pandas1

October 30, 2019

[1]:
```
import pandas as pd
data = pd.read_csv(r'desktop/pandas/pokemon_data.csv')
data
```

[1]:

	#	Name	Type 1	Type 2	HP	Attack	Defense	\
0	1	Bulbasaur	Grass	Poison	45	49	49	
1	2	Ivysaur	Grass	Poison	60	62	63	
2	3	Venusaur	Grass	Poison	80	82	83	
3	3	VenusaurMega Venusaur	Grass	Poison	80	100	123	
4	4	Charmander	Fire	NaN	39	52	43	
5	5	Charmeleon	Fire	NaN	58	64	58	
6	6	Charizard	Fire	Flying	78	84	78	
7	6	CharizardMega Charizard X	Fire	Dragon	78	130	111	
8	6	CharizardMega Charizard Y	Fire	Flying	78	104	78	
9	7	Squirtle	Water	NaN	44	48	65	
10	8	Wartortle	Water	NaN	59	63	80	
11	9	Blastoise	Water	NaN	79	83	100	
12	9	BlastoiseMega Blastoise	Water	NaN	79	103	120	
13	10	Caterpie	Bug	NaN	45	30	35	
14	11	Metapod	Bug	NaN	50	20	55	
15	12	Butterfree	Bug	Flying	60	45	50	
16	13	Weedle	Bug	Poison	40	35	30	
17	14	Kakuna	Bug	Poison	45	25	50	
18	15	Beedrill	Bug	Poison	65	90	40	
19	15	BeedrillMega Beedrill	Bug	Poison	65	150	40	
20	16	Pidgey	Normal	Flying	40	45	40	
21	17	Pidgeotto	Normal	Flying	63	60	55	
22	18	Pidgeot	Normal	Flying	83	80	75	
23	18	PidgeotMega Pidgeot	Normal	Flying	83	80	80	
24	19	Rattata	Normal	NaN	30	56	35	
25	20	Raticate	Normal	NaN	55	81	60	
26	21	Spearow	Normal	Flying	40	60	30	
27	22	Fearow	Normal	Flying	65	90	65	
28	23	Ekans	Poison	NaN	35	60	44	
29	24	Arbok	Poison	NaN	60	85	69	
..	...	...	...	...	...	...	...	
770	700	Sylveon	Fairy	NaN	95	65	65	

771	701	Hawlucha	Fighting	Flying	78	92	75
772	702	Dedenne	Electric	Fairy	67	58	57
773	703	Carbink	Rock	Fairy	50	50	150
774	704	Goomy	Dragon	NaN	45	50	35
775	705	Sliggoo	Dragon	NaN	68	75	53
776	706	Goodra	Dragon	NaN	90	100	70
777	707	Klefki	Steel	Fairy	57	80	91
778	708	Phantump	Ghost	Grass	43	70	48
779	709	Trevenant	Ghost	Grass	85	110	76
780	710	PumpkabooAverage Size	Ghost	Grass	49	66	70
781	710	PumpkabooSmall Size	Ghost	Grass	44	66	70
782	710	PumpkabooLarge Size	Ghost	Grass	54	66	70
783	710	PumpkabooSuper Size	Ghost	Grass	59	66	70
784	711	GourgeistAverage Size	Ghost	Grass	65	90	122
785	711	GourgeistSmall Size	Ghost	Grass	55	85	122
786	711	GourgeistLarge Size	Ghost	Grass	75	95	122
787	711	GourgeistSuper Size	Ghost	Grass	85	100	122
788	712	Bergmite	Ice	NaN	55	69	85
789	713	Avalugg	Ice	NaN	95	117	184
790	714	Noibat	Flying	Dragon	40	30	35
791	715	Noivern	Flying	Dragon	85	70	80
792	716	Xerneas	Fairy	NaN	126	131	95
793	717	Yveltal	Dark	Flying	126	131	95
794	718	Zygarde50% Forme	Dragon	Ground	108	100	121
795	719	Diancie	Rock	Fairy	50	100	150
796	719	DiancieMega Diancie	Rock	Fairy	50	160	110
797	720	HoopaHoopa Confined	Psychic	Ghost	80	110	60
798	720	HoopaHoopa Unbound	Psychic	Dark	80	160	60
799	721	Volcanion	Fire	Water	80	110	120

	Sp. Atk	Sp. Def	Speed	Generation	Legendary
0	65	65	45	1	False
1	80	80	60	1	False
2	100	100	80	1	False
3	122	120	80	1	False
4	60	50	65	1	False
5	80	65	80	1	False
6	109	85	100	1	False
7	130	85	100	1	False
8	159	115	100	1	False
9	50	64	43	1	False
10	65	80	58	1	False
11	85	105	78	1	False
12	135	115	78	1	False
13	20	20	45	1	False
14	25	25	30	1	False
15	90	80	70	1	False

16	20	20	50	1	False
17	25	25	35	1	False
18	45	80	75	1	False
19	15	80	145	1	False
20	35	35	56	1	False
21	50	50	71	1	False
22	70	70	101	1	False
23	135	80	121	1	False
24	25	35	72	1	False
25	50	70	97	1	False
26	31	31	70	1	False
27	61	61	100	1	False
28	40	54	55	1	False
29	65	79	80	1	False
..	...	...	...	...	...
770	110	130	60	6	False
771	74	63	118	6	False
772	81	67	101	6	False
773	50	150	50	6	False
774	55	75	40	6	False
775	83	113	60	6	False
776	110	150	80	6	False
777	80	87	75	6	False
778	50	60	38	6	False
779	65	82	56	6	False
780	44	55	51	6	False
781	44	55	56	6	False
782	44	55	46	6	False
783	44	55	41	6	False
784	58	75	84	6	False
785	58	75	99	6	False
786	58	75	69	6	False
787	58	75	54	6	False
788	32	35	28	6	False
789	44	46	28	6	False
790	45	40	55	6	False
791	97	80	123	6	False
792	131	98	99	6	True
793	131	98	99	6	True
794	81	95	95	6	True
795	100	150	50	6	True
796	160	110	110	6	True
797	150	130	70	6	True
798	170	130	80	6	True
799	130	90	70	6	True

[800 rows x 12 columns]

[2]:
```
#Reading three lines of data
data.head(3)
```

[2]:
```
   #       Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  Sp. Def  Speed  \
0  1  Bulbasaur  Grass  Poison  45      49       49       65       65     45
1  2    Ivysaur  Grass  Poison  60      62       63       80       80     60
2  3   Venusaur  Grass  Poison  80      82       83      100      100     80

   Generation  Legendary
0           1      False
1           1      False
2           1      False
```

[3]:
```
#Reading Columns
data.columns
```

[3]:
```
Index(['#', 'Name', 'Type 1', 'Type 2', 'HP', 'Attack', 'Defense', 'Sp. Atk',
       'Sp. Def', 'Speed', 'Generation', 'Legendary'],
      dtype='object')
```

[4]:
```
#reading each column
data['Name'][0:5]
```

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

[5]:
```
#Readig each row
data.iloc[0]
```

[5]:
```
#                    1
Name           Bulbasaur
Type 1             Grass
Type 2            Poison
HP                    45
Attack                49
Defense               49
Sp. Atk               65
Sp. Def               65
Speed                 45
Generation             1
Legendary          False
Name: 0, dtype: object
```

[6]:
```
data.iloc[0:5]
```

[6]:
```
   #                  Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  \
0  1             Bulbasaur  Grass  Poison  45      49       49       65
1  2               Ivysaur  Grass  Poison  60      62       63       80
```

```
2  3              Venusaur  Grass  Poison  80      82       83       100
3  3  VenusaurMega Venusaur  Grass  Poison  80     100      123       122
4  4             Charmander   Fire     NaN  39      52       43        60

   Sp. Def  Speed  Generation  Legendary
0       65     45           1      False
1       80     60           1      False
2      100     80           1      False
3      120     80           1      False
4       50     65           1      False
```

[7]:
```
#Specific data
data.iloc[2,1]
```

[7]:
```
'Venusaur'
```

[8]:
```
data.loc[2,'Name']
```

[8]:
```
'Venusaur'
```

[9]:
```
#Locating required data
data.loc[[0,3],['Name','Type1']]
```

```
//anaconda3/lib/python3.7/site-packages/pandas/core/indexing.py:1494:
FutureWarning:
Passing list-likes to .loc or [] with any missing label will raise
KeyError in the future, you can use .reindex() as an alternative.

See the documentation here:
https://pandas.pydata.org/pandas-docs/stable/indexing.html#deprecate-loc-
reindex-listlike
  return self._getitem_tuple(key)
```

[9]:
```
                   Name  Type1
0              Bulbasaur    NaN
3  VenusaurMega Venusaur    NaN
```

[10]:
```
(data['Type 1'] == 'Grass').head(5)
```

[10]:
```
0     True
1     True
2     True
3     True
4    False
Name: Type 1, dtype: bool
```

[11]:
```
#Printing the matching results for grass

print(data.loc[data['Type 1'] == 'Grass'].head(5))
```

```
    #                  Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  \
0   1             Bulbasaur  Grass  Poison  45      49       49       65
```

```
1    2               Ivysaur  Grass  Poison  60      62       63       80
2    3              Venusaur  Grass  Poison  80      82       83      100
3    3  VenusaurMega Venusaur  Grass  Poison  80     100      123      122
48  43                Oddish  Grass  Poison  45      50       55       75

    Sp. Def  Speed  Generation  Legendary
0        65     45           1      False
1        80     60           1      False
2       100     80           1      False
3       120     80           1      False
48       65     30           1      False
```

[12]:
```
#Iterating the rows using loop
for index,row in data.iterrows():
    print(index,row['Name'])
```

```
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
30 Pikachu
```

31 Raichu
32 Sandshrew
33 Sandslash
34 Nidoran (Female)
35 Nidorina
36 Nidoqueen
37 Nidoran (Male)
38 Nidorino
39 Nidoking
40 Clefairy
41 Clefable
42 Vulpix
43 Ninetales
44 Jigglypuff
45 Wigglytuff
46 Zubat
47 Golbat
48 Oddish
49 Gloom
50 Vileplume
51 Paras
52 Parasect
53 Venonat
54 Venomoth
55 Diglett
56 Dugtrio
57 Meowth
58 Persian
59 Psyduck
60 Golduck
61 Mankey
62 Primeape
63 Growlithe
64 Arcanine
65 Poliwag
66 Poliwhirl
67 Poliwrath
68 Abra
69 Kadabra
70 Alakazam
71 AlakazamMega Alakazam
72 Machop
73 Machoke
74 Machamp
75 Bellsprout
76 Weepinbell
77 Victreebel
78 Tentacool

79 Tentacruel
80 Geodude
81 Graveler
82 Golem
83 Ponyta
84 Rapidash
85 Slowpoke
86 Slowbro
87 SlowbroMega Slowbro
88 Magnemite
89 Magneton
90 Farfetch'd
91 Doduo
92 Dodrio
93 Seel
94 Dewgong
95 Grimer
96 Muk
97 Shellder
98 Cloyster
99 Gastly
100 Haunter
101 Gengar
102 GengarMega Gengar
103 Onix
104 Drowzee
105 Hypno
106 Krabby
107 Kingler
108 Voltorb
109 Electrode
110 Exeggcute
111 Exeggutor
112 Cubone
113 Marowak
114 Hitmonlee
115 Hitmonchan
116 Lickitung
117 Koffing
118 Weezing
119 Rhyhorn
120 Rhydon
121 Chansey
122 Tangela
123 Kangaskhan
124 KangaskhanMega Kangaskhan
125 Horsea
126 Seadra

127 Goldeen
128 Seaking
129 Staryu
130 Starmie
131 Mr. Mime
132 Scyther
133 Jynx
134 Electabuzz
135 Magmar
136 Pinsir
137 PinsirMega Pinsir
138 Tauros
139 Magikarp
140 Gyarados
141 GyaradosMega Gyarados
142 Lapras
143 Ditto
144 Eevee
145 Vaporeon
146 Jolteon
147 Flareon
148 Porygon
149 Omanyte
150 Omastar
151 Kabuto
152 Kabutops
153 Aerodactyl
154 AerodactylMega Aerodactyl
155 Snorlax
156 Articuno
157 Zapdos
158 Moltres
159 Dratini
160 Dragonair
161 Dragonite
162 Mewtwo
163 MewtwoMega Mewtwo X
164 MewtwoMega Mewtwo Y
165 Mew
166 Chikorita
167 Bayleef
168 Meganium
169 Cyndaquil
170 Quilava
171 Typhlosion
172 Totodile
173 Croconaw
174 Feraligatr

175 Sentret
176 Furret
177 Hoothoot
178 Noctowl
179 Ledyba
180 Ledian
181 Spinarak
182 Ariados
183 Crobat
184 Chinchou
185 Lanturn
186 Pichu
187 Cleffa
188 Igglybuff
189 Togepi
190 Togetic
191 Natu
192 Xatu
193 Mareep
194 Flaaffy
195 Ampharos
196 AmpharosMega Ampharos
197 Bellossom
198 Marill
199 Azumarill
200 Sudowoodo
201 Politoed
202 Hoppip
203 Skiploom
204 Jumpluff
205 Aipom
206 Sunkern
207 Sunflora
208 Yanma
209 Wooper
210 Quagsire
211 Espeon
212 Umbreon
213 Murkrow
214 Slowking
215 Misdreavus
216 Unown
217 Wobbuffet
218 Girafarig
219 Pineco
220 Forretress
221 Dunsparce
222 Gligar

223 Steelix
224 SteelixMega Steelix
225 Snubbull
226 Granbull
227 Qwilfish
228 Scizor
229 ScizorMega Scizor
230 Shuckle
231 Heracross
232 HeracrossMega Heracross
233 Sneasel
234 Teddiursa
235 Ursaring
236 Slugma
237 Magcargo
238 Swinub
239 Piloswine
240 Corsola
241 Remoraid
242 Octillery
243 Delibird
244 Mantine
245 Skarmory
246 Houndour
247 Houndoom
248 HoundoomMega Houndoom
249 Kingdra
250 Phanpy
251 Donphan
252 Porygon2
253 Stantler
254 Smeargle
255 Tyrogue
256 Hitmontop
257 Smoochum
258 Elekid
259 Magby
260 Miltank
261 Blissey
262 Raikou
263 Entei
264 Suicune
265 Larvitar
266 Pupitar
267 Tyranitar
268 TyranitarMega Tyranitar
269 Lugia
270 Ho-oh

271 Celebi
272 Treecko
273 Grovyle
274 Sceptile
275 SceptileMega Sceptile
276 Torchic
277 Combusken
278 Blaziken
279 BlazikenMega Blaziken
280 Mudkip
281 Marshtomp
282 Swampert
283 SwampertMega Swampert
284 Poochyena
285 Mightyena
286 Zigzagoon
287 Linoone
288 Wurmple
289 Silcoon
290 Beautifly
291 Cascoon
292 Dustox
293 Lotad
294 Lombre
295 Ludicolo
296 Seedot
297 Nuzleaf
298 Shiftry
299 Taillow
300 Swellow
301 Wingull
302 Pelipper
303 Ralts
304 Kirlia
305 Gardevoir
306 GardevoirMega Gardevoir
307 Surskit
308 Masquerain
309 Shroomish
310 Breloom
311 Slakoth
312 Vigoroth
313 Slaking
314 Nincada
315 Ninjask
316 Shedinja
317 Whismur
318 Loudred

319 Exploud
320 Makuhita
321 Hariyama
322 Azurill
323 Nosepass
324 Skitty
325 Delcatty
326 Sableye
327 SableyeMega Sableye
328 Mawile
329 MawileMega Mawile
330 Aron
331 Lairon
332 Aggron
333 AggronMega Aggron
334 Meditite
335 Medicham
336 MedichamMega Medicham
337 Electrike
338 Manectric
339 ManectricMega Manectric
340 Plusle
341 Minun
342 Volbeat
343 Illumise
344 Roselia
345 Gulpin
346 Swalot
347 Carvanha
348 Sharpedo
349 SharpedoMega Sharpedo
350 Wailmer
351 Wailord
352 Numel
353 Camerupt
354 CameruptMega Camerupt
355 Torkoal
356 Spoink
357 Grumpig
358 Spinda
359 Trapinch
360 Vibrava
361 Flygon
362 Cacnea
363 Cacturne
364 Swablu
365 Altaria
366 AltariaMega Altaria

367 Zangoose
368 Seviper
369 Lunatone
370 Solrock
371 Barboach
372 Whiscash
373 Corphish
374 Crawdaunt
375 Baltoy
376 Claydol
377 Lileep
378 Cradily
379 Anorith
380 Armaldo
381 Feebas
382 Milotic
383 Castform
384 Kecleon
385 Shuppet
386 Banette
387 BanetteMega Banette
388 Duskull
389 Dusclops
390 Tropius
391 Chimecho
392 Absol
393 AbsolMega Absol
394 Wynaut
395 Snorunt
396 Glalie
397 GlalieMega Glalie
398 Spheal
399 Sealeo
400 Walrein
401 Clamperl
402 Huntail
403 Gorebyss
404 Relicanth
405 Luvdisc
406 Bagon
407 Shelgon
408 Salamence
409 SalamenceMega Salamence
410 Beldum
411 Metang
412 Metagross
413 MetagrossMega Metagross
414 Regirock

415 Regice
416 Registeel
417 Latias
418 LatiasMega Latias
419 Latios
420 LatiosMega Latios
421 Kyogre
422 KyogrePrimal Kyogre
423 Groudon
424 GroudonPrimal Groudon
425 Rayquaza
426 RayquazaMega Rayquaza
427 Jirachi
428 DeoxysNormal Forme
429 DeoxysAttack Forme
430 DeoxysDefense Forme
431 DeoxysSpeed Forme
432 Turtwig
433 Grotle
434 Torterra
435 Chimchar
436 Monferno
437 Infernape
438 Piplup
439 Prinplup
440 Empoleon
441 Starly
442 Staravia
443 Staraptor
444 Bidoof
445 Bibarel
446 Kricketot
447 Kricketune
448 Shinx
449 Luxio
450 Luxray
451 Budew
452 Roserade
453 Cranidos
454 Rampardos
455 Shieldon
456 Bastiodon
457 Burmy
458 WormadamPlant Cloak
459 WormadamSandy Cloak
460 WormadamTrash Cloak
461 Mothim
462 Combee

463 Vespiquen
464 Pachirisu
465 Buizel
466 Floatzel
467 Cherubi
468 Cherrim
469 Shellos
470 Gastrodon
471 Ambipom
472 Drifloon
473 Drifblim
474 Buneary
475 Lopunny
476 LopunnyMega Lopunny
477 Mismagius
478 Honchkrow
479 Glameow
480 Purugly
481 Chingling
482 Stunky
483 Skuntank
484 Bronzor
485 Bronzong
486 Bonsly
487 Mime Jr.
488 Happiny
489 Chatot
490 Spiritomb
491 Gible
492 Gabite
493 Garchomp
494 GarchompMega Garchomp
495 Munchlax
496 Riolu
497 Lucario
498 LucarioMega Lucario
499 Hippopotas
500 Hippowdon
501 Skorupi
502 Drapion
503 Croagunk
504 Toxicroak
505 Carnivine
506 Finneon
507 Lumineon
508 Mantyke
509 Snover
510 Abomasnow

511 AbomasnowMega Abomasnow
512 Weavile
513 Magnezone
514 Lickilicky
515 Rhyperior
516 Tangrowth
517 Electivire
518 Magmortar
519 Togekiss
520 Yanmega
521 Leafeon
522 Glaceon
523 Gliscor
524 Mamoswine
525 Porygon-Z
526 Gallade
527 GalladeMega Gallade
528 Probopass
529 Dusknoir
530 Froslass
531 Rotom
532 RotomHeat Rotom
533 RotomWash Rotom
534 RotomFrost Rotom
535 RotomFan Rotom
536 RotomMow Rotom
537 Uxie
538 Mesprit
539 Azelf
540 Dialga
541 Palkia
542 Heatran
543 Regigigas
544 GiratinaAltered Forme
545 GiratinaOrigin Forme
546 Cresselia
547 Phione
548 Manaphy
549 Darkrai
550 ShayminLand Forme
551 ShayminSky Forme
552 Arceus
553 Victini
554 Snivy
555 Servine
556 Serperior
557 Tepig
558 Pignite

559 Emboar
560 Oshawott
561 Dewott
562 Samurott
563 Patrat
564 Watchog
565 Lillipup
566 Herdier
567 Stoutland
568 Purrloin
569 Liepard
570 Pansage
571 Simisage
572 Pansear
573 Simisear
574 Panpour
575 Simipour
576 Munna
577 Musharna
578 Pidove
579 Tranquill
580 Unfezant
581 Blitzle
582 Zebstrika
583 Roggenrola
584 Boldore
585 Gigalith
586 Woobat
587 Swoobat
588 Drilbur
589 Excadrill
590 Audino
591 AudinoMega Audino
592 Timburr
593 Gurdurr
594 Conkeldurr
595 Tympole
596 Palpitoad
597 Seismitoad
598 Throh
599 Sawk
600 Sewaddle
601 Swadloon
602 Leavanny
603 Venipede
604 Whirlipede
605 Scolipede
606 Cottonee

607 Whimsicott
608 Petilil
609 Lilligant
610 Basculin
611 Sandile
612 Krokorok
613 Krookodile
614 Darumaka
615 DarmanitanStandard Mode
616 DarmanitanZen Mode
617 Maractus
618 Dwebble
619 Crustle
620 Scraggy
621 Scrafty
622 Sigilyph
623 Yamask
624 Cofagrigus
625 Tirtouga
626 Carracosta
627 Archen
628 Archeops
629 Trubbish
630 Garbodor
631 Zorua
632 Zoroark
633 Minccino
634 Cinccino
635 Gothita
636 Gothorita
637 Gothitelle
638 Solosis
639 Duosion
640 Reuniclus
641 Ducklett
642 Swanna
643 Vanillite
644 Vanillish
645 Vanilluxe
646 Deerling
647 Sawsbuck
648 Emolga
649 Karrablast
650 Escavalier
651 Foongus
652 Amoonguss
653 Frillish
654 Jellicent

655 Alomomola
656 Joltik
657 Galvantula
658 Ferroseed
659 Ferrothorn
660 Klink
661 Klang
662 Klinklang
663 Tynamo
664 Eelektrik
665 Eelektross
666 Elgyem
667 Beheeyem
668 Litwick
669 Lampent
670 Chandelure
671 Axew
672 Fraxure
673 Haxorus
674 Cubchoo
675 Beartic
676 Cryogonal
677 Shelmet
678 Accelgor
679 Stunfisk
680 Mienfoo
681 Mienshao
682 Druddigon
683 Golett
684 Golurk
685 Pawniard
686 Bisharp
687 Bouffalant
688 Rufflet
689 Braviary
690 Vullaby
691 Mandibuzz
692 Heatmor
693 Durant
694 Deino
695 Zweilous
696 Hydreigon
697 Larvesta
698 Volcarona
699 Cobalion
700 Terrakion
701 Virizion
702 TornadusIncarnate Forme

703 TornadusTherian Forme
704 ThundurusIncarnate Forme
705 ThundurusTherian Forme
706 Reshiram
707 Zekrom
708 LandorusIncarnate Forme
709 LandorusTherian Forme
710 Kyurem
711 KyuremBlack Kyurem
712 KyuremWhite Kyurem
713 KeldeoOrdinary Forme
714 KeldeoResolute Forme
715 MeloettaAria Forme
716 MeloettaPirouette Forme
717 Genesect
718 Chespin
719 Quilladin
720 Chesnaught
721 Fennekin
722 Braixen
723 Delphox
724 Froakie
725 Frogadier
726 Greninja
727 Bunnelby
728 Diggersby
729 Fletchling
730 Fletchinder
731 Talonflame
732 Scatterbug
733 Spewpa
734 Vivillon
735 Litleo
736 Pyroar
737 Flabébé
738 Floette
739 Florges
740 Skiddo
741 Gogoat
742 Pancham
743 Pangoro
744 Furfrou
745 Espurr
746 MeowsticMale
747 MeowsticFemale
748 Honedge
749 Doublade
750 AegislashBlade Forme

751 AegislashShield Forme
752 Spritzee
753 Aromatisse
754 Swirlix
755 Slurpuff
756 Inkay
757 Malamar
758 Binacle
759 Barbaracle
760 Skrelp
761 Dragalge
762 Clauncher
763 Clawitzer
764 Helioptile
765 Heliolisk
766 Tyrunt
767 Tyrantrum
768 Amaura
769 Aurorus
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
```

[13]:
```
#Describing the data

data.describe()
```

[13]:
```
                #          HP      Attack     Defense     Sp. Atk     Sp. Def  \
count  800.000000  800.000000  800.000000  800.000000  800.000000  800.000000
mean   362.813750   69.258750   79.001250   73.842500   72.820000   71.902500
std    208.343798   25.534669   32.457366   31.183501   32.722294   27.828916
min      1.000000    1.000000    5.000000    5.000000   10.000000   20.000000
25%    184.750000   50.000000   55.000000   50.000000   49.750000   50.000000
50%    364.500000   65.000000   75.000000   70.000000   65.000000   70.000000
75%    539.250000   80.000000  100.000000   90.000000   95.000000   90.000000
max    721.000000  255.000000  190.000000  230.000000  194.000000  230.000000

            Speed  Generation
count  800.000000   800.00000
mean    68.277500     3.32375
std     29.060474     1.66129
min      5.000000     1.00000
25%     45.000000     2.00000
50%     65.000000     3.00000
75%     90.000000     5.00000
max    180.000000     6.00000
```

[14]:
```
#Sorting the data

data.sort_values(['Type 1', 'HP'], ascending=True).head(5)
```

[14]:
```
       #      Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  Sp. Def  \
316  292  Shedinja    Bug   Ghost   1      90       45       30       30
230  213   Shuckle    Bug    Rock  20      10      230       10      230
462  415    Combee    Bug  Flying  30      30       42       30       42
603  543  Venipede    Bug  Poison  30      45       59       30       39
314  290   Nincada    Bug  Ground  31      45       90       30       30

     Speed  Generation  Legendary
316     40           3      False
230      5           2      False
462     70           4      False
603     57           5      False
314     40           3      False
```

[15]:
```
# adding new columns
data['Total'] = data['HP'] + data['Attack'] + data['Defense'] + data['Sp. Atk']␣
 ↪+ data['Sp. Def'] +data['Speed']
```

[16]:
```
data.head(5)
```

[16]:
```
   #                  Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  \
0  1             Bulbasaur  Grass  Poison  45      49       49       65
1  2               Ivysaur  Grass  Poison  60      62       63       80
2  3              Venusaur  Grass  Poison  80      82       83      100
3  3  VenusaurMega Venusaur  Grass  Poison  80     100      123      122
4  4            Charmander   Fire     NaN  39      52       43       60

   Sp. Def  Speed  Generation  Legendary  Total
0       65     45           1      False    318
1       80     60           1      False    405
2      100     80           1      False    525
3      120     80           1      False    625
4       50     65           1      False    309
```

[17]:
```
data.sort_values(['Total'], ascending = False).head(5)
```

[17]:
```
       #                   Name    Type 1    Type 2   HP  Attack  Defense  \
426  384  RayquazaMega Rayquaza    Dragon    Flying  105     180      100
164  150    MewtwoMega Mewtwo Y  Psychic       NaN  106     150       70
163  150    MewtwoMega Mewtwo X  Psychic  Fighting  106     190      100
422  382    KyogrePrimal Kyogre    Water       NaN  100     150       90
424  383  GroudonPrimal Groudon   Ground      Fire  100     180      160

     Sp. Atk  Sp. Def  Speed  Generation  Legendary  Total
426      180      100    115           3       True    780
164      194      120    140           1       True    780
163      154      100    130           1       True    780
422      180      160     90           3       True    770
424      150       90     90           3       True    770
```

[18]:
```
data.head(5)
```

[18]:
```
   #                  Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  \
0  1             Bulbasaur  Grass  Poison  45      49       49       65
1  2               Ivysaur  Grass  Poison  60      62       63       80
2  3              Venusaur  Grass  Poison  80      82       83      100
3  3  VenusaurMega Venusaur  Grass  Poison  80     100      123      122
4  4            Charmander   Fire     NaN  39      52       43       60

   Sp. Def  Speed  Generation  Legendary  Total
0       65     45           1      False    318
1       80     60           1      False    405
2      100     80           1      False    525
3      120     80           1      False    625
4       50     65           1      False    309
```

[19]:
```
# Dropping new columns
data.drop(columns=['Total']).head(5)
```

[19]:
```
   #                   Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  \
0  1              Bulbasaur  Grass  Poison  45      49       49       65
1  2                Ivysaur  Grass  Poison  60      62       63       80
2  3               Venusaur  Grass  Poison  80      82       83      100
3  3  VenusaurMega Venusaur  Grass  Poison  80     100      123      122
4  4             Charmander   Fire     NaN  39      52       43       60

   Sp. Def  Speed  Generation  Legendary
0       65     45           1      False
1       80     60           1      False
2      100     80           1      False
3      120     80           1      False
4       50     65           1      False
```

[20]:
```
data.head(5)
```

[20]:
```
   #                   Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  \
0  1              Bulbasaur  Grass  Poison  45      49       49       65
1  2                Ivysaur  Grass  Poison  60      62       63       80
2  3               Venusaur  Grass  Poison  80      82       83      100
3  3  VenusaurMega Venusaur  Grass  Poison  80     100      123      122
4  4             Charmander   Fire     NaN  39      52       43       60

   Sp. Def  Speed  Generation  Legendary  Total
0       65     45           1      False    318
1       80     60           1      False    405
2      100     80           1      False    525
3      120     80           1      False    625
4       50     65           1      False    309
```

[21]:
```
data.iloc[:,4:10].head(5)
```

[21]:
```
   HP  Attack  Defense  Sp. Atk  Sp. Def  Speed
0  45      49       49       65       65     45
1  60      62       63       80       80     60
2  80      82       83      100      100     80
3  80     100      123      122      120     80
4  39      52       43       60       50     65
```

[22]:
```
#adding new column using the slicing method

data['Total']=data.iloc[:,4:10].sum(axis=1)
```

[23]:
```
data.head(5)
```

[23]:
```
   #                   Name Type 1  Type 2  HP  Attack  Defense  Sp. Atk  \
0  1              Bulbasaur  Grass  Poison  45      49       49       65
1  2                Ivysaur  Grass  Poison  60      62       63       80
2  3               Venusaur  Grass  Poison  80      82       83      100
3  3  VenusaurMega Venusaur  Grass  Poison  80     100      123      122
```

```
4  4             Charmander   Fire     NaN  39      52       43       60

   Sp. Def  Speed  Generation  Legendary  Total
0       65     45           1      False    318
1       80     60           1      False    405
2      100     80           1      False    525
3      120     80           1      False    625
4       50     65           1      False    309
```

[24]:
```
#swaping the columns

cols = list(data.columns)
cols
```

[24]:
```
['#',
 'Name',
 'Type 1',
 'Type 2',
 'HP',
 'Attack',
 'Defense',
 'Sp. Atk',
 'Sp. Def',
 'Speed',
 'Generation',
 'Legendary',
 'Total']
```

[25]:
```
data = data[cols[0:4] + [cols[-1]] + cols[4:12]]
data.head(5)
```

[25]:
```
   #                  Name Type 1  Type 2  Total  HP  Attack  Defense  \
0  1             Bulbasaur  Grass  Poison    318  45      49       49
1  2               Ivysaur  Grass  Poison    405  60      62       63
2  3              Venusaur  Grass  Poison    525  80      82       83
3  3  VenusaurMega Venusaur  Grass  Poison    625  80     100      123
4  4             Charmander   Fire     NaN    309  39      52       43

   Sp. Atk  Sp. Def  Speed  Generation  Legendary
0       65       65     45           1      False
1       80       80     60           1      False
2      100      100     80           1      False
3      122      120     80           1      False
4       60       50     65           1      False
```

[26]:
```
data.to_csv('newpokeman1.csv',index=True)
```

[27]:
```
pd.read_csv('newpokeman1.csv').head(5)
```

[27]:
```
   Unnamed: 0  #                   Name Type 1  Type 2  Total  HP  Attack  \
0           0  1              Bulbasaur  Grass  Poison    318  45      49
1           1  2                Ivysaur  Grass  Poison    405  60      62
2           2  3               Venusaur  Grass  Poison    525  80      82
3           3  3  VenusaurMega Venusaur  Grass  Poison    625  80     100
4           4  4             Charmander   Fire     NaN    309  39      52

   Defense  Sp. Atk  Sp. Def  Speed  Generation  Legendary
0       49       65       65     45           1      False
1       63       80       80     60           1      False
2       83      100      100     80           1      False
3      123      122      120     80           1      False
4       43       60       50     65           1      False
```

[28]:
```
data.to_csv('newpokeman2.csv',index=False)
pd.read_csv('newpokeman2.csv').head(5)
```

[28]:
```
   #                   Name Type 1  Type 2  Total  HP  Attack  Defense  \
0  1              Bulbasaur  Grass  Poison    318  45      49       49
1  2                Ivysaur  Grass  Poison    405  60      62       63
2  3               Venusaur  Grass  Poison    525  80      82       83
3  3  VenusaurMega Venusaur  Grass  Poison    625  80     100      123
4  4             Charmander   Fire     NaN    309  39      52       43

   Sp. Atk  Sp. Def  Speed  Generation  Legendary
0       65       65     45           1      False
1       80       80     60           1      False
2      100      100     80           1      False
3      122      120     80           1      False
4       60       50     65           1      False
```

[29]:
```
data.to_csv('newpokeman3.csv')
pd.read_csv('newpokeman3.csv').head(5)
```

[29]:
```
   Unnamed: 0  #                   Name Type 1  Type 2  Total  HP  Attack  \
0           0  1              Bulbasaur  Grass  Poison    318  45      49
1           1  2                Ivysaur  Grass  Poison    405  60      62
2           2  3               Venusaur  Grass  Poison    525  80      82
3           3  3  VenusaurMega Venusaur  Grass  Poison    625  80     100
4           4  4             Charmander   Fire     NaN    309  39      52

   Defense  Sp. Atk  Sp. Def  Speed  Generation  Legendary
0       49       65       65     45           1      False
1       63       80       80     60           1      False
2       83      100      100     80           1      False
3      123      122      120     80           1      False
4       43       60       50     65           1      False
```

[30]:
```
data.to_csv('newpokeman4.csv',index=False, sep='\t')
pd.read_csv('newpokeman4.csv').head(5)
```

[30]:
```
  #\tName\tType 1\tType 2\tTotal\tHP\tAttack\tDefense\tSp. Atk\tSp.
Def\tSpeed\tGeneration\tLegendary
0  1\tBulbasaur\tGrass\tPoison\t318\t45\t49\t49\t...
1  2\tIvysaur\tGrass\tPoison\t405\t60\t62\t63\t80...
2  3\tVenusaur\tGrass\tPoison\t525\t80\t82\t83\t1...
3  3\tVenusaurMega Venusaur\tGrass\tPoison\t625\t...
4  4\tCharmander\tFire\t\t309\t39\t52\t43\t60\t50...
```

1 Filtering Data

[31]:
```
data1 =data.loc[(data['Type 1'] == 'Grass') & (data['Type 2']=='Poison')]
```

[32]:
```
data1.shape
```

[32]:
```
(15, 13)
```

[33]:
```
data.shape
```

[33]:
```
(800, 13)
```

[34]:
```
data['Type 1'].unique()
```

[34]:
```
array(['Grass', 'Fire', 'Water', 'Bug', 'Normal', 'Poison', 'Electric',
       'Ground', 'Fairy', 'Fighting', 'Psychic', 'Rock', 'Ghost', 'Ice',
       'Dragon', 'Dark', 'Steel', 'Flying'], dtype=object)
```

[35]:
```
data['Type 1'].value_counts()
```

[35]:
```
Water       112
Normal       98
Grass        70
Bug          69
Psychic      57
Fire         52
Rock         44
Electric     44
Ground       32
Ghost        32
Dragon       32
Dark         31
Poison       28
Fighting     27
Steel        27
Ice          24
Fairy        17
Flying        4
Name: Type 1, dtype: int64
```

[36]:
```
#Reset the index in modified data
data = pd.read_csv(r'desktop/pandas/pokemon_data.csv')
```

```
data
```

[36]:

	#	Name	Type 1	Type 2	HP	Attack	Defense	\
0	1	Bulbasaur	Grass	Poison	45	49	49	
1	2	Ivysaur	Grass	Poison	60	62	63	
2	3	Venusaur	Grass	Poison	80	82	83	
3	3	VenusaurMega Venusaur	Grass	Poison	80	100	123	
4	4	Charmander	Fire	NaN	39	52	43	
5	5	Charmeleon	Fire	NaN	58	64	58	
6	6	Charizard	Fire	Flying	78	84	78	
7	6	CharizardMega Charizard X	Fire	Dragon	78	130	111	
8	6	CharizardMega Charizard Y	Fire	Flying	78	104	78	
9	7	Squirtle	Water	NaN	44	48	65	
10	8	Wartortle	Water	NaN	59	63	80	
11	9	Blastoise	Water	NaN	79	83	100	
12	9	BlastoiseMega Blastoise	Water	NaN	79	103	120	
13	10	Caterpie	Bug	NaN	45	30	35	
14	11	Metapod	Bug	NaN	50	20	55	
15	12	Butterfree	Bug	Flying	60	45	50	
16	13	Weedle	Bug	Poison	40	35	30	
17	14	Kakuna	Bug	Poison	45	25	50	
18	15	Beedrill	Bug	Poison	65	90	40	
19	15	BeedrillMega Beedrill	Bug	Poison	65	150	40	
20	16	Pidgey	Normal	Flying	40	45	40	
21	17	Pidgeotto	Normal	Flying	63	60	55	
22	18	Pidgeot	Normal	Flying	83	80	75	
23	18	PidgeotMega Pidgeot	Normal	Flying	83	80	80	
24	19	Rattata	Normal	NaN	30	56	35	
25	20	Raticate	Normal	NaN	55	81	60	
26	21	Spearow	Normal	Flying	40	60	30	
27	22	Fearow	Normal	Flying	65	90	65	
28	23	Ekans	Poison	NaN	35	60	44	
29	24	Arbok	Poison	NaN	60	85	69	
..	...	...	...	...	...	...	...	
770	700	Sylveon	Fairy	NaN	95	65	65	
771	701	Hawlucha	Fighting	Flying	78	92	75	
772	702	Dedenne	Electric	Fairy	67	58	57	
773	703	Carbink	Rock	Fairy	50	50	150	
774	704	Goomy	Dragon	NaN	45	50	35	
775	705	Sliggoo	Dragon	NaN	68	75	53	
776	706	Goodra	Dragon	NaN	90	100	70	
777	707	Klefki	Steel	Fairy	57	80	91	
778	708	Phantump	Ghost	Grass	43	70	48	
779	709	Trevenant	Ghost	Grass	85	110	76	
780	710	PumpkabooAverage Size	Ghost	Grass	49	66	70	
781	710	PumpkabooSmall Size	Ghost	Grass	44	66	70	
782	710	PumpkabooLarge Size	Ghost	Grass	54	66	70	

783	710	PumpkabooSuper Size	Ghost	Grass	59	66	70	
784	711	GourgeistAverage Size	Ghost	Grass	65	90	122	
785	711	GourgeistSmall Size	Ghost	Grass	55	85	122	
786	711	GourgeistLarge Size	Ghost	Grass	75	95	122	
787	711	GourgeistSuper Size	Ghost	Grass	85	100	122	
788	712	Bergmite	Ice	NaN	55	69	85	
789	713	Avalugg	Ice	NaN	95	117	184	
790	714	Noibat	Flying	Dragon	40	30	35	
791	715	Noivern	Flying	Dragon	85	70	80	
792	716	Xerneas	Fairy	NaN	126	131	95	
793	717	Yveltal	Dark	Flying	126	131	95	
794	718	Zygarde50% Forme	Dragon	Ground	108	100	121	
795	719	Diancie	Rock	Fairy	50	100	150	
796	719	DiancieMega Diancie	Rock	Fairy	50	160	110	
797	720	HoopaHoopa Confined	Psychic	Ghost	80	110	60	
798	720	HoopaHoopa Unbound	Psychic	Dark	80	160	60	
799	721	Volcanion	Fire	Water	80	110	120	

	Sp. Atk	Sp. Def	Speed	Generation	Legendary
0	65	65	45	1	False
1	80	80	60	1	False
2	100	100	80	1	False
3	122	120	80	1	False
4	60	50	65	1	False
5	80	65	80	1	False
6	109	85	100	1	False
7	130	85	100	1	False
8	159	115	100	1	False
9	50	64	43	1	False
10	65	80	58	1	False
11	85	105	78	1	False
12	135	115	78	1	False
13	20	20	45	1	False
14	25	25	30	1	False
15	90	80	70	1	False
16	20	20	50	1	False
17	25	25	35	1	False
18	45	80	75	1	False
19	15	80	145	1	False
20	35	35	56	1	False
21	50	50	71	1	False
22	70	70	101	1	False
23	135	80	121	1	False
24	25	35	72	1	False
25	50	70	97	1	False
26	31	31	70	1	False
27	61	61	100	1	False

```
28        40       54     55           1      False
29        65       79     80           1      False
..       ...      ...    ...         ...        ...
770      110      130     60           6      False
771       74       63    118           6      False
772       81       67    101           6      False
773       50      150     50           6      False
774       55       75     40           6      False
775       83      113     60           6      False
776      110      150     80           6      False
777       80       87     75           6      False
778       50       60     38           6      False
779       65       82     56           6      False
780       44       55     51           6      False
781       44       55     56           6      False
782       44       55     46           6      False
783       44       55     41           6      False
784       58       75     84           6      False
785       58       75     99           6      False
786       58       75     69           6      False
787       58       75     54           6      False
788       32       35     28           6      False
789       44       46     28           6      False
790       45       40     55           6      False
791       97       80    123           6      False
792      131       98     99           6       True
793      131       98     99           6       True
794       81       95     95           6       True
795      100      150     50           6       True
796      160      110    110           6       True
797      150      130     70           6       True
798      170      130     80           6       True
799      130       90     70           6       True

[800 rows x 12 columns]
```

[37]:
```
#Reset the index in modified data


new_df = data.loc[(data['Type 1'] == 'Grass') & (data['Type 2'] == 'poison') |␣
 ↪(data['HP'] > 120)]
new_df.shape
```

[37]:
```
(24, 12)
```

[38]:
```
new_df.head(5)
```

[38]:
```
       #        Name  Type 1 Type 2   HP  Attack  Defense  Sp. Atk  Sp. Def  \
45    40  Wigglytuff  Normal  Fairy  140      70       45       85       50
```

```
121  113     Chansey  Normal    NaN  250       5        5       35      105
142  131      Lapras   Water    Ice  130      85       80       85       95
145  134    Vaporeon   Water    NaN  130      65       60      110       95
155  143     Snorlax  Normal    NaN  160     110       65       65      110

     Speed  Generation  Legendary
45      45           1      False
121     50           1      False
142     60           1      False
145     65           1      False
155     30           1      False
```

[39]:
```
#with old and new index
new_df.reset_index().head(5)
```

[39]:
```
   index    #        Name  Type 1 Type 2   HP  Attack  Defense  Sp. Atk  \
0     45   40  Wigglytuff  Normal  Fairy  140      70       45       85
1    121  113     Chansey  Normal    NaN  250       5        5       35
2    142  131      Lapras   Water    Ice  130      85       80       85
3    145  134    Vaporeon   Water    NaN  130      65       60      110
4    155  143     Snorlax  Normal    NaN  160     110       65       65

   Sp. Def  Speed  Generation  Legendary
0       50     45           1      False
1      105     50           1      False
2       95     60           1      False
3       95     65           1      False
4      110     30           1      False
```

[40]:
```
#Dropping old index
new_df.reset_index(drop = True, inplace=  True)
new_df.head(5)
```

[40]:
```
     #        Name  Type 1 Type 2   HP  Attack  Defense  Sp. Atk  Sp. Def  \
0   40  Wigglytuff  Normal  Fairy  140      70       45       85       50
1  113     Chansey  Normal    NaN  250       5        5       35      105
2  131      Lapras   Water    Ice  130      85       80       85       95
3  134    Vaporeon   Water    NaN  130      65       60      110       95
4  143     Snorlax  Normal    NaN  160     110       65       65      110

   Speed  Generation  Legendary
0     45           1      False
1     50           1      False
2     60           1      False
3     65           1      False
4     30           1      False
```

[41]:
```
# Filtering string
```

```
data.loc[data['Name'].str.contains('Mega')].head(5)
```

[41]:
```
     #                     Name Type 1  Type 2  HP  Attack  Defense  \
3    3      VenusaurMega Venusaur  Grass  Poison  80     100      123
7    6  CharizardMega Charizard X   Fire  Dragon  78     130      111
8    6  CharizardMega Charizard Y   Fire  Flying  78     104       78
12   9    BlastoiseMega Blastoise  Water     NaN  79     103      120
19  15      BeedrillMega Beedrill    Bug  Poison  65     150       40

    Sp. Atk  Sp. Def  Speed  Generation  Legendary
3       122      120     80           1      False
7       130       85    100           1      False
8       159      115    100           1      False
12      135      115     78           1      False
19       15       80    145           1      False
```

[42]:
```
# Powerful for string
import re
data.loc[data['Type 1'].str.contains('fire|grass', flags=re.I, regex= True)].
 ↪head(10)
```

[42]:
```
     #                     Name Type 1  Type 2  HP  Attack  Defense  \
0    1                Bulbasaur  Grass  Poison  45      49       49
1    2                  Ivysaur  Grass  Poison  60      62       63
2    3                 Venusaur  Grass  Poison  80      82       83
3    3      VenusaurMega Venusaur  Grass  Poison  80     100      123
4    4                Charmander   Fire     NaN  39      52       43
5    5                Charmeleon   Fire     NaN  58      64       58
6    6                 Charizard   Fire  Flying  78      84       78
7    6  CharizardMega Charizard X   Fire  Dragon  78     130      111
8    6  CharizardMega Charizard Y   Fire  Flying  78     104       78
42  37                    Vulpix   Fire     NaN  38      41       40

    Sp. Atk  Sp. Def  Speed  Generation  Legendary
0        65       65     45           1      False
1        80       80     60           1      False
2       100      100     80           1      False
3       122      120     80           1      False
4        60       50     65           1      False
5        80       65     80           1      False
6       109       85    100           1      False
7       130       85    100           1      False
8       159      115    100           1      False
42       50       65     65           1      False
```

[43]:
```
str1 =data.loc[data['Name'].str.contains('^pi[a-z]*', flags=re.I, regex=True)].
 ↪head(10)
```

[44]:
```
str1.shape
```

[44]:
```
(10, 12)
```

[45]:
```
str1
```

[45]:
```
       #                  Name     Type 1  Type 2   HP  Attack  Defense  \
20    16               Pidgey     Normal  Flying   40      45       40
21    17            Pidgeotto     Normal  Flying   63      60       55
22    18              Pidgeot     Normal  Flying   83      80       75
23    18  PidgeotMega Pidgeot     Normal  Flying   83      80       80
30    25              Pikachu  Electric     NaN   35      55       40
136  127               Pinsir       Bug     NaN   65     125      100
137  127    PinsirMega Pinsir       Bug  Flying   65     155      120
186  172                Pichu  Electric     NaN   20      40       15
219  204               Pineco       Bug     NaN   50      65       90
239  221            Piloswine       Ice  Ground  100     100       80

     Sp. Atk  Sp. Def  Speed  Generation  Legendary
20        35       35     56           1      False
21        50       50     71           1      False
22        70       70    101           1      False
23       135       80    121           1      False
30        50       50     90           1      False
136       55       70     85           1      False
137       65       90    105           1      False
186       35       35     60           2      False
219       35       35     15           2      False
239       60       60     50           2      False
```

[48]:
```
# Conditional Changes

new_df['Total'] = new_df['HP']+ new_df['Attack']+new_df['Defense']+new_df['Sp.␣
↪Atk']+new_df['Speed']
```

```
//anaconda3/lib/python3.7/site-packages/ipykernel_launcher.py:3:
SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: http://pandas.pydata.org/pandas-
docs/stable/indexing.html#indexing-view-versus-copy
  This is separate from the ipykernel package so we can avoid doing imports
until
```

[51]:
```
new_df.head(5)
```

[51]:
```
     #        Name  Type 1 Type 2   HP  Attack  Defense  Sp. Atk  Sp. Def  \
0   40  Wigglytuff  Normal  Fairy  140      70       45       85       50
1  113     Chansey  Normal    NaN  250       5        5       35      105
2  131      Lapras   Water    Ice  130      85       80       85       95
```

```
3  134    Vaporeon   Water    NaN  130      65       60      110       95
4  143     Snorlax  Normal    NaN  160     110       65       65      110

   Speed  Generation  Legendary  Total
0     45           1      False    385
1     50           1      False    345
2     60           1      False    440
3     65           1      False    430
4     30           1      False    430
```

[62]:
```
# Extracting Generation and Legendary fo rthe total >500

new_df.loc[new_df['Total']>500,['Generation','Legendary']]
```

[62]:
```
    Generation  Legendary
8            3      False
14           4       True
15           4       True
17           5       True
18           5       True
19           5       True
22           6       True
23           6       True
```

[86]:
```
# aggregation

new_df.groupby(['Type 1']).mean()
```

[86]:
```
                   #          HP      Attack    Defense     Sp. Atk  \
Type 1
Dark      717.000000  126.000000  131.000000  95.000000  131.000000
Dragon    646.000000  125.000000  140.000000  93.333333  140.000000
Fairy     716.000000  126.000000  131.000000  95.000000  131.000000
Fighting  297.000000  144.000000  120.000000  60.000000   40.000000
Ghost     466.666667  150.000000  100.000000  88.000000  103.333333
Grass     673.000000  123.000000  100.000000  62.000000   97.000000
Normal    212.166667  181.666667   73.333333  44.166667   65.833333
Psychic   202.000000  190.000000   33.000000  58.000000   33.000000
Rock      699.000000  123.000000   77.000000  72.000000   99.000000
Water     278.500000  141.666667   73.833333  59.666667   78.500000

            Sp. Def      Speed       Total
Type 1
Dark      98.000000  99.000000  582.000000
Dragon    93.333333  95.000000  593.333333
Fairy     98.000000  99.000000  582.000000
Fighting  60.000000  50.000000  414.000000
Ghost     91.333333  86.666667  528.000000
Grass     81.000000  68.000000  450.000000
```

```
Normal    91.666667  47.500000  412.500000
Psychic   58.000000  33.000000  347.000000
Rock      92.000000  58.000000  429.000000
Water     65.166667  62.833333  416.500000
```

[85]:
```
new_df.groupby(['Type 1']).mean().sort_values('Defense',ascending=False)
```

[85]:
```
                   #          HP      Attack    Defense     Sp. Atk  \
Type 1
Dark      717.000000  126.000000  131.000000  95.000000  131.000000
Fairy     716.000000  126.000000  131.000000  95.000000  131.000000
Dragon    646.000000  125.000000  140.000000  93.333333  140.000000
Ghost     466.666667  150.000000  100.000000  88.000000  103.333333
Rock      699.000000  123.000000   77.000000  72.000000   99.000000
Grass     673.000000  123.000000  100.000000  62.000000   97.000000
Fighting  297.000000  144.000000  120.000000  60.000000   40.000000
Water     278.500000  141.666667   73.833333  59.666667   78.500000
Psychic   202.000000  190.000000   33.000000  58.000000   33.000000
Normal    212.166667  181.666667   73.333333  44.166667   65.833333

            Sp. Def      Speed       Total
Type 1
Dark      98.000000  99.000000  582.000000
Fairy     98.000000  99.000000  582.000000
Dragon    93.333333  95.000000  593.333333
Ghost     91.333333  86.666667  528.000000
Rock      92.000000  58.000000  429.000000
Grass     81.000000  68.000000  450.000000
Fighting  60.000000  50.000000  414.000000
Water     65.166667  62.833333  416.500000
Psychic   58.000000  33.000000  347.000000
Normal    91.666667  47.500000  412.500000
```

[88]:
```
new_df.groupby(['Type 1']).count()
```

[88]:
```
          #  Name  Type 2  HP  Attack  Defense  Sp. Atk  Sp. Def  Speed  \
Type 1
Dark      1     1       1   1       1        1        1        1      1
Dragon    3     3       3   3       3        3        3        3      3
Fairy     1     1       0   1       1        1        1        1      1
Fighting  1     1       0   1       1        1        1        1      1
Ghost     3     3       3   3       3        3        3        3      3
Grass     1     1       0   1       1        1        1        1      1
Normal    6     6       1   6       6        6        6        6      6
Psychic   1     1       0   1       1        1        1        1      1
Rock      1     1       1   1       1        1        1        1      1
Water     6     6       2   6       6        6        6        6      6

          Generation  Legendary  Total
```

```
Type 1
Dark              1          1      1
Dragon            3          3      3
Fairy             1          1      1
Fighting          1          1      1
Ghost             3          3      3
Grass             1          1      1
Normal            6          6      6
Psychic           1          1      1
Rock              1          1      1
Water             6          6      6
```

[92]:
```
# Multiple groupby

new_df.groupby(['Type 1','Type 2']).count()
```

[92]:
```
                #  Name  HP  Attack  Defense  Sp. Atk  Sp. Def  Speed  \
Type 1 Type 2
Dark   Flying   1     1   1       1        1        1        1      1
Dragon Ice      3     3   3       3        3        3        3      3
Ghost  Dragon   2     2   2       2        2        2        2      2
       Flying   1     1   1       1        1        1        1      1
Normal Fairy    1     1   1       1        1        1        1      1
Rock   Ice      1     1   1       1        1        1        1      1
Water  Electric 1     1   1       1        1        1        1      1
       Ice      1     1   1       1        1        1        1      1

                Generation  Legendary  Total
Type 1 Type 2
Dark   Flying            1          1      1
Dragon Ice               3          3      3
Ghost  Dragon            2          2      2
       Flying            1          1      1
Normal Fairy             1          1      1
Rock   Ice               1          1      1
Water  Electric          1          1      1
       Ice               1          1      1
```

[ ]: