# assignment 9

March 8, 2022

## 1 Bivariate analysis of confidence intervals on Penguins dataset

[ ]:
```
import pandas as pd
```

[1]:
```
import seaborn as sns
```

[10]:
```
penguins = sns.load_dataset("penguins")
```

[11]:
```
penguins.head()
```

[11]:
```
  species     island  bill_length_mm  bill_depth_mm  flipper_length_mm  \
0  Adelie  Torgersen            39.1           18.7              181.0
1  Adelie  Torgersen            39.5           17.4              186.0
2  Adelie  Torgersen            40.3           18.0              195.0
3  Adelie  Torgersen             NaN            NaN                NaN
4  Adelie  Torgersen            36.7           19.3              193.0

   body_mass_g     sex
0       3750.0    Male
1       3800.0  Female
2       3250.0  Female
3          NaN     NaN
4       3450.0  Female
```

[12]:
```
penguins.corr()
```

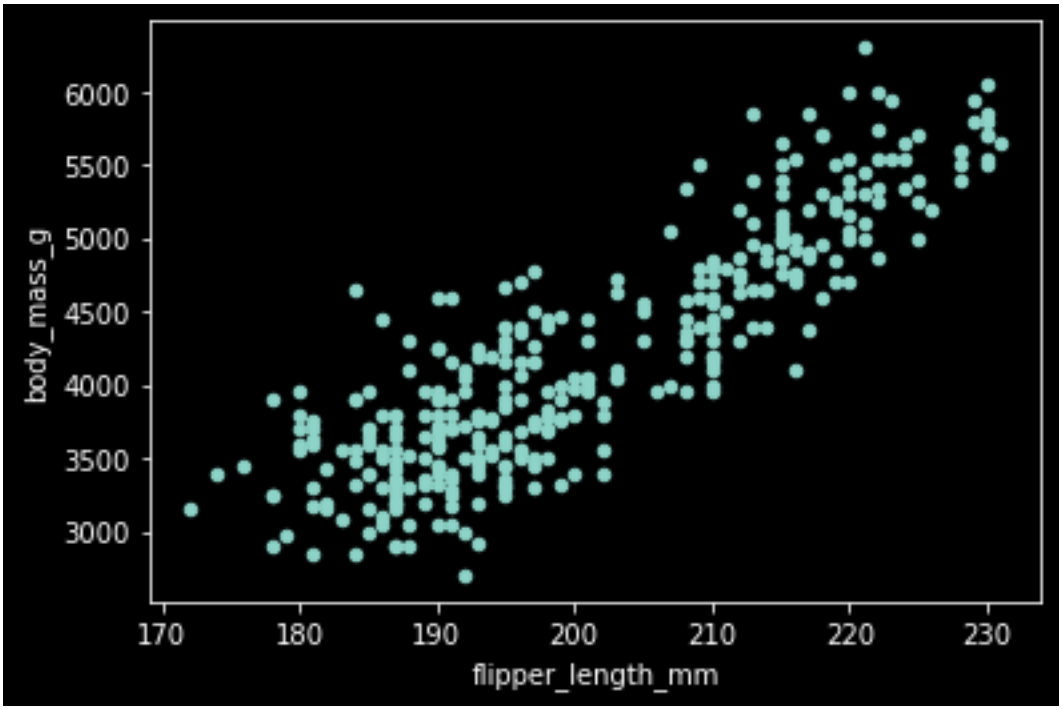
[12]:
```
                   bill_length_mm  bill_depth_mm  flipper_length_mm  \
bill_length_mm           1.000000      -0.235053           0.656181
bill_depth_mm           -0.235053       1.000000          -0.583851
flipper_length_mm        0.656181      -0.583851           1.000000
body_mass_g              0.595110      -0.471916           0.871202

                   body_mass_g
bill_length_mm        0.595110
bill_depth_mm        -0.471916
flipper_length_mm     0.871202
body_mass_g           1.000000
```

The results do match my expectations. It makes sense that pengiuns with heavier pengiuns have larger flippers as well. It surprises me that pengiuns with wider bills have shorter flippers, I would expect a positive correlation

## 2 Strongest positive correlation

[13]:
```
penguins.plot(kind='scatter',x='flipper_length_mm',y='body_mass_g')
```

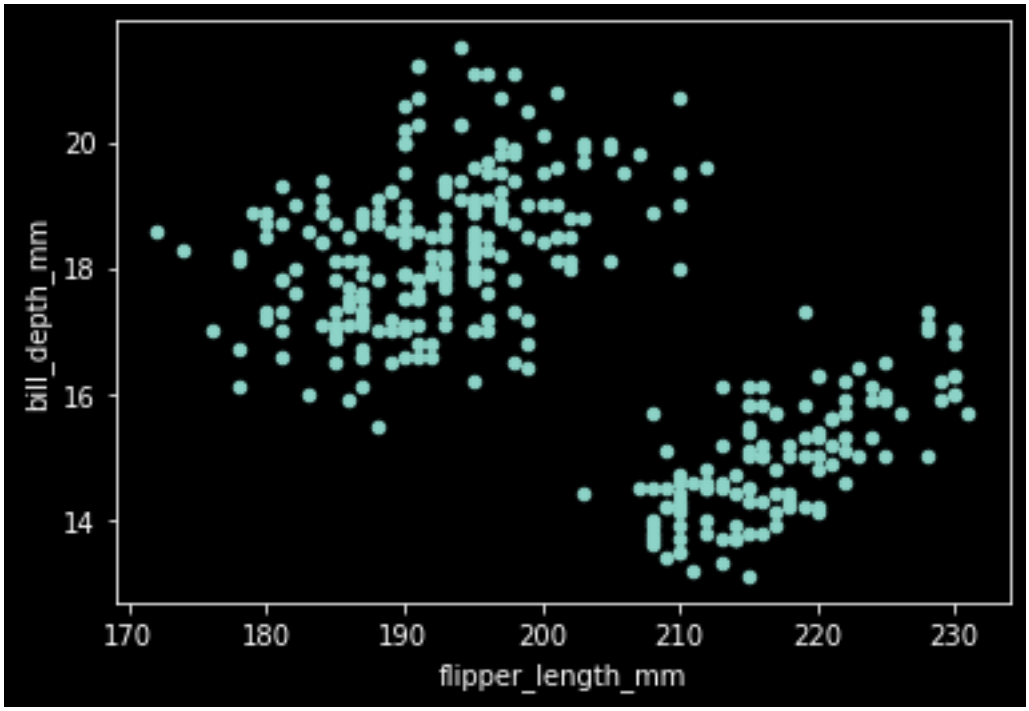
[13]:
```
<AxesSubplot:xlabel='flipper_length_mm', ylabel='body_mass_g'>
```




## 3 Strongest negative correlation

[15]:
```
penguins.plot(kind='scatter',x='flipper_length_mm',y='bill_depth_mm')
```

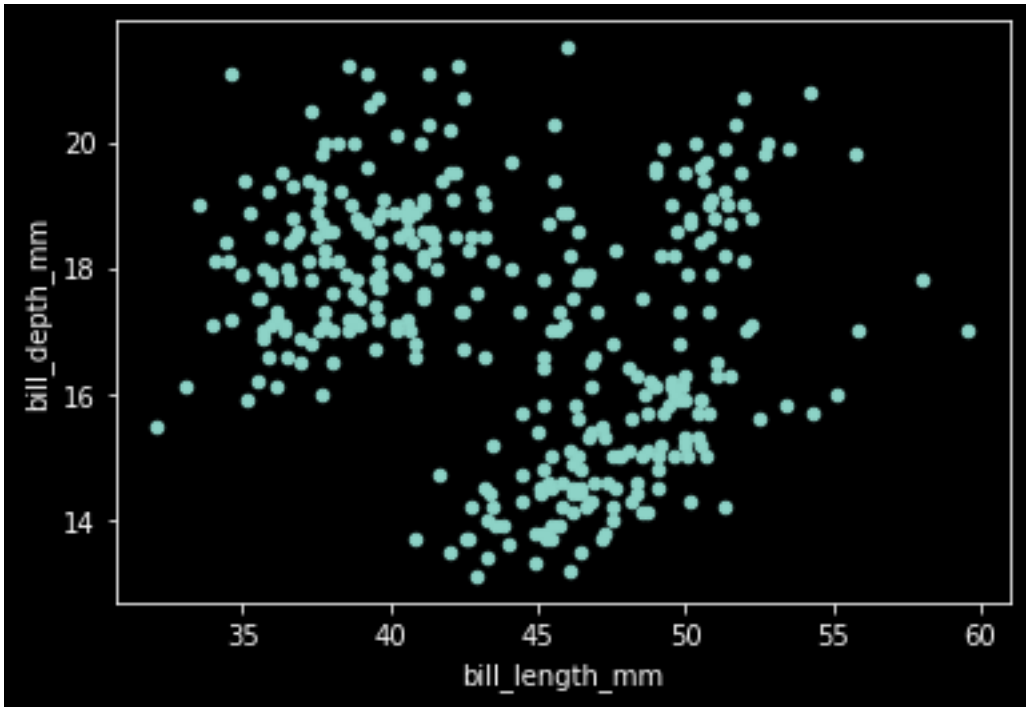
[15]:
```
<AxesSubplot:xlabel='flipper_length_mm', ylabel='bill_depth_mm'>
```




## 4 Weakest correlation

[16]:
```
penguins.plot(kind='scatter',x='bill_length_mm',y='bill_depth_mm')
```

[16]:
```
<AxesSubplot:xlabel='bill_length_mm', ylabel='bill_depth_mm'>
```


bill_depth_mm
20
18
16
14
35
40
45
50
55
60
bill_length_mm