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Import Libraries

In [31]:
```
import pandas as pd
from pandas import ExcelWriter
from pandas import ExcelFile
from matplotlib import pyplot as plt
import seaborn as sns
```

Read Excel File

In [32]:
```
df = pd.read_excel('biometrics.xlsx', sheet_name='Sheet1')
```

Print the data from excel file

In [33]:
```
print(df)
```

```
    Unnamed: 0  tars1  tars2  head  aede1  aede2  aede3     species
0            1    191    131    53    150     15    104   Concinna
1            2    185    134    50    147     13    105   Concinna
2            3    200    137    52    144     14    102   Concinna
3            4    173    127    50    144     16     97   Concinna
4            5    171    118    49    153     13    106   Concinna
5            6    160    118    47    140     15     99   Concinna
6            7    188    134    54    151     14     98   Concinna
7            8    186    129    51    143     14    110   Concinna
8            9    174    131    52    144     14    116   Concinna
9           10    163    115    47    142     15     95   Concinna
10          11    190    143    52    141     13     99   Concinna
11          12    174    131    50    150     15    105   Concinna
12          13    201    130    51    148     13    110   Concinna
13          14    190    133    53    154     15    106   Concinna
14          15    182    130    51    147     14    105   Concinna
15          16    184    131    51    137     14     95   Concinna
16          17    177    127    49    134     15    105   Concinna
17          18    178    126    53    157     14    116   Concinna
18          19    210    140    54    149     13    107   Concinna
19          20    182    121    51    147     13    111   Concinna
20          21    186    136    56    148     14    111   Concinna
21          22    158    141    58    145      8    107  Heptapot.
22          23    146    119    51    140     11    111  Heptapot.
23          24    151    130    51    140     11    113  Heptapot.
24          25    122    113    45    131     10    102  Heptapot.
25          26    138    121    53    139     11    106  Heptapot.
26          27    132    115    49    139     10     98  Heptapot.
27          28    131    127    51    136     12    107  Heptapot.
28          29    135    123    50    129     11    107  Heptapot.
29          30    125    119    51    140     10    110  Heptapot.
..         ...    ...    ...   ...    ...    ...    ...         ...
44          45    211    122    49    123     16     95   Heikert.
45          46    201    114    47    130     14     74   Heikert.
46          47    242    131    54    131     16     90   Heikert.
47          48    184    108    43    116     16     75   Heikert.
48          49    211    118    51    122     15     90   Heikert.
49          50    217    122    49    127     15     73   Heikert.
50          51    223    127    51    132     16     84   Heikert.
51          52    208    125    50    125     14     88   Heikert.
52          53    199    124    46    119     13     78   Heikert.
53          54    211    129    49    122     13     83   Heikert.
54          55    218    126    49    120     15     85   Heikert.
55          56    203    122    49    119     14     73   Heikert.
56          57    192    116    49    123     15     90   Heikert.
57          58    195    123    47    125     15     77   Heikert.
58          59    211    122    48    125     14     73   Heikert.
59          60    187    123    47    129     14     75   Heikert.
60          61    192    109    46    130     13     90   Heikert.
61          62    223    124    53    129     13     82   Heikert.
62          63    188    114    48    122     12     74   Heikert.
63          64    216    120    50    129     15     86   Heikert.
64          65    185    114    46    124     15     92   Heikert.
65          66    178    119    47    120     13     78   Heikert.
```

```
66          67    187    111    49    119     16     66   Heikert.
67          68    187    112    49    119     14     55   Heikert.
68          69    201    130    54    133     13     84   Heikert.
69          70    187    120    47    121     15     86   Heikert.
70          71    210    119    50    128     14     68   Heikert.
71          72    196    114    51    129     14     86   Heikert.
72          73    195    110    49    124     13     89   Heikert.
73          74    187    124    49    129     14     88   Heikert.

[74 rows x 8 columns]
```

Descriptive statistics for tars1

In [34]:
```
print('Sum of tars1 =', df['tars1'].sum())
print('Mean of tars1 =', df['tars1'].mean())
print('Median of tars1 =', df['tars1'].median())
print('Mode of tars1 =', df['tars1'].mode())
print('Standard deviation of tars1 =', df['tars1'].std())
```

```
Sum of tars1 = 13117
Mean of tars1 = 177.25675675675674
Median of tars1 = 185.5
Mode of tars1 = 0    187
dtype: int64
Standard deviation of tars1 = 29.41254080253133
```

Descriptive statistics for tars2

In [35]:
```
print('Sum of tars2 =', df['tars2'].sum())
print('Mean of tars2 =', df['tars2'].mean())
print('Median of tars2 =', df['tars2'].median())
print('Mode of tars2 =', df['tars2'].mode())
print('Standard deviation of tars2 =', df['tars2'].std())
```

```
Sum of tars2 = 9173
Mean of tars2 = 123.95945945945945
Median of tars2 = 123.0
Mode of tars2 = 0    131
dtype: int64
Standard deviation of tars2 = 8.481146196104852
```

Descriptive statistics for head

In [36]:
```
print('Sum of head =', df['head'].sum())
print('Mean of head =', df['head'].mean())
print('Median of head =', df['head'].median())
print('Mode of head =', df['head'].mode())
print('Standard deviation of head =', df['head'].std())
```

```
Sum of head = 3726
Mean of head = 50.351351351351354
Median of head = 50.5
Mode of head = 0    49
1    51
dtype: int64
Standard deviation of head = 2.751997692498795
```

Descriptive statistics for aede1

In [37]:
```
print('Sum of aede1 =', df['aede1'].sum())
print('Mean of aede1 =', df['aede1'].mean())
print('Median of aede1 =', df['aede1'].median())
print('Mode of aede1 =', df['aede1'].mode())
print('Standard deviation of aede1 =', df['aede1'].std())
```

```
Sum of aede1 = 9976
Mean of aede1 = 134.8108108108108
Median of aede1 = 136.5
Mode of aede1 = 0    129
1    140
dtype: int64
Standard deviation of aede1 = 10.350932292966666
```

Descriptive statistics for aede2

In [38]:
```
print('Mean of aede2 =', df['aede2'].mean())
print('Median of aede2 =', df['aede2'].median())
print('Mode of aede2 =', df['aede2'].mode())
print('Standard deviation of aede2 =', df['aede2'].std())
```

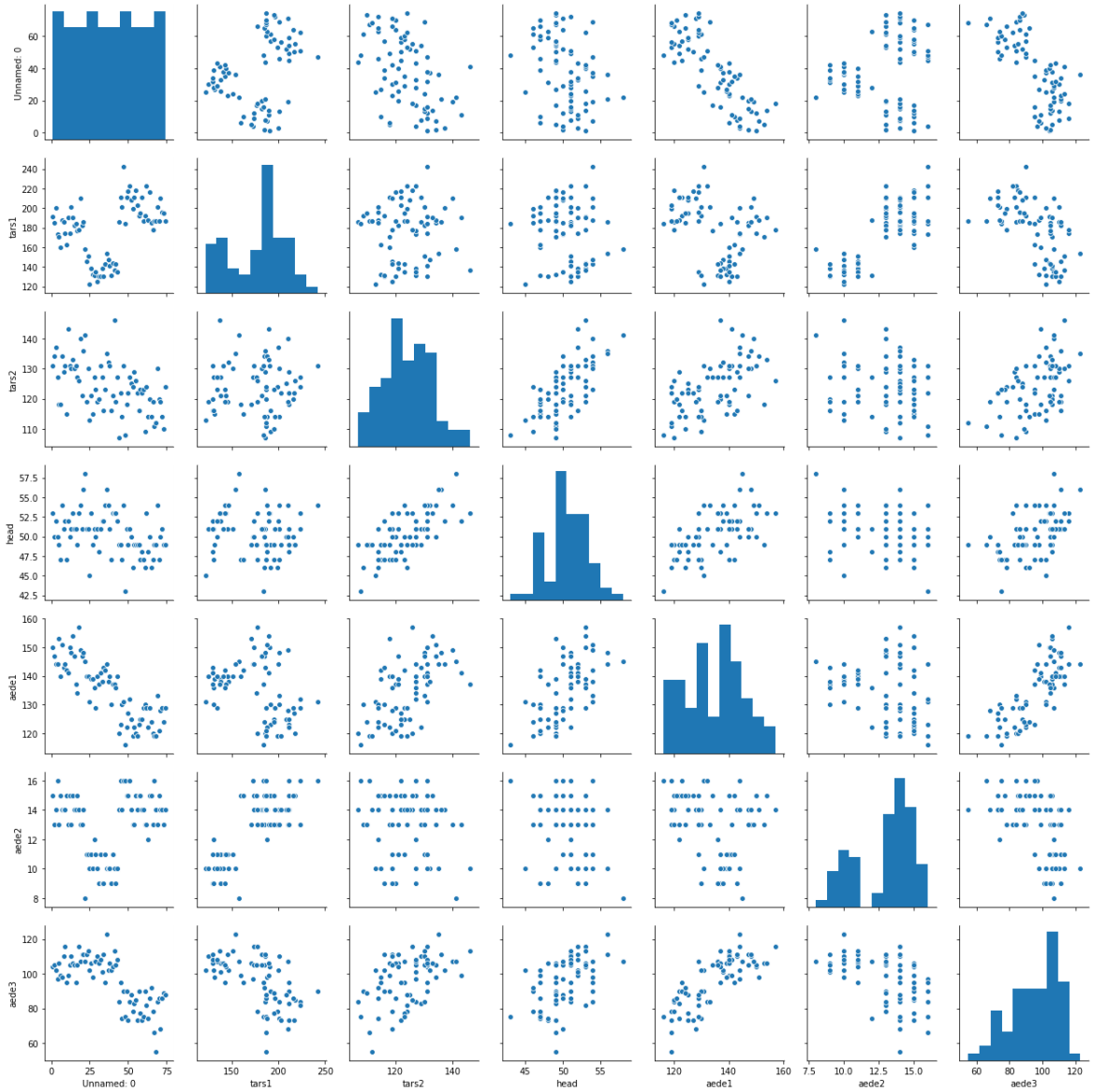
```
Mean of aede2 = 12.986486486486486
Median of aede2 = 14.0
Mode of aede2 = 0    14
dtype: int64
Standard deviation of aede2 = 2.1421615203497018
```

Descriptive statistics for aede3

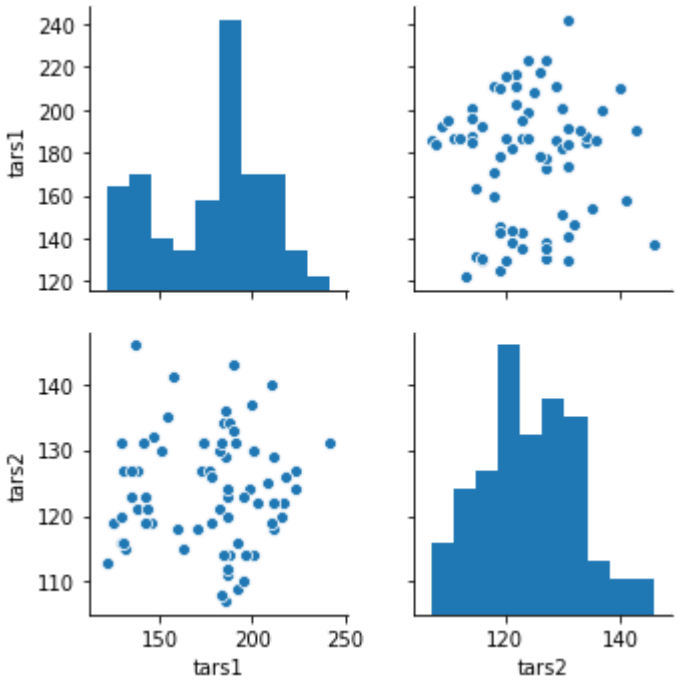
In [39]:
```
print('Mean of aede3 =', df['aede3'].mean())
print('Median of aede3 =', df['aede3'].median())
print('Mode of aede3 =', df['aede3'].mode())
print('Standard deviation of aede3 =', df['aede3'].std())
```

```
Mean of aede3 = 95.37837837837837
Median of aede3 = 98.5
Mode of aede3 = 0    105
1    106
dtype: int64
Standard deviation of aede3 = 14.304614355335435
```

In [40]:
```
sns.pairplot(df)
plt.show()
```



In [41]:
```
sns.pairplot(data = df[['tars1', 'tars2']])
plt.show()
```



Conclusion

The graph shows there is comparison between tars1 and tars2. From the graph, we can infer that there is less data when the value for tar1 is between 0-150 and tar2 is between 0-112.