LAB 01

September 8, 2021

1 LAB 01

1.0.1 Python, Exploratory Data Analysis, and Pandas

Description: This data set includes data on FIFA 2019 players attributes like Age, Nationality, Overall, Potential, Club, Value, Wage, Preferred Foot, International Reputation, Weak Foot, Skill Moves, Work Rate, Position, Jersey Number, Joined, Loaned From, Contract Valid Until, Height, Weight, and more. There is categorical and numerical data.

LOAD THE DATAFRAME

```
[25]: import pandas as pd
      import matplotlib.pyplot as plt
      import seaborn as sns
      df = pd.read_csv('data.csv',index_col=0)
```

1.1 Using describe() and info(), to find the following information:

Average age of the players

The name of the oldest player

The highest salary (You will need to convert string to int for these, consider using the strip()method, then casting it as an int)

```
[26]: df
```

```
[26]:            ID               Name  Age  \
      0       158023          L. Messi   31
      1        20801  Cristiano Ronaldo   33
      2       190871          Neymar Jr   26
      3       193080             De Gea   27
      4       192985       K. De Bruyne   27
      ...        ...                ...  ...
      18202   238813       J. Lundstram   19
      18203   243165  N. Christoffersson   19
      18204   241638          B. Worman   16
```

```
18205  246268       D. Walker-Rice   17
18206  246269           G. Nugent     16


                                              Photo Nationality  \
0         https://cdn.sofifa.org/players/4/19/158023.png    Argentina
1          https://cdn.sofifa.org/players/4/19/20801.png     Portugal
2         https://cdn.sofifa.org/players/4/19/190871.png       Brazil
3         https://cdn.sofifa.org/players/4/19/193080.png        Spain
4         https://cdn.sofifa.org/players/4/19/192985.png      Belgium
…                                                   …          …
18202     https://cdn.sofifa.org/players/4/19/238813.png      England
18203     https://cdn.sofifa.org/players/4/19/243165.png       Sweden
18204     https://cdn.sofifa.org/players/4/19/241638.png      England
18205     https://cdn.sofifa.org/players/4/19/246268.png      England
18206     https://cdn.sofifa.org/players/4/19/246269.png      England


                                     Flag   Overall   Potential  \
0          https://cdn.sofifa.org/flags/52.png        94          94
1          https://cdn.sofifa.org/flags/38.png        94          94
2          https://cdn.sofifa.org/flags/54.png        92          93
3          https://cdn.sofifa.org/flags/45.png        91          93
4           https://cdn.sofifa.org/flags/7.png        91          92
…                                          …        …           …
18202      https://cdn.sofifa.org/flags/14.png        47          65
18203      https://cdn.sofifa.org/flags/46.png        47          63
18204      https://cdn.sofifa.org/flags/14.png        47          67
18205      https://cdn.sofifa.org/flags/14.png        47          66
18206      https://cdn.sofifa.org/flags/14.png        46          66


                       Club                              Club Logo  \
0              FC Barcelona      https://cdn.sofifa.org/teams/2/light/241.png
1                  Juventus       https://cdn.sofifa.org/teams/2/light/45.png
2        Paris Saint-Germain       https://cdn.sofifa.org/teams/2/light/73.png
3          Manchester United       https://cdn.sofifa.org/teams/2/light/11.png
4            Manchester City       https://cdn.sofifa.org/teams/2/light/10.png
…                          …                                      …
18202         Crewe Alexandra      https://cdn.sofifa.org/teams/2/light/121.png
18203          Trelleborgs FF      https://cdn.sofifa.org/teams/2/light/703.png
18204         Cambridge United     https://cdn.sofifa.org/teams/2/light/1944.png
18205         Tranmere Rovers     https://cdn.sofifa.org/teams/2/light/15048.png
18206         Tranmere Rovers     https://cdn.sofifa.org/teams/2/light/15048.png


        … Composure  Marking  StandingTackle  SlidingTackle   GKDiving  \
0       …      96.0     33.0            28.0           26.0        6.0
1       …      95.0     28.0            31.0           23.0        7.0
2       …      94.0     27.0            24.0           33.0        9.0
3       …      68.0     15.0            21.0           13.0       90.0
```

2

```
4        …     88.0    68.0         58.0         51.0        15.0
…    …       …      …               …           …           …
18202    …     45.0    40.0         48.0         47.0        10.0
18203    …     42.0    22.0         15.0         19.0        10.0
18204    …     41.0    32.0         13.0         11.0         6.0
18205    …     46.0    20.0         25.0         27.0        14.0
18206    …     43.0    40.0         43.0         50.0        10.0

        GKHandling  GKKicking GKPositioning GKReflexes Release Clause
0            11.0       15.0          14.0        8.0        €226.5M
1            11.0       15.0          14.0       11.0        €127.1M
2             9.0       15.0          15.0       11.0        €228.1M
3            85.0       87.0          88.0       94.0        €138.6M
4            13.0        5.0          10.0       13.0        €196.4M
…             …          …             …          …             …
18202        13.0        7.0           8.0        9.0         €143K
18203         9.0        9.0           5.0       12.0         €113K
18204         5.0       10.0           6.0       13.0         €165K
18205         6.0       14.0           8.0        9.0         €143K
18206        15.0        9.0          12.0        9.0         €165K

[18207 rows x 88 columns]
```

2 AVERAGE AGE OF PLAYERS

```
[27]: df.Age.describe()
```

```
[27]: count    18207.000000
      mean        25.122206
      std          4.669943
      min         16.000000
      25%         21.000000
      50%         25.000000
      75%         28.000000
      max         45.000000
      Name: Age, dtype: float64
```

As you can see here, the average age of the players are approximately 25.12

2.1 THE NAME OF OLDEST PLAYER

```
[28]: df.groupby('Age', as_index=False).Name.max()
```

```
[28]:      Age              Name
      0    16   Y. Verschaeren
      1    17      Zhu Chenjie
      2    18    Álvaro García
      3    19  Álex Dos Santos
      4    20        Óscar Gil
      5    21      Ángel López
      6    22     Óscar Pinchi
      7    23    Óscar Valentín
      8    24    Óscar Whalley
      9    25     Ángel Galván
      10   26   Édundo Oliveira
      11   27      Óscar Plano
      12   28           Álvaro
      13   29            Ícaro
      14   30     Éverton Luiz
      15   31            Ángel
      16   32            Élton
      17   33      Zhao Hejing
      18   34   Z. Ljubijankič
      19   35      Íñigo López
      20   36        Zhang Lie
      21   37        Zheng Zhi
      22   38          Y. Endo
      23   39         Zhou Ting
      24   40       Y. Nakazawa
      25   41         M. Tyler
      26   42      S. Narazaki
      27   44        T. Warner
      28   45          O. Pérez
```

The age of the oldest player according to the code result above would be 45 and the name of him is O.Pérez.

```
[ ]:
```

```
[29]: df.columns #What are the columns that is listed in the dataset fifa
```

```
[29]: Index(['ID', 'Name', 'Age', 'Photo', 'Nationality', 'Flag', 'Overall',
             'Potential', 'Club', 'Club Logo', 'Value', 'Wage', 'Special',
             'Preferred Foot', 'International Reputation', 'Weak Foot',
             'Skill Moves', 'Work Rate', 'Body Type', 'Real Face', 'Position',
             'Jersey Number', 'Joined', 'Loaned From', 'Contract Valid Until',
             'Height', 'Weight', 'LS', 'ST', 'RS', 'LW', 'LF', 'CF', 'RF', 'RW',
             'LAM', 'CAM', 'RAM', 'LM', 'LCM', 'CM', 'RCM', 'RM', 'LWB', 'LDM',
             'CDM', 'RDM', 'RWB', 'LB', 'LCB', 'CB', 'RCB', 'RB', 'Crossing',
             'Finishing', 'HeadingAccuracy', 'ShortPassing', 'Volleys', 'Dribbling',
```

```
       'Curve', 'FKAccuracy', 'LongPassing', 'BallControl', 'Acceleration',
       'SprintSpeed', 'Agility', 'Reactions', 'Balance', 'ShotPower',
       'Jumping', 'Stamina', 'Strength', 'LongShots', 'Aggression',
       'Interceptions', 'Positioning', 'Vision', 'Penalties', 'Composure',
       'Marking', 'StandingTackle', 'SlidingTackle', 'GKDiving', 'GKHandling',
       'GKKicking', 'GKPositioning', 'GKReflexes', 'Release Clause'],
      dtype='object')
```

2.2 HIGHEST SALARY

```
[30]: df['Wage_without_Euro_Signs'] = df['Wage'].str.replace('€', '')
      df['String Salary'] = df['Wage_without_Euro_Signs'].str.replace('K', '0000')
      df['Int_Salary'] = df['String Salary'].astype(int)
      df
      df.Int_Salary.describe()
```

```
[30]: count    1.820700e+04
      mean     9.731312e+04
      std      2.199929e+05
      min      0.000000e+00
      25%      1.000000e+04
      50%      3.000000e+04
      75%      9.000000e+04
      max      5.650000e+06
      Name: Int_Salary, dtype: float64
```
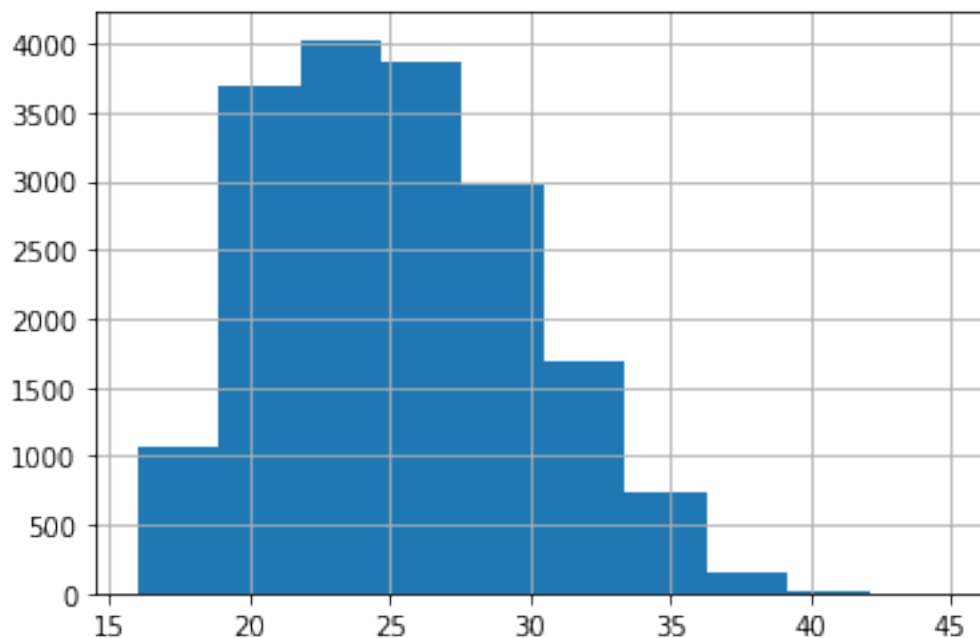
The highest salary would be 5.6 * 10^6

2.3 HISTOGRAM

```
[31]: df['Age'].hist(bins=10)
```

```
[31]: <matplotlib.axes._subplots.AxesSubplot at 0x7fe7be3c4f50>
```

The following histogram is of Age and as you can see it is mostly skewed to the right which means the average would be larger than the median

2.4 CORRELATION

```
[32]: corr = df.corr()
```

```
[33]: corr
```

```
[33]:                              ID       Age    Overall  Potential   Special  \
      ID                     1.000000 -0.739208 -0.417025   0.047074 -0.231352
      Age                   -0.739208  1.000000  0.452350  -0.253312  0.236695
      Overall               -0.417025  0.452350  1.000000   0.660939  0.606960
      Potential              0.047074 -0.253312  0.660939   1.000000  0.383727
      Special               -0.231352  0.236695  0.606960   0.383727  1.000000
      International Reputation -0.356191  0.253765  0.499491   0.372993  0.292208
      Weak Foot             -0.075784  0.059867  0.212015   0.162346  0.341855
      Skill Moves           -0.056914  0.027649  0.414463   0.354290  0.763412
      Jersey Number          0.182074 -0.241156 -0.218931  -0.010474 -0.133716
      Crossing              -0.131994  0.130545  0.394972   0.246319  0.866417
      Finishing             -0.082323  0.068660  0.332515   0.243355  0.724244
      HeadingAccuracy       -0.106815  0.147183  0.340776   0.200988  0.644421
      ShortPassing          -0.136279  0.132894  0.502550   0.369189  0.906729
      Volleys               -0.159915  0.142472  0.391338   0.254906  0.773974
      Dribbling             -0.030340  0.010166  0.372426   0.315019  0.874274
```

6

Curve	-0.169511	0.143276	0.419491	0.279944	0.851900
FKAccuracy	-0.199549	0.193467	0.396892	0.230544	0.806414
LongPassing	-0.186764	0.181310	0.483909	0.321437	0.846302
BallControl	-0.100184	0.084969	0.460197	0.354396	0.912107
Acceleration	0.133236	-0.158667	0.196869	0.234608	0.654337
SprintSpeed	0.132437	-0.151682	0.210647	0.236771	0.645963
Agility	-0.019897	-0.019395	0.264952	0.222310	0.699673
Reactions	-0.408617	0.453124	0.850045	0.513425	0.597169
Balance	0.048463	-0.089877	0.103160	0.138025	0.586788
ShotPower	-0.166133	0.156947	0.441118	0.288318	0.835277
Jumping	-0.169369	0.177167	0.264435	0.109151	0.321846
Stamina	-0.053895	0.097793	0.365656	0.202563	0.792762
Strength	-0.259756	0.332798	0.349326	0.075769	0.192990
LongShots	-0.161549	0.155096	0.420795	0.266740	0.840049
Aggression	-0.228329	0.265190	0.395470	0.171174	0.666236
Interceptions	-0.160602	0.197845	0.321326	0.154908	0.561676
Positioning	-0.088330	0.082443	0.356493	0.245616	0.824307
Vision	-0.215170	0.187422	0.498894	0.348141	0.761992
Penalties	-0.140657	0.139535	0.341429	0.224281	0.734533
Composure	-0.384473	0.391023	0.727655	0.440008	0.752331
Marking	-0.110198	0.142817	0.286505	0.162801	0.561866
StandingTackle	-0.085929	0.119745	0.252629	0.143564	0.538802
SlidingTackle	-0.068409	0.103089	0.222811	0.128980	0.506968
GKDiving	-0.105594	0.101277	-0.025937	-0.053446	-0.674637
GKHandling	-0.111149	0.106419	-0.025062	-0.054672	-0.673625
GKKicking	-0.106652	0.104964	-0.029372	-0.059061	-0.670254
GKPositioning	-0.118250	0.116402	-0.017674	-0.052589	-0.668272
GKReflexes	-0.105778	0.103313	-0.023276	-0.053341	-0.673238
Int_Salary	-0.204610	0.141145	0.571926	0.486413	0.347835

	International Reputation	Weak Foot	Skill Moves \
ID	-0.356191	-0.075784	-0.056914
Age	0.253765	0.059867	0.027649
Overall	0.499491	0.212015	0.414463
Potential	0.372993	0.162346	0.354290
Special	0.292208	0.341855	0.763412
International Reputation	1.000000	0.128317	0.208153
Weak Foot	0.128317	1.000000	0.340721
Skill Moves	0.208153	0.340721	1.000000
Jersey Number	-0.077298	-0.035410	-0.035194
Crossing	0.191770	0.307925	0.741035
Finishing	0.178373	0.357416	0.743439
HeadingAccuracy	0.157483	0.183238	0.443005
ShortPassing	0.242803	0.322133	0.730363
Volleys	0.243089	0.357340	0.745077
Dribbling	0.179041	0.352658	0.839757
Curve	0.233681	0.345468	0.771052

FKAccuracy	0.223564	0.330472	0.701068
LongPassing	0.239525	0.277174	0.622342
BallControl	0.217946	0.356383	0.818051
Acceleration	0.044319	0.261435	0.652356
SprintSpeed	0.044070	0.248822	0.624098
Agility	0.100869	0.302062	0.681765
Reactions	0.445614	0.201341	0.377044
Balance	0.050076	0.254022	0.578459
ShotPower	0.227772	0.332855	0.718237
Jumping	0.120931	0.069752	0.107553
Stamina	0.094780	0.232094	0.570226
Strength	0.131280	-0.008470	-0.041475
LongShots	0.213960	0.355967	0.752980
Aggression	0.173327	0.131524	0.347795
Interceptions	0.129586	0.053097	0.209604
Positioning	0.183003	0.346896	0.781248
Vision	0.284600	0.337897	0.674057
Penalties	0.218620	0.330252	0.690434
Composure	0.392787	0.278132	0.586836
Marking	0.115208	0.065673	0.241428
StandingTackle	0.092846	0.042646	0.210517
SlidingTackle	0.079176	0.026105	0.178607
GKDiving	0.004526	-0.231905	-0.621675
GKHandling	0.003942	-0.233098	-0.619755
GKKicking	0.000651	-0.229395	-0.616990
GKPositioning	0.006904	-0.231298	-0.618853
GKReflexes	0.003444	-0.232574	-0.621925
Int_Salary	0.668635	0.140849	0.263205

	Jersey Number	Crossing	…	Composure	Marking \
ID	0.182074	-0.131994	…	-0.384473	-0.110198
Age	-0.241156	0.130545	…	0.391023	0.142817
Overall	-0.218931	0.394972	…	0.727655	0.286505
Potential	-0.010474	0.246319	…	0.440008	0.162801
Special	-0.133716	0.866417	…	0.752331	0.561866
International Reputation	-0.077298	0.191770	…	0.392787	0.115208
Weak Foot	-0.035410	0.307925	…	0.278132	0.065673
Skill Moves	-0.035194	0.741035	…	0.586836	0.241428
Jersey Number	1.000000	-0.076585	…	-0.167523	-0.142474
Crossing	-0.076585	1.000000	…	0.575446	0.443101
Finishing	-0.006639	0.655300	…	0.533414	0.024218
HeadingAccuracy	-0.091688	0.469507	…	0.507208	0.583123
ShortPassing	-0.100241	0.809660	…	0.685137	0.559576
Volleys	-0.026731	0.690339	…	0.595281	0.120919
Dribbling	-0.028021	0.856647	…	0.597498	0.336072
Curve	-0.055428	0.833105	…	0.616532	0.289529
FKAccuracy	-0.068843	0.761107	…	0.585120	0.297976

LongPassing	-0.117424	0.756527	…	0.645797	0.587106
BallControl	-0.073210	0.840916	…	0.674881	0.452705
Acceleration	-0.004395	0.668365	…	0.347427	0.195369
SprintSpeed	-0.015069	0.645578	…	0.351607	0.212575
Agility	-0.034158	0.698320	…	0.432511	0.167122
Reactions	-0.192622	0.389574	…	0.685558	0.283607
Balance	0.008009	0.618280	…	0.310763	0.178695
ShotPower	-0.053860	0.705503	…	0.634495	0.296944
Jumping	-0.104179	0.135486	…	0.252353	0.279196
Stamina	-0.127822	0.672633	…	0.523112	0.587782
Strength	-0.158411	-0.029403	…	0.280522	0.333334
LongShots	-0.046174	0.742065	…	0.616102	0.215510
Aggression	-0.146907	0.473570	…	0.515776	0.723961
Interceptions	-0.158526	0.427739	…	0.397450	0.888349
Positioning	-0.025422	0.783185	…	0.580498	0.202597
Vision	-0.078050	0.684948	…	0.636280	0.176760
Penalties	-0.028023	0.645805	…	0.551801	0.152296
Composure	-0.167523	0.575446	…	1.000000	0.384081
Marking	-0.142474	0.443101	…	0.384081	1.000000
StandingTackle	-0.133285	0.428963	…	0.351726	0.906541
SlidingTackle	-0.124610	0.409961	…	0.317492	0.895908
GKDiving	0.004807	-0.663053	…	-0.378750	-0.550978
GKHandling	0.001543	-0.660193	…	-0.375720	-0.552263
GKKicking	0.001162	-0.659767	…	-0.374897	-0.549498
GKPositioning	-0.002736	-0.660160	…	-0.370234	-0.546670
GKReflexes	0.003255	-0.662539	…	-0.377626	-0.551290
Int_Salary	-0.086561	0.232834	…	0.419597	0.145594

	StandingTackle	SlidingTackle	GKDiving	GKHandling \
ID	-0.085929	-0.068409	-0.105594	-0.111149
Age	0.119745	0.103089	0.101277	0.106419
Overall	0.252629	0.222811	-0.025937	-0.025062
Potential	0.143564	0.128980	-0.053446	-0.054672
Special	0.538802	0.506968	-0.674637	-0.673625
International Reputation	0.092846	0.079176	0.004526	0.003942
Weak Foot	0.042646	0.026105	-0.231905	-0.233098
Skill Moves	0.210517	0.178607	-0.621675	-0.619755
Jersey Number	-0.133285	-0.124610	0.004807	0.001543
Crossing	0.428963	0.409961	-0.663053	-0.660193
Finishing	-0.033023	-0.071811	-0.588752	-0.587145
HeadingAccuracy	0.561063	0.533643	-0.750417	-0.749888
ShortPassing	0.541131	0.508644	-0.729785	-0.728024
Volleys	0.072788	0.035457	-0.590808	-0.588668
Dribbling	0.301251	0.273963	-0.754625	-0.753181
Curve	0.261481	0.232869	-0.606286	-0.603141
FKAccuracy	0.279153	0.247903	-0.556605	-0.553644
LongPassing	0.587430	0.562230	-0.596820	-0.594999

BallControl	0.417566	0.384802	-0.788444	-0.786797
Acceleration	0.163000	0.157565	-0.593008	-0.594866
SprintSpeed	0.178214	0.171980	-0.597677	-0.599694
Agility	0.129204	0.116686	-0.527756	-0.528482
Reactions	0.255399	0.228355	-0.062967	-0.061940
Balance	0.154045	0.152470	-0.504727	-0.506102
ShotPower	0.256403	0.220237	-0.654117	-0.654099
Jumping	0.260645	0.260261	-0.192700	-0.193692
Stamina	0.570055	0.544702	-0.701467	-0.698556
Strength	0.332159	0.304849	-0.111012	-0.109660
LongShots	0.172331	0.133603	-0.612381	-0.610739
Aggression	0.744216	0.721384	-0.575843	-0.576114
Interceptions	0.941471	0.928282	-0.485585	-0.486324
Positioning	0.158060	0.124228	-0.679480	-0.677699
Vision	0.146460	0.113228	-0.381899	-0.377807
Penalties	0.101920	0.066693	-0.620069	-0.618968
Composure	0.351726	0.317492	-0.378750	-0.375720
Marking	0.906541	0.895908	-0.550978	-0.552263
StandingTackle	1.000000	0.974659	-0.530989	-0.532160
SlidingTackle	0.974659	1.000000	-0.509337	-0.510591
GKDiving	-0.530989	-0.509337	1.000000	0.970280
GKHandling	-0.532160	-0.510591	0.970280	1.000000
GKKicking	-0.531092	-0.509378	0.965685	0.965239
GKPositioning	-0.527792	-0.505792	0.969864	0.969408
GKReflexes	-0.531474	-0.509425	0.973320	0.970264
Int_Salary	0.126291	0.111025	-0.025595	-0.025177

	GKKicking	GKPositioning	GKReflexes	Int_Salary
ID	-0.106652	-0.118250	-0.105778	-0.204610
Age	0.104964	0.116402	0.103313	0.141145
Overall	-0.029372	-0.017674	-0.023276	0.571926
Potential	-0.059061	-0.052589	-0.053341	0.486413
Special	-0.670254	-0.668272	-0.673238	0.347835
International Reputation	0.000651	0.006904	0.003444	0.668635
Weak Foot	-0.229395	-0.231298	-0.232574	0.140849
Skill Moves	-0.616990	-0.618853	-0.621925	0.263205
Jersey Number	0.001162	-0.002736	0.003255	-0.086561
Crossing	-0.659767	-0.660160	-0.662539	0.232834
Finishing	-0.583268	-0.584852	-0.586913	0.217439
HeadingAccuracy	-0.746444	-0.744443	-0.748895	0.187967
ShortPassing	-0.724381	-0.723782	-0.728721	0.296691
Volleys	-0.584954	-0.586131	-0.588670	0.257357
Dribbling	-0.749816	-0.751348	-0.754341	0.237150
Curve	-0.600266	-0.603540	-0.604960	0.259550
FKAccuracy	-0.549911	-0.552641	-0.554920	0.236385
LongPassing	-0.591453	-0.591561	-0.595887	0.276762
BallControl	-0.783423	-0.783607	-0.787939	0.277615

```
Acceleration          -0.592127    -0.592143    -0.593201    0.124985
SprintSpeed           -0.597320    -0.596498    -0.597837    0.130315
Agility               -0.527164    -0.526983    -0.528899    0.156287
Reactions             -0.065927    -0.055031    -0.059961    0.495560
Balance               -0.503970    -0.503652    -0.505974    0.088873
ShotPower             -0.649403    -0.651409    -0.653475    0.258351
Jumping               -0.195282    -0.189079    -0.192050    0.129691
Stamina               -0.696729    -0.696073    -0.699670    0.177562
Strength              -0.110253    -0.103878    -0.107497    0.139360
LongShots             -0.605952    -0.607200    -0.610087    0.249084
Aggression            -0.573607    -0.571201    -0.575142    0.194581
Interceptions         -0.485394    -0.481279    -0.486036    0.157415
Positioning           -0.674393    -0.675569    -0.678582    0.226775
Vision                -0.374737    -0.375775    -0.381158    0.315395
Penalties             -0.614006    -0.617074    -0.619099    0.222440
Composure             -0.374897    -0.370234    -0.377626    0.419597
Marking               -0.549498    -0.546670    -0.551290    0.145594
StandingTackle        -0.531092    -0.527792    -0.531474    0.126291
SlidingTackle         -0.509378    -0.505792    -0.509425    0.111025
GKDiving               0.965685     0.969864     0.973320   -0.025595
GKHandling             0.965239     0.969408     0.970264   -0.025177
GKKicking              1.000000     0.964336     0.966337   -0.028325
GKPositioning          0.964336     1.000000     0.970130   -0.025489
GKReflexes             0.966337     0.970130     1.000000   -0.025992
Int_Salary            -0.028325    -0.025489    -0.025992    1.000000

[44 rows x 44 columns]
```
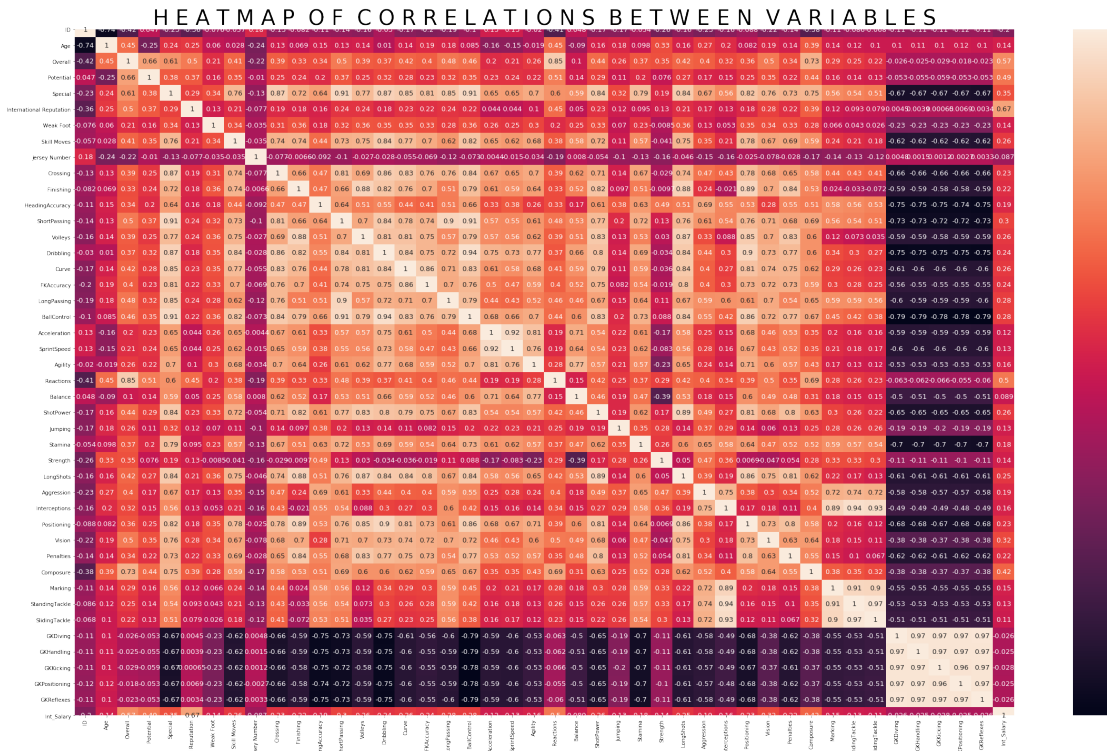
Some correlation that is positive may be weak foot and skill moves (34 percent), vision and skill moves (67 percent), special and skill moves (71 percent). The negative correlation or something that has NO association would be id and age (-73 percent) and Id and special with -23 percent and weak foot and jersey number with -3 percent.

I would personally look at vision and skill moves because if you have a good vision your moves would be very precise and good at point. Another one I would use is weak move and skill moves because how it correlates with each other qould be quiet interesting to see why something is causing another one to happen like for example how a weak move has skills .

2.4.1 HEATMAP

```
[42]: plt.figure(figsize=(40, 24))
      sns.heatmap(corr, annot=True, annot_kws={'size':13})
      plt.title("H E A T M A P   O F   C O R R E L A T I O N S   B E T W E E N   V A R I␣
       ↪A B L E S", fontsize =40)
```

```
[42]: Text(0.5, 1, 'H E A T M A P   O F   C O R R E L A T I O N S   B E T W E E N   V A R
      I A B L E S')
```

HEATMAP OF CORRELATIONS BETWEEN VARIABLES

Note: The reason I created 1 heatmap was that I wanted to see the correlation between each variable.

2.5 2 OTHER VISUALIZATIONS FOR COMPARING FIELDS THAT HAVE CORRELATION WITHIN EACH OTHER

```
[46]: df.columns
```

```
[46]: Index(['ID', 'Name', 'Age', 'Photo', 'Nationality', 'Flag', 'Overall',
             'Potential', 'Club', 'Club Logo', 'Value', 'Wage', 'Special',
             'Preferred Foot', 'International Reputation', 'Weak Foot',
             'Skill Moves', 'Work Rate', 'Body Type', 'Real Face', 'Position',
             'Jersey Number', 'Joined', 'Loaned From', 'Contract Valid Until',
             'Height', 'Weight', 'LS', 'ST', 'RS', 'LW', 'LF', 'CF', 'RF', 'RW',
             'LAM', 'CAM', 'RAM', 'LM', 'LCM', 'CM', 'RCM', 'RM', 'LWB', 'LDM',
             'CDM', 'RDM', 'RWB', 'LB', 'LCB', 'CB', 'RCB', 'RB', 'Crossing',
             'Finishing', 'HeadingAccuracy', 'ShortPassing', 'Volleys', 'Dribbling',
             'Curve', 'FKAccuracy', 'LongPassing', 'BallControl', 'Acceleration',
             'SprintSpeed', 'Agility', 'Reactions', 'Balance', 'ShotPower',
             'Jumping', 'Stamina', 'Strength', 'LongShots', 'Aggression',
             'Interceptions', 'Positioning', 'Vision', 'Penalties', 'Composure',
             'Marking', 'StandingTackle', 'SlidingTackle', 'GKDiving', 'GKHandling',
```
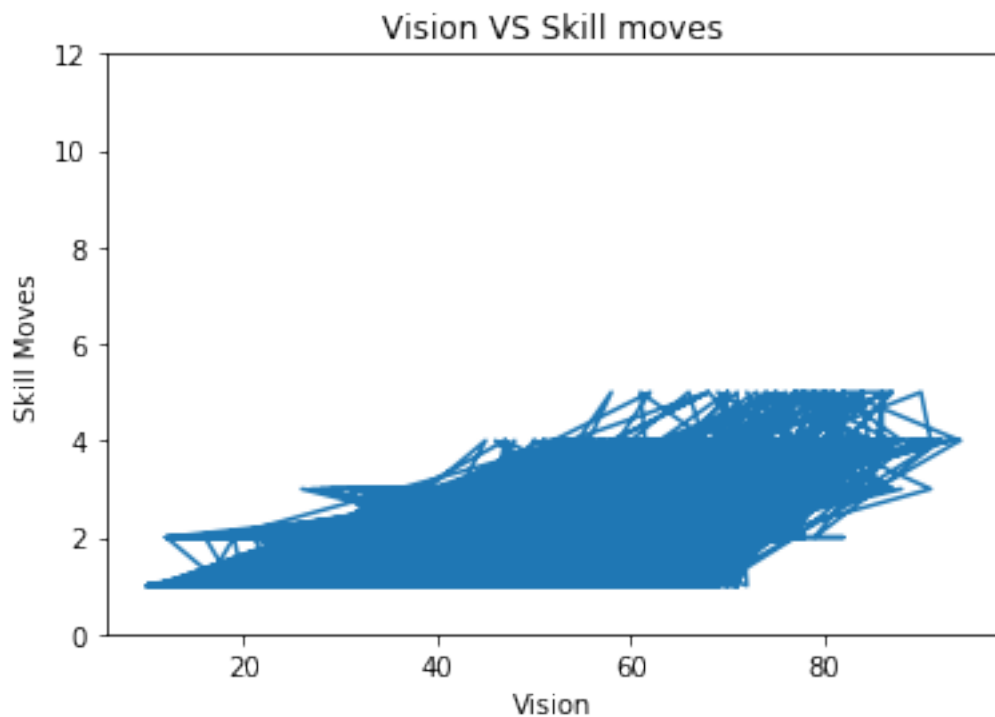
```
        'GKKicking', 'GKPositioning', 'GKReflexes', 'Release Clause',
        'Wage_without_Euro_Signs', 'String Salary', 'Int_Salary'],
       dtype='object')
```

[75]:
```python
#df

plt.plot(df['Vision'],df['Skill Moves'])

plt.ylim(0, 12)
plt.xlabel('Vision')
plt.ylabel('Skill Moves')
plt.title('Vision VS Skill moves')
# as you can see it is positively correlated
```
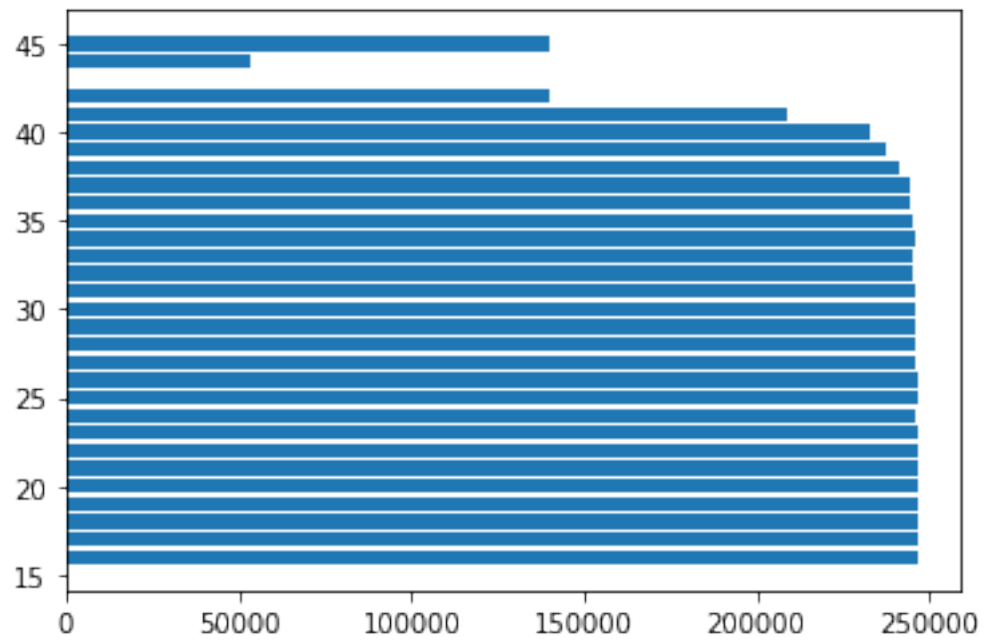
[75]: Text(0.5, 1.0, 'Vision VS Skill moves')

as you can see theres somewhat a minor correlation like 34 percent

[73]:
```python
plt.barh(df['Age'], df['ID'])
plt.ylim(0, 12)
plt.xlabel('AGE')
plt.ylabel('ID')
plt.title('AGE VS ID')
```

```
plt.show()
```


as you can see there is somewhat a constant correlation or 0 percent of correlation

[ ]: