1	58
11	Blastoise	1	78
12	BlastoiseMega Blastoise	1	78
13	Caterpie	1	45
14	Metapod	1	30
15	Butterfree	1	70
16	Weedle	1	50
17	Kakuna	1	35
18	Beedrill	1	75
19	BeedrillMega Beedrill	1	145
20	Pidgey	1	56
21	Pidgeotto	1	71
22	Pidgeot	1	101
23	PidgeotMega Pidgeot	1	121
24	Rattata	1	72
25	Raticate	1	97
26	Spearow	1	70
27	Fearow	1	100
28	Ekans	1	55
29	Arbok	1	80
...	...	...	...
770	Sylveon	6	60
771	Hawlucha	6	118
772	Dedenne	6	101
773	Carbink	6	50
774	Goomy	6	40
775	Sliggoo	6	60

	Name	Generation	Speed
776	Goodra	6	80
777	Klefki	6	75
778	Phantump	6	38
779	Trevenant	6	56
780	PumpkabooAverage Size	6	51
781	PumpkabooSmall Size	6	56
782	PumpkabooLarge Size	6	46
783	PumpkabooSuper Size	6	41
784	GourgeistAverage Size	6	84
785	GourgeistSmall Size	6	99
786	GourgeistLarge Size	6	69
787	GourgeistSuper Size	6	54
788	Bergmite	6	28
789	Avalugg	6	28
790	Noibat	6	55
791	Noivern	6	123
792	Xerneas	6	99
793	Yveltal	6	99
794	Zygarde50% Forme	6	95
795	Diancie	6	50
796	DiancieMega Diancie	6	110
797	HoopaHoopa Confined	6	70
798	HoopaHoopa Unbound	6	80
799	Volcanion	6	70

800 rows × 3 columns

Read each row

In [13]:

```
df.iloc[1]
```

Out[13]:

```
#                   2
Name          Ivysaur
Type 1          Grass
Type 2         Poison
Total             405
HP                 60
Attack             62
Defense            63
Sp. Atk            80
Sp. Def            80
Speed              60
Generation          1
Legendary       False
Name: 1, dtype: object
```

In [14]:

```
df.iloc[543]
```

Out[14]:

```
#                   486
Name          Regigigas
Type 1           Normal
Type 2              NaN
Total               670
HP                  110
Attack              160
Defense             110
Sp. Atk              80
Sp. Def             110
Speed               100
Generation            4
Legendary          True
Name: 543, dtype: object
```

Read multiple rows

In [15]:

```
df.iloc[9:12]
```

Out[15]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generation	Leg
9	7	Squirtle	Water	NaN	314	44	48	65	50	64	43	1	
10	8	Wartortle	Water	NaN	405	59	63	80	65	80	58	1	
11	9	Blastoise	Water	NaN	530	79	83	100	85	105	78	1	

Read a specific a value

In [16]:

```
df.iloc[10,5]
```

Out[16]:

```
59
```

In [17]:

```
df.iloc[9,2]
```

Out[17]:

```
'Water'
```

Read rows using condition

In [18]:

```
df.loc[df['Type 1'] == 'Water']
```

Out[18]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Ge
9	7	Squirtle	Water	NaN	314	44	48	65	50	64	43	
10	8	Wartortle	Water	NaN	405	59	63	80	65	80	58	
11	9	Blastoise	Water	NaN	530	79	83	100	85	105	78	
12	9	BlastoiseMega Blastoise	Water	NaN	630	79	103	120	135	115	78	
59	54	Psyduck	Water	NaN	320	50	52	48	65	50	55	
60	55	Golduck	Water	NaN	500	80	82	78	95	80	85	
65	60	Poliwag	Water	NaN	300	40	50	40	40	40	90	
66	61	Poliwhirl	Water	NaN	385	65	65	65	50	50	90	
67	62	Poliwrath	Water	Fighting	510	90	95	95	70	90	70	
78	72	Tentacool	Water	Poison	335	40	40	35	50	100	70	
79	73	Tentacruel	Water	Poison	515	80	70	65	80	120	100	
85	79	Slowpoke	Water	Psychic	315	90	65	65	40	40	15	
86	80	Slowbro	Water	Psychic	490	95	75	110	100	80	30	
87	80	SlowbroMega Slowbro	Water	Psychic	590	95	75	180	130	80	30	
93	86	Seel	Water	NaN	325	65	45	55	45	70	45	
94	87	Dewgong	Water	Ice	475	90	70	80	70	95	70	
97	90	Shellder	Water	NaN	305	30	65	100	45	25	40	
98	91	Cloyster	Water	Ice	525	50	95	180	85	45	70	
106	98	Krabby	Water	NaN	325	30	105	90	25	25	50	
107	99	Kingler	Water	NaN	475	55	130	115	50	50	75	
125	116	Horsea	Water	NaN	295	30	40	70	70	25	60	
126	117	Seadra	Water	NaN	440	55	65	95	95	45	85	
127	118	Goldeen	Water	NaN	320	45	67	60	35	50	63	
128	119	Seaking	Water	NaN	450	80	92	65	65	80	68	
129	120	Staryu	Water	NaN	340	30	45	55	70	55	85	
130	121	Starmie	Water	Psychic	520	60	75	85	100	85	115	
139	129	Magikarp	Water	NaN	200	20	10	55	15	20	80	
140	130	Gyarados	Water	Flying	540	95	125	79	60	100	81	
141	130	GyaradosMega Gyarados	Water	Dark	640	95	155	109	70	130	81	
142	131	Lapras	Water	Ice	535	130	85	80	85	95	60	
...	...	...	...	...	...	...	...	...	...	...	...	
470	423	Gastrodon	Water	Ground	475	111	83	68	92	82	39	
506	456	Finneon	Water	NaN	330	49	49	56	49	61	66	
507	457	Lumineon	Water	NaN	460	69	69	76	69	86	91	
508	458	Mantyke	Water	Flying	345	45	20	50	60	120	50	

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Ge
541	484	Palkia	Water	Dragon	680	90	120	100	150	120	100	
547	489	Phione	Water	NaN	480	80	80	80	80	80	80	
548	490	Manaphy	Water	NaN	600	100	100	100	100	100	100	
560	501	Oshawott	Water	NaN	308	55	55	45	63	45	45	
561	502	Dewott	Water	NaN	413	75	75	60	83	60	60	
562	503	Samurott	Water	NaN	528	95	100	85	108	70	70	
574	515	Panpour	Water	NaN	316	50	53	48	53	48	64	
575	516	Simipour	Water	NaN	498	75	98	63	98	63	101	
595	535	Tympole	Water	NaN	294	50	50	40	50	40	64	
596	536	Palpitoad	Water	Ground	384	75	65	55	65	55	69	
597	537	Seismitoad	Water	Ground	509	105	95	75	85	75	74	
610	550	Basculin	Water	NaN	460	70	92	65	80	55	98	
625	564	Tirtouga	Water	Rock	355	54	78	103	53	45	22	
626	565	Carracosta	Water	Rock	495	74	108	133	83	65	32	
641	580	Ducklett	Water	Flying	305	62	44	50	44	50	55	
642	581	Swanna	Water	Flying	473	75	87	63	87	63	98	
653	592	Frillish	Water	Ghost	335	55	40	50	65	85	40	
654	593	Jellicent	Water	Ghost	480	100	60	70	85	105	60	
655	594	Alomomola	Water	NaN	470	165	75	80	40	45	65	
713	647	KeldeoOrdinary Forme	Water	Fighting	580	91	72	90	129	90	108	
714	647	KeldeoResolute Forme	Water	Fighting	580	91	72	90	129	90	108	
724	656	Froakie	Water	NaN	314	41	56	40	62	44	71	
725	657	Frogadier	Water	NaN	405	54	63	52	83	56	97	
726	658	Greninja	Water	Dark	530	72	95	67	103	71	122	
762	692	Clauncher	Water	NaN	330	50	53	62	58	63	44	
763	693	Clawitzer	Water	NaN	500	71	73	88	120	89	59	

112 rows × 13 columns

Read rows using multiple condition

In [19]:

```
df.loc[(df['Type 1'] == 'Water') & (df['Type 2'] == 'Dark')]
```

Out[19]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
141	130	GyaradosMega Gyarados	Water	Dark	640	95	155	109	70	130	81	
347	318	Carvanha	Water	Dark	305	45	90	20	65	20	65	
348	319	Sharpedo	Water	Dark	460	70	120	40	95	40	95	
349	319	SharpedoMega Sharpedo	Water	Dark	560	70	140	70	110	65	105	
374	342	Crawdaunt	Water	Dark	468	63	120	85	90	55	55	
726	658	Greninja	Water	Dark	530	72	95	67	103	71	122	

In [20]:

```
df.loc[(df['Type 1'] == 'Water') & (df['Type 2'] == 'Dark') & (df['HP'] > 60)]
```

Out[20]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
141	130	GyaradosMega Gyarados	Water	Dark	640	95	155	109	70	130	81	
348	319	Sharpedo	Water	Dark	460	70	120	40	95	40	95	
349	319	SharpedoMega Sharpedo	Water	Dark	560	70	140	70	110	65	105	
374	342	Crawdaunt	Water	Dark	468	63	120	85	90	55	55	
726	658	Greninja	Water	Dark	530	72	95	67	103	71	122	

In [21]:

```
array = ['Dark', 'Ghost', 'Ground']
df.loc[(df['Type 1'] == 'Fire') & df['Type 2'].isin(array)]
```

Out[21]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gene
352	322	Numel	Fire	Ground	305	60	60	40	65	45	35	
353	323	Camerupt	Fire	Ground	460	70	100	70	105	75	40	
354	323	CameruptMega Camerupt	Fire	Ground	560	70	120	100	145	105	20	

In [22]:

```
array = ['Fire', 'Water', 'Rain']
df.loc[df['Type 1'].isin(array)]
```

Out[22]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65
5	5	Charmeleon	Fire	NaN	405	58	64	58	80	65	80
6	6	Charizard	Fire	Flying	534	78	84	78	109	85	100
7	6	CharizardMega Charizard X	Fire	Dragon	634	78	130	111	130	85	100
8	6	CharizardMega Charizard Y	Fire	Flying	634	78	104	78	159	115	100
9	7	Squirtle	Water	NaN	314	44	48	65	50	64	43
10	8	Wartortle	Water	NaN	405	59	63	80	65	80	58
11	9	Blastoise	Water	NaN	530	79	83	100	85	105	78
12	9	BlastoiseMega Blastoise	Water	NaN	630	79	103	120	135	115	78
42	37	Vulpix	Fire	NaN	299	38	41	40	50	65	65
43	38	Ninetales	Fire	NaN	505	73	76	75	81	100	100
59	54	Psyduck	Water	NaN	320	50	52	48	65	50	55
60	55	Golduck	Water	NaN	500	80	82	78	95	80	85
63	58	Growlithe	Fire	NaN	350	55	70	45	70	50	60
64	59	Arcanine	Fire	NaN	555	90	110	80	100	80	95
65	60	Poliwag	Water	NaN	300	40	50	40	40	40	90
66	61	Poliwhirl	Water	NaN	385	65	65	65	50	50	90
67	62	Poliwrath	Water	Fighting	510	90	95	95	70	90	70
78	72	Tentacool	Water	Poison	335	40	40	35	50	100	70
79	73	Tentacruel	Water	Poison	515	80	70	65	80	120	100
83	77	Ponyta	Fire	NaN	410	50	85	55	65	65	90
84	78	Rapidash	Fire	NaN	500	65	100	70	80	80	105
85	79	Slowpoke	Water	Psychic	315	90	65	65	40	40	15
86	80	Slowbro	Water	Psychic	490	95	75	110	100	80	30
87	80	SlowbroMega Slowbro	Water	Psychic	590	95	75	180	130	80	30
93	86	Seel	Water	NaN	325	65	45	55	45	70	45
94	87	Dewgong	Water	Ice	475	90	70	80	70	95	70
97	90	Shellder	Water	NaN	305	30	65	100	45	25	40
98	91	Cloyster	Water	Ice	525	50	95	180	85	45	70
106	98	Krabby	Water	NaN	325	30	105	90	25	25	50
...	...	...	...	...	...	...	...	...	...	...	...
595	535	Tympole	Water	NaN	294	50	50	40	50	40	64
596	536	Palpitoad	Water	Ground	384	75	65	55	65	55	69
597	537	Seismitoad	Water	Ground	509	105	95	75	85	75	74

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
610	550	Basculin	Water	NaN	460	70	92	65	80	55	98
614	554	Darumaka	Fire	NaN	315	70	90	45	15	45	50
615	555	DarmanitanStandard Mode	Fire	NaN	480	105	140	55	30	55	95
616	555	DarmanitanZen Mode	Fire	Psychic	540	105	30	105	140	105	55
625	564	Tirtouga	Water	Rock	355	54	78	103	53	45	22
626	565	Carracosta	Water	Rock	495	74	108	133	83	65	32
641	580	Ducklett	Water	Flying	305	62	44	50	44	50	55
642	581	Swanna	Water	Flying	473	75	87	63	87	63	98
653	592	Frillish	Water	Ghost	335	55	40	50	65	85	40
654	593	Jellicent	Water	Ghost	480	100	60	70	85	105	60
655	594	Alomomola	Water	NaN	470	165	75	80	40	45	65
692	631	Heatmor	Fire	NaN	484	85	97	66	105	66	65
713	647	KeldeoOrdinary Forme	Water	Fighting	580	91	72	90	129	90	108
714	647	KeldeoResolute Forme	Water	Fighting	580	91	72	90	129	90	108
721	653	Fennekin	Fire	NaN	307	40	45	40	62	60	60
722	654	Braixen	Fire	NaN	409	59	59	58	90	70	73
723	655	Delphox	Fire	Psychic	534	75	69	72	114	100	104
724	656	Froakie	Water	NaN	314	41	56	40	62	44	71
725	657	Frogadier	Water	NaN	405	54	63	52	83	56	97
726	658	Greninja	Water	Dark	530	72	95	67	103	71	122
730	662	Fletchinder	Fire	Flying	382	62	73	55	56	52	84
731	663	Talonflame	Fire	Flying	499	78	81	71	74	69	126
735	667	Litleo	Fire	Normal	369	62	50	58	73	54	72
736	668	Pyroar	Fire	Normal	507	86	68	72	109	66	106
762	692	Clauncher	Water	NaN	330	50	53	62	58	63	44
763	693	Clawitzer	Water	NaN	500	71	73	88	120	89	59
799	721	Volcanion	Fire	Water	600	80	110	120	130	90	70

164 rows × 13 columns

Describing data

In [23]:

```
df.describe()
```

Out[23]:

	#	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	
count	800.000000	800.00000	800.000000	800.000000	800.000000	800.000000	800.000000	8
mean	362.813750	435.10250	69.258750	79.001250	73.842500	72.820000	71.902500	
std	208.343798	119.96304	25.534669	32.457366	31.183501	32.722294	27.828916	
min	1.000000	180.00000	1.000000	5.000000	5.000000	10.000000	20.000000	
25%	184.750000	330.00000	50.000000	55.000000	50.000000	49.750000	50.000000	
50%	364.500000	450.00000	65.000000	75.000000	70.000000	65.000000	70.000000	
75%	539.250000	515.00000	80.000000	100.000000	90.000000	95.000000	90.000000	
max	721.000000	780.00000	255.000000	190.000000	230.000000	194.000000	230.000000	1

Sorting data

In [24]:

```
df.sort_values('Name')
```

Out[24]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
510	460	Abomasnow	Grass	Ice	494	90	92	75	92	85	60
511	460	AbomasnowMega Abomasnow	Grass	Ice	594	90	132	105	132	105	30
68	63	Abra	Psychic	NaN	310	25	20	15	105	55	90
392	359	Absol	Dark	NaN	465	65	130	60	75	60	75
393	359	AbsolMega Absol	Dark	NaN	565	65	150	60	115	60	115
678	617	Accelgor	Bug	NaN	495	80	70	40	100	60	145
750	681	AegislashBlade Forme	Steel	Ghost	520	60	150	50	150	50	60
751	681	AegislashShield Forme	Steel	Ghost	520	60	50	150	50	150	60
153	142	Aerodactyl	Rock	Flying	515	80	105	65	60	75	130
154	142	AerodactylMega Aerodactyl	Rock	Flying	615	80	135	85	70	95	150
332	306	Aggron	Steel	Rock	530	70	110	180	60	60	50
333	306	AggronMega Aggron	Steel	NaN	630	70	140	230	60	80	50
205	190	Aipom	Normal	NaN	360	55	70	55	40	55	85
70	65	Alakazam	Psychic	NaN	500	55	50	45	135	95	120
71	65	AlakazamMega Alakazam	Psychic	NaN	590	55	50	65	175	95	150
655	594	Alomomola	Water	NaN	470	165	75	80	40	45	65
365	334	Altaria	Dragon	Flying	490	75	70	90	70	105	80
366	334	AltariaMega Altaria	Dragon	Fairy	590	75	110	110	110	105	80
768	698	Amaura	Rock	Ice	362	77	59	50	67	63	46
471	424	Ambipom	Normal	NaN	482	75	100	66	60	66	115
652	591	Amoonguss	Grass	Poison	464	114	85	70	85	80	30
195	181	Ampharos	Electric	NaN	510	90	75	85	115	90	55
196	181	AmpharosMega Ampharos	Electric	Dragon	610	90	95	105	165	110	45
379	347	Anorith	Rock	Bug	355	45	95	50	40	50	75
29	24	Arbok	Poison	NaN	438	60	85	69	65	79	80
64	59	Arcanine	Fire	NaN	555	90	110	80	100	80	95
552	493	Arceus	Normal	NaN	720	120	120	120	120	120	120
627	566	Archen	Rock	Flying	401	55	112	45	74	45	70
628	567	Archeops	Rock	Flying	567	75	140	65	112	65	110
182	168	Ariados	Bug	Poison	390	70	90	70	60	60	40
...	...	...	...	...	...	...	...	...	...	...	...
607	547	Whimsicott	Grass	Fairy	480	60	67	85	77	75	116

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
604	544	Whirlipede	Bug	Poison	360	40	55	99	40	79	47
372	340	Whiscash	Water	Ground	468	110	78	73	76	71	60
317	293	Whismur	Normal	NaN	240	64	51	23	51	23	28
45	40	Wigglytuff	Normal	Fairy	435	140	70	45	85	50	45
301	278	Wingull	Water	Flying	270	40	30	30	55	30	85
217	202	Wobbuffet	Psychic	NaN	405	190	33	58	33	58	33
586	527	Woobat	Psychic	Flying	313	55	45	43	55	43	72
209	194	Wooper	Water	Ground	210	55	45	45	25	25	15
458	413	WormadamPlant Cloak	Bug	Grass	424	60	59	85	79	105	36
459	413	WormadamSandy Cloak	Bug	Ground	424	60	79	105	59	85	36
460	413	WormadamTrash Cloak	Bug	Steel	424	60	69	95	69	95	36
288	265	Wurmple	Bug	NaN	195	45	45	35	20	30	20
394	360	Wynaut	Psychic	NaN	260	95	23	48	23	48	23
192	178	Xatu	Psychic	Flying	470	65	75	70	95	70	95
792	716	Xerneas	Fairy	NaN	680	126	131	95	131	98	99
623	562	Yamask	Ghost	NaN	303	38	30	85	55	65	30
208	193	Yanma	Bug	Flying	390	65	65	45	75	45	95
520	469	Yanmega	Bug	Flying	515	86	76	86	116	56	95
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	99
367	335	Zangoose	Normal	NaN	458	73	115	60	60	60	90
157	145	Zapdos	Electric	Flying	580	90	90	85	125	90	100
582	523	Zebstrika	Electric	NaN	497	75	100	63	80	63	116
707	644	Zekrom	Dragon	Electric	680	100	150	120	120	100	90
286	263	Zigzagoon	Normal	NaN	240	38	30	41	30	41	60
632	571	Zoroark	Dark	NaN	510	60	105	60	120	60	105
631	570	Zorua	Dark	NaN	330	40	65	40	80	40	65
46	41	Zubat	Poison	Flying	245	40	45	35	30	40	55
695	634	Zweilous	Dark	Dragon	420	72	85	70	65	70	58
794	718	Zygarde50% Forme	Dragon	Ground	600	108	100	121	81	95	95

800 rows × 13 columns

Sorting data using multiple columns

In [25]:

```
df.sort_values(['Name', 'HP', 'Generation'])
```

Out[25]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
510	460	Abomasnow	Grass	Ice	494	90	92	75	92	85	60
511	460	AbomasnowMega Abomasnow	Grass	Ice	594	90	132	105	132	105	30
68	63	Abra	Psychic	NaN	310	25	20	15	105	55	90
392	359	Absol	Dark	NaN	465	65	130	60	75	60	75
393	359	AbsolMega Absol	Dark	NaN	565	65	150	60	115	60	115
678	617	Accelgor	Bug	NaN	495	80	70	40	100	60	145
750	681	AegislashBlade Forme	Steel	Ghost	520	60	150	50	150	50	60
751	681	AegislashShield Forme	Steel	Ghost	520	60	50	150	50	150	60
153	142	Aerodactyl	Rock	Flying	515	80	105	65	60	75	130
154	142	AerodactylMega Aerodactyl	Rock	Flying	615	80	135	85	70	95	150
332	306	Aggron	Steel	Rock	530	70	110	180	60	60	50
333	306	AggronMega Aggron	Steel	NaN	630	70	140	230	60	80	50
205	190	Aipom	Normal	NaN	360	55	70	55	40	55	85
70	65	Alakazam	Psychic	NaN	500	55	50	45	135	95	120
71	65	AlakazamMega Alakazam	Psychic	NaN	590	55	50	65	175	95	150
655	594	Alomomola	Water	NaN	470	165	75	80	40	45	65
365	334	Altaria	Dragon	Flying	490	75	70	90	70	105	80
366	334	AltariaMega Altaria	Dragon	Fairy	590	75	110	110	110	105	80
768	698	Amaura	Rock	Ice	362	77	59	50	67	63	46
471	424	Ambipom	Normal	NaN	482	75	100	66	60	66	115
652	591	Amoonguss	Grass	Poison	464	114	85	70	85	80	30
195	181	Ampharos	Electric	NaN	510	90	75	85	115	90	55
196	181	AmpharosMega Ampharos	Electric	Dragon	610	90	95	105	165	110	45
379	347	Anorith	Rock	Bug	355	45	95	50	40	50	75
29	24	Arbok	Poison	NaN	438	60	85	69	65	79	80
64	59	Arcanine	Fire	NaN	555	90	110	80	100	80	95
552	493	Arceus	Normal	NaN	720	120	120	120	120	120	120
627	566	Archen	Rock	Flying	401	55	112	45	74	45	70
628	567	Archeops	Rock	Flying	567	75	140	65	112	65	110
182	168	Ariados	Bug	Poison	390	70	90	70	60	60	40
...	...	...	...	...	...	...	...	...	...	...	...
607	547	Whimsicott	Grass	Fairy	480	60	67	85	77	75	116

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
604	544	Whirlipede	Bug	Poison	360	40	55	99	40	79	47
372	340	Whiscash	Water	Ground	468	110	78	73	76	71	60
317	293	Whismur	Normal	NaN	240	64	51	23	51	23	28
45	40	Wigglytuff	Normal	Fairy	435	140	70	45	85	50	45
301	278	Wingull	Water	Flying	270	40	30	30	55	30	85
217	202	Wobbuffet	Psychic	NaN	405	190	33	58	33	58	33
586	527	Woobat	Psychic	Flying	313	55	45	43	55	43	72
209	194	Wooper	Water	Ground	210	55	45	45	25	25	15
458	413	WormadamPlant Cloak	Bug	Grass	424	60	59	85	79	105	36
459	413	WormadamSandy Cloak	Bug	Ground	424	60	79	105	59	85	36
460	413	WormadamTrash Cloak	Bug	Steel	424	60	69	95	69	95	36
288	265	Wurmple	Bug	NaN	195	45	45	35	20	30	20
394	360	Wynaut	Psychic	NaN	260	95	23	48	23	48	23
192	178	Xatu	Psychic	Flying	470	65	75	70	95	70	95
792	716	Xerneas	Fairy	NaN	680	126	131	95	131	98	99
623	562	Yamask	Ghost	NaN	303	38	30	85	55	65	30
208	193	Yanma	Bug	Flying	390	65	65	45	75	45	95
520	469	Yanmega	Bug	Flying	515	86	76	86	116	56	95
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	99
367	335	Zangoose	Normal	NaN	458	73	115	60	60	60	90
157	145	Zapdos	Electric	Flying	580	90	90	85	125	90	100
582	523	Zebstrika	Electric	NaN	497	75	100	63	80	63	116
707	644	Zekrom	Dragon	Electric	680	100	150	120	120	100	90
286	263	Zigzagoon	Normal	NaN	240	38	30	41	30	41	60
632	571	Zoroark	Dark	NaN	510	60	105	60	120	60	105
631	570	Zorua	Dark	NaN	330	40	65	40	80	40	65
46	41	Zubat	Poison	Flying	245	40	45	35	30	40	55
695	634	Zweilous	Dark	Dragon	420	72	85	70	65	70	58
794	718	Zygarde50% Forme	Dragon	Ground	600	108	100	121	81	95	95

800 rows × 13 columns

Sorting data into dscending order

In [26]:

```
df.sort_values('Name', ascending = False)
```

Out[26]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
794	718	Zygarde50% Forme	Dragon	Ground	600	108	100	121	81	95	95
695	634	Zweilous	Dark	Dragon	420	72	85	70	65	70	58
46	41	Zubat	Poison	Flying	245	40	45	35	30	40	55
631	570	Zorua	Dark	NaN	330	40	65	40	80	40	65
632	571	Zoroark	Dark	NaN	510	60	105	60	120	60	105
286	263	Zigzagoon	Normal	NaN	240	38	30	41	30	41	60
707	644	Zekrom	Dragon	Electric	680	100	150	120	120	100	90
582	523	Zebstrika	Electric	NaN	497	75	100	63	80	63	116
157	145	Zapdos	Electric	Flying	580	90	90	85	125	90	100
367	335	Zangoose	Normal	NaN	458	73	115	60	60	60	90
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	99
520	469	Yanmega	Bug	Flying	515	86	76	86	116	56	95
208	193	Yanma	Bug	Flying	390	65	65	45	75	45	95
623	562	Yamask	Ghost	NaN	303	38	30	85	55	65	30
792	716	Xerneas	Fairy	NaN	680	126	131	95	131	98	99
192	178	Xatu	Psychic	Flying	470	65	75	70	95	70	95
394	360	Wynaut	Psychic	NaN	260	95	23	48	23	48	23
288	265	Wurmple	Bug	NaN	195	45	45	35	20	30	20
460	413	WormadamTrash Cloak	Bug	Steel	424	60	69	95	69	95	36
459	413	WormadamSandy Cloak	Bug	Ground	424	60	79	105	59	85	36
458	413	WormadamPlant Cloak	Bug	Grass	424	60	59	85	79	105	36
209	194	Wooper	Water	Ground	210	55	45	45	25	25	15
586	527	Woobat	Psychic	Flying	313	55	45	43	55	43	72
217	202	Wobbuffet	Psychic	NaN	405	190	33	58	33	58	33
301	278	Wingull	Water	Flying	270	40	30	30	55	30	85
45	40	Wigglytuff	Normal	Fairy	435	140	70	45	85	50	45
317	293	Whismur	Normal	NaN	240	64	51	23	51	23	28
372	340	Whiscash	Water	Ground	468	110	78	73	76	71	60
604	544	Whirlipede	Bug	Poison	360	40	55	99	40	79	47
607	547	Whimsicott	Grass	Fairy	480	60	67	85	77	75	116
...	...	...	...	...	...	...	...	...	...	...	...
182	168	Ariados	Bug	Poison	390	70	90	70	60	60	40
628	567	Archeops	Rock	Flying	567	75	140	65	112	65	110
627	566	Archen	Rock	Flying	401	55	112	45	74	45	70

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
552	493	Arceus	Normal	NaN	720	120	120	120	120	120	120
64	59	Arcanine	Fire	NaN	555	90	110	80	100	80	95
29	24	Arbok	Poison	NaN	438	60	85	69	65	79	80
379	347	Anorith	Rock	Bug	355	45	95	50	40	50	75
196	181	AmpharosMega Ampharos	Electric	Dragon	610	90	95	105	165	110	45
195	181	Ampharos	Electric	NaN	510	90	75	85	115	90	55
652	591	Amoonguss	Grass	Poison	464	114	85	70	85	80	30
471	424	Ambipom	Normal	NaN	482	75	100	66	60	66	115
768	698	Amaura	Rock	Ice	362	77	59	50	67	63	46
366	334	AltariaMega Altaria	Dragon	Fairy	590	75	110	110	110	105	80
365	334	Altaria	Dragon	Flying	490	75	70	90	70	105	80
655	594	Alomomola	Water	NaN	470	165	75	80	40	45	65
71	65	AlakazamMega Alakazam	Psychic	NaN	590	55	50	65	175	95	150
70	65	Alakazam	Psychic	NaN	500	55	50	45	135	95	120
205	190	Aipom	Normal	NaN	360	55	70	55	40	55	85
333	306	AggronMega Aggron	Steel	NaN	630	70	140	230	60	80	50
332	306	Aggron	Steel	Rock	530	70	110	180	60	60	50
154	142	AerodactylMega Aerodactyl	Rock	Flying	615	80	135	85	70	95	150
153	142	Aerodactyl	Rock	Flying	515	80	105	65	60	75	130
751	681	AegislashShield Forme	Steel	Ghost	520	60	50	150	50	150	60
750	681	AegislashBlade Forme	Steel	Ghost	520	60	150	50	150	50	60
678	617	Accelgor	Bug	NaN	495	80	70	40	100	60	145
393	359	AbsolMega Absol	Dark	NaN	565	65	150	60	115	60	115
392	359	Absol	Dark	NaN	465	65	130	60	75	60	75
68	63	Abra	Psychic	NaN	310	25	20	15	105	55	90
511	460	AbomasnowMega Abomasnow	Grass	Ice	594	90	132	105	132	105	30
510	460	Abomasnow	Grass	Ice	494	90	92	75	92	85	60

800 rows × 13 columns

In [27]:

```
df.sort_values(['Name', 'Type 1', 'Type 2'], ascending = [1, 0, 1])
```

Out[27]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
510	460	Abomasnow	Grass	Ice	494	90	92	75	92	85	60
511	460	AbomasnowMega Abomasnow	Grass	Ice	594	90	132	105	132	105	30
68	63	Abra	Psychic	NaN	310	25	20	15	105	55	90
392	359	Absol	Dark	NaN	465	65	130	60	75	60	75
393	359	AbsolMega Absol	Dark	NaN	565	65	150	60	115	60	115
678	617	Accelgor	Bug	NaN	495	80	70	40	100	60	145
750	681	AegislashBlade Forme	Steel	Ghost	520	60	150	50	150	50	60
751	681	AegislashShield Forme	Steel	Ghost	520	60	50	150	50	150	60
153	142	Aerodactyl	Rock	Flying	515	80	105	65	60	75	130
154	142	AerodactylMega Aerodactyl	Rock	Flying	615	80	135	85	70	95	150
332	306	Aggron	Steel	Rock	530	70	110	180	60	60	50
333	306	AggronMega Aggron	Steel	NaN	630	70	140	230	60	80	50
205	190	Aipom	Normal	NaN	360	55	70	55	40	55	85
70	65	Alakazam	Psychic	NaN	500	55	50	45	135	95	120
71	65	AlakazamMega Alakazam	Psychic	NaN	590	55	50	65	175	95	150
655	594	Alomomola	Water	NaN	470	165	75	80	40	45	65
365	334	Altaria	Dragon	Flying	490	75	70	90	70	105	80
366	334	AltariaMega Altaria	Dragon	Fairy	590	75	110	110	110	105	80
768	698	Amaura	Rock	Ice	362	77	59	50	67	63	46
471	424	Ambipom	Normal	NaN	482	75	100	66	60	66	115
652	591	Amoonguss	Grass	Poison	464	114	85	70	85	80	30
195	181	Ampharos	Electric	NaN	510	90	75	85	115	90	55
196	181	AmpharosMega Ampharos	Electric	Dragon	610	90	95	105	165	110	45
379	347	Anorith	Rock	Bug	355	45	95	50	40	50	75
29	24	Arbok	Poison	NaN	438	60	85	69	65	79	80
64	59	Arcanine	Fire	NaN	555	90	110	80	100	80	95
552	493	Arceus	Normal	NaN	720	120	120	120	120	120	120
627	566	Archen	Rock	Flying	401	55	112	45	74	45	70
628	567	Archeops	Rock	Flying	567	75	140	65	112	65	110
182	168	Ariados	Bug	Poison	390	70	90	70	60	60	40
...	...	...	...	...	...	...	...	...	...	...	...
607	547	Whimsicott	Grass	Fairy	480	60	67	85	77	75	116

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
604	544	Whirlipede	Bug	Poison	360	40	55	99	40	79	47
372	340	Whiscash	Water	Ground	468	110	78	73	76	71	60
317	293	Whismur	Normal	NaN	240	64	51	23	51	23	28
45	40	Wigglytuff	Normal	Fairy	435	140	70	45	85	50	45
301	278	Wingull	Water	Flying	270	40	30	30	55	30	85
217	202	Wobbuffet	Psychic	NaN	405	190	33	58	33	58	33
586	527	Woobat	Psychic	Flying	313	55	45	43	55	43	72
209	194	Wooper	Water	Ground	210	55	45	45	25	25	15
458	413	WormadamPlant Cloak	Bug	Grass	424	60	59	85	79	105	36
459	413	WormadamSandy Cloak	Bug	Ground	424	60	79	105	59	85	36
460	413	WormadamTrash Cloak	Bug	Steel	424	60	69	95	69	95	36
288	265	Wurmple	Bug	NaN	195	45	45	35	20	30	20
394	360	Wynaut	Psychic	NaN	260	95	23	48	23	48	23
192	178	Xatu	Psychic	Flying	470	65	75	70	95	70	95
792	716	Xerneas	Fairy	NaN	680	126	131	95	131	98	99
623	562	Yamask	Ghost	NaN	303	38	30	85	55	65	30
208	193	Yanma	Bug	Flying	390	65	65	45	75	45	95
520	469	Yanmega	Bug	Flying	515	86	76	86	116	56	95
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	99
367	335	Zangoose	Normal	NaN	458	73	115	60	60	60	90
157	145	Zapdos	Electric	Flying	580	90	90	85	125	90	100
582	523	Zebstrika	Electric	NaN	497	75	100	63	80	63	116
707	644	Zekrom	Dragon	Electric	680	100	150	120	120	100	90
286	263	Zigzagoon	Normal	NaN	240	38	30	41	30	41	60
632	571	Zoroark	Dark	NaN	510	60	105	60	120	60	105
631	570	Zorua	Dark	NaN	330	40	65	40	80	40	65
46	41	Zubat	Poison	Flying	245	40	45	35	30	40	55
695	634	Zweilous	Dark	Dragon	420	72	85	70	65	70	58
794	718	Zygarde50% Forme	Dragon	Ground	600	108	100	121	81	95	95

800 rows × 13 columns

Making changes to the data

In [28]:

```
df.head(5)
```

Out[28]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [29]:

```
df['Sum'] = df['Total'] + df['HP'] + df['Attack']
df.head(5)
```

Out[29]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [30]:

```
df['Mul'] = df['HP'] * df['Attack']
df.tail(5)
```

Out[30]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
795	719	Diancie	Rock	Fairy	600	50	100	150	100	150	50	
796	719	DiancieMega Diancie	Rock	Fairy	700	50	160	110	160	110	110	
797	720	HoopaHoopa Confined	Psychic	Ghost	600	80	110	60	150	130	70	
798	720	HoopaHoopa Unbound	Psychic	Dark	680	80	160	60	170	130	80	
799	721	Volcanion	Fire	Water	600	80	110	120	130	90	70	

Drop a column

In [31]:

```
df.columns
```

Out[31]:

```
Index(['#', 'Name', 'Type 1', 'Type 2', 'Total', 'HP', 'Attack', 'De
fense',
       'Sp. Atk', 'Sp. Def', 'Speed', 'Generation', 'Legendary', 'Su
m', 'Mul'],
      dtype='object')
```

In [32]:

```
df = df.drop(columns=['Sum'])
df.head(3)
```

Out[32]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generation	L
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	1	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	1	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	1	

Alternative way to sum columns

In [33]:

```
df['Sum2'] = df.iloc[:, 4:8].sum(axis=1)
df.head(3)
```

Out[33]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generation	L
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	1	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	1	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	1	

Drop multiple columns

In [34]:

```
df = df.drop(columns=['Sum2', 'Mul'])
df.head(5)
```

Out[34]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

Filtering data

Sreach rows using valus

In [35]:

```
df.loc[df['Type 1'] == 'Dark']
```

Out[35]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Ge
212	197	Umbreon	Dark	NaN	525	95	65	110	60	130	65	
213	198	Murkrow	Dark	Flying	405	60	85	42	85	42	91	
233	215	Sneasel	Dark	Ice	430	55	95	55	35	75	115	
246	228	Houndour	Dark	Fire	330	45	60	30	80	50	65	
247	229	Houndoom	Dark	Fire	500	75	90	50	110	80	95	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	
284	261	Poochyena	Dark	NaN	220	35	55	35	30	30	35	
285	262	Mightyena	Dark	NaN	420	70	90	70	60	60	70	
326	302	Sableye	Dark	Ghost	380	50	75	75	65	65	50	
327	302	SableyeMega Sableye	Dark	Ghost	480	50	85	125	85	115	20	
392	359	Absol	Dark	NaN	465	65	130	60	75	60	75	
393	359	AbsolMega Absol	Dark	NaN	565	65	150	60	115	60	115	
478	430	Honchkrow	Dark	Flying	505	100	125	52	105	52	71	
512	461	Weavile	Dark	Ice	510	70	120	65	45	85	125	
549	491	Darkrai	Dark	NaN	600	70	90	90	135	90	125	
568	509	Purrloin	Dark	NaN	281	41	50	37	50	37	66	
569	510	Liepard	Dark	NaN	446	64	88	50	88	50	106	
620	559	Scraggy	Dark	Fighting	348	50	75	70	35	70	48	
621	560	Scrafty	Dark	Fighting	488	65	90	115	45	115	58	
631	570	Zorua	Dark	NaN	330	40	65	40	80	40	65	
632	571	Zoroark	Dark	NaN	510	60	105	60	120	60	105	
685	624	Pawniard	Dark	Steel	340	45	85	70	40	40	60	
686	625	Bisharp	Dark	Steel	490	65	125	100	60	70	70	
690	629	Vullaby	Dark	Flying	370	70	55	75	45	65	60	
691	630	Mandibuzz	Dark	Flying	510	110	65	105	55	95	80	
694	633	Deino	Dark	Dragon	300	52	65	50	45	50	38	
695	634	Zweilous	Dark	Dragon	420	72	85	70	65	70	58	
696	635	Hydreigon	Dark	Dragon	600	92	105	90	125	90	98	
756	686	Inkay	Dark	Psychic	288	53	54	53	37	46	45	
757	687	Malamar	Dark	Psychic	482	86	92	88	68	75	73	
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	99	

In [36]:

```
df.loc[df['Type 2'] == 'Fire']
```

Out[36]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Ge
246	228	Houndour	Dark	Fire	330	45	60	30	80	50	65	
247	229	Houndoom	Dark	Fire	500	75	90	50	110	80	95	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	
424	383	GroudonPrimal Groudon	Ground	Fire	770	100	180	160	150	90	90	
532	479	RotomHeat Rotom	Electric	Fire	520	50	65	107	105	107	86	
553	494	Victini	Psychic	Fire	600	100	100	100	100	100	100	
668	607	Litwick	Ghost	Fire	275	50	30	55	65	55	20	
669	608	Lampent	Ghost	Fire	370	60	40	60	95	60	55	
670	609	Chandelure	Ghost	Fire	520	60	55	90	145	90	80	
697	636	Larvesta	Bug	Fire	360	55	85	55	50	55	60	
698	637	Volcarona	Bug	Fire	550	85	60	65	135	105	100	
706	643	Reshiram	Dragon	Fire	680	100	120	100	150	120	90	

Search rows using multiple values

In [37]:

```
df.loc[(df['Type 1'] == 'Bug') & (df['Type 2'] == 'Fire')]
```

Out[37]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generation
697	636	Larvesta	Bug	Fire	360	55	85	55	50	55	60	5
698	637	Volcarona	Bug	Fire	550	85	60	65	135	105	100	5

In [38]:

```
df.loc[(df['Type 1'] == 'Dark') & (df['Type 2'] == 'Fire') & (df['HP'] > 20)]
```

Out[38]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
246	228	Houndour	Dark	Fire	330	45	60	30	80	50	65	
247	229	Houndoom	Dark	Fire	500	75	90	50	110	80	95	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	

In [39]:

```
df.loc[((df['Type 1'] == 'Dark') | (df['Type 2'] == 'Dark')) & (df['Total'] > 500)]
```

Out[39]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	G
141	130	GyaradosMega Gyarados	Water	Dark	640	95	155	109	70	130	81	
212	197	Umbreon	Dark	NaN	525	95	65	110	60	130	65	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	
267	248	Tyranitar	Rock	Dark	600	100	134	110	95	100	61	
268	248	TyranitarMega Tyranitar	Rock	Dark	700	100	164	150	95	120	71	
349	319	SharpedoMega Sharpedo	Water	Dark	560	70	140	70	110	65	105	
393	359	AbsolMega Absol	Dark	NaN	565	65	150	60	115	60	115	
478	430	Honchkrow	Dark	Flying	505	100	125	52	105	52	71	
512	461	Weavile	Dark	Ice	510	70	120	65	45	85	125	
549	491	Darkrai	Dark	NaN	600	70	90	90	135	90	125	
613	553	Krookodile	Ground	Dark	519	95	117	80	65	70	92	
632	571	Zoroark	Dark	NaN	510	60	105	60	120	60	105	
691	630	Mandibuzz	Dark	Flying	510	110	65	105	55	95	80	
696	635	Hydreigon	Dark	Dragon	600	92	105	90	125	90	98	
726	658	Greninja	Water	Dark	530	72	95	67	103	71	122	
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	99	
798	720	HoopaHoopa Unbound	Psychic	Dark	680	80	160	60	170	130	80	

Making new csv file

In [40]:

```
df_new = df.loc[(df['Type 1'] == 'Dark') & (df['Type 2'] == 'Fire') & (df['HP']
> 10)]
df_new
#df_new.to_csv('New Pokemon')
```

Out[40]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
246	228	Houndour	Dark	Fire	330	45	60	30	80	50	65	
247	229	Houndoom	Dark	Fire	500	75	90	50	110	80	95	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	

In [41]:

```
df_new1 = df.loc[(df['Type 1'] == 'Dark') | (df['Defense'] >= 600)]
df_new1
```

Out[41]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Ge
212	197	Umbreon	Dark	NaN	525	95	65	110	60	130	65	
213	198	Murkrow	Dark	Flying	405	60	85	42	85	42	91	
233	215	Sneasel	Dark	Ice	430	55	95	55	35	75	115	
246	228	Houndour	Dark	Fire	330	45	60	30	80	50	65	
247	229	Houndoom	Dark	Fire	500	75	90	50	110	80	95	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	
284	261	Poochyena	Dark	NaN	220	35	55	35	30	30	35	
285	262	Mightyena	Dark	NaN	420	70	90	70	60	60	70	
326	302	Sableye	Dark	Ghost	380	50	75	75	65	65	50	
327	302	SableyeMega Sableye	Dark	Ghost	480	50	85	125	85	115	20	
392	359	Absol	Dark	NaN	465	65	130	60	75	60	75	
393	359	AbsolMega Absol	Dark	NaN	565	65	150	60	115	60	115	
478	430	Honchkrow	Dark	Flying	505	100	125	52	105	52	71	
512	461	Weavile	Dark	Ice	510	70	120	65	45	85	125	
549	491	Darkrai	Dark	NaN	600	70	90	90	135	90	125	
568	509	Purrloin	Dark	NaN	281	41	50	37	50	37	66	
569	510	Liepard	Dark	NaN	446	64	88	50	88	50	106	
620	559	Scraggy	Dark	Fighting	348	50	75	70	35	70	48	
621	560	Scrafty	Dark	Fighting	488	65	90	115	45	115	58	
631	570	Zorua	Dark	NaN	330	40	65	40	80	40	65	
632	571	Zoroark	Dark	NaN	510	60	105	60	120	60	105	
685	624	Pawniard	Dark	Steel	340	45	85	70	40	40	60	
686	625	Bisharp	Dark	Steel	490	65	125	100	60	70	70	
690	629	Vullaby	Dark	Flying	370	70	55	75	45	65	60	
691	630	Mandibuzz	Dark	Flying	510	110	65	105	55	95	80	
694	633	Deino	Dark	Dragon	300	52	65	50	45	50	38	
695	634	Zweilous	Dark	Dragon	420	72	85	70	65	70	58	
696	635	Hydreigon	Dark	Dragon	600	92	105	90	125	90	98	
756	686	Inkay	Dark	Psychic	288	53	54	53	37	46	45	
757	687	Malamar	Dark	Psychic	482	86	92	88	68	75	73	
793	717	Yveltal	Dark	Flying	680	126	131	95	131	98	99	

Searchibg by string values

In [42]:

```
df.loc[df['Name'].str.contains('Houndoom')]
```

Out[42]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
247	229	Houndoom	Dark	Fire	500	75	90	50	110	80	95	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	

In [43]:

```
df.loc[df['Name'].str.contains('ye')]
```

Out[43]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gene
284	261	Poochyena	Dark	NaN	220	35	55	35	30	30	35	
285	262	Mightyena	Dark	NaN	420	70	90	70	60	60	70	
326	302	Sableye	Dark	Ghost	380	50	75	75	65	65	50	
327	302	SableyeMega Sableye	Dark	Ghost	480	50	85	125	85	115	20	
666	605	Elgyem	Psychic	NaN	335	55	55	55	85	55	30	
667	606	Beheeyem	Psychic	NaN	485	75	75	75	125	95	40	

In [44]:

```
df.loc[df['Name'].str.contains('Sableye') & (df['Total'] > 390)]
```

Out[44]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generat
327	302	SableyeMega Sableye	Dark	Ghost	480	50	85	125	85	115	20	

In [45]:

```
df.loc[df['Name'].str.contains('Houndoom')]
```

Out[45]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Gener
247	229	Houndoom	Dark	Fire	500	75	90	50	110	80	95	
248	229	HoundoomMega Houndoom	Dark	Fire	600	75	90	90	140	90	115	

In [46]:

```
df.loc[~df['Name'].str.contains('Houndoom')][0:5]
```

Out[46]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [47]:

```
import re
df.loc[df['Type 1'].str.contains('Grass|Ghost', regex = True)]
```

Out[47]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80
48	43	Oddish	Grass	Poison	320	45	50	55	75	65	30
49	44	Gloom	Grass	Poison	395	60	65	70	85	75	40
50	45	Vileplume	Grass	Poison	490	75	80	85	110	90	50
75	69	Bellsprout	Grass	Poison	300	50	75	35	70	30	40
76	70	Weepinbell	Grass	Poison	390	65	90	50	85	45	55
77	71	Victreebel	Grass	Poison	490	80	105	65	100	70	70
99	92	Gastly	Ghost	Poison	310	30	35	30	100	35	80
100	93	Haunter	Ghost	Poison	405	45	50	45	115	55	95
101	94	Gengar	Ghost	Poison	500	60	65	60	130	75	110
102	94	GengarMega Gengar	Ghost	Poison	600	60	65	80	170	95	130
110	102	Exeggcute	Grass	Psychic	325	60	40	80	60	45	40
111	103	Exeggutor	Grass	Psychic	520	95	95	85	125	65	55
122	114	Tangela	Grass	NaN	435	65	55	115	100	40	60
166	152	Chikorita	Grass	NaN	318	45	49	65	49	65	45
167	153	Bayleef	Grass	NaN	405	60	62	80	63	80	60
168	154	Meganium	Grass	NaN	525	80	82	100	83	100	80
197	182	Bellossom	Grass	NaN	490	75	80	95	90	100	50
202	187	Hoppip	Grass	Flying	250	35	35	40	35	55	50
203	188	Skiploom	Grass	Flying	340	55	45	50	45	65	80
204	189	Jumpluff	Grass	Flying	460	75	55	70	55	95	110
206	191	Sunkern	Grass	NaN	180	30	30	30	30	30	30
207	192	Sunflora	Grass	NaN	425	75	75	55	105	85	30
215	200	Misdreavus	Ghost	NaN	435	60	60	60	85	85	85
272	252	Treecko	Grass	NaN	310	40	45	35	65	55	70
273	253	Grovyle	Grass	NaN	405	50	65	45	85	65	95
274	254	Sceptile	Grass	NaN	530	70	85	65	105	85	120
...	...	...	...	...	...	...	...	...	...	...	...
606	546	Cottonee	Grass	Fairy	280	40	27	60	37	50	66
607	547	Whimsicott	Grass	Fairy	480	60	67	85	77	75	116
608	548	Petilil	Grass	NaN	280	45	35	50	70	50	30
609	549	Lilligant	Grass	NaN	480	70	60	75	110	75	90

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
617	556	Maractus	Grass	NaN	461	75	86	67	106	67	60
623	562	Yamask	Ghost	NaN	303	38	30	85	55	65	30
624	563	Cofagrigus	Ghost	NaN	483	58	50	145	95	105	30
651	590	Foongus	Grass	Poison	294	69	55	45	55	55	15
652	591	Amoonguss	Grass	Poison	464	114	85	70	85	80	30
658	597	Ferroseed	Grass	Steel	305	44	50	91	24	86	10
659	598	Ferrothorn	Grass	Steel	489	74	94	131	54	116	20
668	607	Litwick	Ghost	Fire	275	50	30	55	65	55	20
669	608	Lampent	Ghost	Fire	370	60	40	60	95	60	55
670	609	Chandelure	Ghost	Fire	520	60	55	90	145	90	80
701	640	Virizion	Grass	Fighting	580	91	90	72	90	129	108
718	650	Chespin	Grass	NaN	313	56	61	65	48	45	38
719	651	Quilladin	Grass	NaN	405	61	78	95	56	58	57
720	652	Chesnaught	Grass	Fighting	530	88	107	122	74	75	64
740	672	Skiddo	Grass	NaN	350	66	65	48	62	57	52
741	673	Gogoat	Grass	NaN	531	123	100	62	97	81	68
778	708	Phantump	Ghost	Grass	309	43	70	48	50	60	38
779	709	Trevenant	Ghost	Grass	474	85	110	76	65	82	56
780	710	PumpkabooAverage Size	Ghost	Grass	335	49	66	70	44	55	51
781	710	PumpkabooSmall Size	Ghost	Grass	335	44	66	70	44	55	56
782	710	PumpkabooLarge Size	Ghost	Grass	335	54	66	70	44	55	46
783	710	PumpkabooSuper Size	Ghost	Grass	335	59	66	70	44	55	41
784	711	GourgeistAverage Size	Ghost	Grass	494	65	90	122	58	75	84
785	711	GourgeistSmall Size	Ghost	Grass	494	55	85	122	58	75	99
786	711	GourgeistLarge Size	Ghost	Grass	494	75	95	122	58	75	69
787	711	GourgeistSuper Size	Ghost	Grass	494	85	100	122	58	75	54

102 rows × 13 columns

In [48]:

```
df.loc[df['Type 1'].str.contains('poison|flying', flags = re.I, regex=True)]
```

Out[48]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed
28	23	Ekans	Poison	NaN	288	35	60	44	40	54	55
29	24	Arbok	Poison	NaN	438	60	85	69	65	79	80
34	29	Nidoran♀	Poison	NaN	275	55	47	52	40	40	41
35	30	Nidorina	Poison	NaN	365	70	62	67	55	55	56
36	31	Nidoqueen	Poison	Ground	505	90	92	87	75	85	76
37	32	Nidoran♂	Poison	NaN	273	46	57	40	40	40	50
38	33	Nidorino	Poison	NaN	365	61	72	57	55	55	65
39	34	Nidoking	Poison	Ground	505	81	102	77	85	75	85
46	41	Zubat	Poison	Flying	245	40	45	35	30	40	55
47	42	Golbat	Poison	Flying	455	75	80	70	65	75	90
95	88	Grimer	Poison	NaN	325	80	80	50	40	50	25
96	89	Muk	Poison	NaN	500	105	105	75	65	100	50
117	109	Koffing	Poison	NaN	340	40	65	95	60	45	35
118	110	Weezing	Poison	NaN	490	65	90	120	85	70	60
183	169	Crobat	Poison	Flying	535	85	90	80	70	80	130
345	316	Gulpin	Poison	NaN	302	70	43	53	43	53	40
346	317	Swalot	Poison	NaN	467	100	73	83	73	83	55
368	336	Seviper	Poison	NaN	458	73	100	60	100	60	65
482	434	Stunky	Poison	Dark	329	63	63	47	41	41	74
483	435	Skuntank	Poison	Dark	479	103	93	67	71	61	84
501	451	Skorupi	Poison	Bug	330	40	50	90	30	55	65
502	452	Drapion	Poison	Dark	500	70	90	110	60	75	95
503	453	Croagunk	Poison	Fighting	300	48	61	40	61	40	50
504	454	Toxicroak	Poison	Fighting	490	83	106	65	86	65	85
629	568	Trubbish	Poison	NaN	329	50	50	62	40	62	65
630	569	Garbodor	Poison	NaN	474	80	95	82	60	82	75
702	641	TornadusIncarnate Forme	Flying	NaN	580	79	115	70	125	80	111
703	641	TornadusTherian Forme	Flying	NaN	580	79	100	80	110	90	121
760	690	Skrelp	Poison	Water	320	50	60	60	60	60	30
761	691	Dragalge	Poison	Dragon	494	65	75	90	97	123	44
790	714	Noibat	Flying	Dragon	245	40	30	35	45	40	55
791	715	Noivern	Flying	Dragon	535	85	70	80	97	80	123

Conditional changes

In [49]:

```
df.head(5)
```

Out[49]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [50]:

```
df.loc[df['Type 1'] == 'Grass', 'Type 1'] = 'Poison'
df.head(5)
```

Out[50]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatic
0	1	Bulbasaur	Poison	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Poison	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Poison	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Poison	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [51]:

```
df.loc[df['Type 1'] == 'Poison', 'Type 1'] = 'Grass'
df.head(5)
```

Out[51]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [52]:

```
df.loc[df['HP'] >= 50, ['Total', 'Attack']] = 'Test0'
df.head(5)
```

Out[52]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	Test0	60	Test0	63	80	80	60	
2	3	Venusaur	Grass	Poison	Test0	80	Test0	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	Test0	80	Test0	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [53]:

```
df.loc[df['Total'] == 'Test0', ['Total', 'Attack']] = [12, 45]
df.head(5)
```

Out[53]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	12	60	45	63	80	80	60	
2	3	Venusaur	Grass	Poison	12	80	45	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	12	80	45	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

In [54]:

```
df.loc[df['Total'] == 12, ['Total', 'Attack']] = [2, 5]
df.head(5)
```

Out[54]:

	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generatio
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	
1	2	Ivysaur	Grass	Poison	2	60	5	63	80	80	60	
2	3	Venusaur	Grass	Poison	2	80	5	83	100	100	80	
3	3	VenusaurMega Venusaur	Grass	Poison	2	80	5	123	122	120	80	
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	

Group by - mean

In [55]:

```
df.groupby('Type 1').mean()
```

Out[55]:

Type 1	#	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	
Bug	334.492754	72.043478	56.884058	14.550725	70.724638	53.869565	64.797101	6
Dark	461.354839	50.096774	66.806452	14.354839	70.225806	74.645161	69.516129	7
Dragon	474.375000	39.875000	83.312500	13.000000	86.375000	96.843750	88.843750	8
Electric	363.500000	68.750000	59.795455	14.909091	66.295455	90.022727	73.704545	8
Fairy	449.529412	34.000000	74.117647	7.823529	65.705882	78.529412	84.705882	4
Fighting	363.851852	54.592593	69.851852	15.555556	65.925926	53.111111	64.703704	6
Fire	327.403846	48.961538	69.903846	12.365385	67.769231	88.980769	72.211538	7
Flying	677.750000	62.750000	70.750000	11.250000	66.250000	94.250000	72.500000	10
Ghost	486.500000	112.843750	64.437500	22.250000	81.187500	79.343750	76.468750	6
Grass	318.275510	56.918367	67.265306	12.785714	70.234694	72.622449	68.704082	6
Ground	356.281250	41.125000	73.781250	12.968750	84.843750	56.468750	62.750000	6
Ice	423.541667	40.916667	72.000000	10.000000	71.416667	77.541667	76.291667	6
Normal	319.173469	45.438776	77.275510	12.561224	59.846939	55.816327	63.724490	7
Psychic	380.807018	62.614035	70.631579	11.000000	67.684211	98.403509	86.280702	8
Rock	392.727273	64.840909	65.363636	14.977273	100.795455	63.340909	75.477273	5
Steel	442.851852	36.037037	65.222222	11.481481	126.370370	67.518519	80.629630	5
Water	303.089286	55.223214	72.062500	13.026786	72.946429	74.812500	70.517857	6

In [56]:

```
df.groupby('Type 1').mean().sort_values('HP', ascending = False)
```

Out[56]:

Type 1	#	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	
Dragon	474.375000	39.875000	83.312500	13.000000	86.375000	96.843750	88.843750	8
Normal	319.173469	45.438776	77.275510	12.561224	59.846939	55.816327	63.724490	7
Fairy	449.529412	34.000000	74.117647	7.823529	65.705882	78.529412	84.705882	4
Ground	356.281250	41.125000	73.781250	12.968750	84.843750	56.468750	62.750000	6
Water	303.089286	55.223214	72.062500	13.026786	72.946429	74.812500	70.517857	6
Ice	423.541667	40.916667	72.000000	10.000000	71.416667	77.541667	76.291667	6
Flying	677.750000	62.750000	70.750000	11.250000	66.250000	94.250000	72.500000	10
Psychic	380.807018	62.614035	70.631579	11.000000	67.684211	98.403509	86.280702	8
Fire	327.403846	48.961538	69.903846	12.365385	67.769231	88.980769	72.211538	7
Fighting	363.851852	54.592593	69.851852	15.555556	65.925926	53.111111	64.703704	6
Grass	318.275510	56.918367	67.265306	12.785714	70.234694	72.622449	68.704082	6
Dark	461.354839	50.096774	66.806452	14.354839	70.225806	74.645161	69.516129	7
Rock	392.727273	64.840909	65.363636	14.977273	100.795455	63.340909	75.477273	5
Steel	442.851852	36.037037	65.222222	11.481481	126.370370	67.518519	80.629630	5
Ghost	486.500000	112.843750	64.437500	22.250000	81.187500	79.343750	76.468750	6
Electric	363.500000	68.750000	59.795455	14.909091	66.295455	90.022727	73.704545	8
Bug	334.492754	72.043478	56.884058	14.550725	70.724638	53.869565	64.797101	6

In [57]:

```
df.groupby('Type 2').mean().sort_values('Attack', ascending = False)
```

Out[57]:

Type 2	#	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	
Bug	382.000000	229.000000	53.333333	50.000000	80.000000	46.666667	61.666667	6
Grass	505.400000	73.280000	62.640000	18.000000	80.120000	60.160000	74.520000	5
Water	400.000000	93.214286	62.714286	18.000000	85.071429	74.500000	68.642857	5
Poison	169.970588	96.588235	58.764706	17.323529	59.558824	74.029412	69.911765	6
Ghost	551.714286	41.785714	59.142857	16.428571	82.285714	73.214286	78.071429	5
Steel	435.636364	61.636364	64.636364	13.727273	104.636364	77.727273	86.272727	5
Normal	681.000000	73.750000	63.500000	13.250000	53.750000	88.000000	64.250000	8
Flying	331.103093	44.938144	71.391753	11.185567	68.309278	75.628866	71.206186	8
Fairy	379.043478	67.913043	64.304348	10.739130	73.869565	75.000000	81.956522	6
Fire	481.833333	29.333333	71.250000	9.583333	80.166667	110.416667	83.500000	7
Ground	307.600000	29.000000	77.228571	9.428571	90.314286	65.542857	66.742857	5
Psychic	337.151515	37.666667	72.212121	9.393939	87.030303	88.030303	87.606061	6
Dark	413.850000	17.150000	75.550000	9.250000	72.050000	81.800000	69.850000	7
Fighting	438.192308	13.461538	79.461538	7.153846	82.500000	81.269231	82.384615	8
Dragon	482.555556	15.500000	82.166667	6.388889	87.055556	98.500000	83.444444	8
Rock	347.785714	37.928571	68.071429	5.357143	126.857143	51.142857	68.571429	3
Electric	465.666667	2.000000	88.166667	5.000000	68.333333	81.166667	73.500000	7
Ice	441.285714	2.000000	90.000000	5.000000	85.642857	92.642857	84.785714	7

Group by - sum

In [58]:

```
df.groupby('Type 1').sum()
```

Out[58]:

Type 1	#	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generation	Legendary
Bug	23080	4971	3925	1004	4880	3717	4471	4256	222	0.0
Dark	14302	1553	2071	445	2177	2314	2155	2361	125	2.0
Dragon	15180	1276	2666	416	2764	3099	2843	2657	124	12.0
Electric	15994	3025	2631	656	2917	3961	3243	3718	144	4.0
Fairy	7642	578	1260	133	1117	1335	1440	826	70	1.0
Fighting	9824	1474	1886	420	1780	1434	1747	1784	91	0.0
Fire	17025	2546	3635	643	3524	4627	3755	3871	167	5.0
Flying	2711	251	283	45	265	377	290	410	22	2.0
Ghost	15568	3611	2062	712	2598	2539	2447	2059	134	2.0
Grass	31191	5578	6592	1253	6883	7117	6733	6115	306	3.0
Ground	11401	1316	2361	415	2715	1807	2008	2045	101	4.0
Ice	10165	982	1728	240	1714	1861	1831	1523	85	2.0
Normal	31279	4453	7573	1231	5865	5470	6245	7012	299	2.0
Psychic	21706	3569	4026	627	3858	5609	4918	4645	193	14.0
Rock	17280	2853	2876	659	4435	2787	3321	2460	152	4.0
Steel	11957	973	1761	310	3412	1823	2177	1492	104	4.0
Water	33946	6185	8071	1459	8170	8379	7898	7388	320	4.0

Group by - count

In [59]:

```
df.groupby('Type 1').count()
```

Out[59]:

Type 1	#	Name	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generation	Lege
Bug	69	69	52	69	69	69	69	69	69	69	69	
Dark	31	31	21	31	31	31	31	31	31	31	31	
Dragon	32	32	21	32	32	32	32	32	32	32	32	
Electric	44	44	17	44	44	44	44	44	44	44	44	
Fairy	17	17	2	17	17	17	17	17	17	17	17	
Fighting	27	27	7	27	27	27	27	27	27	27	27	
Fire	52	52	24	52	52	52	52	52	52	52	52	
Flying	4	4	2	4	4	4	4	4	4	4	4	
Ghost	32	32	22	32	32	32	32	32	32	32	32	
Grass	98	98	50	98	98	98	98	98	98	98	98	
Ground	32	32	19	32	32	32	32	32	32	32	32	
Ice	24	24	11	24	24	24	24	24	24	24	24	
Normal	98	98	37	98	98	98	98	98	98	98	98	
Psychic	57	57	19	57	57	57	57	57	57	57	57	
Rock	44	44	35	44	44	44	44	44	44	44	44	
Steel	27	27	22	27	27	27	27	27	27	27	27	
Water	112	112	53	112	112	112	112	112	112	112	112	

In [60]:

```
df['Count'] = 1
df.groupby(['Type 1']).count()['Count']
```

Out[60]:

```
Type 1
Bug          69
Dark         31
Dragon       32
Electric     44
Fairy        17
Fighting     27
Fire         52
Flying        4
Ghost        32
Grass        98
Ground       32
Ice          24
Normal       98
Psychic      57
Rock         44
Steel        27
Water       112
Name: Count, dtype: int64
```

In [61]:

```
df['Count'] = 1
df.groupby(['Type 1', 'Type 2']).count()['Count']
```

Out[61]:

Type 1	Type 2	
Bug	Electric	2
	Fighting	2
	Fire	2
	Flying	14
	Ghost	1
	Grass	6
	Ground	2
	Poison	12
	Rock	3
	Steel	7
	Water	1
Dark	Dragon	3
	Fighting	2
	Fire	3
	Flying	5
	Ghost	2
	Ice	2
	Psychic	2
	Steel	2
Dragon	Electric	1
	Fairy	1
	Fire	1
	Flying	6
	Ground	5
	Ice	3
	Psychic	4
Electric	Dragon	1
	Fairy	1
	Fire	1
	Flying	5
		..
Rock	Fighting	1
	Flying	4
	Grass	2
	Ground	6
	Ice	2
	Psychic	2
	Steel	3
	Water	6
Steel	Dragon	1
	Fairy	3
	Fighting	1
	Flying	1
	Ghost	4
	Ground	2
	Psychic	7
	Rock	3
Water	Dark	6
	Dragon	2
	Electric	2
	Fairy	2
	Fighting	3
	Flying	7
	Ghost	2
	Grass	3
	Ground	10
	Ice	3
	Poison	3

```
          Psychic      5
          Rock         4
          Steel        1
Name: Count, Length: 131, dtype: int64
```

To be countinued...!