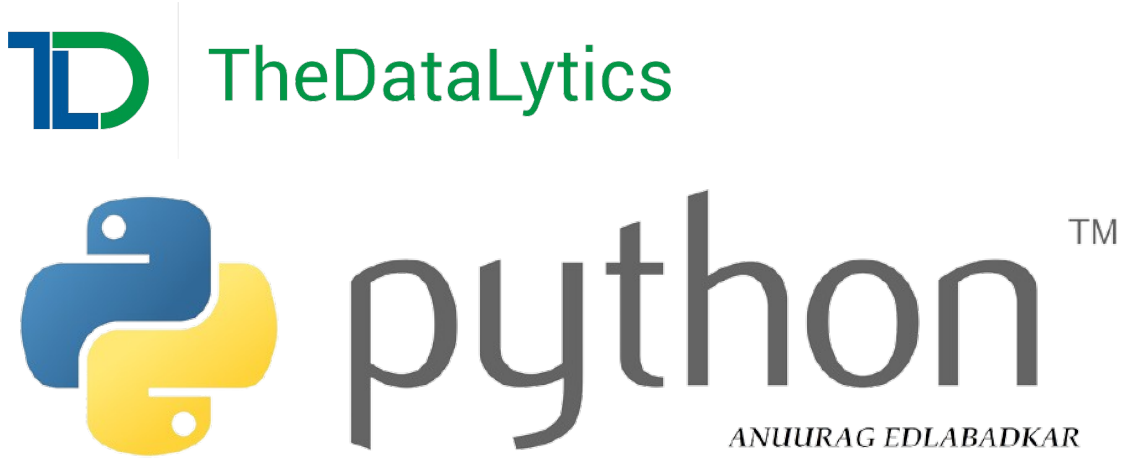
Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832



#Priyadarshini Bhagwati College of Engineering, Harpur Nagar, Umred Rd, Near Bada, Taj Bagh, Nagpur, Maharashtra 440024

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

df_euro_csv = pd.read_csv("Euro2012TEAM.csv")

df_euro_csv
```

```
                  Team  Goals  ...  Subs off  Players Used
0              Croatia      4  ...         9            16
1       Czech Republic      4  ...        11            19
2              Denmark      4  ...         7            15
3              England      5  ...        11            16
4               France      3  ...        11            19
5              Germany     10  ...        15            17
6               Greece      5  ...        12            20
7                Italy      6  ...        18            19
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
8           Netherlands      2  ...         7           15
9                Poland      2  ...         7           17
10             Portugal      6  ...        14           16
11  Republic of Ireland      1  ...        10           17
12               Russia      5  ...         7           16
13                Spain     12  ...        17           18
14               Sweden      5  ...         9           18
15              Ukraine      2  ...         9           18

[16 rows x 35 columns]
```

```
df_euro_csv.to_excel("Euro2012TeamXLS.xls")
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1:
FutureWarning: As the xlwt package is no longer maintained, the xlwt
engine will be removed in a future version of pandas. This is the only
engine in pandas that supports writing in the xls format. Install
openpyxl and write to an xlsx file instead. You can set the option
io.excel.xls.writer to 'xlwt' to silence this warning. While this
option is deprecated and will also raise a warning, it can be globally
set and the warning suppressed.
  """Entry point for launching an IPython kernel.
```

```
df_euro_html = pd.read_html("Euro2012TeamHTML.html")
```

```
df_euro_json = pd.read_json("Euro2012TeamJSON.json")
```

```
df_euro_xlsx = pd.read_excel("Euro2012TeamXLSX.xlsx")
```

```
df_euro_csv.to_excel("Euro2012TeamXLSX.xlsx")
```

```
df_euro_csv.to_html("Euro2012TeamHTML.html")
```

```
df_euro_csv.to_json("Euro2012TeamJSON.json")
```

#Create DataFrame

```
df = pd.DataFrame()
df
```

```
Empty DataFrame
Columns: []
Index: []
```

```
proglang = ['Python','Java','CSS','SQL']
df = pd.DataFrame(proglang)
df
```

```
        0
0  Python
1    Java
2     CSS
3     SQL
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
rating = [1,2,3,4]
df[1] = rating
df
```

```
        0  1
0  Python  1
1    Java  2
2     CSS  3
3     SQL  4
```

```
df.columns
```

```
Int64Index([0, 1], dtype='int64')
```

```
df.columns = ['Programming Language', 'Rating']
df
```

```
  Programming Language  Rating
0               Python       1
1                 Java       2
2                  CSS       3
3                  SQL       4
```

```
# DataFrame Using Dictionary

data = [{'a':'apple','b':'ball','c':'cat'},{'a':'doll','b':'egg'}]

df2 = pd.DataFrame(data)
df2
df3 = pd.DataFrame(data, index=['row1','row2'], columns=['a','b'])
df3
df4 = pd.DataFrame(data, index=['row1','row2'], columns=['a','b','c'])
df4
df5 = pd.DataFrame(data, index=['row1','row2'],
columns=['a','b','c','d'])
df5
```

```
          a     b    c   d
row1  apple  ball  cat NaN
row2   doll   egg  NaN NaN
```

```
df0 = pd.DataFrame({'ID':[1,2,3,4,5],'Name':
['Prajakta','Priyanka','Sayali','Spruha','Sanika']})
df0
```

```
   ID      Name
0   1  Prajakta
1   2  Priyanka
2   3    Sayali
3   4    Spruha
4   5    Sanika
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
# Create a DataFrame from Dictionary of Series

dict = {
    'A': pd.Series([1,2,3], index=['a','b','c']),
    'B': pd.Series([1,2,3,4,5], index=['a','b','c','d','e'])
}

df1 = pd.DataFrame(dict)
df1
```

```
     A  B
a  1.0  1
b  2.0  2
c  3.0  3
d  NaN  4
e  NaN  5
```

```
# DataFrames of Random Numbers with Date Indices

df_dates = pd.date_range(start='2020-01-01', end='2022-02-12')
df_dates
```

```
DatetimeIndex(['2020-01-01', '2020-01-02', '2020-01-03', '2020-01-04',
               '2020-01-05', '2020-01-06', '2020-01-07', '2020-01-08',
               '2020-01-09', '2020-01-10',
               ...
               '2022-02-03', '2022-02-04', '2022-02-05', '2022-02-06',
               '2022-02-07', '2022-02-08', '2022-02-09', '2022-02-10',
               '2022-02-11', '2022-02-12'],
              dtype='datetime64[ns]', length=774, freq='D')
```

```
df_dates = pd.date_range('today', periods=7)
df_dates
```

```
DatetimeIndex(['2022-02-26 08:32:17.309393', '2022-02-27
08:32:17.309393',
               '2022-02-28 08:32:17.309393', '2022-03-01
08:32:17.309393',
               '2022-03-02 08:32:17.309393', '2022-03-03
08:32:17.309393',
               '2022-03-04 08:32:17.309393'],
              dtype='datetime64[ns]', freq='D')
```

```
df_dates = pd.date_range(start='2022-02-12', periods=7)
df_dates
```

```
DatetimeIndex(['2022-02-12', '2022-02-13', '2022-02-14', '2022-02-15',
               '2022-02-16', '2022-02-17', '2022-02-18'],
              dtype='datetime64[ns]', freq='D')
```

```
m = np.random.random((7,7))
m
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
array([[0.29702402, 0.99340143, 0.68345537, 0.47936164, 0.66510966,
        0.87395624, 0.27447494],
       [0.39197339, 0.0680303 , 0.72509582, 0.24857744, 0.09357214,
        0.89464463, 0.16723556],
       [0.6468961 , 0.71961162, 0.43241249, 0.74406802, 0.45960101,
        0.77317424, 0.58804368],
       [0.84525509, 0.2277863 , 0.4217118 , 0.18089405, 0.17060361,
        0.66518967, 0.34744506],
       [0.69801784, 0.94404295, 0.8365751 , 0.73892661, 0.9031584 ,
        0.09278367, 0.93831671],
       [0.81902038, 0.27757321, 0.73018993, 0.11121947, 0.03754569,
        0.43984833, 0.7681264 ],
       [0.53085847, 0.2496172 , 0.95375302, 0.31225572, 0.22123399,
        0.65510711, 0.81353864]])

dframe = pd.DataFrame(m , index=df_dates)
dframe

                   0         1         2  ...         4         5
6
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]

dframe.columns = [ 'C1'  ,  'C2'  ,  'C3' ,  'C4' ,  'C5' ,  'C6' ,
'C7' ]
dframe

                  C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]
```

```
dframe.index
```

```
DatetimeIndex(['2022-02-12', '2022-02-13', '2022-02-14', '2022-02-15',
               '2022-02-16', '2022-02-17', '2022-02-18'],
              dtype='datetime64[ns]', freq='D')
```

```
dframe.columns
```

```
Index(['C1', 'C2', 'C3', 'C4', 'C5', 'C6', 'C7'], dtype='object')
```

```
dframe.dtypes
```

```
C1    float64
C2    float64
C3    float64
C4    float64
C5    float64
C6    float64
C7    float64
dtype: object
```

```
dframe.sort_values(by='C1')
```

```
                  C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445

[7 rows x 7 columns]
```

```
dframe.sort_values(by='C1' , ascending=False)
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
                C1        C2        C3  ...        C5        C6
C7
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475

[7 rows x 7 columns]
```

```
df1
```

```
     A  B
a  1.0  1
b  2.0  2
c  3.0  3
d  NaN  4
e  NaN  5
```

#Delete Column in DataFrame

```
del df1['B']
```

```
df1
```

```
     A
a  1.0
b  2.0
c  3.0
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
d  NaN
e  NaN

df5

          a     b    c   d
row1  apple  ball  cat NaN
row2   doll   egg  NaN NaN

df5.pop('c')
df5

          a     b   d
row1  apple  ball NaN
row2   doll   egg NaN

df

  Programming Language  Rating
0               Python       1
1                 Java       2
2                  CSS       3
3                  SQL       4

df.index = [21,22,23,24]
df

   Programming Language  Rating
21               Python       1
22                 Java       2
23                  CSS       3
24                  SQL       4

df.loc[21]

Programming Language    Python
Rating                       1
Name: 21, dtype: object
```

#Data Selection in DataFrame

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
df
```

```
   Programming Language  Rating
21               Python       1
22                 Java       2
23                  CSS       3
24                  SQL       4
```

```
df.index
```

```
Int64Index([21, 22, 23, 24], dtype='int64')
```

```
df.index = [1,2,3,4]
df
```

```
  Programming Language  Rating
1               Python       1
2                 Java       2
3                  CSS       3
4                  SQL       4
```

```
df.loc[1], df.loc[2], df.loc[3], df.loc[4] # accessing column value
```

```
(Programming Language    Python
 Rating                       1
 Name: 1, dtype: object, Programming Language    Java
 Rating                       2
 Name: 2, dtype: object, Programming Language    CSS
 Rating                       3
 Name: 3, dtype: object, Programming Language    SQL
 Rating                       4
 Name: 4, dtype: object)
```

```
df.iloc[1] # accessing index value
```

```
Programming Language    Java
Rating                     2
Name: 2, dtype: object
```

```
df.iloc[:]
```

```
  Programming Language  Rating
1               Python       1
2                 Java       2
3                  CSS       3
4                  SQL       4
```

```
df.iloc[0:4]
```

```
  Programming Language  Rating
1               Python       1
2                 Java       2
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
3                  CSS       3
4                  SQL       4
```

```
df.iloc[0:1], df.iloc[1:2], df.iloc[2:3], df.iloc[3:4]
```

```
(  Programming Language  Rating
 1               Python       1,   Programming Language  Rating
 2                 Java       2,   Programming Language  Rating
 3                  CSS       3,   Programming Language  Rating
 4                  SQL       4)
```

```
df.iloc[0:4], df.iloc[1:4], df.iloc[2:4], df.iloc[3:4]
```

```
(  Programming Language  Rating
 1               Python       1
 2                 Java       2
 3                  CSS       3
 4                  SQL       4,   Programming Language  Rating
 2                 Java       2
 3                  CSS       3
 4                  SQL       4,   Programming Language  Rating
 3                  CSS       3
 4                  SQL       4,   Programming Language  Rating
 4                  SQL       4)
```

```
df.loc[df.Rating>2]
```

```
  Programming Language  Rating
3                  CSS       3
4                  SQL       4
```

```
df1
```

```
     A
a  1.0
b  2.0
c  3.0
d  NaN
e  NaN
```

```
df1.loc['a']
```

```
A    1.0
Name: a, dtype: float64
```

```
#df1.iloc['a']
```

```
df1.iloc[0]
```

```
A    1.0
Name: a, dtype: float64
```

```
dframe
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
                 C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]
```

```
dframe['2022-02-13':'2022-02-15']
```

```
                 C1        C2        C3  ...        C5        C6
C7
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445

[3 rows x 7 columns]
```

```
dframe.loc[:,['C2','C5']]
```

```
                 C2        C5
2022-02-12  0.993401  0.665110
2022-02-13  0.068030  0.093572
2022-02-14  0.719612  0.459601
2022-02-15  0.227786  0.170604
2022-02-16  0.944043  0.903158
2022-02-17  0.277573  0.037546
2022-02-18  0.249617  0.221234
```

```
dframe.loc[:,:]
```

```
                 C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]
```

```
dframe.loc['2022-02-12':'2022-02-15',['C1','C3','C5','C7']]
```

```
                C1        C3        C5        C7
2022-02-12  0.297024  0.683455  0.665110  0.274475
2022-02-13  0.391973  0.725096  0.093572  0.167236
2022-02-14  0.646896  0.432412  0.459601  0.588044
2022-02-15  0.845255  0.421712  0.170604  0.347445
```

```
dframe[dframe['C1']>0.5]
```

```
                C1        C2        C3  ...        C5        C6
C7
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[5 rows x 7 columns]
```

```
dframe[(dframe['C3']>0.2) & (dframe['C5']<0.3)]
```

```
                C1        C2        C3  ...        C5        C6
C7
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
[4 rows x 7 columns]

dframe[(dframe['C1']>0.1) & (dframe['C2']<0.88) | (dframe['C3']<0.79)]

                 C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[6 rows x 7 columns]

dframe

                 C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]

dframe[(dframe['C1']>0.05) | (dframe['C2']>0.14) | (dframe['C3']>0.40)
| (dframe['C4']>0.19) | (dframe['C5']>0.07) | (dframe['C6']<0.13) |
(dframe['C7']>0.18)]

                 C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]
```

```
dframe.iloc[0][0]
```

```
0.2970240205535962
```


```
for i in range(0,7):
  for j in range(0,7):
    print(dframe.iloc[i][j],end=" ")
  print('\r')
```

```
0.2970240205535962 0.9934014300214532 0.6834553697127193
0.47936163525774567 0.665109661037421 0.8739562368944179
0.27447493860838135
0.3919733929241598 0.06803030139282162 0.725095818211181
0.24857743823734124 0.09357214446558892 0.8946446333680803
0.167235555695172
0.6468960971307358 0.7196116239174362 0.43241249401959014
0.7440680169017216 0.45960101209093596 0.7731742355137042
0.5880436772892668
0.8452550912258495 0.22778629542411688 0.421711803234877
0.18089404763642591 0.17060360858690626 0.6651896667567393
0.3474450561889899
0.6980178395383771 0.9440429504645023 0.8365751033456689
0.7389266094644521 0.9031584022330947 0.09278367103618113
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
0.9383167071519896
0.8190203839065364 0.27757321017074355 0.7301899320621287
0.11121946783937142 0.03754569443727962 0.4398483285510715
0.7681264020131515
0.5308584704527858 0.24961720213081773 0.953753021545734
0.3122557217360349 0.2212339939525797 0.6551071068942877
0.8135386375759671

dframe.iloc[:,:]

                 C1        C2        C3  ...        C5        C6
C7
2022-02-12  0.297024  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13  0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14  0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15  0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16  0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17  0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18  0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]

dframe.iloc[2:5, 2:5]

                 C3        C4        C5
2022-02-14  0.432412  0.744068  0.459601
2022-02-15  0.421712  0.180894  0.170604
2022-02-16  0.836575  0.738927  0.903158

dframe.iloc[:, 2:5]

                 C3        C4        C5
2022-02-12  0.683455  0.479362  0.665110
2022-02-13  0.725096  0.248577  0.093572
2022-02-14  0.432412  0.744068  0.459601
2022-02-15  0.421712  0.180894  0.170604
2022-02-16  0.836575  0.738927  0.903158
2022-02-17  0.730190  0.111219  0.037546
2022-02-18  0.953753  0.312256  0.221234

dframe.iloc[0][0]=10
dframe

                  C1        C2        C3  ...        C5        C6
C7
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-12  10.000000  0.993401  0.683455  ...  0.665110  0.873956
0.274475
2022-02-13   0.391973  0.068030  0.725096  ...  0.093572  0.894645
0.167236
2022-02-14   0.646896  0.719612  0.432412  ...  0.459601  0.773174
0.588044
2022-02-15   0.845255  0.227786  0.421712  ...  0.170604  0.665190
0.347445
2022-02-16   0.698018  0.944043  0.836575  ...  0.903158  0.092784
0.938317
2022-02-17   0.819020  0.277573  0.730190  ...  0.037546  0.439848
0.768126
2022-02-18   0.530858  0.249617  0.953753  ...  0.221234  0.655107
0.813539

[7 rows x 7 columns]
```


```
for i in range(0,7):
  for j in range(0,7):
    dframe.iloc[i][j]=((i+1)*(j+1))
dframe
```

```
             C1    C2    C3    C4    C5    C6    C7
2022-02-12  1.0   2.0   3.0   4.0   5.0   6.0   7.0
2022-02-13  2.0   4.0   6.0   8.0  10.0  12.0  14.0
2022-02-14  3.0   6.0   9.0  12.0  15.0  18.0  21.0
2022-02-15  4.0   8.0  12.0  16.0  20.0  24.0  28.0
2022-02-16  5.0  10.0  15.0  20.0  25.0  30.0  35.0
2022-02-17  6.0  12.0  18.0  24.0  30.0  36.0  42.0
2022-02-18  7.0  14.0  21.0  28.0  35.0  42.0  49.0
```

```
dframe[dframe['C1'].isin([1,3,5,7])]
```

```
             C1    C2    C3    C4    C5    C6    C7
2022-02-12  1.0   2.0   3.0   4.0   5.0   6.0   7.0
2022-02-14  3.0   6.0   9.0  12.0  15.0  18.0  21.0
2022-02-16  5.0  10.0  15.0  20.0  25.0  30.0  35.0
2022-02-18  7.0  14.0  21.0  28.0  35.0  42.0  49.0
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
dframe['C1']=123
dframe['C2']=234
dframe['C3']=345
dframe['C4']=456
dframe['C5']=567
dframe['C6']=678
dframe['C7']=789
dframe
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567	678	789
2022-02-13	123	234	345	456	567	678	789
2022-02-14	123	234	345	456	567	678	789
2022-02-15	123	234	345	456	567	678	789
2022-02-16	123	234	345	456	567	678	789
2022-02-17	123	234	345	456	567	678	789
2022-02-18	123	234	345	456	567	678	789

dframe.at Access a single value for a row/column label pair.

Similar to `loc`, in that both provide label-based lookups. Use `at` if you only need to get or set a single value in a DataFrame or Series.

Raises

KeyError If 'label' does not exist in DataFrame.

See Also

DataFrame.iat : Access a single value for a row/column pair by integer position. DataFrame.loc : Access a group of rows and columns by label(s). Series.at : Access a single value using a label.

Examples

> df = pd.DataFrame([[0, 2, 3], [0, 4, 1], [10, 20, 30]], ... index=[4, 5, 6], columns=['A', 'B', 'C']) df A B C 4 0 2 3 5 0 4 1 6 10 20 30

Get value at specified row/column pair

> df.at[4, 'B'] 2

Set value at specified row/column pair

> df.at[4, 'B'] = 10 df.at[4, 'B'] 10

Get value within a Series

> df.loc[5].at['B'] 4

```
dframe.at[1:4,'C4']=777
dframe
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
/usr/local/lib/python3.7/dist-packages/pandas/core/indexing.py:719:
FutureWarning: Slicing a positional slice with .loc is not supported,
and will raise TypeError in a future version.  Use .loc with labels or
.iloc with positions instead.
  indexer = self._get_setitem_indexer(key)
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567	678	789
2022-02-13	123	234	345	777	567	678	789
2022-02-14	123	234	345	777	567	678	789
2022-02-15	123	234	345	777	567	678	789
2022-02-16	123	234	345	456	567	678	789
2022-02-17	123	234	345	456	567	678	789
2022-02-18	123	234	345	456	567	678	789

dframe.iat Access a single value for a row/column pair by integer position.

Similar to `iloc`, in that both provide integer-based lookups. Use `iat` if you only need to get or set a single value in a DataFrame or Series.

Raises

IndexError When integer position is out of bounds.

See Also

DataFrame.at : Access a single value for a row/column label pair. DataFrame.loc : Access a group of rows and columns by label(s). DataFrame.iloc : Access a group of rows and columns by integer position(s).

Examples

df = pd.DataFrame([[0, 2, 3], [0, 4, 1], [10, 20, 30]], ... columns=['A', 'B', 'C']) df A B C 0 0 2 3 1 0 4 1 2 10 20 30

Get value at specified row/column pair

df.iat[1, 2] 1

Set value at specified row/column pair

df.iat[1, 2] = 10 df.iat[1, 2] 10

Get value within a series

df.loc[0].iat[1] 2

```
dframe.iat[3,3]=333
dframe
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567	678	789
2022-02-13	123	234	345	777	567	678	789

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-14  123  234  345  777  567  678  789
2022-02-15  123  234  345  333  567  678  789
2022-02-16  123  234  345  456  567  678  789
2022-02-17  123  234  345  456  567  678  789
2022-02-18  123  234  345  456  567  678  789
```


```
dframe.iloc[5,5]=505
dframe
```

```
             C1   C2   C3   C4   C5   C6   C7
2022-02-12  123  234  345  456  567  678  789
2022-02-13  123  234  345  777  567  678  789
2022-02-14  123  234  345  777  567  678  789
2022-02-15  123  234  345  333  567  678  789
2022-02-16  123  234  345  456  567  678  789
2022-02-17  123  234  345  456  567  505  789
2022-02-18  123  234  345  456  567  678  789
```

(deep: bool_t = True) -> DataFrame Make a copy of this object's indices and data.

When deep=True (default), a new object will be created with a copy of the calling object's data and indices. Modifications to the data or indices of the copy will not be reflected in the original object (see notes below).

When deep=False, a new object will be created without copying the calling object's data or index (only references to the data and index are copied). Any changes to the data of the original will be reflected in the shallow copy (and vice versa).

Parameters

deep : bool, default True Make a deep copy, including a copy of the data and the indices. With deep=False neither the indices nor the data are copied.

Returns

copy : Series or DataFrame Object type matches caller.

Notes

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

When deep=True, data is copied but actual Python objects will not be copied recursively, only the reference to the object. This is in contrast to copy.deepcopy in the Standard Library, which recursively copies object data (see examples below).

While Index objects are copied when deep=True, the underlying numpy array is not copied for performance reasons. Since Index is immutable, the underlying data can be safely shared and a copy is not needed.

Examples

s = pd.Series([1, 2], index=["a", "b"]) s a 1 b 2 dtype: int64 s_copy = s.copy() s_copy a 1 b 2 dtype: int64 **Shallow copy versus default (deep) copy:**

s = pd.Series([1, 2], index=["a", "b"]) deep = s.copy() shallow = s.copy(deep=False) Shallow copy shares data and index with original.

s is shallow False s.values is shallow.values and s.index is shallow.index True Deep copy has own copy of data and index.

s is deep False s.values is deep.values or s.index is deep.index False Updates to the data shared by shallow copy and original is reflected in both; deep copy remains unchanged.

s[0] = 3 shallow[1] = 4 s a 3 b 4 dtype: int64 shallow a 3 b 4 dtype: int64 deep a 1 b 2 dtype: int64 Note that when copying an object containing Python objects, a deep copy will copy the data, but will not do so recursively. Updating a nested data object will be reflected in the deep copy.

s = pd.Series([[1, 2], [3, 4]]) deep = s.copy() s[0][0] = 10 s 0 [10, 2] 1 [3, 4] dtype: object deep 0 [10, 2] 1 [3, 4] dtype: object

```
dframe1 = dframe.copy(deep=True)
dframe1.copy()
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567	678	789
2022-02-13	123	234	345	777	567	678	789
2022-02-14	123	234	345	777	567	678	789
2022-02-15	123	234	345	333	567	678	789
2022-02-16	123	234	345	456	567	678	789
2022-02-17	123	234	345	456	567	505	789
2022-02-18	123	234	345	456	567	678	789

```
dframe1[(dframe1['C1']>0.5) & (dframe1['C4']>0.5)] = 0
dframe1
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	0	0	0	0	0	0	0
2022-02-13	0	0	0	0	0	0	0
2022-02-14	0	0	0	0	0	0	0
2022-02-15	0	0	0	0	0	0	0
2022-02-16	0	0	0	0	0	0	0

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-17   0   0   0   0   0   0   0
2022-02-18   0   0   0   0   0   0   0
```

```
dframe1[dframe1['C1'] == 0]
```

```
            C1  C2  C3  C4  C5  C6  C7
2022-02-12   0   0   0   0   0   0   0
2022-02-13   0   0   0   0   0   0   0
2022-02-14   0   0   0   0   0   0   0
2022-02-15   0   0   0   0   0   0   0
2022-02-16   0   0   0   0   0   0   0
2022-02-17   0   0   0   0   0   0   0
2022-02-18   0   0   0   0   0   0   0
```

```
dframe1[dframe1['C1'].isin([0])] = 99
dframe1
```

```
            C1  C2  C3  C4  C5  C6  C7
2022-02-12  99  99  99  99  99  99  99
2022-02-13  99  99  99  99  99  99  99
2022-02-14  99  99  99  99  99  99  99
2022-02-15  99  99  99  99  99  99  99
2022-02-16  99  99  99  99  99  99  99
2022-02-17  99  99  99  99  99  99  99
2022-02-18  99  99  99  99  99  99  99
```

```
dframe1[dframe1['C1'] == 99]
```

```
            C1  C2  C3  C4  C5  C6  C7
2022-02-12  99  99  99  99  99  99  99
2022-02-13  99  99  99  99  99  99  99
2022-02-14  99  99  99  99  99  99  99
2022-02-15  99  99  99  99  99  99  99
2022-02-16  99  99  99  99  99  99  99
2022-02-17  99  99  99  99  99  99  99
2022-02-18  99  99  99  99  99  99  99
```

#Dealing with NULL Values

```
dframe.at[0:8, 'C7'] = np.NaN
dframe.at[0:2, 'C6'] = np.NaN
dframe.at[5:6, 'C5'] = np.NaN
dframe
```

```
/usr/local/lib/python3.7/dist-packages/pandas/core/indexing.py:719:
FutureWarning: Slicing a positional slice with .loc is not supported,
and will raise TypeError in a future version.  Use .loc with labels or
.iloc with positions instead.
  indexer = self._get_setitem_indexer(key)
```

```
             C1   C2   C3   C4     C5     C6  C7
2022-02-12  123  234  345  456  567.0    NaN NaN
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-13  123  234  345  777  567.0    NaN NaN
2022-02-14  123  234  345  777  567.0  678.0 NaN
2022-02-15  123  234  345  333  567.0  678.0 NaN
2022-02-16  123  234  345  456  567.0  678.0 NaN
2022-02-17  123  234  345  456    NaN  505.0 NaN
2022-02-18  123  234  345  456  567.0  678.0 NaN
```

```
dframe.notna()
```

```
              C1    C2    C3    C4     C5     C6     C7
2022-02-12  True  True  True  True   True  False  False
2022-02-13  True  True  True  True   True  False  False
2022-02-14  True  True  True  True   True   True  False
2022-02-15  True  True  True  True   True   True  False
2022-02-16  True  True  True  True   True   True  False
2022-02-17  True  True  True  True  False   True  False
2022-02-18  True  True  True  True   True   True  False
```

```
dframe.isna()
```

```
               C1     C2     C3     C4     C5     C6    C7
2022-02-12  False  False  False  False  False   True  True
2022-02-13  False  False  False  False  False   True  True
2022-02-14  False  False  False  False  False  False  True
2022-02-15  False  False  False  False  False  False  True
2022-02-16  False  False  False  False  False  False  True
2022-02-17  False  False  False  False   True  False  True
2022-02-18  False  False  False  False  False  False  True
```


```
dframe = dframe.fillna(1020)
dframe
```

```
              C1   C2   C3   C4      C5      C6      C7
2022-02-12  123  234  345  456   567.0  1020.0  1020.0
2022-02-13  123  234  345  777   567.0  1020.0  1020.0
2022-02-14  123  234  345  777   567.0   678.0  1020.0
2022-02-15  123  234  345  333   567.0   678.0  1020.0
2022-02-16  123  234  345  456   567.0   678.0  1020.0
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-17  123  234  345  456  1020.0   505.0  1020.0
2022-02-18  123  234  345  456   567.0   678.0  1020.0
```

```
dframe.at[0:5 , 'C7'] = np.NaN
dframe.at[0:2 , 'C6'] = np.NaN
dframe.at[5:6 , 'C5'] = np.NaN
dframe
```

```
/usr/local/lib/python3.7/dist-packages/pandas/core/indexing.py:719:
FutureWarning: Slicing a positional slice with .loc is not supported,
and will raise TypeError in a future version.  Use .loc with labels or
.iloc with positions instead.
  indexer = self._get_setitem_indexer(key)
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567.0	NaN	NaN
2022-02-13	123	234	345	777	567.0	NaN	NaN
2022-02-14	123	234	345	777	567.0	678.0	NaN
2022-02-15	123	234	345	333	567.0	678.0	NaN
2022-02-16	123	234	345	456	567.0	678.0	NaN
2022-02-17	123	234	345	456	NaN	505.0	1020.0
2022-02-18	123	234	345	456	567.0	678.0	1020.0

```
dframe.fillna(value={'C5':123, 'c6':789})
dframe
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567.0	NaN	NaN
2022-02-13	123	234	345	777	567.0	NaN	NaN
2022-02-14	123	234	345	777	567.0	678.0	NaN
2022-02-15	123	234	345	333	567.0	678.0	NaN
2022-02-16	123	234	345	456	567.0	678.0	NaN
2022-02-17	123	234	345	456	NaN	505.0	1020.0
2022-02-18	123	234	345	456	567.0	678.0	1020.0

```
dframe.fillna(value={'C7':789}, limit=1)
dframe
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567.0	NaN	NaN
2022-02-13	123	234	345	777	567.0	NaN	NaN
2022-02-14	123	234	345	777	567.0	678.0	NaN
2022-02-15	123	234	345	333	567.0	678.0	NaN
2022-02-16	123	234	345	456	567.0	678.0	NaN
2022-02-17	123	234	345	456	NaN	505.0	1020.0
2022-02-18	123	234	345	456	567.0	678.0	1020.0

```
dframe.dropna()
dframe
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567.0	NaN	NaN

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-13  123  234  345  777  567.0    NaN     NaN
2022-02-14  123  234  345  777  567.0  678.0     NaN
2022-02-15  123  234  345  333  567.0  678.0     NaN
2022-02-16  123  234  345  456  567.0  678.0     NaN
2022-02-17  123  234  345  456    NaN  505.0  1020.0
2022-02-18  123  234  345  456  567.0  678.0  1020.0
```

```
dframe.dropna(axis='columns')
dframe
```

```
             C1   C2   C3   C4     C5     C6      C7
2022-02-12  123  234  345  456  567.0    NaN     NaN
2022-02-13  123  234  345  777  567.0    NaN     NaN
2022-02-14  123  234  345  777  567.0  678.0     NaN
2022-02-15  123  234  345  333  567.0  678.0     NaN
2022-02-16  123  234  345  456  567.0  678.0     NaN
2022-02-17  123  234  345  456    NaN  505.0  1020.0
2022-02-18  123  234  345  456  567.0  678.0  1020.0
```

```
dframe.dropna(subset=['C5','C6'])
```

```
             C1   C2   C3   C4     C5     C6      C7
2022-02-14  123  234  345  777  567.0  678.0     NaN
2022-02-15  123  234  345  333  567.0  678.0     NaN
2022-02-16  123  234  345  456  567.0  678.0     NaN
2022-02-18  123  234  345  456  567.0  678.0  1020.0
```

#Descriptive Statistics

```
dframe.fillna(55, inplace=True)
dframe
```

```
             C1   C2   C3   C4     C5     C6      C7
2022-02-12  123  234  345  456  567.0   55.0    55.0
2022-02-13  123  234  345  777  567.0   55.0    55.0
2022-02-14  123  234  345  777  567.0  678.0    55.0
2022-02-15  123  234  345  333  567.0  678.0    55.0
2022-02-16  123  234  345  456  567.0  678.0    55.0
2022-02-17  123  234  345  456   55.0  505.0  1020.0
2022-02-18  123  234  345  456  567.0  678.0  1020.0
```

```
dframe.mean()
```

```
C1    123.000000
C2    234.000000
C3    345.000000
C4    530.142857
C5    493.857143
C6    475.285714
C7    330.714286
dtype: float64
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
dframe.max()

C1     123.0
C2     234.0
C3     345.0
C4     777.0
C5     567.0
C6     678.0
C7    1020.0
dtype: float64

dframe.min()

C1    123.0
C2    234.0
C3    345.0
C4    333.0
C5     55.0
C6     55.0
C7     55.0
dtype: float64

dframe.median()

C1    123.0
C2    234.0
C3    345.0
C4    456.0
C5    567.0
C6    678.0
C7     55.0
dtype: float64

dframe.std()

C1      0.000000
C2      0.000000
C3      0.000000
C4    174.514019
C5    193.517810
C6    293.977161
C7    470.871785
dtype: float64

dframe.var()

C1         0.000000
C2         0.000000
C3         0.000000
C4     30455.142857
C5     37449.142857
C6     86422.571429
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
C7    221720.238095
dtype: float64

dframe.quantile()

C1    123.0
C2    234.0
C3    345.0
C4    456.0
C5    567.0
C6    678.0
C7     55.0
Name: 0.5, dtype: float64

dframe.quantile(0.25)

C1    123.0
C2    234.0
C3    345.0
C4    456.0
C5    567.0
C6    280.0
C7     55.0
Name: 0.25, dtype: float64

dframe.quantile(0.50)

C1    123.0
C2    234.0
C3    345.0
C4    456.0
C5    567.0
C6    678.0
C7     55.0
Name: 0.5, dtype: float64

dframe.quantile(0.75)

C1    123.0
C2    234.0
C3    345.0
C4    616.5
C5    567.0
C6    678.0
C7    537.5
Name: 0.75, dtype: float64

dframe.quantile(0.75)-dframe.quantile(0.25)

C1      0.0
C2      0.0
C3      0.0
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
C4    160.5
C5      0.0
C6    398.0
C7    482.5
dtype: float64

dframe.sum()

C1     861.0
C2    1638.0
C3    2415.0
C4    3711.0
C5    3457.0
C6    3327.0
C7    2315.0
dtype: float64

dframe.describe()

          C1     C2     C3          C4          C5          C6
C7
count    7.0    7.0    7.0    7.000000    7.000000    7.000000
7.000000
mean   123.0  234.0  345.0  530.142857  493.857143  475.285714
330.714286
std      0.0    0.0    0.0  174.514019  193.517810  293.977161
470.871785
min    123.0  234.0  345.0  333.000000   55.000000   55.000000
55.000000
25%    123.0  234.0  345.0  456.000000  567.000000  280.000000
55.000000
50%    123.0  234.0  345.0  456.000000  567.000000  678.000000
55.000000
75%    123.0  234.0  345.0  616.500000  567.000000  678.000000
537.500000
max    123.0  234.0  345.0  777.000000  567.000000  678.000000
1020.000000

dframe.skew()

C1    0.000000
C2    0.000000
C3    0.000000
C4    0.912895
C5   -2.645751
C6   -1.057380
C7    1.229634
dtype: float64

dframe.kurt()
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
C1    0.000000
C2    0.000000
C3    0.000000
C4   -0.842404
C5    7.000000
C6   -1.078846
C7   -0.840000
dtype: float64
```

```
dframe.corr()
```

```
    C1  C2  C3        C4        C5        C6        C7
C1 NaN NaN NaN       NaN       NaN       NaN       NaN
C2 NaN NaN NaN       NaN       NaN       NaN       NaN
C3 NaN NaN NaN       NaN       NaN       NaN       NaN
C4 NaN NaN NaN  1.000000  0.187343 -0.307890 -0.290230
C5 NaN NaN NaN  0.187343  1.000000 -0.044571 -0.645497
C6 NaN NaN NaN -0.307890 -0.044571  1.000000  0.270053
C7 NaN NaN NaN -0.290230 -0.645497  0.270053  1.000000
```

```
dframe.cov()
```

```
     C1   C2   C3            C4            C5            C6
C7
C1  0.0  0.0  0.0      0.000000      0.000000      0.000000
0.000000
C2  0.0  0.0  0.0      0.000000      0.000000      0.000000
0.000000
C3  0.0  0.0  0.0      0.000000      0.000000      0.000000
0.000000
C4  0.0  0.0  0.0  30455.142857   6326.857143 -15795.714286  -
23849.285714
C5  0.0  0.0  0.0   6326.857143  37449.142857  -2535.619048  -
58819.047619
C6  0.0  0.0  0.0 -15795.714286  -2535.619048  86422.571429
37382.261905
C7  0.0  0.0  0.0 -23849.285714 -58819.047619  37382.261905
221720.238095
```

#import statistics as st

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832


```
import statistics as st
dframe.at[3:6,'C1']=22
dframe
```

```
/usr/local/lib/python3.7/dist-packages/pandas/core/indexing.py:719:
FutureWarning: Slicing a positional slice with .loc is not supported,
and will raise TypeError in a future version.  Use .loc with labels or
.iloc with positions instead.
  indexer = self._get_setitem_indexer(key)
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567.0	55.0	55.0
2022-02-13	123	234	345	777	567.0	55.0	55.0
2022-02-14	123	234	345	777	567.0	678.0	55.0
2022-02-15	22	234	345	333	567.0	678.0	55.0
2022-02-16	22	234	345	456	567.0	678.0	55.0
2022-02-17	22	234	345	456	55.0	505.0	1020.0
2022-02-18	123	234	345	456	567.0	678.0	1020.0

```
st.mean(dframe['C1'])
```

```
79.71428571428571
```

```
st.harmonic_mean(dframe['C1'])
```

```
41.44857768052516
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
arr  = np. array( [1, 2,3,4,5, 6,7,8])
st.median(arr)
```

```
4.5
```

```
st.median_low(arr)
```

```
4
```

```
st.median_high(arr)
```

```
5
```

```
st.mode(dframe['C7'])
```

```
55.0
```

```
st.variance(dframe['C1'])
```

```
2914.5714285714284
```

```
st.pvariance(dframe['C1'])
```

```
2498.204081632653
```

```
st.stdev(dframe['C1'])
```

```
53.986770866309726
```

```
st.pstdev(dframe['C1'])
```

```
49.982037589844744
```

```
dframe
```

	C1	C2	C3	C4	C5	C6	C7
2022-02-12	123	234	345	456	567.0	55.0	55.0
2022-02-13	123	234	345	777	567.0	55.0	55.0
2022-02-14	123	234	345	777	567.0	678.0	55.0
2022-02-15	22	234	345	333	567.0	678.0	55.0
2022-02-16	22	234	345	456	567.0	678.0	55.0
2022-02-17	22	234	345	456	55.0	505.0	1020.0
2022-02-18	123	234	345	456	567.0	678.0	1020.0

```
dframe.apply(max)
```

```
C1     123.0
C2     234.0
C3     345.0
C4     777.0
C5     567.0
C6     678.0
C7    1020.0
dtype: float64
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
dframe.apply(min)
```

```
C1     22.0
C2    234.0
C3    345.0
C4    333.0
C5     55.0
C6     55.0
C7     55.0
dtype: float64
```


```
dframe.apply(sum)
```

```
C1     558.0
C2    1638.0
C3    2415.0
C4    3711.0
C5    3457.0
C6    3327.0
C7    2315.0
dtype: float64
```

```
dframe.apply(np.sum)
```

```
C1     558.0
C2    1638.0
C3    2415.0
C4    3711.0
C5    3457.0
C6    3327.0
C7    2315.0
dtype: float64
```

```
dframe.apply(np.sum ,axis=1)
```

```
2022-02-12    1835.0
2022-02-13    2156.0
2022-02-14    2779.0
2022-02-15    2234.0
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2022-02-16    2357.0
2022-02-17    2637.0
2022-02-18    3423.0
Freq: D, dtype: float64

dframe.applymap(np.sqrt)

                   C1         C2         C3  ...         C5         C6
C7
2022-02-12  11.090537  15.297059  18.574176  ...  23.811762   7.416198
7.416198
2022-02-13  11.090537  15.297059  18.574176  ...  23.811762   7.416198
7.416198
2022-02-14  11.090537  15.297059  18.574176  ...  23.811762  26.038433
7.416198
2022-02-15   4.690416  15.297059  18.574176  ...  23.811762  26.038433
7.416198
2022-02-16   4.690416  15.297059  18.574176  ...  23.811762  26.038433
7.416198
2022-02-17   4.690416  15.297059  18.574176  ...   7.416198  22.472205
31.937439
2022-02-18  11.090537  15.297059  18.574176  ...  23.811762  26.038433
31.937439

[7 rows x 7 columns]

import math
dframe.applymap(math.sqrt)

                   C1         C2         C3  ...         C5         C6
C7
2022-02-12  11.090537  15.297059  18.574176  ...  23.811762   7.416198
7.416198
2022-02-13  11.090537  15.297059  18.574176  ...  23.811762   7.416198
7.416198
2022-02-14  11.090537  15.297059  18.574176  ...  23.811762  26.038433
7.416198
2022-02-15   4.690416  15.297059  18.574176  ...  23.811762  26.038433
7.416198
2022-02-16   4.690416  15.297059  18.574176  ...  23.811762  26.038433
7.416198
2022-02-17   4.690416  15.297059  18.574176  ...   7.416198  22.472205
31.937439
2022-02-18  11.090537  15.297059  18.574176  ...  23.811762  26.038433
31.937439

[7 rows x 7 columns]

dframe.applymap(float)
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
               C1     C2     C3     C4     C5     C6      C7
2022-02-12  123.0  234.0  345.0  456.0  567.0   55.0    55.0
2022-02-13  123.0  234.0  345.0  777.0  567.0   55.0    55.0
2022-02-14  123.0  234.0  345.0  777.0  567.0  678.0    55.0
2022-02-15   22.0  234.0  345.0  333.0  567.0  678.0    55.0
2022-02-16   22.0  234.0  345.0  456.0  567.0  678.0    55.0
2022-02-17   22.0  234.0  345.0  456.0   55.0  505.0  1020.0
2022-02-18  123.0  234.0  345.0  456.0  567.0  678.0  1020.0
```

```
dframe.apply(lambda x: min(x))
```

```
C1     22.0
C2    234.0
C3    345.0
C4    333.0
C5     55.0
C6     55.0
C7     55.0
dtype: float64
```

```
dframe.apply(lambda x: x*x)
```

```
               C1     C2      C3      C4        C5        C6
C7
2022-02-12  15129  54756  119025  207936  321489.0    3025.0
3025.0
2022-02-13  15129  54756  119025  603729  321489.0    3025.0
3025.0
2022-02-14  15129  54756  119025  603729  321489.0  459684.0
3025.0
2022-02-15    484  54756  119025  110889  321489.0  459684.0
3025.0
2022-02-16    484  54756  119025  207936  321489.0  459684.0
3025.0
2022-02-17    484  54756  119025  207936    3025.0  255025.0
1040400.0
2022-02-18  15129  54756  119025  207936  321489.0  459684.0
1040400.0
```

```
dafl =  pd.DataFrame ({'id' : ['1', '2', '3', '4', '5'], 'Name' :
['Prajakta', 'Prerna', 'Prema', 'Pari', 'Palkia']})
dafl
```

```
  id      Name
0  1  Prajakta
1  2    Prerna
2  3     Prema
3  4      Pari
4  5    Palkia
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
daf2 = pd.DataFrame ({'id': ['1', '2', '6', '7', '8'], 'Score': [40 ,
60 , 80 , 90 , 70]})
daf2
```

```
  id  Score
0  1     40
1  2     60
2  6     80
3  7     90
4  8     70
```

```
# Inner Join
pd.merge(dafl, daf2, on='id', how='inner')
```

```
  id      Name  Score
0  1  Prajakta     40
1  2    Prerna     60
```

```
# Full Outer Join
pd.merge(dafl, daf2, on='id', how='outer')
```

```
  id      Name  Score
0  1  Prajakta   40.0
1  2    Prerna   60.0
2  3     Prema    NaN
3  4      Pari    NaN
4  5    Palkia    NaN
5  6       NaN   80.0
6  7       NaN   90.0
7  8       NaN   70.0
```

```
# Left Outer Soon
pd.merge(dafl, daf2, on='id', how='left')
```

```
  id      Name  Score
0  1  Prajakta   40.0
1  2    Prerna   60.0
2  3     Prema    NaN
3  4      Pari    NaN
4  5    Palkia    NaN
```

```
#Right Outer Join
pd.merge(dafl, daf2, on='id', how='right')
```

```
  id      Name  Score
0  1  Prajakta     40
1  2    Prerna     60
2  6       NaN     80
3  7       NaN     90
4  8       NaN     70
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
import glob
path = r"C:\Users\User\Downloads\COVID-19-master\COVID-19-master\
csse_covid_19_data\csse_covid_19_daily_reports_us"
filenames = glob.glob(path + "\*.csv")
print(path, filenames)
covid=pd.DataFrame()
for i in filenames:
  df = pd.read_csv(i)
  print(i)
  covid = covid.append(df, ignore_index=True,sort=True)
```

```
C:\Users\User\Downloads\COVID-19-master\COVID-19-master\
csse_covid_19_data\csse_covid_19_daily_reports_us []
```

```
from google.colab import data_table
data_table.enable_dataframe_formatter()
```

```
df_pokemon =
pd.read_csv("https://raw.githubusercontent.com/lgreski/pokemonData/
master/Pokemon.csv")
df_pokemon
```

```
       ID        Name          Form  ... Sp. Def Speed  Generation
0       1   Bulbasaur                ...      65    45           1
1       2     Ivysaur                ...      80    60           1
2       3    Venusaur                ...     100    80           1
3       4  Charmander                ...      50    65           1
4       5  Charmeleon                ...      65    80           1
...   ...         ...           ...  ...     ...   ...         ...
1040  896   Glastrier                ...     110    30           8
1041  897   Spectrier                ...      80   130           8
1042  898     Calyrex                ...      80    80           8
1043  898     Calyrex     Ice Rider  ...     130    50           8
1044  898     Calyrex  Shadow Rider  ...     100   150           8

[1045 rows x 13 columns]
```

```
df_pokemon.head(), df_pokemon.tail()
```

```
(   ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed
Generation
 0   1   Bulbasaur       Grass  ...      65       65     45
1
 1   2     Ivysaur       Grass  ...      80       80     60
1
 2   3    Venusaur       Grass  ...     100      100     80
1
 3   4  Charmander        Fire  ...      60       50     65
1
 4   5  Charmeleon        Fire  ...      80       65     80
1
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
 [5 rows x 13 columns],
        ID       Name          Form  ... Sp. Def Speed  Generation
 1040  896  Glastrier                ...      110    30           8
 1041  897  Spectrier                ...       80   130           8
 1042  898    Calyrex                ...       80    80           8
 1043  898    Calyrex     Ice Rider  ...      130    50           8
 1044  898    Calyrex  Shadow Rider  ...      100   150           8

 [5 rows x 13 columns])
```

```
df_pokemon['Total'] = df_pokemon['HP'] + df_pokemon['Attack']
df_pokemon
```

```
       ID       Name          Form  ... Sp. Def Speed  Generation
0       1   Bulbasaur                ...       65    45           1
1       2     Ivysaur                ...       80    60           1
2       3    Venusaur                ...      100    80           1
3       4  Charmander                ...       50    65           1
4       5  Charmeleon                ...       65    80           1
...   ...         ...           ...  ...      ...   ...         ...
1040  896   Glastrier                ...      110    30           8
1041  897   Spectrier                ...       80   130           8
1042  898     Calyrex                ...       80    80           8
1043  898     Calyrex     Ice Rider  ...      130    50           8
1044  898     Calyrex  Shadow Rider  ...      100   150           8

[1045 rows x 13 columns]
```

```
df_pokemon['Total'] = df_pokemon['HP'] + df_pokemon['Attack']
df_pokemon
```

```
       ID       Name          Form  ... Sp. Def Speed  Generation
0       1   Bulbasaur                ...       65    45           1
1       2     Ivysaur                ...       80    60           1
2       3    Venusaur                ...      100    80           1
3       4  Charmander                ...       50    65           1
4       5  Charmeleon                ...       65    80           1
...   ...         ...           ...  ...      ...   ...         ...
1040  896   Glastrier                ...      110    30           8
1041  897   Spectrier                ...       80   130           8
1042  898     Calyrex                ...       80    80           8
1043  898     Calyrex     Ice Rider  ...      130    50           8
1044  898     Calyrex  Shadow Rider  ...      100   150           8

[1045 rows x 13 columns]
```

```
df_pokemon['Total'] = df_pokemon.iloc[:,4:10].sum(axis=1)
df_pokemon.head(5)
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1:
FutureWarning: Dropping of nuisance columns in DataFrame reductions
(with 'numeric_only=None') is deprecated; in a future version this
will raise TypeError.  Select only valid columns before calling the
reduction.
  """Entry point for launching an IPython kernel.
```

	ID	Name	Form	Type1	...	Sp. Atk	Sp. Def	Speed	Generation
0	1	Bulbasaur		Grass	...	65	65	45	1
1	2	Ivysaur		Grass	...	80	80	60	1
2	3	Venusaur		Grass	...	100	100	80	1
3	4	Charmander		Fire	...	60	50	65	1
4	5	Charmeleon		Fire	...	80	65	80	1

[5 rows x 13 columns]

```
cols = list(df_pokemon.columns)
df_pokemon  = df_pokemon[cols[0:10] + [cols[-1]] + cols[10:12]]
df_pokemon.head(5)
```

	ID	Name	Form	Type1	...	Sp. Atk	Generation	Sp. Def	Speed
0	1	Bulbasaur		Grass	...	65	1	65	45
1	2	Ivysaur		Grass	...	80	1	80	60
2	3	Venusaur		Grass	...	100	1	100	80
3	4	Charmander		Fire	...	60	1	50	65
4	5	Charmeleon		Fire	...	80	1	65	80

[5 rows x 13 columns]

```
cols = list(df_pokemon.columns)
df_pokemon = df_pokemon[cols[0:10] + [cols[-1]] + cols[10:12]]
df_pokemon.head(5)
```

	ID	Name	Form	Type1	...	Sp. Atk	Speed	Generation	Sp. Def
0	1	Bulbasaur		Grass	...	65	45	1	65
1	2	Ivysaur		Grass	...	80	60	1	80
2	3	Venusaur		Grass	...	100	80	1	100
3	4	Charmander		Fire	...	60	65	1	50
4	5	Charmeleon		Fire	...	80	80	1	65

[5 rows x 13 columns]

```
cols = list(df_pokemon.columns)
df_pokemon = df_pokemon[cols[0:10] + [cols[12]] + cols[10:12]]
df_pokemon.head(5)
```

	ID	Name	Form	Type1	...	Sp. Atk	Sp. Def	Speed	Generation
0	1	Bulbasaur		Grass	...	65	65	45	1
1	2	Ivysaur		Grass	...	80	80	60	1
2	3	Venusaur		Grass	...	100	100	80	1
3	4	Charmander		Fire	...	60	50	65	1

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
4   5  Charmeleon        Fire  ...      80       65     80           1

[5 rows x 13 columns]
```

```
df_pokemon.to_csv('poke_updated1.csv', index=False)
```

```
df_pokemon.to_html('poke_updated1.html', index=False)
```

```
df_pokemon.to_json('poke_updated1.json')
```

```
df_pokemon.to_excel('poke_updated1.xlsx', index=False)
```

```
df_pokemon.to_excel('poke_updated1_xls.xls', index=False)
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1:
FutureWarning: As the xlwt package is no longer maintained, the xlwt
engine will be removed in a future version of pandas. This is the only
engine in pandas that supports writing in the xls format. Install
openpyxl and write to an xlsx file instead. You can set the option
io.excel.xls.writer to 'xlwt' to silence this warning. While this
option is deprecated and will also raise a warning, it can be globally
set and the warning suppressed.
  """Entry point for launching an IPython kernel.
```

```
df_pokemon.to_csv('poke.txt' , sep='\t' , index=False)
```

```
df_pokemon.loc[df_pokemon['Type2'] == 'Dragon']
df_pokemon
```

```
       ID        Name          Form  ... Sp. Def Speed  Generation
0       1   Bulbasaur                ...      65    45           1
1       2     Ivysaur                ...      80    60           1
2       3    Venusaur                ...     100    80           1
3       4  Charmander                ...      50    65           1
4       5  Charmeleon                ...      65    80           1
...   ...         ...           ...  ...     ...   ...         ...
1040  896   Glastrier                ...     110    30           8
1041  897   Spectrier                ...      80   130           8
1042  898     Calyrex                ...      80    80           8
1043  898     Calyrex     Ice Rider  ...     130    50           8
1044  898     Calyrex  Shadow Rider  ...     100   150           8

[1045 rows x 13 columns]
```

```
df3  = df_pokemon.loc[(df_pokemon['Type2']  == 'Dragon') &
(df_pokemon['Type1']  == 'Dark')]
df3
```

```
      ID       Name Form Type1  ... Sp. Atk  Sp. Def  Speed
Generation
649  633      Deino       Dark  ...      45       50     38
5
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
650  634   Zweilous       Dark  ...      65       70     58
5
651  635  Hydreigon       Dark  ...     125       90     98
5
912  799   Guzzlord       Dark  ...      97       53     43
7

[4 rows x 13 columns]
```

```
df4  = df3.reset_index()
df4
```

```
   index   ID       Name Form  ... Sp. Atk Sp. Def  Speed  Generation
0    649  633      Deino       ...      45      50     38           5
1    650  634   Zweilous       ...      65      70     58           5
2    651  635  Hydreigon       ...     125      90     98           5
3    912  799   Guzzlord       ...      97      53     43           7

[4 rows x 14 columns]
```

```
df3.reset_index(drop=True , inplace=True)
df3
```

```
    ID       Name Form Type1  ... Sp. Atk  Sp. Def  Speed  Generation
0  633      Deino       Dark  ...      45       50     38           5
1  634   Zweilous       Dark  ...      65       70     58           5
2  635  Hydreigon       Dark  ...     125       90     98           5
3  799   Guzzlord       Dark  ...      97       53     43           7

[4 rows x 13 columns]
```

```
df_pokemon.head(10)
```

```
   ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed  Generation
0   1   Bulbasaur       Grass  ...      65       65     45           1
1   2     Ivysaur       Grass  ...      80       80     60           1
2   3    Venusaur       Grass  ...     100      100     80           1
3   4  Charmander        Fire  ...      60       50     65           1
4   5  Charmeleon        Fire  ...      80       65     80           1
5   6   Charizard        Fire  ...     109       85    100           1
6   7    Squirtle       Water  ...      50       64     43           1
7   8   Wartortle       Water  ...      65       80     58           1
8   9   Blastoise       Water  ...      85      105     78           1
9  10    Caterpie         Bug  ...      20       20     45           1

[10 rows x 13 columns]
```

```
df_pokemon.Name.str.contains("rill").head(10)
```

```
0    False
1    False
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
2    False
3    False
4    False
5    False
6    False
7    False
8    False
9    False
Name: Name, dtype: bool
```

```
df_pokemon.loc[df_pokemon.Name.str.contains('rill')]
```

```
      ID       Name           Form   Type1  ... Sp. Atk  Sp. Def
Speed  Generation
14    15   Beedrill                    Bug  ...      45       80
75           1
182  183     Marill                   Water  ...      20       50
40           2
183  184  Azumarill                   Water  ...      60       80
50           2
297  298    Azurill                  Normal  ...      20       40
20           3
544  530  Excadrill                  Ground  ...      50       65
88           5
608  592   Frillish                   Water  ...      65       85
40           5
677   15   Beedrill  Mega Beedrill     Bug  ...      15       80
145           6

[7 rows x 13 columns]
```

```
df_pokemon.loc[-df_pokemon.Name.str.contains('rill')].head(10)
```

```
   ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed  Generation
0   1   Bulbasaur       Grass  ...      65       65     45           1
1   2     Ivysaur       Grass  ...      80       80     60           1
2   3    Venusaur       Grass  ...     100      100     80           1
3   4  Charmander        Fire  ...      60       50     65           1
4   5  Charmeleon        Fire  ...      80       65     80           1
5   6   Charizard        Fire  ...     109       85    100           1
6   7    Squirtle       Water  ...      50       64     43           1
7   8   Wartortle       Water  ...      65       80     58           1
8   9   Blastoise       Water  ...      85      105     78           1
9  10    Caterpie         Bug  ...      20       20     45           1

[10 rows x 13 columns]
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832


```
df_pokemon.loc[df_pokemon['Type1'].str.contains('Grass') &
df_pokemon['Type2'].str.contains("Poison")]
```

```
      ID        Name            Form  Type1  ... Sp. Atk  Sp. Def
Speed  Generation
0      1   Bulbasaur                 Grass  ...      65       65
45           1
1      2     Ivysaur                 Grass  ...      80       80
60           1
2      3    Venusaur                 Grass  ...     100      100
80           1
42    43      Oddish                 Grass  ...      75       65
30           1
43    44       Gloom                 Grass  ...      85       75
40           1
44    45   Vileplume                 Grass  ...     110       90
50           1
68    69  Bellsprout                 Grass  ...      70       30
40           1
69    70  Weepinbell                 Grass  ...      85       45
55           1
70    71  Victreebel                 Grass  ...     100       70
70           1
314  315     Roselia                 Grass  ...     100       80
65           3
411  406       Budew                 Grass  ...      50       70
55           4
412  407    Roserade                 Grass  ...     125      105
90           4
606  590     Foongus                 Grass  ...      55       55
15           5
607  591   Amoonguss                 Grass  ...      85       80
30           5
673    3    Venusaur  Mega Venusaur  Grass  ...     122      120
80           6

[15 rows x 13 columns]
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
df_pokemon.loc[df_pokemon['Type1'].str.contains('grass |water',regex =
True)].head(10)
```

```
Empty DataFrame
Columns: [ID, Name, Form, Type1, Type2, Total, HP, Attack, Defense,
Sp. Atk, Sp. Def, Speed, Generation]
Index: []
```

```
df_pokemon.loc[df_pokemon['Type1'].str.contains('grass |water', case =
False ,regex = True)].head(10)
```

```
    ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed
Generation
6    7    Squirtle       Water  ...      50       64     43
1
7    8   Wartortle       Water  ...      65       80     58
1
8    9   Blastoise       Water  ...      85      105     78
1
53  54     Psyduck       Water  ...      65       50     55
1
54  55     Golduck       Water  ...      95       80     85
1
59  60     Poliwag       Water  ...      40       40     90
1
60  61   Poliwhirl       Water  ...      50       50     90
1
61  62   Poliwrath       Water  ...      70       90     70
1
71  72   Tentacool       Water  ...      50      100     70
1
72  73  Tentacruel       Water  ...      80      120    100
1

[10 rows x 13 columns]
```

```
import re
df_pokemon.loc[df_pokemon['Type1'].str.contains('grass |water',flags =
re.I ,regex = True)].head(10)
```

```
    ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed
Generation
6    7    Squirtle       Water  ...      50       64     43
1
7    8   Wartortle       Water  ...      65       80     58
1
8    9   Blastoise       Water  ...      85      105     78
1
53  54     Psyduck       Water  ...      65       50     55
1
54  55     Golduck       Water  ...      95       80     85
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
1
59  60     Poliwag       Water  ...      40       40     90
1
60  61   Poliwhirl       Water  ...      50       50     90
1
61  62   Poliwrath       Water  ...      70       90     70
1
71  72   Tentacool       Water  ...      50      100     70
1
72  73  Tentacruel       Water  ...      80      120    100
1

[10 rows x 13 columns]
```

```
df_pokemon.loc[df_pokemon.Name.str.contains('Wa',flags = re.I ,regex =
True)].head(10)
```

```
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
7      8  Wartortle        Water  ...      65       80     58
1
59    60    Poliwag        Water  ...      40       40     90
1
104  105    Marowak       Ground  ...      50       80     45
1
259  260   Swampert        Water  ...      85       90     60
3
316  317     Swalot       Poison  ...      73       83     55
3
319  320    Wailmer        Water  ...      70       35     60
3
320  321    Wailord        Water  ...      90       45     60
3
332  333     Swablu       Normal  ...      40       75     50
3
367  365    Walrein          Ice  ...      95       90     65
3
519  505    Watchog       Normal  ...      60       69     77
5

[10 rows x 13 columns]
```

```
df_pokemon.loc[df_pokemon.Name.str.contains('^Wa[a-l]
+',flags=re.I ,regex=True)].head(10)
```

```
      ID     Name Form  Type1  ... Sp. Atk  Sp. Def  Speed  Generation
319  320  Wailmer       Water  ...      70       35     60           3
320  321  Wailord       Water  ...      90       45     60           3
367  365  Walrein         Ice  ...      95       90     65           3

[3 rows x 13 columns]
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
df_pokemon.loc[df_pokemon.Name.str.contains('^[x-z]',flags =
re.I ,regex = True)]
```

	ID	Name	Form	...	Sp. Def	Speed	Generation
40	41	Zubat		...	40	55	1
144	145	Zapdos		...	90	100	1
177	178	Xatu		...	70	95	2
192	193	Yanma		...	45	95	2
262	263	Zigzagoon		...	41	60	3
334	335	Zangoose		...	60	90	3
476	469	Yanmega		...	56	95	4
537	523	Zebstrika		...	63	116	5
578	562	Yamask		...	65	30	5
586	570	Zorua		...	40	65	5
587	571	Zoroark		...	60	105	5
650	634	Zweilous		...	70	58	5
662	644	Zekrom		...	100	90	5
796	716	Xerneas		...	98	99	6
797	717	Yveltal		...	98	99	6
798	718	Zygarde50% Forme		...	95	95	6
825	718	Zygarde10% Forme		...	85	115	7
826	718	Zygarde	Complete Forme	...	95	85	7
839	734	Yungoos		...	30	45	7
909	796	Xurkitree		...	71	83	7
923	807	Zeraora		...	80	143	7
935	145	Zapdos	Galarian Zapdos	...	90	100	8
939	263	Zigzagoon	Galarian Zigzagoon	...	41	60	

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
8
944   562            Yamask       Galarian Yamask  ...      65    30
8
971   835            Yamper                        ...      50    26
8
1028  888            Zacian         Crowned Sword  ...     115   148
8
1029  888            Zacian  Hero of Many Battles  ...     115   138
8
1030  889         Zamazenta        Crowned Shield  ...     145   128
8
1031  889         Zamazenta  Hero of Many Battles  ...     115   138
8
1037  893            Zarude                        ...      95   105
8

[30 rows x 13 columns]
```

```
df_pokemon['Name2']  = df_pokemon.Name.str.extract(r'(^\w{3})')
```

```
df_pokemon.head()
```

```
   ID        Name Form  Type1  ... Sp. Def  Speed  Generation  Name2
0   1   Bulbasaur       Grass  ...      65     45           1    Bul
1   2     Ivysaur       Grass  ...      80     60           1    Ivy
2   3    Venusaur       Grass  ...     100     80           1    Ven
3   4  Charmander        Fire  ...      50     65           1    Cha
4   5  Charmeleon        Fire  ...      65     80           1    Cha

[5 rows x 14 columns]
```

```
df_pokemon.loc[df_pokemon.Name.str.match(r'(^[B|b].*)')].head(5)
```

```
    ID        Name Form  Type1  ... Sp. Def  Speed  Generation  Name2
0    1   Bulbasaur       Grass  ...      65     45           1    Bul
8    9   Blastoise       Water  ...     105     78           1    Bla
11  12  Butterfree         Bug  ...      80     70           1    But
14  15    Beedrill         Bug  ...      80     75           1    Bee
68  69  Bellsprout       Grass  ...      30     40           1    Bel

[5 rows x 14 columns]
```

#Replace values in DataFrame


```
df_pokemon.head(10)
```

```
   ID        Name Form  Type1  ... Sp. Def  Speed  Generation  Name2
0   1   Bulbasaur       Grass  ...      65     45           1    Bul
1   2     Ivysaur       Grass  ...      80     60           1    Ivy
2   3    Venusaur       Grass  ...     100     80           1    Ven
3   4  Charmander        Fire  ...      50     65           1    Cha
4   5  Charmeleon        Fire  ...      65     80           1    Cha
5   6   Charizard        Fire  ...      85    100           1    Cha
6   7    Squirtle       Water  ...      64     43           1    Squ
7   8   Wartortle       Water  ...      80     58           1    War
8   9   Blastoise       Water  ...     105     78           1    Bla
9  10    Caterpie         Bug  ...      20     45           1    Cat

[10 rows x 14 columns]
```

```
df_pokemon['Type1']  = df_pokemon['Type1'].replace({'Grass' : 'Meadow'
,  'Fire' : 'Blaze'})
df_pokemon.head(10)
```

```
   ID        Name Form   Type1  ... Sp. Def  Speed  Generation  Name2
0   1   Bulbasaur       Meadow  ...      65     45           1    Bul
1   2     Ivysaur       Meadow  ...      80     60           1    Ivy
2   3    Venusaur       Meadow  ...     100     80           1    Ven
3   4  Charmander        Blaze  ...      50     65           1    Cha
4   5  Charmeleon        Blaze  ...      65     80           1    Cha
5   6   Charizard        Blaze  ...      85    100           1    Cha
6   7    Squirtle        Water  ...      64     43           1    Squ
7   8   Wartortle        Water  ...      80     58           1    War
8   9   Blastoise        Water  ...     105     78           1    Bla
9  10    Caterpie          Bug  ...      20     45           1    Cat

[10 rows x 14 columns]
```

```
df_pokemon['Type2'] = df_pokemon['Type2'].replace({'Poison' :
'Venom'})
df_pokemon.head()
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
   ID        Name Form   Type1  ... Sp. Def  Speed  Generation  Name2
0   1   Bulbasaur       Meadow  ...      65     45           1    Bul
1   2     Ivysaur       Meadow  ...      80     60           1    Ivy
2   3    Venusaur       Meadow  ...     100     80           1    Ven
3   4  Charmander        Blaze  ...      50     65           1    Cha
4   5  Charmeleon        Blaze  ...      65     80           1    Cha

[5 rows x 14 columns]
```

```
df_pokemon['Type2']  = df_pokemon['Type2'].replace(['Venom' ,
'Dragon'] ,  'DANGER')
df_pokemon.head(10)
```

```
   ID        Name Form   Type1  ... Sp. Def  Speed  Generation  Name2
0   1   Bulbasaur       Meadow  ...      65     45           1    Bul
1   2     Ivysaur       Meadow  ...      80     60           1    Ivy
2   3    Venusaur       Meadow  ...     100     80           1    Ven
3   4  Charmander        Blaze  ...      50     65           1    Cha
4   5  Charmeleon        Blaze  ...      65     80           1    Cha
5   6   Charizard        Blaze  ...      85    100           1    Cha
6   7    Squirtle        Water  ...      64     43           1    Squ
7   8   Wartortle        Water  ...      80     58           1    War
8   9   Blastoise        Water  ...     105     78           1    Bla
9  10    Caterpie          Bug  ...      20     45           1    Cat

[10 rows x 14 columns]
```

```
df_pokemon.loc[df_pokemon['Type2'] == 'DANGER' ,  'Name2'] = np.NaN
df_pokemon.head(10)
```

```
   ID        Name Form   Type1  ... Sp. Def  Speed  Generation  Name2
0   1   Bulbasaur       Meadow  ...      65     45           1    NaN
1   2     Ivysaur       Meadow  ...      80     60           1    NaN
2   3    Venusaur       Meadow  ...     100     80           1    NaN
3   4  Charmander        Blaze  ...      50     65           1    Cha
4   5  Charmeleon        Blaze  ...      65     80           1    Cha
5   6   Charizard        Blaze  ...      85    100           1    Cha
6   7    Squirtle        Water  ...      64     43           1    Squ
7   8   Wartortle        Water  ...      80     58           1    War
8   9   Blastoise        Water  ...     105     78           1    Bla
9  10    Caterpie          Bug  ...      20     45           1    Cat

[10 rows x 14 columns]
```

```
df_pokemon.loc[df_pokemon['Total']>400 ,  ['Name2'  ,  'Legendary']] =
'ALERT'
df_pokemon.head(10)
```

```
   ID        Name Form   Type1  ... Speed  Generation  Name2
Legendary
0   1   Bulbasaur       Meadow  ...    45           1    NaN
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
NaN
1   2     Ivysaur       Meadow  ...    60           1    NaN
NaN
2   3    Venusaur       Meadow  ...    80           1  ALERT
ALERT
3   4  Charmander        Blaze  ...    65           1    Cha
NaN
4   5  Charmeleon        Blaze  ...    80           1    Cha
NaN
5   6   Charizard        Blaze  ...   100           1  ALERT
ALERT
6   7    Squirtle        Water  ...    43           1    Squ
NaN
7   8   Wartortle        Water  ...    58           1    War
NaN
8   9   Blastoise        Water  ...    78           1  ALERT
ALERT
9  10    Caterpie          Bug  ...    45           1    Cat
NaN

[10 rows x 15 columns]
```

```
df_pokemon.loc[df_pokemon['Total'] > 400 , ['Legendary' ,  'Name2']] =
['ALERT-1' ,  'ALERT-2']
df_pokemon.head(10)
```

```
   ID        Name Form   Type1  ... Speed  Generation    Name2
Legendary
0   1   Bulbasaur       Meadow  ...    45           1      NaN
NaN
1   2     Ivysaur       Meadow  ...    60           1      NaN
NaN
2   3    Venusaur       Meadow  ...    80           1  ALERT-2
ALERT-1
3   4  Charmander        Blaze  ...    65           1      Cha
NaN
4   5  Charmeleon        Blaze  ...    80           1      Cha
NaN
5   6   Charizard        Blaze  ...   100           1  ALERT-2
ALERT-1
6   7    Squirtle        Water  ...    43           1      Squ
NaN
7   8   Wartortle        Water  ...    58           1      War
NaN
8   9   Blastoise        Water  ...    78           1  ALERT-2
ALERT-1
9  10    Caterpie          Bug  ...    45           1      Cat
NaN

[10 rows x 15 columns]
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
df = pd.read_csv('poke_updated1.csv')
df.head(5)
```

```
   ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed  Generation
0   1   Bulbasaur       Grass  ...      65       65     45           1
1   2     Ivysaur       Grass  ...      80       80     60           1
2   3    Venusaur       Grass  ...     100      100     80           1
3   4  Charmander        Fire  ...      60       50     65           1
4   5  Charmeleon        Fire  ...      80       65     80           1

[5 rows x 13 columns]
```

```
df.groupby(['Type1']).mean().head(10)
```

```
                  ID       Total         HP  ...    Sp. Def      Speed
Generation
Type1                                        ...

Bug       399.691358  384.382716  57.024691  ...  65.074074  63.259259
4.037037
Dark      476.260870  441.478261  70.065217  ...  68.369565  76.695652
5.434783
Dragon    549.219512  560.195122  85.243902  ...  84.097561  84.341463
5.073171
Electric  474.967742  430.241935  62.241935  ...  71.661290  86.758065
4.645161
Fairy     541.772727  431.590909  72.954545  ...  89.181818  59.545455
4.954545
Fighting  499.809524  482.714286  72.928571  ...  68.214286  71.333333
5.047619
Fire      401.923077  464.184615  69.430769  ...  71.292308  74.369231
4.230769
Flying    752.750000  427.750000  69.625000  ...  70.000000  87.000000
6.750000
Ghost     549.976190  441.000000  64.809524  ...  78.809524  63.047619
5.166667
Grass     438.648352  429.967033  66.736264  ...  70.054945  59.769231
4.395604

[10 rows x 9 columns]
```

```
df.groupby(['Type1']).mean().sort_values('Attack',ascending=False).hea
d(10)
```

```
                  ID       Total         HP  ...    Sp. Def      Speed
Generation
Type1                                        ...

Dragon    549.219512  560.195122  85.243902  ...  84.097561  84.341463
5.073171
Fighting  499.809524  482.714286  72.928571  ...  68.214286  71.333333
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
5.047619
Ground    408.170732  470.000000  70.853659  ...  64.317073  61.804878
4.195122
Steel     520.222222  513.638889  69.527778  ...  76.416667  53.638889
5.138889
Rock      462.700000  477.100000  67.100000  ...  72.800000  57.666667
4.616667
Fire      401.923077  464.184615  69.430769  ...  71.292308  74.369231
4.230769
Dark      476.260870  441.478261  70.065217  ...  68.369565  76.695652
5.434783
Ice       451.378378  442.756757  72.270270  ...  72.729730  66.135135
4.945946
Psychic   468.864198  470.765432  73.456790  ...  87.864198  80.432099
4.876543
Poison    341.780488  447.707317  74.975610  ...  72.731707  65.926829
4.073171

[10 rows x 9 columns]
```

```
df.groupby(['Type1']).mean().sort_values('Defense',ascending=False).he
ad(10)
```

```
                  ID       Total         HP  ...    Sp. Def      Speed
Generation
Type1                                        ...

Steel     520.222222  513.638889  69.527778  ...  76.416667  53.638889
5.138889
Rock      462.700000  477.100000  67.100000  ...  72.800000  57.666667
4.616667
Ground    408.170732  470.000000  70.853659  ...  64.317073  61.804878
4.195122
Dragon    549.219512  560.195122  85.243902  ...  84.097561  84.341463
5.073171
Ghost     549.976190  441.000000  64.809524  ...  78.809524  63.047619
5.166667
Poison    341.780488  447.707317  74.975610  ...  72.731707  65.926829
4.073171
Fighting  499.809524  482.714286  72.928571  ...  68.214286  71.333333
5.047619
Water     377.619403  439.888060  70.888060  ...  71.395522  66.335821
3.738806
Ice       451.378378  442.756757  72.270270  ...  72.729730  66.135135
4.945946
Psychic   468.864198  470.765432  73.456790  ...  87.864198  80.432099
4.876543

[10 rows x 9 columns]
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
df.groupby(['Type1']).mean().sort_values('Speed',ascending=False).head
(10)
```

```
                  ID       Total         HP  ...    Sp. Def      Speed
Generation
Type1                                        ...

Flying    752.750000  427.750000  69.625000  ...  70.000000  87.000000
6.750000
Electric  474.967742  430.241935  62.241935  ...  71.661290  86.758065
4.645161
Dragon    549.219512  560.195122  85.243902  ...  84.097561  84.341463
5.073171
Psychic   468.864198  470.765432  73.456790  ...  87.864198  80.432099
4.876543
Dark      476.260870  441.478261  70.065217  ...  68.369565  76.695652
5.434783
Fire      401.923077  464.184615  69.430769  ...  71.292308  74.369231
4.230769
Fighting  499.809524  482.714286  72.928571  ...  68.214286  71.333333
5.047619
Normal    380.547826  423.017391  77.052174  ...  64.486957  69.678261
3.782609
Water     377.619403  439.888060  70.888060  ...  71.395522  66.335821
3.738806
Ice       451.378378  442.756757  72.270270  ...  72.729730  66.135135
4.945946

[10 rows x 9 columns]
```

```
df.sum()
```

```
ID                                                    460604
Name          BulbasaurIvysaurVenusaurCharmanderCharmeleonCh...
Form                                        Female  Male      ...
Type1         GrassGrassGrassFireFireFireWaterWaterWaterBugB...
Type2         PoisonPoisonPoison  Flying     FlyingPoisonPoi...
Total                                                 468947
HP                                                     73221
Attack                                                 84088
Defense                                                78021
Sp. Atk                                                76308
Sp. Def                                                75542
Speed                                                  71904
Generation                                              4655
dtype: object
```

```
df.groupby(['Type2']).sum().head(5)
```

```
              ID   Total     HP  Attack  ...  Sp. Atk  Sp. Def  Speed
Generation
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
Type2                                  ...

          211000  207355  33198   37217  ...    33130    33245  32470
2073
Bug         6095    3461    516     650  ...      540      649    449
56
Dark       12485   14196   2079    2961  ...     2177     1884   2065
139
Dragon     19697   18223   2970    3004  ...     3290     2701   2475
193
Electric    4494    5199    838     883  ...      817      731    608
59

[5 rows x 9 columns]
```

```
df.count()
```

```
ID            1045
Name          1045
Form          1045
Type1         1045
Type2         1045
Total         1045
HP            1045
Attack        1045
Defense       1045
Sp. Atk       1045
Sp. Def       1045
Speed         1045
Generation    1045
dtype: int64
```

```
df['count1'] = 0
df.groupby(['Type2']).count()['count1']
```

```
Type2
           492
Bug          9
Dark        27
Dragon      32
Electric    11
Fairy       41
Fighting    32
Fire        17
Flying     112
Ghost       26
Grass       28
Ground      39
Ice         20
Normal      11
Poison      38
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
Psychic      40
Rock         15
Steel        35
Water        20
Name: count1, dtype: int64
```

```
df['count1'] = 0
df.groupby(['Type1']).count()['count1']
```

```
Type1
Bug          81
Dark         46
Dragon       41
Electric     62
Fairy        22
Fighting     42
Fire         65
Flying        8
Ghost        42
Grass        91
Ground       41
Ice          37
Normal      115
Poison       41
Psychic      81
Rock         60
Steel        36
Water       134
Name: count1, dtype: int64
```

```
df['count1'] = 0
df.groupby(['Type1','Type2']).count()['count1']
df.columns
```

```
Index(['ID', 'Name', 'Form', 'Type1', 'Type2', 'Total', 'HP',
'Attack',
       'Defense', 'Sp. Atk', 'Sp. Def', 'Speed', 'Generation',
'count1'],
      dtype='object')
```

#Loading Data in Chunks

```
for df in pd.read_csv('poke_updated1.csv', chunksize=10):
  print(df)
```

```
   ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed  Generation
0   1   Bulbasaur       Grass  ...      65       65     45           1
1   2     Ivysaur       Grass  ...      80       80     60           1
2   3    Venusaur       Grass  ...     100      100     80           1
3   4  Charmander        Fire  ...      60       50     65           1
4   5  Charmeleon        Fire  ...      80       65     80           1
5   6   Charizard        Fire  ...     109       85    100           1
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
6   7    Squirtle       Water  ...      50       64     43           1
7   8   Wartortle       Water  ...      65       80     58           1
8   9   Blastoise       Water  ...      85      105     78           1
9  10    Caterpie         Bug  ...      20       20     45           1

[10 rows x 13 columns]
    ID        Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
10  11     Metapod          Bug  ...      25       25     30
1
11  12  Butterfree          Bug  ...      90       80     70
1
12  13      Weedle          Bug  ...      20       20     50
1
13  14      Kakuna          Bug  ...      25       25     35
1
14  15    Beedrill          Bug  ...      45       80     75
1
15  16      Pidgey       Normal  ...      35       35     56
1
16  17   Pidgeotto       Normal  ...      50       50     71
1
17  18     Pidgeot       Normal  ...      70       70    101
1
18  19     Rattata       Normal  ...      25       35     72
1
19  20    Raticate       Normal  ...      50       70     97
1

[10 rows x 13 columns]
    ID       Name    Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
20  21    Spearow            Normal  ...      31       31     70
1
21  22     Fearow            Normal  ...      61       61    100
1
22  23      Ekans            Poison  ...      40       54     55
1
23  24      Arbok            Poison  ...      65       79     80
1
24  25    Pikachu          Electric  ...      50       50     90
1
25  26     Raichu          Electric  ...      90       80    110
1
26  27  Sandshrew            Ground  ...      20       30     40
1
27  28  Sandslash            Ground  ...      45       55     65
1
28  29    Nidoran  Female    Poison  ...      40       40     41
1
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
29  30   Nidorina            Poison  ...      55       55     56
1

[10 rows x 13 columns]
    ID        Name  Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
30  31   Nidoqueen        Poison  ...      75       85     76
1
31  32     Nidoran  Male  Poison  ...      40       40     50
1
32  33    Nidorino        Poison  ...      55       55     65
1
33  34    Nidoking        Poison  ...      85       75     85
1
34  35    Clefairy         Fairy  ...      60       65     35
1
35  36    Clefable         Fairy  ...      95       90     60
1
36  37      Vulpix          Fire  ...      50       65     65
1
37  38   Ninetales          Fire  ...      81      100    100
1
38  39  Jigglypuff        Normal  ...      45       25     20
1
39  40  Wigglytuff        Normal  ...      85       50     45
1

[10 rows x 13 columns]
    ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
40  41      Zubat       Poison  ...      30       40     55
1
41  42     Golbat       Poison  ...      65       75     90
1
42  43     Oddish        Grass  ...      75       65     30
1
43  44      Gloom        Grass  ...      85       75     40
1
44  45  Vileplume        Grass  ...     110       90     50
1
45  46      Paras          Bug  ...      45       55     25
1
46  47   Parasect          Bug  ...      60       80     30
1
47  48    Venonat          Bug  ...      40       55     45
1
48  49   Venomoth          Bug  ...      90       75     90
1
49  50    Diglett       Ground  ...      35       45     95
1
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
[10 rows x 13 columns]
    ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
50  51    Dugtrio         Ground  ...      50       70    120
1
51  52     Meowth         Normal  ...      40       40     90
1
52  53    Persian         Normal  ...      65       65    115
1
53  54    Psyduck          Water  ...      65       50     55
1
54  55    Golduck          Water  ...      95       80     85
1
55  56     Mankey       Fighting  ...      35       45     70
1
56  57   Primeape       Fighting  ...      60       70     95
1
57  58  Growlithe           Fire  ...      70       50     60
1
58  59   Arcanine           Fire  ...     100       80     95
1
59  60    Poliwag          Water  ...      40       40     90
1

[10 rows x 13 columns]
    ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
60  61   Poliwhirl          Water  ...      50       50     90
1
61  62   Poliwrath          Water  ...      70       90     70
1
62  63        Abra        Psychic  ...     105       55     90
1
63  64     Kadabra        Psychic  ...     120       70    105
1
64  65    Alakazam        Psychic  ...     135       95    120
1
65  66      Machop       Fighting  ...      35       35     35
1
66  67     Machoke       Fighting  ...      50       60     45
1
67  68     Machamp       Fighting  ...      65       85     55
1
68  69  Bellsprout          Grass  ...      70       30     40
1
69  70  Weepinbell          Grass  ...      85       45     55
1

[10 rows x 13 columns]
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
    ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed
Generation
70  71  Victreebel       Grass  ...     100       70     70
1
71  72   Tentacool       Water  ...      50      100     70
1
72  73  Tentacruel       Water  ...      80      120    100
1
73  74     Geodude        Rock  ...      30       30     20
1
74  75    Graveler        Rock  ...      45       45     35
1
75  76       Golem        Rock  ...      55       65     45
1
76  77      Ponyta        Fire  ...      65       65     90
1
77  78    Rapidash        Fire  ...      80       80    105
1
78  79    Slowpoke       Water  ...      40       40     15
1
79  80     Slowbro       Water  ...     100       80     30
1

[10 rows x 13 columns]
    ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
80  81   Magnemite       Electric  ...      95       55     45
1
81  82    Magneton       Electric  ...     120       70     70
1
82  83  Farfetch'd         Normal  ...      58       62     60
1
83  84       Doduo         Normal  ...      35       35     75
1
84  85      Dodrio         Normal  ...      60       60    110
1
85  86        Seel          Water  ...      45       70     45
1
86  87     Dewgong          Water  ...      70       95     70
1
87  88      Grimer         Poison  ...      40       50     25
1
88  89         Muk         Poison  ...      65      100     50
1
89  90    Shellder          Water  ...      45       25     40
1

[10 rows x 13 columns]
     ID      Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
90   91  Cloyster          Water  ...      85       45     70
1
91   92    Gastly          Ghost  ...     100       35     80
1
92   93   Haunter          Ghost  ...     115       55     95
1
93   94    Gengar          Ghost  ...     130       75    110
1
94   95      Onix           Rock  ...      30       45     70
1
95   96   Drowzee        Psychic  ...      43       90     42
1
96   97     Hypno        Psychic  ...      73      115     67
1
97   98    Krabby          Water  ...      25       25     50
1
98   99   Kingler          Water  ...      50       50     75
1
99  100   Voltorb       Electric  ...      55       55    100
1

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
100  101   Electrode       Electric  ...      80       80    150
1
101  102   Exeggcute          Grass  ...      60       45     40
1
102  103   Exeggutor          Grass  ...     125       75     55
1
103  104      Cubone         Ground  ...      40       50     35
1
104  105     Marowak         Ground  ...      50       80     45
1
105  106   Hitmonlee       Fighting  ...      35      110     87
1
106  107  Hitmonchan       Fighting  ...      35      110     76
1
107  108   Lickitung         Normal  ...      60       75     30
1
108  109     Koffing         Poison  ...      60       45     35
1
109  110     Weezing         Poison  ...      85       70     60
1

[10 rows x 13 columns]
      ID        Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
110  111     Rhyhorn       Ground  ...      30       30     25
1
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
111  112      Rhydon       Ground  ...      45       45     40
1
112  113     Chansey       Normal  ...      35      105     50
1
113  114     Tangela        Grass  ...     100       40     60
1
114  115  Kangaskhan       Normal  ...      40       80     90
1
115  116      Horsea        Water  ...      70       25     60
1
116  117      Seadra        Water  ...      95       45     85
1
117  118     Goldeen        Water  ...      35       50     63
1
118  119     Seaking        Water  ...      65       80     68
1
119  120      Staryu        Water  ...      70       55     85
1

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
120  121     Starmie          Water  ...     100       85    115
1
121  122    Mr. Mime        Psychic  ...     100      120     90
1
122  123     Scyther            Bug  ...      55       80    105
1
123  124        Jynx            Ice  ...     115       95     95
1
124  125  Electabuzz       Electric  ...      95       85    105
1
125  126      Magmar           Fire  ...     100       85     93
1
126  127      Pinsir            Bug  ...      55       70     85
1
127  128      Tauros         Normal  ...      40       70    110
1
128  129    Magikarp          Water  ...      15       20     80
1
129  130    Gyarados          Water  ...      60      100     81
1

[10 rows x 13 columns]
      ID      Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
130  131    Lapras          Water  ...      85       95     60
1
131  132     Ditto         Normal  ...      48       48     48
1
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
132  133     Eevee         Normal  ...      45       65     55
1
133  134  Vaporeon          Water  ...     110       95     65
1
134  135   Jolteon       Electric  ...     110       95    130
1
135  136   Flareon           Fire  ...      95      110     65
1
136  137   Porygon         Normal  ...      85       75     40
1
137  138   Omanyte           Rock  ...      90       55     35
1
138  139   Omastar           Rock  ...     115       70     55
1
139  140    Kabuto           Rock  ...      55       45     55
1

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
140  141    Kabutops           Rock  ...      65       70     80
1
141  142  Aerodactyl           Rock  ...      60       75    130
1
142  143     Snorlax         Normal  ...      65      110     30
1
143  144    Articuno            Ice  ...      95      125     85
1
144  145      Zapdos       Electric  ...     125       90    100
1
145  146     Moltres           Fire  ...     125       85     90
1
146  147     Dratini         Dragon  ...      50       50     50
1
147  148   Dragonair         Dragon  ...      70       70     70
1
148  149   Dragonite         Dragon  ...     100      100     80
1
149  150      Mewtwo        Psychic  ...     154       90    130
1

[10 rows x 13 columns]
      ID        Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
150  151         Mew       Psychic  ...     100      100    100
1
151  152   Chikorita         Grass  ...      49       65     45
2
152  153     Bayleef         Grass  ...      63       80     60
2
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
153  154    Meganium         Grass  ...      83      100     80
2
154  155   Cyndaquil          Fire  ...      60       50     65
2
155  156     Quilava          Fire  ...      80       65     80
2
156  157  Typhlosion          Fire  ...     109       85    100
2
157  158    Totodile         Water  ...      44       48     43
2
158  159    Croconaw         Water  ...      59       63     58
2
159  160  Feraligatr         Water  ...      79       83     78
2

[10 rows x 13 columns]
      ID      Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
160  161   Sentret       Normal  ...      35       45     20
2
161  162    Furret       Normal  ...      45       55     90
2
162  163  Hoothoot       Normal  ...      36       56     50
2
163  164   Noctowl       Normal  ...      86       96     70
2
164  165    Ledyba          Bug  ...      40       80     55
2
165  166    Ledian          Bug  ...      55      110     85
2
166  167  Spinarak          Bug  ...      40       40     30
2
167  168   Ariados          Bug  ...      60       70     40
2
168  169    Crobat       Poison  ...      70       80    130
2
169  170  Chinchou        Water  ...      56       56     67
2

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
170  171    Lanturn          Water  ...      76       76     67
2
171  172      Pichu       Electric  ...      35       35     60
2
172  173     Cleffa          Fairy  ...      45       55     15
2
173  174  Igglybuff         Normal  ...      40       20     15
2
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
174  175     Togepi          Fairy  ...      40       65     20
2
175  176    Togetic          Fairy  ...      80      105     40
2
176  177       Natu        Psychic  ...      70       45     70
2
177  178       Xatu        Psychic  ...      95       70     95
2
178  179     Mareep       Electric  ...      65       45     35
2
179  180    Flaaffy       Electric  ...      80       60     45
2

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
180  181   Ampharos       Electric  ...     115       90     55
2
181  182  Bellossom          Grass  ...      90      100     50
2
182  183     Marill          Water  ...      20       50     40
2
183  184  Azumarill          Water  ...      60       80     50
2
184  185  Sudowoodo           Rock  ...      30       65     30
2
185  186   Politoed          Water  ...      90      100     70
2
186  187     Hoppip          Grass  ...      35       55     50
2
187  188   Skiploom          Grass  ...      45       65     80
2
188  189   Jumpluff          Grass  ...      55       95    110
2
189  190      Aipom         Normal  ...      40       55     85
2

[10 rows x 13 columns]
      ID        Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
190  191     Sunkern         Grass  ...      30       30     30
2
191  192    Sunflora         Grass  ...     105       85     30
2
192  193       Yanma           Bug  ...      75       45     95
2
193  194      Wooper         Water  ...      25       25     15
2
194  195    Quagsire         Water  ...      65       65     35
2
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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195  196      Espeon       Psychic  ...     130       95    110
2
196  197     Umbreon          Dark  ...      60      130     65
2
197  198     Murkrow          Dark  ...      85       42     91
2
198  199    Slowking         Water  ...     100      110     30
2
199  200  Misdreavus         Ghost  ...      85       85     85
2

[10 rows x 13 columns]
      ID        Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
200  201       Unown       Psychic  ...      72       48     48
2
201  202   Wobbuffet       Psychic  ...      33       58     33
2
202  203   Girafarig        Normal  ...      90       65     85
2
203  204      Pineco           Bug  ...      35       35     15
2
204  205  Forretress           Bug  ...      60       60     40
2
205  206   Dunsparce        Normal  ...      65       65     45
2
206  207      Gligar        Ground  ...      35       65     85
2
207  208     Steelix         Steel  ...      55       65     30
2
208  209    Snubbull         Fairy  ...      40       40     30
2
209  210    Granbull         Fairy  ...      60       60     45
2

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
210  211   Qwilfish        Water  ...      55       55     85
2
211  212     Scizor          Bug  ...      55       80     65
2
212  213    Shuckle          Bug  ...      10      230      5
2
213  214  Heracross          Bug  ...      40       95     85
2
214  215    Sneasel         Dark  ...      35       75    115
2
215  216  Teddiursa       Normal  ...      50       50     40
2
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
216  217   Ursaring       Normal  ...      75       75     55
2
217  218     Slugma         Fire  ...      70       40     20
2
218  219   Magcargo         Fire  ...      90       80     30
2
219  220     Swinub          Ice  ...      30       30     50
2

[10 rows x 13 columns]
      ID       Name Form  Type1  ... Sp. Atk  Sp. Def  Speed
Generation
220  221  Piloswine         Ice  ...      60       60     50
2
221  222    Corsola       Water  ...      65       95     35
2
222  223   Remoraid       Water  ...      65       35     65
2
223  224  Octillery       Water  ...     105       75     45
2
224  225   Delibird         Ice  ...      65       45     75
2
225  226    Mantine       Water  ...      80      140     70
2
226  227   Skarmory       Steel  ...      40       70     70
2
227  228   Houndour        Dark  ...      80       50     65
2
228  229   Houndoom        Dark  ...     110       80     95
2
229  230    Kingdra       Water  ...      95       95     85
2

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
230  231     Phanpy         Ground  ...      40       40     40
2
231  232    Donphan         Ground  ...      60       60     50
2
232  233   Porygon2         Normal  ...     105       95     60
2
233  234   Stantler         Normal  ...      85       65     85
2
234  235   Smeargle         Normal  ...      20       45     75
2
235  236    Tyrogue       Fighting  ...      35       35     35
2
236  237  Hitmontop       Fighting  ...      35      110     70
2
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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237  238   Smoochum            Ice  ...      85       65     65
2
238  239     Elekid       Electric  ...      65       55     95
2
239  240      Magby           Fire  ...      70       55     83
2

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
240  241    Miltank         Normal  ...      40       70    100
2
241  242    Blissey         Normal  ...      75      135     55
2
242  243     Raikou       Electric  ...     115      100    115
2
243  244      Entei           Fire  ...      90       75    100
2
244  245    Suicune          Water  ...      90      115     85
2
245  246   Larvitar           Rock  ...      45       50     41
2
246  247    Pupitar           Rock  ...      65       70     51
2
247  248  Tyranitar           Rock  ...      95      100     61
2
248  249      Lugia        Psychic  ...      90      154    110
2
249  250      Ho-oh           Fire  ...     110      154     90
2

[10 rows x 13 columns]
      ID       Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
250  251     Celebi       Psychic  ...     100      100    100
2
251  252    Treecko         Grass  ...      65       55     70
3
252  253    Grovyle         Grass  ...      85       65     95
3
253  254   Sceptile         Grass  ...     105       85    120
3
254  255    Torchic          Fire  ...      70       50     45
3
255  256  Combusken          Fire  ...      85       60     55
3
256  257   Blaziken          Fire  ...     110       70     80
3
257  258     Mudkip         Water  ...      50       50     40
3
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
258  259  Marshtomp         Water  ...      60       70     50
3
259  260   Swampert         Water  ...      85       90     60
3

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
260  261  Poochyena         Dark  ...      30       30     35
3
261  262  Mightyena         Dark  ...      60       60     70
3
262  263  Zigzagoon       Normal  ...      30       41     60
3
263  264    Linoone       Normal  ...      50       61    100
3
264  265    Wurmple          Bug  ...      20       30     20
3
265  266    Silcoon          Bug  ...      25       25     15
3
266  267  Beautifly          Bug  ...     100       50     65
3
267  268    Cascoon          Bug  ...      25       25     15
3
268  269     Dustox          Bug  ...      50       90     65
3
269  270      Lotad        Water  ...      40       50     30
3

[10 rows x 13 columns]
      ID      Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
270  271    Lombre         Water  ...      60       70     50
3
271  272  Ludicolo         Water  ...      90      100     70
3
272  273    Seedot         Grass  ...      30       30     30
3
273  274   Nuzleaf         Grass  ...      60       40     60
3
274  275   Shiftry         Grass  ...      90       60     80
3
275  276   Taillow        Normal  ...      30       30     85
3
276  277   Swellow        Normal  ...      75       50    125
3
277  278   Wingull         Water  ...      55       30     85
3
278  279  Pelipper         Water  ...      95       70     65
3
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
279  280     Ralts       Psychic  ...      45       35     40
3

[10 rows x 13 columns]
      ID        Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
280  281      Kirlia       Psychic  ...      65       55     50
3
281  282   Gardevoir       Psychic  ...     125      115     80
3
282  283     Surskit           Bug  ...      50       52     65
3
283  284  Masquerain           Bug  ...     100       82     80
3
284  285   Shroomish         Grass  ...      40       60     35
3
285  286     Breloom         Grass  ...      60       60     70
3
286  287     Slakoth        Normal  ...      35       35     30
3
287  288    Vigoroth        Normal  ...      55       55     90
3
288  289     Slaking        Normal  ...      95       65    100
3
289  290     Nincada           Bug  ...      30       30     40
3

[10 rows x 13 columns]
      ID      Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
290  291   Ninjask            Bug  ...      50       50    160
3
291  292  Shedinja            Bug  ...      30       30     40
3
292  293   Whismur         Normal  ...      51       23     28
3
293  294   Loudred         Normal  ...      71       43     48
3
294  295   Exploud         Normal  ...      91       73     68
3
295  296  Makuhita       Fighting  ...      20       30     25
3
296  297  Hariyama       Fighting  ...      40       60     50
3
297  298   Azurill         Normal  ...      20       40     20
3
298  299  Nosepass           Rock  ...      45       90     30
3
299  300    Skitty         Normal  ...      35       35     50
3
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
300  301   Delcatty         Normal  ...      55       55     90
3
301  302    Sableye           Dark  ...      65       65     50
3
302  303     Mawile          Steel  ...      55       55     50
3
303  304       Aron          Steel  ...      40       40     30
3
304  305     Lairon          Steel  ...      50       50     40
3
305  306     Aggron          Steel  ...      60       60     50
3
306  307   Meditite       Fighting  ...      40       55     60
3
307  308   Medicham       Fighting  ...      60       75     80
3
308  309  Electrike       Electric  ...      65       40     65
3
309  310  Manectric       Electric  ...     105       60    105
3

[10 rows x 13 columns]
      ID      Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
310  311    Plusle       Electric  ...      85       75     95
3
311  312     Minun       Electric  ...      75       85     95
3
312  313   Volbeat            Bug  ...      47       85     85
3
313  314  Illumise            Bug  ...      73       85     85
3
314  315   Roselia          Grass  ...     100       80     65
3
315  316    Gulpin         Poison  ...      43       53     40
3
316  317    Swalot         Poison  ...      73       83     55
3
317  318  Carvanha          Water  ...      65       20     65
3
318  319  Sharpedo          Water  ...      95       40     95
3
319  320   Wailmer          Water  ...      70       35     60
3

[10 rows x 13 columns]
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
      ID      Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
320  321   Wailord         Water  ...      90       45     60
3
321  322     Numel          Fire  ...      65       45     35
3
322  323  Camerupt          Fire  ...     105       75     40
3
323  324   Torkoal          Fire  ...      85       70     20
3
324  325    Spoink       Psychic  ...      70       80     60
3
325  326   Grumpig       Psychic  ...      90      110     80
3
326  327    Spinda        Normal  ...      60       60     60
3
327  328  Trapinch        Ground  ...      45       45     10
3
328  329   Vibrava        Ground  ...      50       50     70
3
329  330    Flygon        Ground  ...      80       80    100
3

[10 rows x 13 columns]
      ID      Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
330  331    Cacnea        Grass  ...      85       40     35
3
331  332  Cacturne        Grass  ...     115       60     55
3
332  333    Swablu       Normal  ...      40       75     50
3
333  334   Altaria       Dragon  ...      70      105     80
3
334  335  Zangoose       Normal  ...      60       60     90
3
335  336   Seviper       Poison  ...     100       60     65
3
336  337  Lunatone         Rock  ...      95       85     70
3
337  338   Solrock         Rock  ...      55       65     70
3
338  339  Barboach        Water  ...      46       41     60
3
339  340  Whiscash        Water  ...      76       71     60
3

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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340  341   Corphish        Water  ...      50       35     35
3
341  342  Crawdaunt        Water  ...      90       55     55
3
342  343     Baltoy       Ground  ...      40       70     55
3
343  344    Claydol       Ground  ...      70      120     75
3
344  345     Lileep         Rock  ...      61       87     23
3
345  346    Cradily         Rock  ...      81      107     43
3
346  347    Anorith         Rock  ...      40       50     75
3
347  348    Armaldo         Rock  ...      70       80     45
3
348  349     Feebas        Water  ...      10       55     80
3
349  350    Milotic        Water  ...     100      125     81
3

[10 rows x 13 columns]
      ID      Name        Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
350  351  Castform              Normal  ...      70       70     70
3
351  351  Castform  Sunny Form    Fire  ...      70       70     70
3
352  351  Castform  Rainy Form   Water  ...      70       70     70
3
353  351  Castform  Snowy Form     Ice  ...      70       70     70
3
354  352   Kecleon              Normal  ...      60      120     40
3
355  353   Shuppet               Ghost  ...      63       33     45
3
356  354   Banette               Ghost  ...      83       63     65
3
357  355   Duskull               Ghost  ...      30       90     25
3
358  356  Dusclops               Ghost  ...      60      130     25
3
359  357   Tropius               Grass  ...      72       87     51
3

[10 rows x 13 columns]
      ID      Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
360  358  Chimecho       Psychic  ...      95       90     65
3
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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361  359     Absol          Dark  ...      75       60     75
3
362  360    Wynaut       Psychic  ...      23       48     23
3
363  361   Snorunt           Ice  ...      50       50     50
3
364  362    Glalie           Ice  ...      80       80     80
3
365  363    Spheal           Ice  ...      55       50     25
3
366  364    Sealeo           Ice  ...      75       70     45
3
367  365   Walrein           Ice  ...      95       90     65
3
368  366  Clamperl         Water  ...      74       55     32
3
369  367   Huntail         Water  ...      94       75     52
3

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
370  368   Gorebyss        Water  ...     114       75     52
3
371  369  Relicanth        Water  ...      45       65     55
3
372  370    Luvdisc        Water  ...      40       65     97
3
373  371      Bagon       Dragon  ...      40       30     50
3
374  372    Shelgon       Dragon  ...      60       50     50
3
375  373  Salamence       Dragon  ...     110       80    100
3
376  374     Beldum        Steel  ...      35       60     30
3
377  375     Metang        Steel  ...      55       80     50
3
378  376  Metagross        Steel  ...      95       90     70
3
379  377   Regirock         Rock  ...      50      100     50
3

[10 rows x 13 columns]
      ID       Name          Form    Type1  ... Sp. Atk  Sp. Def
Speed  Generation
380  378     Regice                    Ice  ...     100      200
50           3
381  379  Registeel                  Steel  ...      75      150
50           3
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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382  380     Latias                Dragon  ...     110      130
110           3
383  381     Latios                Dragon  ...     130      110
110           3
384  382     Kyogre                 Water  ...     150      140
90            3
385  383    Groudon                Ground  ...     100       90
90            3
386  384   Rayquaza                Dragon  ...     150       90
95            3
387  385    Jirachi                 Steel  ...     100      100
100           3
388  386     Deoxys  Normal Forme  Psychic  ...     150       50
150           3
389  386     Deoxys  Attack Forme  Psychic  ...     180       20
150           3

[10 rows x 13 columns]
      ID       Name           Form  ... Sp. Def Speed  Generation
390  386     Deoxys  Defense Forme  ...     160    90           3
391  386     Deoxys    Speed Forme  ...      90   180           3
392  387    Turtwig                 ...      55    31           4
393  388     Grotle                 ...      65    36           4
394  389   Torterra                 ...      85    56           4
395  390   Chimchar                 ...      44    61           4
396  391   Monferno                 ...      52    81           4
397  392  Infernape                 ...      71   108           4
398  393     Piplup                 ...      56    40           4
399  394   Prinplup                 ...      76    50           4

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
400  395    Empoleon          Water  ...     111      101     60
4
401  396      Starly         Normal  ...      30       30     60
4
402  397    Staravia         Normal  ...      40       40     80
4
403  398   Staraptor         Normal  ...      50       60    100
4
404  399      Bidoof         Normal  ...      35       40     31
4
405  400     Bibarel         Normal  ...      55       60     71
4
406  401   Kricketot            Bug  ...      25       41     25
4
407  402  Kricketune            Bug  ...      55       51     65
4
408  403       Shinx       Electric  ...      40       34     45
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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4
409  404       Luxio       Electric  ...      60       49     60
4

[10 rows x 13 columns]
      ID       Name         Form     Type1  ... Sp. Atk  Sp. Def
Speed  Generation
410  405     Luxray               Electric  ...      95       79
70           4
411  406      Budew                  Grass  ...      50       70
55           4
412  407   Roserade                  Grass  ...     125      105
90           4
413  408   Cranidos                   Rock  ...      30       30
58           4
414  409  Rampardos                   Rock  ...      65       50
58           4
415  410   Shieldon                   Rock  ...      42       88
30           4
416  411  Bastiodon                   Rock  ...      47      138
30           4
417  412      Burmy                    Bug  ...      29       45
36           4
418  413   Wormadam  Plant Cloak       Bug  ...      79      105
36           4
419  413   Wormadam  Sandy Cloak       Bug  ...      59       85
36           4

[10 rows x 13 columns]
      ID       Name         Form     Type1  ... Sp. Atk  Sp. Def
Speed  Generation
420  413   Wormadam  Trash Cloak       Bug  ...      69       95
36           4
421  414     Mothim                    Bug  ...      94       50
66           4
422  415     Combee                    Bug  ...      30       42
70           4
423  416  Vespiquen                    Bug  ...      80      102
40           4
424  417  Pachirisu               Electric  ...      45       90
95           4
425  418     Buizel                  Water  ...      60       30
85           4
426  419   Floatzel                  Water  ...      85       50
115          4
427  420    Cherubi                  Grass  ...      62       53
35           4
428  421    Cherrim                  Grass  ...      87       78
85           4
429  422    Shellos                  Water  ...      57       62
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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34           4

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
430  423  Gastrodon        Water  ...      92       82     39
4
431  424    Ambipom       Normal  ...      60       66    115
4
432  425   Drifloon        Ghost  ...      60       44     70
4
433  426   Drifblim        Ghost  ...      90       54     80
4
434  427    Buneary       Normal  ...      44       56     85
4
435  428    Lopunny       Normal  ...      54       96    105
4
436  429  Mismagius        Ghost  ...     105      105    105
4
437  430  Honchkrow         Dark  ...     105       52     71
4
438  431    Glameow       Normal  ...      42       37     85
4
439  432    Purugly       Normal  ...      64       59    112
4

[10 rows x 13 columns]
      ID       Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
440  433  Chingling       Psychic  ...      65       50     45
4
441  434     Stunky        Poison  ...      41       41     74
4
442  435   Skuntank        Poison  ...      71       61     84
4
443  436    Bronzor         Steel  ...      24       86     23
4
444  437   Bronzong         Steel  ...      79      116     33
4
445  438     Bonsly          Rock  ...      10       45     10
4
446  439   Mime Jr.       Psychic  ...      70       90     60
4
447  440    Happiny        Normal  ...      15       65     30
4
448  441     Chatot        Normal  ...      92       42     91
4
449  442  Spiritomb         Ghost  ...      92      108     35
4
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
450  443       Gible         Dragon  ...      40       45     42
4
451  444      Gabite         Dragon  ...      50       55     82
4
452  445    Garchomp         Dragon  ...      80       85    102
4
453  446    Munchlax         Normal  ...      40       85      5
4
454  447       Riolu       Fighting  ...      35       40     60
4
455  448     Lucario       Fighting  ...     115       70     90
4
456  449  Hippopotas         Ground  ...      38       42     32
4
457  450   Hippowdon         Ground  ...      68       72     47
4
458  451     Skorupi         Poison  ...      30       55     65
4
459  452     Drapion         Poison  ...      60       75     95
4

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
460  453   Croagunk         Poison  ...      61       40     50
4
461  454  Toxicroak         Poison  ...      86       65     85
4
462  455  Carnivine          Grass  ...      90       72     46
4
463  456    Finneon          Water  ...      49       61     66
4
464  457   Lumineon          Water  ...      69       86     91
4
465  458    Mantyke          Water  ...      60      120     50
4
466  459     Snover          Grass  ...      62       60     40
4
467  460  Abomasnow          Grass  ...      92       85     60
4
468  461    Weavile           Dark  ...      45       85    125
4
469  462  Magnezone       Electric  ...     130       90     60
4

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
Generation
470  463  Lickilicky         Normal  ...      80       95     50
4
471  464   Rhyperior         Ground  ...      55       55     40
4
472  465   Tangrowth          Grass  ...     110       50     50
4
473  466  Electivire       Electric  ...      95       85     95
4
474  467   Magmortar           Fire  ...     125       95     83
4
475  468    Togekiss          Fairy  ...     120      115     80
4
476  469     Yanmega            Bug  ...     116       56     95
4
477  470     Leafeon          Grass  ...      60       65     95
4
478  471     Glaceon            Ice  ...     130       95     65
4
479  472     Gliscor         Ground  ...      45       75     95
4

[10 rows x 13 columns]
      ID       Name         Form     Type1  ... Sp. Atk  Sp. Def
Speed  Generation
480  473  Mamoswine                   Ice  ...      70       60
80           4
481  474  Porygon-Z                Normal  ...     135       75
90           4
482  475    Gallade               Psychic  ...      65      115
80           4
483  476  Probopass                  Rock  ...      75      150
40           4
484  477   Dusknoir                 Ghost  ...      65      135
45           4
485  478   Froslass                   Ice  ...      80       70
110          4
486  479     Rotom               Electric  ...      95       77
91           4
487  479     Rotom   Heat Rotom  Electric  ...     105      107
86           4
488  479     Rotom   Wash Rotom  Electric  ...     105      107
86           4
489  479     Rotom  Frost Rotom  Electric  ...     105      107
86           4

[10 rows x 13 columns]
      ID       Name           Form  ... Sp. Def Speed  Generation
490  479     Rotom      Fan Rotom  ...     107    86           4
491  479     Rotom      Mow Rotom  ...     107    86           4
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
492  480       Uxie                  ...     130    95           4
493  481    Mesprit                  ...     105    80           4
494  482      Azelf                  ...      70   115           4
495  483     Dialga                  ...     100    90           4
496  484     Palkia                  ...     120   100           4
497  485    Heatran                  ...     106    77           4
498  486  Regigigas                  ...     110   100           4
499  487   Giratina  Altered Forme   ...     120    90           4

[10 rows x 13 columns]
      ID       Name          Form    Type1  ... Sp. Atk  Sp. Def
Speed  Generation
500  487   Giratina  Origin Forme    Ghost  ...     120      100
90           4
501  488  Cresselia                Psychic  ...      75      130
85           4
502  489     Phione                  Water  ...      80       80
80           4
503  490    Manaphy                  Water  ...     100      100
100          4
504  491    Darkrai                   Dark  ...     135       90
125          4
505  492    Shaymin    Land Forme    Grass  ...     100      100
100          4
506  492    Shaymin     Sky Forme    Grass  ...     120       75
127          4
507  493     Arceus                 Normal  ...     120      120
120          4
508  494    Victini                Psychic  ...     100      100
100          5
509  495      Snivy                  Grass  ...      45       55
63           5

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
510  496    Servine        Grass  ...      60       75     83
5
511  497  Serperior        Grass  ...      75       95    113
5
512  498      Tepig         Fire  ...      45       45     45
5
513  499    Pignite         Fire  ...      70       55     55
5
514  500     Emboar         Fire  ...     100       65     65
5
515  501   Oshawott        Water  ...      63       45     45
5
516  502     Dewott        Water  ...      83       60     60
5
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
517  503   Samurott        Water  ...     108       70     70
5
518  504     Patrat       Normal  ...      35       39     42
5
519  505    Watchog       Normal  ...      60       69     77
5

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
520  506   Lillipup       Normal  ...      25       45     55
5
521  507    Herdier       Normal  ...      35       65     60
5
522  508  Stoutland       Normal  ...      45       90     80
5
523  509   Purrloin         Dark  ...      50       37     66
5
524  510    Liepard         Dark  ...      88       50    106
5
525  511    Pansage        Grass  ...      53       48     64
5
526  512   Simisage        Grass  ...      98       63    101
5
527  513    Pansear         Fire  ...      53       48     64
5
528  514   Simisear         Fire  ...      98       63    101
5
529  515    Panpour        Water  ...      53       48     64
5

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
530  516    Simipour          Water  ...      98       63    101
5
531  517       Munna         Psychic  ...      67       55     24
5
532  518    Musharna         Psychic  ...     107       95     29
5
533  519      Pidove          Normal  ...      36       30     43
5
534  520   Tranquill          Normal  ...      50       42     65
5
535  521    Unfezant          Normal  ...      65       55     93
5
536  522     Blitzle        Electric  ...      50       32     76
5
537  523   Zebstrika        Electric  ...      80       63    116
5
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
538  524  Roggenrola           Rock  ...      25       25     15
5
539  525     Boldore           Rock  ...      50       40     20
5

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
540  526    Gigalith           Rock  ...      60       80     25
5
541  527      Woobat        Psychic  ...      55       43     72
5
542  528     Swoobat        Psychic  ...      77       55    114
5
543  529     Drilbur         Ground  ...      30       45     68
5
544  530   Excadrill         Ground  ...      50       65     88
5
545  531      Audino         Normal  ...      60       86     50
5
546  532     Timburr       Fighting  ...      25       35     35
5
547  533     Gurdurr       Fighting  ...      40       50     40
5
548  534  Conkeldurr       Fighting  ...      55       65     45
5
549  535     Tympole          Water  ...      50       40     64
5

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
550  536   Palpitoad          Water  ...      65       55     69
5
551  537  Seismitoad          Water  ...      85       75     74
5
552  538       Throh       Fighting  ...      30       85     45
5
553  539        Sawk       Fighting  ...      30       75     85
5
554  540    Sewaddle            Bug  ...      40       60     42
5
555  541    Swadloon            Bug  ...      50       80     42
5
556  542    Leavanny            Bug  ...      70       80     92
5
557  543    Venipede            Bug  ...      30       39     57
5
558  544  Whirlipede            Bug  ...      40       79     47
5
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
559  545   Scolipede            Bug  ...      55       69    112
5

[10 rows x 13 columns]
      ID        Name               Form  ... Sp. Def Speed  Generation
560  546    Cottonee                     ...      50    66           5
561  547  Whimsicott                     ...      75   116           5
562  548     Petilil                     ...      50    30           5
563  549   Lilligant                     ...      75    90           5
564  550    Basculin   Red-Striped Form  ...      55    98           5
565  550    Basculin  Blue-Striped Form  ...      55    98           5
566  551     Sandile                     ...      35    65           5
567  552    Krokorok                     ...      45    74           5
568  553  Krookodile                     ...      70    92           5
569  554    Darumaka                     ...      45    50           5

[10 rows x 13 columns]
      ID        Name           Form  ... Sp. Def Speed  Generation
570  555  Darmanitan  Standard Mode  ...      55    95           5
571  555  Darmanitan       Zen Mode  ...     105    55           5
572  556    Maractus                 ...      67    60           5
573  557     Dwebble                 ...      35    55           5
574  558     Crustle                 ...      75    45           5
575  559     Scraggy                 ...      70    48           5
576  560     Scrafty                 ...     115    58           5
577  561    Sigilyph                 ...      80    97           5
578  562      Yamask                 ...      65    30           5
579  563  Cofagrigus                 ...     105    30           5

[10 rows x 13 columns]
      ID        Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
580  564    Tirtouga        Water  ...      53       45     22
5
581  565  Carracosta        Water  ...      83       65     32
5
582  566      Archen         Rock  ...      74       45     70
5
583  567    Archeops         Rock  ...     112       65    110
5
584  568    Trubbish       Poison  ...      40       62     65
5
585  569    Garbodor       Poison  ...      60       82     75
5
586  570       Zorua         Dark  ...      80       40     65
5
587  571     Zoroark         Dark  ...     120       60    105
5
588  572    Minccino       Normal  ...      40       40     75
5
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
589  573    Cinccino       Normal  ...      65       60    115
5

[10 rows x 13 columns]
      ID        Name Form    Type1  ... Sp. Atk  Sp. Def  Speed
Generation
590  574     Gothita       Psychic  ...      55       65     45
5
591  575   Gothorita       Psychic  ...      75       85     55
5
592  576  Gothitelle       Psychic  ...      95      110     65
5
593  577     Solosis       Psychic  ...     105       50     20
5
594  578     Duosion       Psychic  ...     125       60     30
5
595  579   Reuniclus       Psychic  ...     125       85     30
5
596  580    Ducklett         Water  ...      44       50     55
5
597  581      Swanna         Water  ...      87       63     98
5
598  582   Vanillite           Ice  ...      65       60     44
5
599  583   Vanillish           Ice  ...      80       75     59
5

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
600  584   Vanilluxe            Ice  ...     110       95     79
5
601  585    Deerling         Normal  ...      40       50     75
5
602  586    Sawsbuck         Normal  ...      60       70     95
5
603  587      Emolga       Electric  ...      75       60    103
5
604  588  Karrablast            Bug  ...      40       45     60
5
605  589  Escavalier            Bug  ...      60      105     20
5
606  590     Foongus          Grass  ...      55       55     15
5
607  591   Amoonguss          Grass  ...      85       80     30
5
608  592    Frillish          Water  ...      65       85     40
5
609  593   Jellicent          Water  ...      85      105     60
5
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
610  594   Alomomola          Water  ...      40       45     65
5
611  595      Joltik            Bug  ...      57       50     65
5
612  596  Galvantula            Bug  ...      97       60    108
5
613  597   Ferroseed          Grass  ...      24       86     10
5
614  598  Ferrothorn          Grass  ...      54      116     20
5
615  599       Klink          Steel  ...      45       60     30
5
616  600       Klang          Steel  ...      70       85     50
5
617  601   Klinklang          Steel  ...      70       85     90
5
618  602      Tynamo       Electric  ...      45       40     60
5
619  603   Eelektrik       Electric  ...      75       70     40
5

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
620  604  Eelektross       Electric  ...     105       80     50
5
621  605      Elgyem        Psychic  ...      85       55     30
5
622  606    Beheeyem        Psychic  ...     125       95     40
5
623  607     Litwick          Ghost  ...      65       55     20
5
624  608     Lampent          Ghost  ...      95       60     55
5
625  609  Chandelure          Ghost  ...     145       90     80
5
626  610        Axew         Dragon  ...      30       40     57
5
627  611     Fraxure         Dragon  ...      40       50     67
5
628  612     Haxorus         Dragon  ...      60       70     97
5
629  613     Cubchoo            Ice  ...      60       40     40
5

[10 rows x 13 columns]
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
630  614    Beartic            Ice  ...      70       80     50
5
631  615  Cryogonal            Ice  ...      95      135    105
5
632  616    Shelmet            Bug  ...      40       65     25
5
633  617   Accelgor            Bug  ...     100       60    145
5
634  618   Stunfisk         Ground  ...      81       99     32
5
635  619    Mienfoo       Fighting  ...      55       50     65
5
636  620   Mienshao       Fighting  ...      95       60    105
5
637  621  Druddigon         Dragon  ...      60       90     48
5
638  622     Golett         Ground  ...      35       50     35
5
639  623     Golurk         Ground  ...      55       80     55
5

[10 rows x 13 columns]
      ID        Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
640  624    Pawniard         Dark  ...      40       40     60
5
641  625     Bisharp         Dark  ...      60       70     70
5
642  626  Bouffalant       Normal  ...      40       95     55
5
643  627     Rufflet       Normal  ...      37       50     60
5
644  628    Braviary       Normal  ...      57       75     80
5
645  629     Vullaby         Dark  ...      45       65     60
5
646  630   Mandibuzz         Dark  ...      55       95     80
5
647  631     Heatmor         Fire  ...     105       66     65
5
648  632      Durant          Bug  ...      48       48    109
5
649  633       Deino         Dark  ...      45       50     38
5

[10 rows x 13 columns]
      ID       Name             Form  ... Sp. Def Speed  Generation
650  634   Zweilous                   ...      70    58           5
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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651  635  Hydreigon                    ...      90    98           5
652  636   Larvesta                    ...      55    60           5
653  637  Volcarona                    ...     105   100           5
654  638   Cobalion                    ...      72   108           5
655  639  Terrakion                    ...      90   108           5
656  640   Virizion                    ...     129   108           5
657  641   Tornadus  Incarnate Forme    ...      80   111           5
658  641   Tornadus    Therian Forme    ...      90   121           5
659  642  Thundurus  Incarnate Forme    ...      80   111           5

[10 rows x 13 columns]
      ID       Name              Form  ... Sp. Def Speed  Generation
660  642  Thundurus    Therian Forme  ...      80   101           5
661  643   Reshiram                  ...     120    90           5
662  644     Zekrom                  ...     100    90           5
663  645   Landorus  Incarnate Forme  ...      80   101           5
664  645   Landorus    Therian Forme  ...      80    91           5
665  646     Kyurem                  ...      90    95           5
666  646     Kyurem     Black Kyurem  ...      90    95           5
667  646     Kyurem     White Kyurem  ...     100    95           5
668  647     Keldeo    Ordinary Form  ...      90   108           5
669  647     Keldeo    Resolute Form  ...      90   108           5

[10 rows x 13 columns]
      ID       Name              Form  ... Sp. Def Speed  Generation
670  648   Meloetta        Aria Forme  ...     128    90           5
671  648   Meloetta   Pirouette Forme  ...      77   128           5
672  649   Genesect                    ...      95    99           5
673    3   Venusaur     Mega Venusaur  ...     120    80           6
674    6  Charizard  Mega Charizard X  ...      85   100           6
675    6  Charizard  Mega Charizard Y  ...     115   100           6
676    9  Blastoise    Mega Blastoise  ...     115    78           6
677   15   Beedrill     Mega Beedrill  ...      80   145           6
678   18    Pidgeot      Mega Pidgeot  ...      80   121           6
679   65   Alakazam     Mega Alakazam  ...     105   150           6

[10 rows x 13 columns]
      ID        Name              Form  ... Sp. Def Speed  Generation
680   80     Slowbro     Mega Slowbro  ...      80    30           6
681   94      Gengar      Mega Gengar  ...      95   130           6
682  115  Kangaskhan  Mega Kangaskhan  ...     100   100           6
683  127      Pinsir      Mega Pinsir  ...      90   105           6
684  130    Gyarados    Mega Gyarados  ...     130    81           6
685  142  Aerodactyl  Mega Aerodactyl  ...      95   150           6
686  150      Mewtwo    Mega Mewtwo X  ...     100   130           6
687  150      Mewtwo    Mega Mewtwo Y  ...     120   140           6
688  181    Ampharos    Mega Ampharos  ...     110    45           6
689  208     Steelix     Mega Steelix  ...      95    30           6

[10 rows x 13 columns]
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

	ID	Name	Form	...	Sp. Def	Speed	Generation
690	212	Scizor	Mega Scizor	...	100	75	6
691	214	Heracross	Mega Heracross	...	105	75	6
692	229	Houndoom	Mega Houndoom	...	90	115	6
693	248	Tyranitar	Mega Tyranitar	...	120	71	6
694	254	Sceptile	Mega Sceptile	...	85	145	6
695	257	Blaziken	Mega Blaziken	...	80	100	6
696	260	Swampert	Mega Swampert	...	110	70	6
697	282	Gardevoir	Mega Gardevoir	...	135	100	6
698	302	Sableye	Mega Sableye	...	115	20	6
699	303	Mawile	Mega Mawile	...	95	50	6

[10 rows x 13 columns]

	ID	Name	Form	...	Sp. Def	Speed	Generation
700	306	Aggron	Mega Aggron	...	80	50	6
701	308	Medicham	Mega Medicham	...	85	100	6
702	310	Manectric	Mega Manectric	...	80	135	6
703	319	Sharpedo	Mega Sharpedo	...	65	105	6
704	323	Camerupt	Mega Camerupt	...	105	20	6
705	334	Altaria	Mega Altaria	...	105	80	6
706	354	Banette	Mega Banette	...	83	75	6
707	359	Absol	Mega Absol	...	60	115	6
708	362	Glalie	Mega Glalie	...	80	100	6
709	373	Salamence	Mega Salamence	...	90	120	6

[10 rows x 13 columns]

	ID	Name	Form	...	Sp. Def	Speed	Generation
710	376	Metagross	Mega Metagross	...	110	110	6
711	380	Latias	Mega Latias	...	150	110	6
712	381	Latios	Mega Latios	...	120	110	6
713	382	Kyogre	Primal Kyogre	...	160	90	6
714	383	Groudon	Primal Groudon	...	90	90	6
715	384	Rayquaza	Mega Rayquaza	...	100	115	6
716	428	Lopunny	Mega Lopunny	...	96	135	6
717	445	Garchomp	Mega Garchomp	...	95	92	6
718	448	Lucario	Mega Lucario	...	70	112	6
719	460	Abomasnow	Mega Abomasnow	...	105	30	6

[10 rows x 13 columns]

	ID	Name	Form	...	Sp. Def	Speed	Generation
720	475	Gallade	Mega Gallade	...	115	110	6
721	531	Audino	Mega Audino	...	126	50	6
722	650	Chespin		...	45	38	6
723	651	Quilladin		...	58	57	6
724	652	Chesnaught		...	75	64	6
725	653	Fennekin		...	60	60	6
726	654	Braixen		...	70	73	6
727	655	Delphox		...	100	104	6
728	656	Froakie		...	44	71	6
729	657	Frogadier		...	56	97	6

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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[10 rows x 13 columns]
      ID         Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
730  658     Greninja        Water  ...     103       71    122
6
731  659     Bunnelby       Normal  ...      32       36     57
6
732  660    Diggersby       Normal  ...      50       77     78
6
733  661   Fletchling       Normal  ...      40       38     62
6
734  662  Fletchinder         Fire  ...      56       52     84
6
735  663   Talonflame         Fire  ...      74       69    126
6
736  664   Scatterbug          Bug  ...      27       25     35
6
737  665       Spewpa          Bug  ...      27       30     29
6
738  666     Vivillon          Bug  ...      90       50     89
6
739  667       Litleo         Fire  ...      73       54     72
6

[10 rows x 13 columns]
      ID     Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
740  668   Pyroar           Fire  ...     109       66    106
6
741  669  Flabébé          Fairy  ...      61       79     42
6
742  670  Floette          Fairy  ...      75       98     52
6
743  671  Florges          Fairy  ...     112      154     75
6
744  672   Skiddo          Grass  ...      62       57     52
6
745  673   Gogoat          Grass  ...      97       81     68
6
746  674  Pancham       Fighting  ...      46       48     43
6
747  675  Pangoro       Fighting  ...      69       71     58
6
748  676  Furfrou         Normal  ...      65       90    102
6
749  677   Espurr         Psychic  ...      63       60     68
6

[10 rows x 13 columns]
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
      ID        Name          Form  ... Sp. Def Speed  Generation
750  678    Meowstic          Male  ...      81   104           6
751  678    Meowstic        Female  ...      81   104           6
752  679     Honedge                ...      37    28           6
753  680    Doublade                ...      49    35           6
754  681   Aegislash  Shield Forme  ...     140    60           6
755  681   Aegislash   Blade Forme  ...      50    60           6
756  682    Spritzee                ...      65    23           6
757  683  Aromatisse                ...      89    29           6
758  684     Swirlix                ...      57    49           6
759  685    Slurpuff                ...      75    72           6

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
760  686       Inkay           Dark  ...      37       46     45
6
761  687     Malamar           Dark  ...      68       75     73
6
762  688     Binacle           Rock  ...      39       56     50
6
763  689  Barbaracle           Rock  ...      54       86     68
6
764  690      Skrelp         Poison  ...      60       60     30
6
765  691    Dragalge         Poison  ...      97      123     44
6
766  692   Clauncher          Water  ...      58       63     44
6
767  693   Clawitzer          Water  ...     120       89     59
6
768  694  Helioptile       Electric  ...      61       43     70
6
769  695   Heliolisk       Electric  ...     109       94    109
6

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
770  696     Tyrunt           Rock  ...      45       45     48
6
771  697  Tyrantrum           Rock  ...      69       59     71
6
772  698     Amaura           Rock  ...      67       63     46
6
773  699    Aurorus           Rock  ...      99       92     58
6
774  700    Sylveon          Fairy  ...     110      130     60
6
775  701   Hawlucha       Fighting  ...      74       63    118
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
6
776  702    Dedenne       Electric  ...      81       67    101
6
777  703    Carbink           Rock  ...      50      150     50
6
778  704      Goomy         Dragon  ...      55       75     40
6
779  705    Sliggoo         Dragon  ...      83      113     60
6

[10 rows x 13 columns]
      ID       Name          Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
780  706     Goodra                Dragon  ...     110      150     80
6
781  707     Klefki                 Steel  ...      80       87     75
6
782  708   Phantump                 Ghost  ...      50       60     38
6
783  709  Trevenant                 Ghost  ...      65       82     56
6
784  710  Pumpkaboo  Average Size   Ghost  ...      44       55     51
6
785  710  Pumpkaboo    Small Size   Ghost  ...      44       55     56
6
786  710  Pumpkaboo    Large Size   Ghost  ...      44       55     46
6
787  710  Pumpkaboo    Super Size   Ghost  ...      44       55     41
6
788  711  Gourgeist  Average Size   Ghost  ...      58       75     84
6
789  711  Gourgeist    Small Size   Ghost  ...      58       75     99
6

[10 rows x 13 columns]
      ID              Name        Form  ... Sp. Def Speed  Generation
790  711         Gourgeist  Large Size  ...      75    69           6
791  711         Gourgeist  Super Size  ...      75    54           6
792  712          Bergmite              ...      35    28           6
793  713           Avalugg              ...      46    28           6
794  714            Noibat              ...      40    55           6
795  715           Noivern              ...      80   123           6
796  716           Xerneas              ...      98    99           6
797  717           Yveltal              ...      98    99           6
798  718  Zygarde50% Forme              ...      95    95           6
799  719           Diancie              ...     150    50           6

[10 rows x 13 columns]
      ID       Name              Form  ... Sp. Def Speed  Generation
800  719    Diancie      Mega Diancie  ...     110   110           6
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
801  720      Hoopa    Hoopa Confined  ...     130    70           6
802  720      Hoopa     Hoopa Unbound  ...     130    80           6
803  721  Volcanion                    ...      90    70           6
804   19    Rattata    Alolan Rattata  ...      35    72           7
805   20   Raticate   Alolan Raticate  ...      80    77           7
806   25    Pikachu   Partner Pikachu  ...      60   120           7
807   26     Raichu     Alolan Raichu  ...      85   110           7
808   27  Sandshrew  Alolan Sandshrew  ...      35    40           7
809   28  Sandslash  Alolan Sandslash  ...      65    65           7

[10 rows x 13 columns]
     ID       Name              Form  ... Sp. Def Speed  Generation
810  37     Vulpix     Alolan Vulpix  ...      65    65           7
811  38  Ninetales  Alolan Ninetales  ...     100   109           7
812  50    Diglett    Alolan Diglett  ...      45    90           7
813  51    Dugtrio    Alolan Dugtrio  ...      70   110           7
814  52     Meowth     Alolan Meowth  ...      40    90           7
815  53    Persian    Alolan Persian  ...      65   115           7
816  74    Geodude    Alolan Geodude  ...      30    20           7
817  75   Graveler   Alolan Graveler  ...      45    35           7
818  76      Golem      Alolan Golem  ...      65    45           7
819  88     Grimer     Alolan Grimer  ...      50    25           7

[10 rows x 13 columns]
      ID              Name              Form  ... Sp. Def Speed
Generation
820   89               Muk        Alolan Muk  ...     100    50
7
821  103         Exeggutor  Alolan Exeggutor  ...      75    45
7
822  105           Marowak    Alolan Marowak  ...      80    45
7
823  133             Eevee     Partner Eevee  ...      85    75
7
824  658          Greninja      Ash-Greninja  ...      71   132
7
825  718  Zygarde10% Forme                    ...      85   115
7
826  718           Zygarde    Complete Forme  ...      95    85
7
827  722            Rowlet                    ...      50    42
7
828  723           Dartrix                    ...      70    52
7
829  724         Decidueye                    ...     100    70
7

[10 rows x 13 columns]
      ID        Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
830  725      Litten         Fire  ...      60       40     70
7
831  726    Torracat         Fire  ...      80       50     90
7
832  727  Incineroar         Fire  ...      80       90     60
7
833  728     Popplio        Water  ...      66       56     40
7
834  729     Brionne        Water  ...      91       81     50
7
835  730   Primarina        Water  ...     126      116     60
7
836  731     Pikipek       Normal  ...      30       30     65
7
837  732    Trumbeak       Normal  ...      40       50     75
7
838  733   Toucannon       Normal  ...      75       75     60
7
839  734     Yungoos       Normal  ...      30       30     45
7

[10 rows x 13 columns]
      ID          Name           Form  ... Sp. Def Speed  Generation
840  735      Gumshoos                ...      60    45           7
841  736       Grubbin                ...      45    46           7
842  737     Charjabug                ...      75    36           7
843  738      Vikavolt                ...      75    43           7
844  739    Crabrawler                ...      47    63           7
845  740  Crabominable                ...      67    43           7
846  741      Oricorio    Baile Style  ...      70    93           7
847  741      Oricorio  Pom-Pom Style  ...      70    93           7
848  741      Oricorio     Pa'u Style  ...      70    93           7
849  741      Oricorio    Sensu Style  ...      70    93           7

[10 rows x 13 columns]
      ID        Name                Form  ... Sp. Def Speed
Generation
850  742    Cutiefly                     ...      40    84
7
851  743    Ribombee                     ...      70   124
7
852  744    Rockruff                     ...      40    60
7
853  744    Rockruff  Own Tempo Rockruff  ...      40    60
7
854  745    Lycanroc         Midday Form  ...      65   112
7
855  745    Lycanroc       Midnight Form  ...      75    82
7
856  745    Lycanroc           Dusk Form  ...      65   110
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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7
857  746  Wishiwashi           Solo Form  ...      25    40
7
858  746  Wishiwashi         School Form  ...     135    30
7
859  747    Mareanie                      ...      52    45
7

[10 rows x 13 columns]
      ID       Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
860  748    Toxapex       Poison  ...      53      142     35
7
861  749    Mudbray       Ground  ...      45       55     45
7
862  750   Mudsdale       Ground  ...      55       85     35
7
863  751   Dewpider        Water  ...      40       72     27
7
864  752  Araquanid        Water  ...      50      132     42
7
865  753   Fomantis        Grass  ...      50       35     35
7
866  754   Lurantis        Grass  ...      80       90     45
7
867  755   Morelull        Grass  ...      65       75     15
7
868  756  Shiinotic        Grass  ...      90      100     30
7
869  757   Salandit       Poison  ...      71       40     77
7

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
870  758   Salazzle         Poison  ...     111       60    117
7
871  759    Stufful         Normal  ...      45       50     50
7
872  760     Bewear         Normal  ...      55       60     60
7
873  761  Bounsweet          Grass  ...      30       38     32
7
874  762    Steenee          Grass  ...      40       48     62
7
875  763   Tsareena          Grass  ...      50       98     72
7
876  764     Comfey          Fairy  ...      82      110    100
7
877  765   Oranguru         Normal  ...      90      110     60
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
7
878  766  Passimian       Fighting  ...      40       60     80
7
879  767     Wimpod            Bug  ...      20       30     80
7

[10 rows x 13 columns]
      ID        Name         Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
880  768   Golisopod                Bug  ...      60       90     40
7
881  769   Sandygast               Ghost  ...      70       45     15
7
882  770   Palossand               Ghost  ...     100       75     35
7
883  771   Pyukumuku               Water  ...      30      130      5
7
884  772  Type: Null              Normal  ...      95       95     59
7
885  773    Silvally              Normal  ...      95       95     95
7
886  774      Minior  Meteor Form    Rock  ...      60      100     60
7
887  774      Minior    Core Form    Rock  ...     100       60    120
7
888  775      Komala              Normal  ...      75       95     65
7
889  776  Turtonator                Fire  ...      91       85     36
7

[10 rows x 13 columns]
      ID        Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
890  777  Togedemaru       Electric  ...      40       73     96
7
891  778     Mimikyu          Ghost  ...      50      105     96
7
892  779     Bruxish          Water  ...      70       70     92
7
893  780      Drampa         Normal  ...     135       91     36
7
894  781    Dhelmise          Ghost  ...      86       90     40
7
895  782    Jangmo-o         Dragon  ...      45       45     45
7
896  783    Hakamo-o         Dragon  ...      65       70     65
7
897  784     Kommo-o         Dragon  ...     100      105     85
7
898  785   Tapu Koko       Electric  ...      95       75    130
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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7
899  786   Tapu Lele        Psychic  ...     130      115     95
7

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
900  787  Tapu Bulu          Grass  ...      85       95     75
7
901  788  Tapu Fini          Water  ...      95      130     85
7
902  789     Cosmog        Psychic  ...      29       31     37
7
903  790    Cosmoem        Psychic  ...      29      131     37
7
904  791   Solgaleo        Psychic  ...     113       89     97
7
905  792     Lunala        Psychic  ...     137      107     97
7
906  793   Nihilego           Rock  ...     127      131    103
7
907  794   Buzzwole            Bug  ...      53       53     79
7
908  795  Pheromosa            Bug  ...     137       37    151
7
909  796  Xurkitree       Electric  ...     173       71     83
7

[10 rows x 13 columns]
      ID        Name                Form  ... Sp. Def Speed
Generation
910  797  Celesteela                      ...     101    61
7
911  798     Kartana                      ...      31   109
7
912  799    Guzzlord                      ...      53    43
7
913  800    Necrozma                      ...      89    79
7
914  800    Necrozma   Dusk Mane Necrozma  ...     109    77
7
915  800    Necrozma  Dawn Wings Necrozma  ...     127    77
7
916  800    Necrozma       Ultra Necrozma  ...      97   129
7
917  801    Magearna                      ...     115    65
7
918  802   Marshadow                      ...      90   125
7
919  803     Poipole                      ...      67    73
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

7

[10 rows x 13 columns]

	ID	Name	Form	...	Sp. Def	Speed	Generation
920	804	Naganadel		...	73	121	7
921	805	Stakataka		...	101	13	7
922	806	Blacephalon		...	79	107	7
923	807	Zeraora		...	80	143	7
924	808	Meltan		...	35	34	7
925	809	Melmetal		...	65	34	7
926	52	Meowth	Galarian Meowth	...	40	40	8
927	77	Ponyta	Galarian Ponyta	...	65	90	8
928	78	Rapidash	Galarian Rapidash	...	80	105	8
929	79	Slowpoke	Galarian Slowpoke	...	40	15	8

[10 rows x 13 columns]

	ID	Name	Form	...	Sp. Def	Speed	Generation
930	80	Slowbro	Galarian Slowbro	...	70	30	8
931	83	Farfetch'd	Galarian Farfetch'd	...	62	55	8
932	110	Weezing	Galarian Weezing	...	70	60	8
933	122	Mr. Mime	Galarian Mr. Mime	...	90	100	8
934	144	Articuno	Galarian Articuno	...	100	95	8
935	145	Zapdos	Galarian Zapdos	...	90	100	8
936	146	Moltres	Galarian Moltres	...	125	90	8
937	199	Slowking	Galarian Slowking	...	110	30	8
938	222	Corsola	Galarian Corsola	...	100	30	8
939	263	Zigzagoon	Galarian Zigzagoon	...	41	60	8

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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[10 rows x 13 columns]
      ID        Name                    Form  ... Sp. Def Speed
Generation
940  264     Linoone        Galarian Linoone  ...      61   100
8
941  554    Darumaka       Galarian Darumaka  ...      45    50
8
942  555  Darmanitan  Galarian Standard Mode  ...      55    95
8
943  555  Darmanitan       Galarian Zen Mode  ...      55   135
8
944  562      Yamask         Galarian Yamask  ...      65    30
8
945  618    Stunfisk       Galarian Stunfisk  ...      84    32
8
946  810     Grookey                          ...      40    65
8
947  811    Thwackey                          ...      60    80
8
948  812   Rillaboom                          ...      70    85
8
949  813   Scorbunny                          ...      40    69
8

[10 rows x 13 columns]
      ID         Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
Generation
950  814       Raboot         Fire  ...      55       60     94
8
951  815    Cinderace         Fire  ...      65       75    119
8
952  816       Sobble        Water  ...      70       40     70
8
953  817     Drizzile        Water  ...      95       55     90
8
954  818     Inteleon        Water  ...     125       65    120
8
955  819      Skwovet       Normal  ...      35       35     25
8
956  820     Greedent       Normal  ...      55       75     20
8
957  821     Rookidee       Flying  ...      33       35     57
8
958  822  Corvisquire       Flying  ...      43       55     77
8
959  823  Corviknight       Flying  ...      53       85     67
8

[10 rows x 13 columns]
      ID        Name Form   Type1  ... Sp. Atk  Sp. Def  Speed
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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Generation
960  824     Blipbug          Bug  ...      25       45     45
8
961  825     Dottler          Bug  ...      50       90     30
8
962  826    Orbeetle          Bug  ...      80      120     90
8
963  827      Nickit         Dark  ...      47       52     50
8
964  828     Thievul         Dark  ...      87       92     90
8
965  829  Gossifleur        Grass  ...      40       60     10
8
966  830    Eldegoss        Grass  ...      80      120     60
8
967  831      Wooloo       Normal  ...      40       45     48
8
968  832     Dubwool       Normal  ...      60       90     88
8
969  833     Chewtle        Water  ...      38       38     44
8

[10 rows x 13 columns]
      ID       Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
970  834    Drednaw          Water  ...      48       68     74
8
971  835     Yamper       Electric  ...      40       50     26
8
972  836    Boltund       Electric  ...      90       60    121
8
973  837   Rolycoly           Rock  ...      40       50     30
8
974  838     Carkol           Rock  ...      60       70     50
8
975  839  Coalossal           Rock  ...      80       90     30
8
976  840     Applin          Grass  ...      40       40     20
8
977  841    Flapple          Grass  ...      95       60     70
8
978  842   Appletun          Grass  ...     100       80     30
8
979  843  Silicobra         Ground  ...      35       50     46
8

[10 rows x 13 columns]
      ID         Name          Form  ... Sp. Def Speed  Generation
980  844   Sandaconda                ...      70    71           8
981  845    Cramorant                ...      95    85           8
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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982  846     Arrokuda                ...      30    66           8
983  847  Barraskewda                ...      50   136           8
984  848        Toxel                ...      35    40           8
985  849   Toxtricity  Low Key Form  ...      70    75           8
986  849   Toxtricity    Amped Form  ...      70    75           8
987  850   Sizzlipede                ...      50    45           8
988  851  Centiskorch                ...      90    65           8
989  852    Clobbopus                ...      50    32           8

[10 rows x 13 columns]
      ID         Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
990  853    Grapploct       Fighting  ...      70       80     42
8
991  854     Sinistea          Ghost  ...      74       54     50
8
992  855  Polteageist          Ghost  ...     134      114     70
8
993  856      Hatenna        Psychic  ...      56       53     39
8
994  857      Hattrem        Psychic  ...      86       73     49
8
995  858    Hatterene        Psychic  ...     136      103     29
8
996  859     Impidimp           Dark  ...      55       40     50
8
997  860      Morgrem           Dark  ...      75       55     70
8
998  861   Grimmsnarl           Dark  ...      95       75     60
8
999  862    Obstagoon           Dark  ...      60       81     95
8

[10 rows x 13 columns]
       ID         Name Form     Type1  ... Sp. Atk  Sp. Def  Speed
Generation
1000  863  Perrserker          Steel  ...      50       60     50
8
1001  864     Cursola          Ghost  ...     145      130     30
8
1002  865  Sirfetch'd       Fighting  ...      68       82     65
8
1003  866    Mr. Rime        Psychic  ...     110      100     70
8
1004  867   Runerigus         Ground  ...      50      105     30
8
1005  868     Milcery          Fairy  ...      50       61     34
8
1006  869    Alcremie          Fairy  ...     110      121     64
8
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Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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1007  870     Falinks       Fighting  ...      70       60     75
8
1008  871  Pincurchin       Electric  ...      91       85     15
8
1009  872        Snom            Ice  ...      45       30     20
8

[10 rows x 13 columns]
       ID         Name             Form  ... Sp. Def Speed  Generation
1010  873     Frosmoth                   ...      90    65           8
1011  874  Stonjourner                   ...      20    70           8
1012  875       Eiscue         Ice Face  ...      90    50           8
1013  875       Eiscue       Noice Face  ...      50   130           8
1014  876     Indeedee             Male  ...      95    95           8
1015  876     Indeedee           Female  ...     105    85           8
1016  877      Morpeko  Full Belly Mode  ...      58    97           8
1017  877      Morpeko      Hangry Mode  ...      58    97           8
1018  878       Cufant                   ...      49    40           8
1019  879   Copperajah                   ...      69    30           8

[10 rows x 13 columns]
       ID       Name                 Form  ... Sp. Def Speed
Generation
1020  880  Dracozolt                       ...      70    75
8
1021  881  Arctozolt                       ...      80    55
8
1022  882  Dracovish                       ...      80    75
8
1023  883  Arctovish                       ...      90    55
8
1024  884  Duraludon                       ...      50    85
8
1025  885     Dreepy                       ...      30    82
8
1026  886   Drakloak                       ...      50   102
8
1027  887  Dragapult                       ...      75   142
8
1028  888     Zacian         Crowned Sword  ...     115   148
8
1029  888     Zacian  Hero of Many Battles  ...     115   138
8

[10 rows x 13 columns]
       ID       Name                 Form  ... Sp. Def Speed
Generation
1030  889  Zamazenta        Crowned Shield  ...     145   128
8
1031  889  Zamazenta  Hero of Many Battles  ...     115   138
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

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8
1032  890  Eternatus                          ...      95   130
8
1033  890  Eternatus              Eternamax   ...     250   130
8
1034  891      Kubfu                          ...      50    72
8
1035  892    Urshifu   Single Strike Style   ...      60    97
8
1036  892    Urshifu    Rapid Strike Style   ...      60    97
8
1037  893     Zarude                          ...      95   105
8
1038  894  Regieleki                          ...      50   200
8
1039  895  Regidrago                          ...      50    80
8

[10 rows x 13 columns]
       ID       Name          Form  ... Sp. Def Speed  Generation
1040  896  Glastrier                ...     110    30           8
1041  897  Spectrier                ...      80   130           8
1042  898    Calyrex                ...      80    80           8
1043  898    Calyrex     Ice Rider  ...     130    50           8
1044  898    Calyrex  Shadow Rider  ...     100   150           8

[5 rows x 13 columns]

df

       ID       Name          Form  ... Sp. Def Speed  Generation
1040  896  Glastrier                ...     110    30           8
1041  897  Spectrier                ...      80   130           8
1042  898    Calyrex                ...      80    80           8
1043  898    Calyrex     Ice Rider  ...     130    50           8
1044  898    Calyrex  Shadow Rider  ...     100   150           8

[5 rows x 13 columns]
```

```
df1 = pd.DataFrame()
for df in pd.read_csv('poke_updated1.csv', chunksize=10):
  df1 = pd.concat([df1 ,df])
df1.head(15)
```

```
    ID        Name Form  Type1  ... Sp. Atk  Sp. Def  Speed
Generation
0    1   Bulbasaur       Grass  ...      65       65     45
1
1    2     Ivysaur       Grass  ...      80       80     60
1
2    3    Venusaur       Grass  ...     100      100     80
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
1
3    4  Charmander        Fire  ...      60       50     65
1
4    5  Charmeleon        Fire  ...      80       65     80
1
5    6   Charizard        Fire  ...     109       85    100
1
6    7    Squirtle       Water  ...      50       64     43
1
7    8   Wartortle       Water  ...      65       80     58
1
8    9   Blastoise       Water  ...      85      105     78
1
9   10    Caterpie         Bug  ...      20       20     45
1
10  11     Metapod         Bug  ...      25       25     30
1
11  12  Butterfree         Bug  ...      90       80     70
1
12  13      Weedle         Bug  ...      20       20     50
1
13  14      Kakuna         Bug  ...      25       25     35
1
14  15    Beedrill         Bug  ...      45       80     75
1

[15 rows x 13 columns]
```

#Stack & Unstack in Pandas

```
col=pd.MultiIndex.from_product([['2010', '2015'], [' Literacy'
'GDP']])

data=([[80,7,88,6], [90,8,92,7], [89,7,91,8], [87,6,93,8]])

df6=pd.DataFrame(data,index=['India','USA','Russia','China'])

df6
```

```
         0  1   2  3
India   80  7  88  6
USA     90  8  92  7
Russia  89  7  91  8
China   87  6  93  8
```

```
st_df = df6.stack()
st_df
```

```
India   0    80
        1     7
        2    88
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

```
        3     6
USA     0    90
        1     8
        2    92
        3     7
Russia  0    89
        1     7
        2    91
        3     8
China   0    87
        1     6
        2    93
        3     8
dtype: int64
```

```
unst_df = st_df.unstack()
unst_df
```

```
         0  1   2  3
India   80  7  88  6
USA     90  8  92  7
Russia  89  7  91  8
China   87  6  93  8
```

```
unst_df = unst_df.unstack()
unst_df
```

```
0  India     80
   USA       90
   Russia    89
   China     87
1  India      7
   USA        8
   Russia     7
   China      6
2  India     88
   USA       92
   Russia    91
   China     93
3  India      6
   USA        7
   Russia     8
   China      8
dtype: int64
```

```
unst_df = unst_df.unstack()
unst_df
```

```
   India  USA  Russia  China
0     80   90      89     87
1      7    8       7      6
```

Anuurag A Edlabadkar
anuurag.edlabadkar@gmail.com
ĉ 8669619546 ŵ 9890781832

2	88	92	91	93
3	6	7	8	8