

O VIT-AI-ML-Aug-

Assign, X

2023/VIT

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Assignment-III.ipynb - Colaborat

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Assignment-III

NAME-SANJAY HARITWAL

REG. NO-21BDS0124

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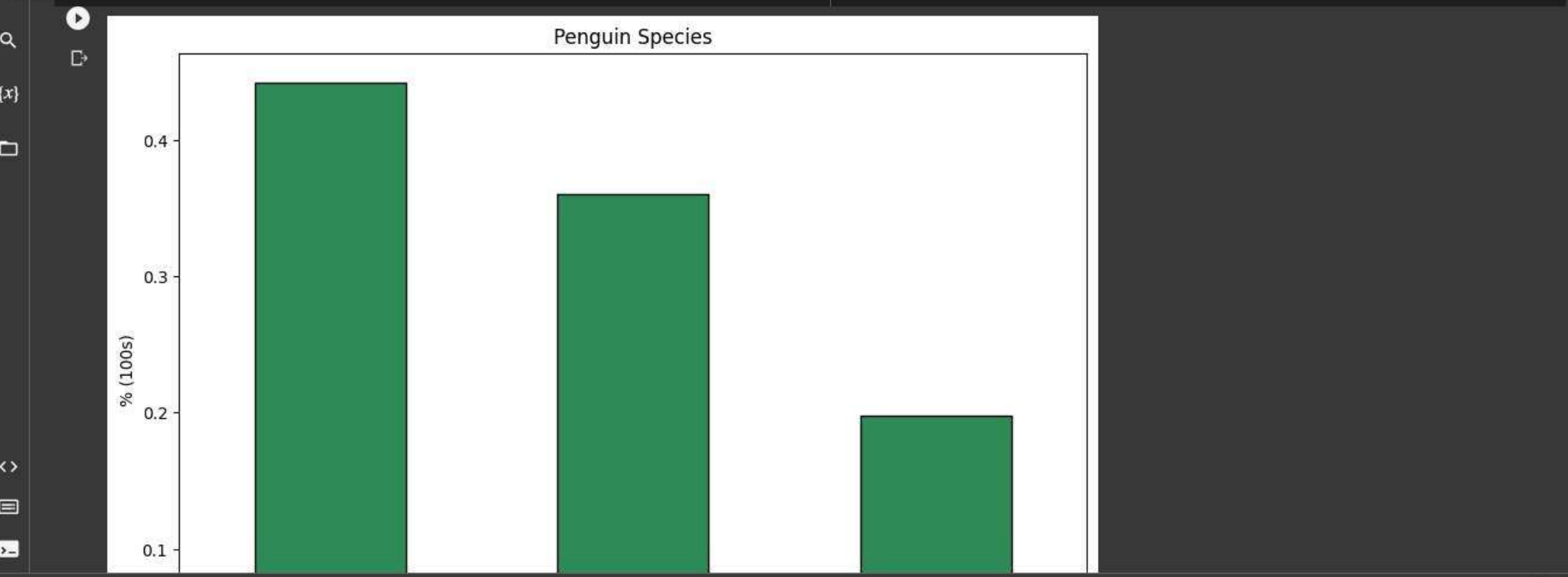
350c Haze

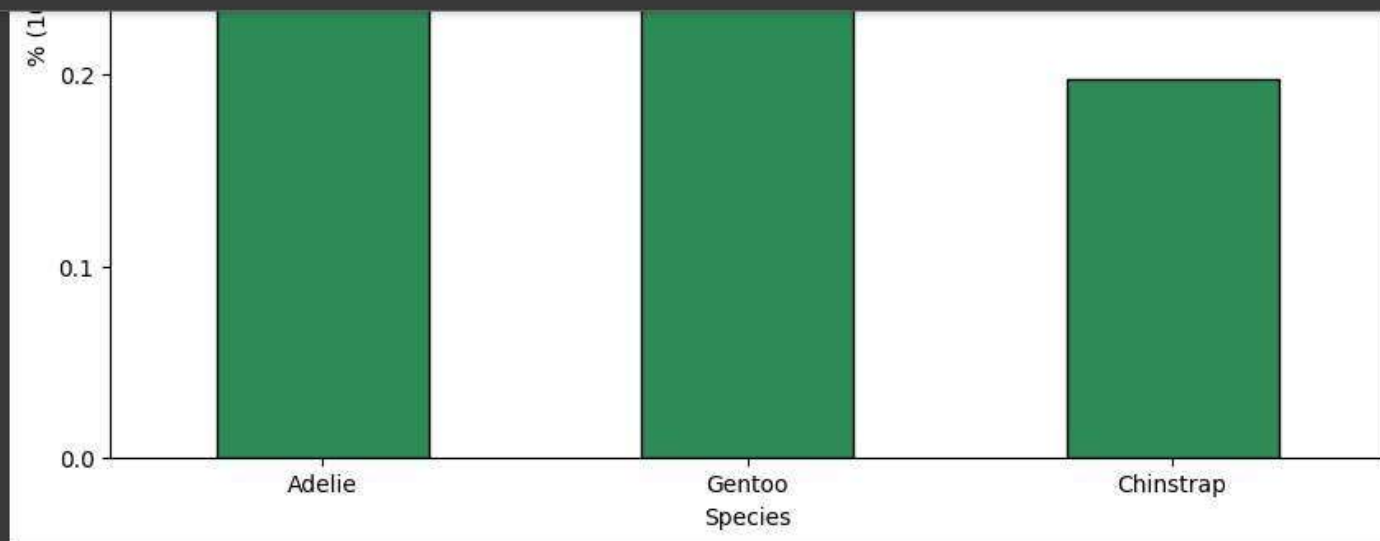
ENG 14-09-2023

```
[ ] 1 island          344 non-null    object
    2 bill_length_mm 342 non-null    float64
    3 bill_depth_mm   342 non-null    float64
    4 flipper_length_mm 342 non-null    float64
    5 body_mass_g     342 non-null    float64
    6 sex            333 non-null    object
dtypes: float64(4), object(3)
memory usage: 18.9+ KB
species          0
island           0
bill_length_mm   2
bill_depth_mm    2
flipper_length_mm 2
body_mass_g      2
sex              11
dtype: int64
```

```
plt.rcParams['figure.figsize'] = (10,7)
df['species'].value_counts(normalize = True).plot(kind = 'bar', color = 'seagreen', linewidth = 1, edgecolor = 'k')
plt.title('Penguin Species')
plt.xlabel('Species')
plt.ylabel('% (100s)')
plt.xticks(rotation = 360)
plt.show()
```

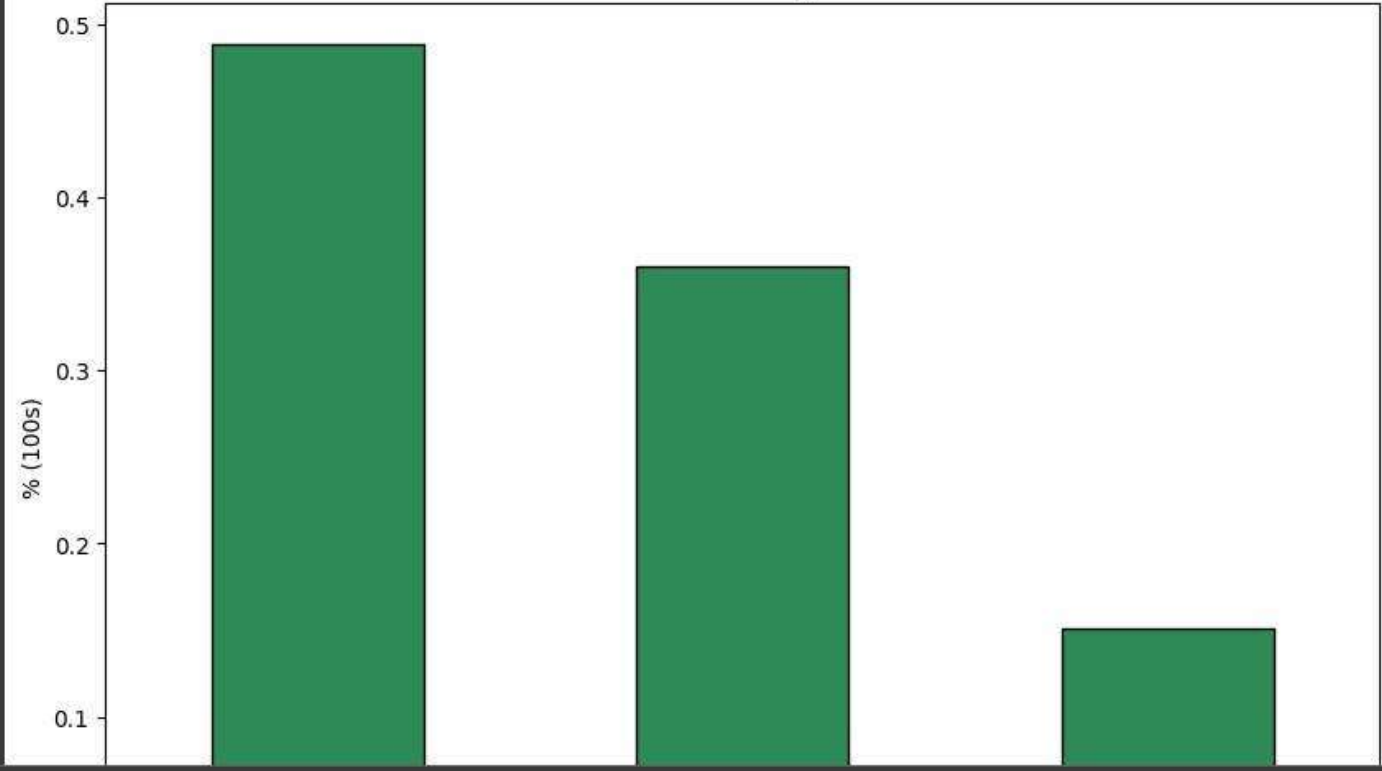
Penguin Species





```
df['island'].value_counts(normalize = True).plot(kind = 'bar', color = 'seagreen', linewidth = 1, edgecolor = 'k')  
plt.title('Islands where Penguins live')  
plt.xlabel('Island')  
plt.ylabel('% (100s)')  
plt.xticks(rotation = 360)  
plt.show()
```

Islands where Penguins live

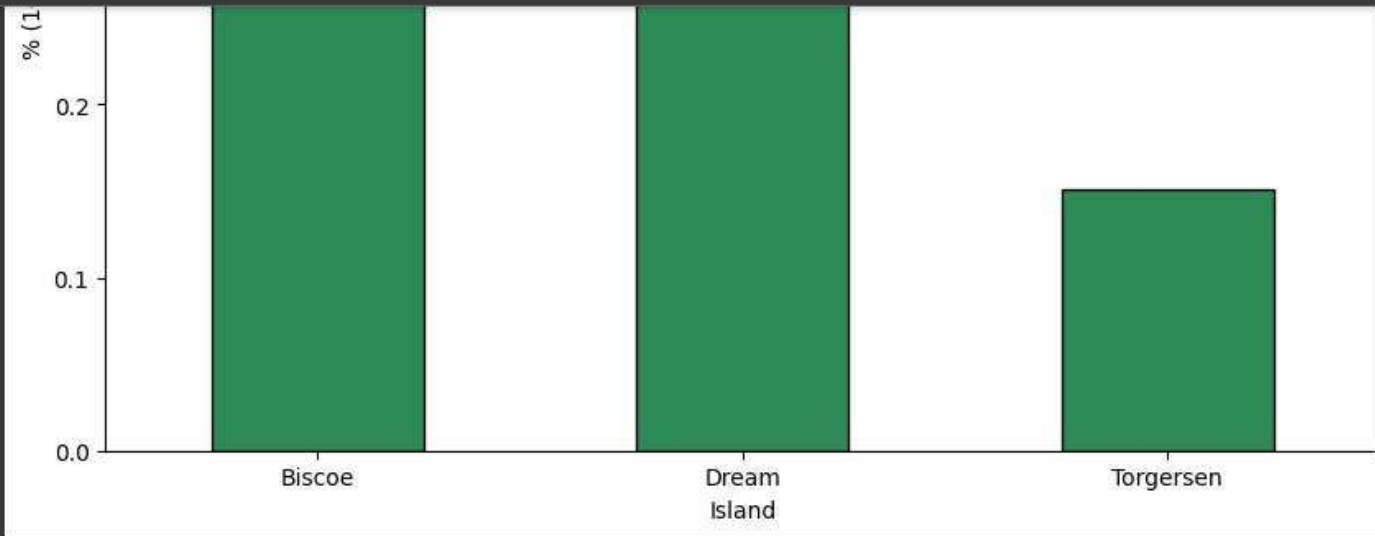


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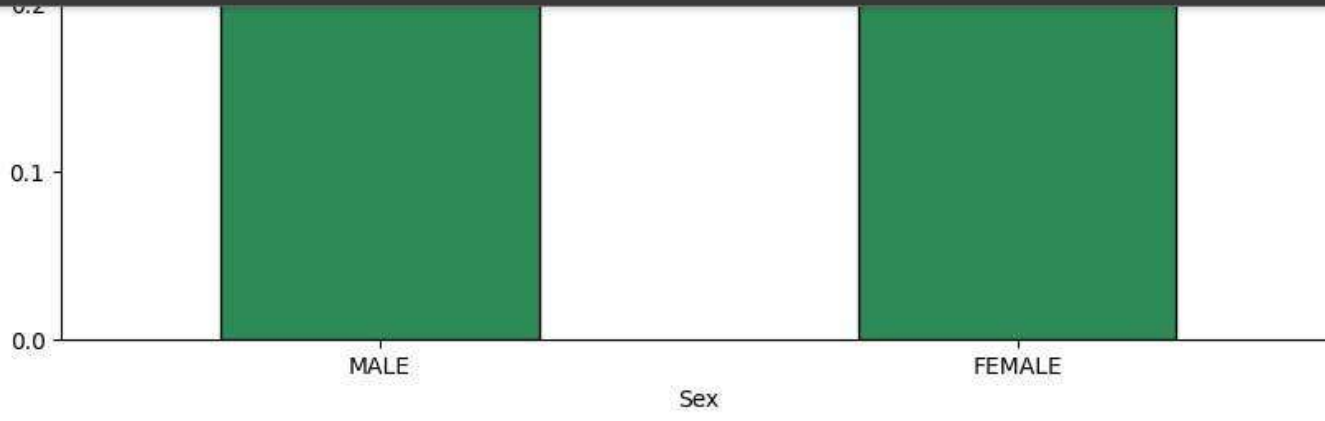


```
df['sex'].value_counts(normalize = True).plot(kind = 'bar', color = 'seagreen', linewidth = 1, edgecolor = 'k')  
plt.title('Penguins - Sex')  
plt.xlabel('Sex')  
plt.ylabel('% (100s)')  
plt.xticks(rotation = 360)  
plt.show()
```

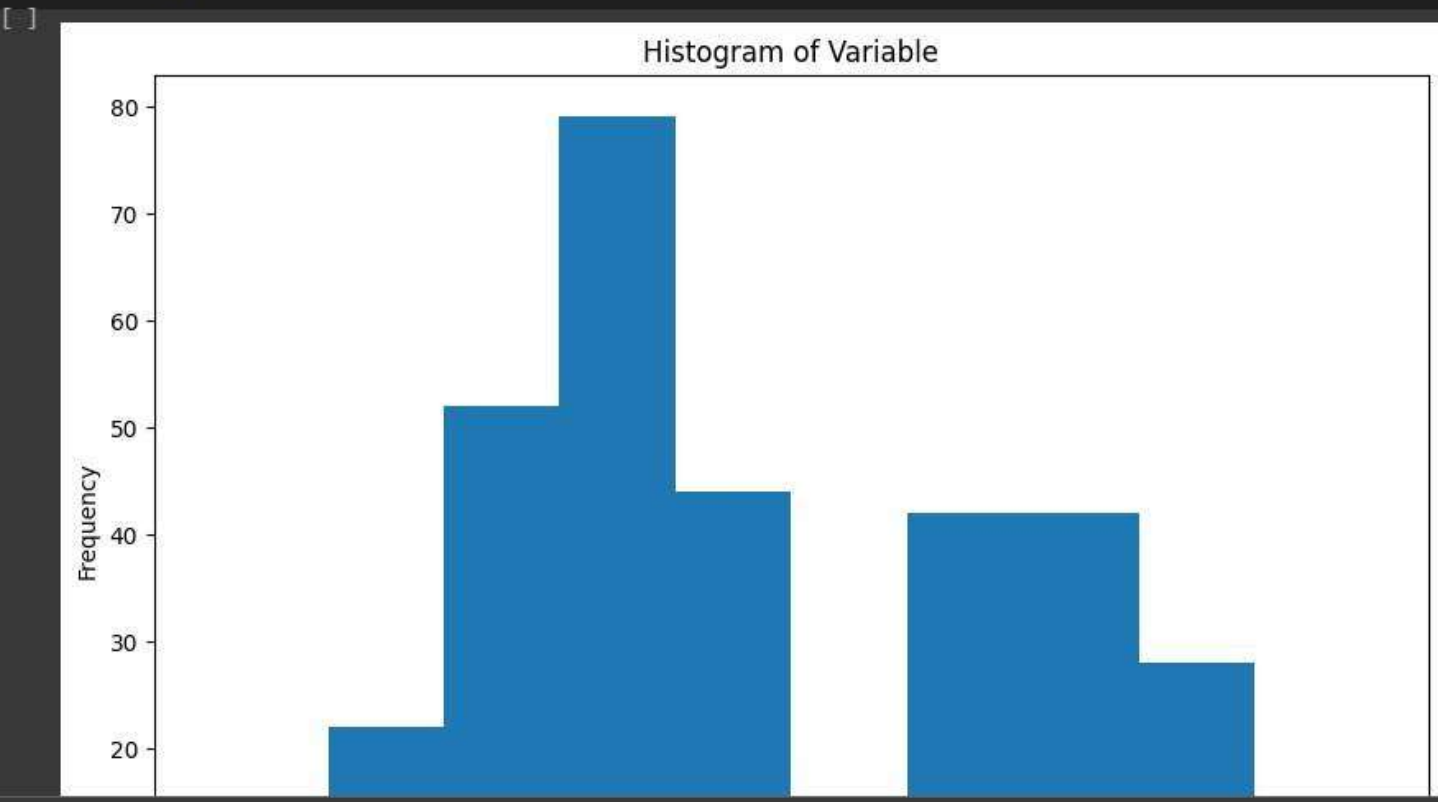

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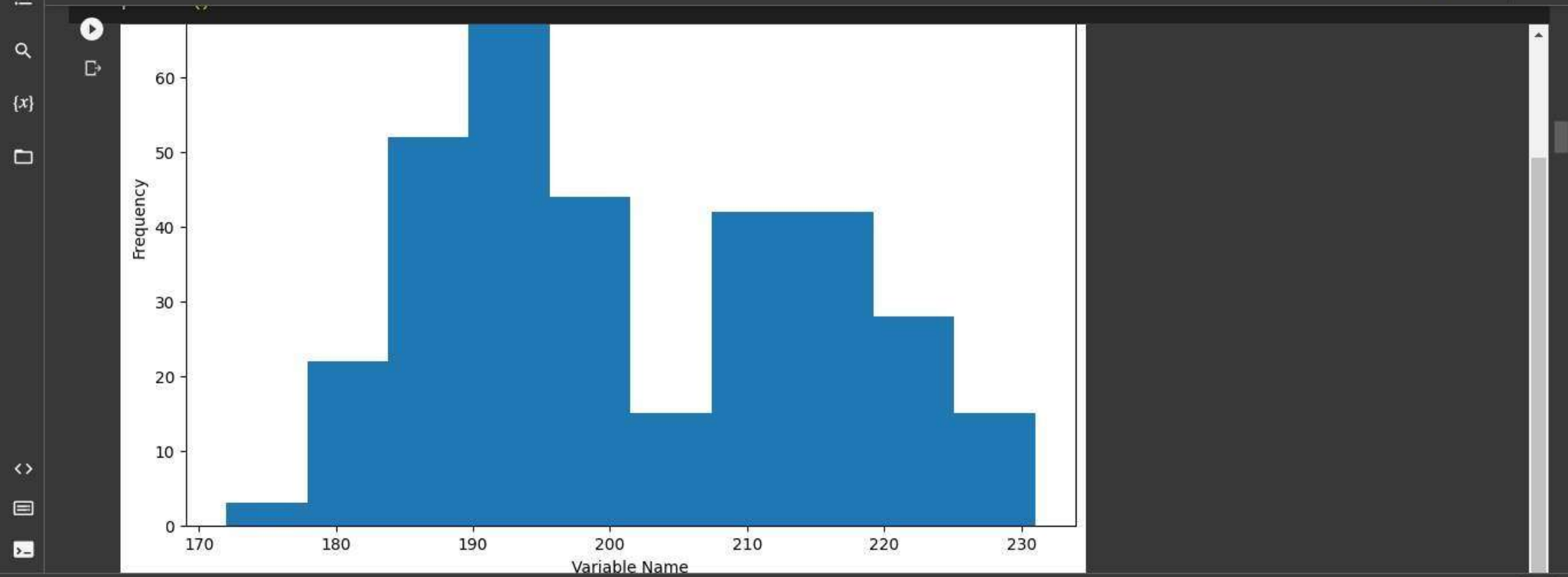
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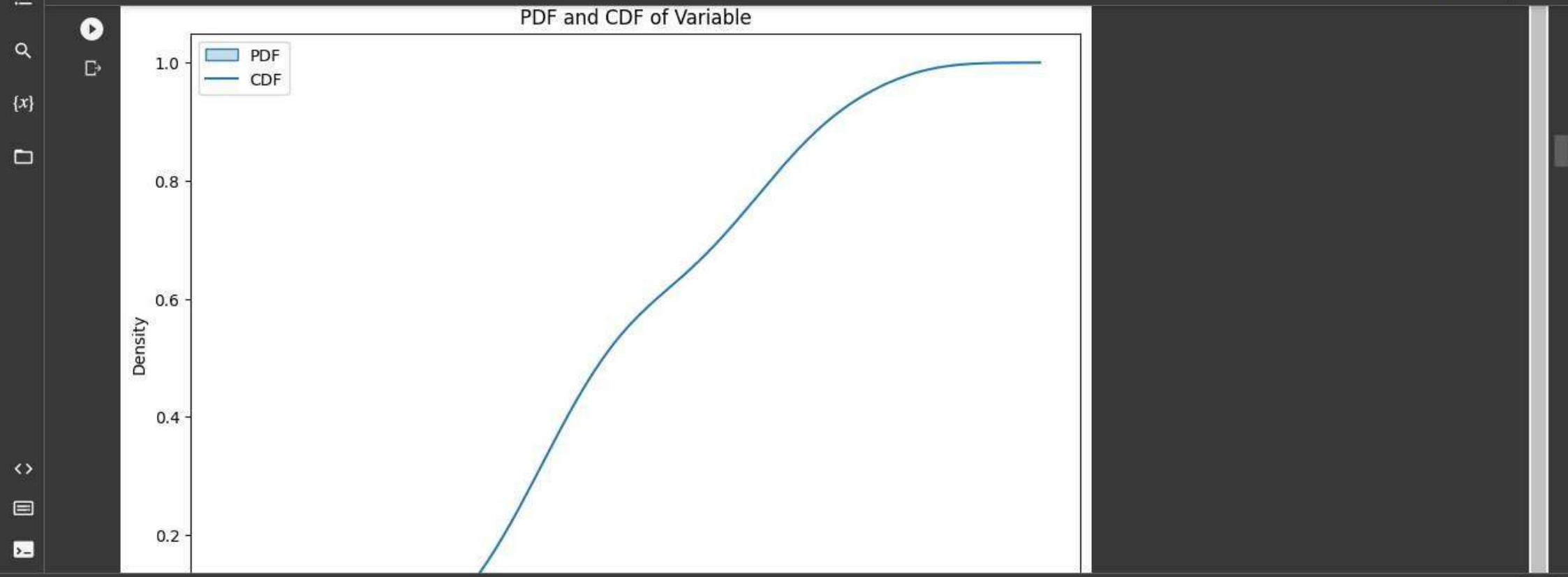
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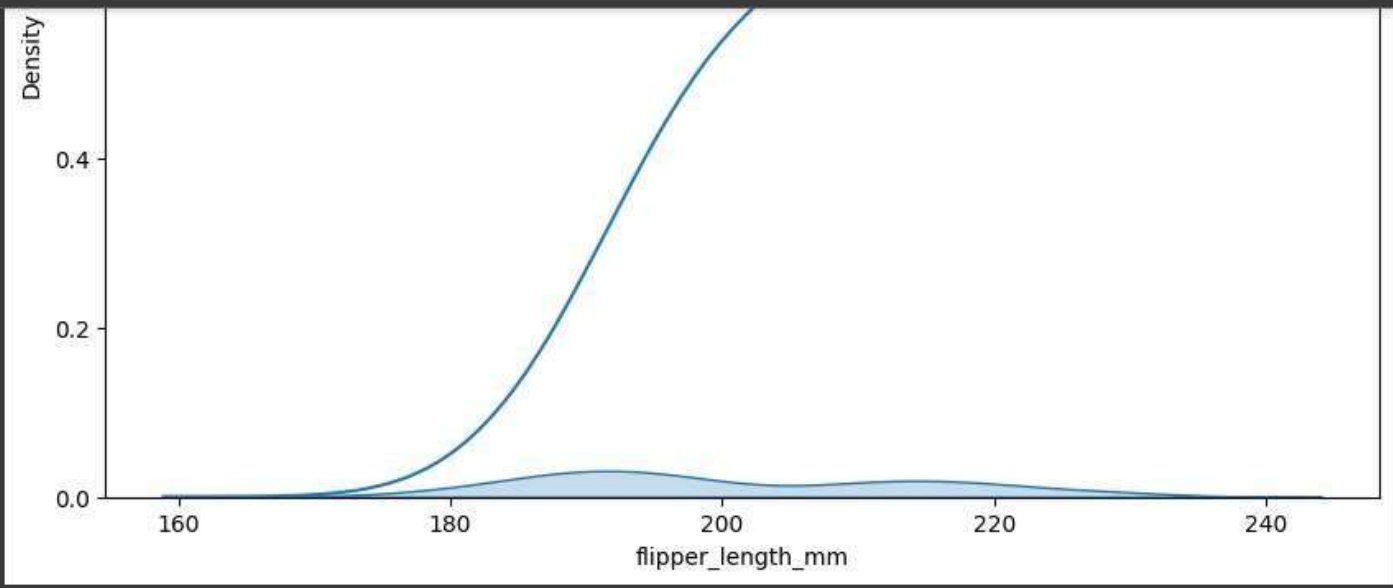


```
plt.hist(df['flipper_length_mm'], bins=10)
plt.xlabel('Variable Name')
plt.ylabel('Frequency')
plt.title('Histogram of Variable')
plt.show()
sns.kdeplot(df['flipper_length_mm'], shade=True, label='PDF')
sns.kdeplot(df['flipper_length_mm'], cumulative=True, label='CDF')
plt.title('PDF and CDF of Variable')
plt.legend()
plt.show()
```







```
sns.scatterplot(data=df, x="bill_length_mm", y="bill_depth_mm")  
plt.title("Scatter Plot: Bill Length vs Bill Depth")  
plt.show()
```

Scatter Plot: Bill Length vs Bill Depth



Assignment-III.ipynb

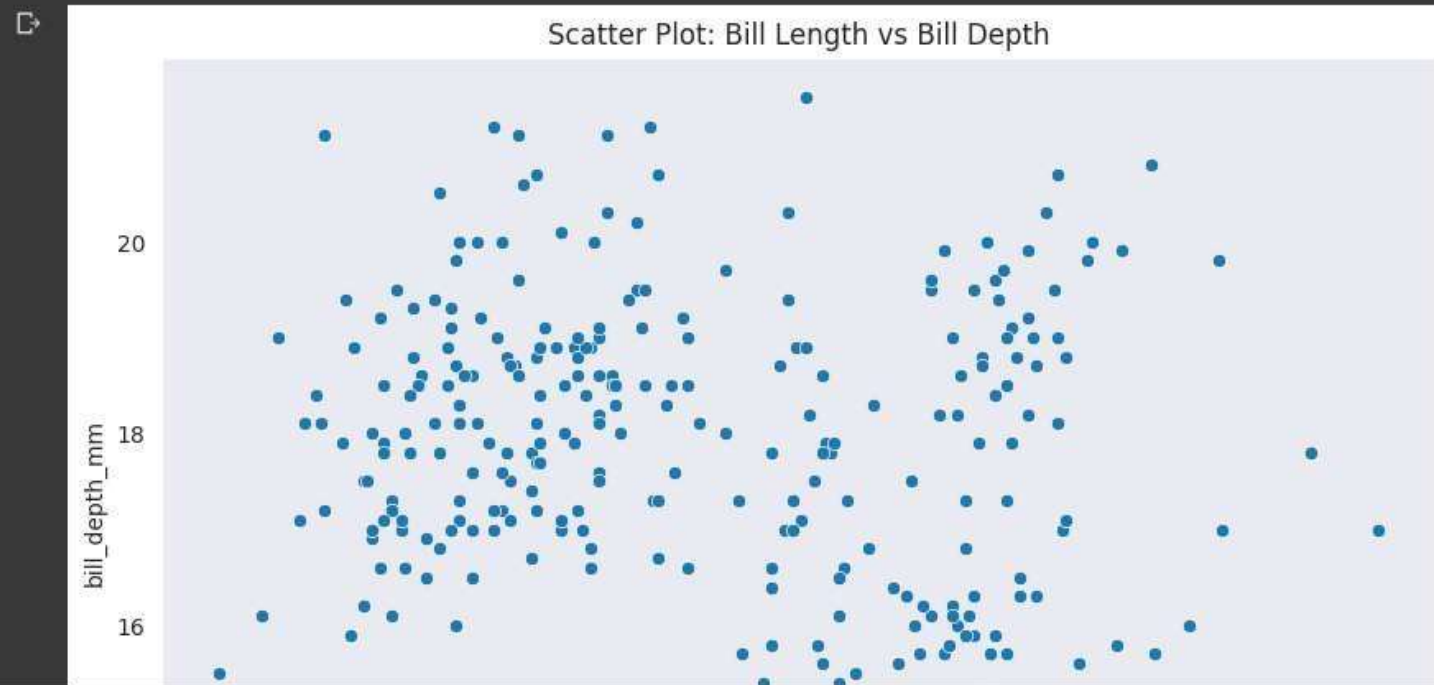
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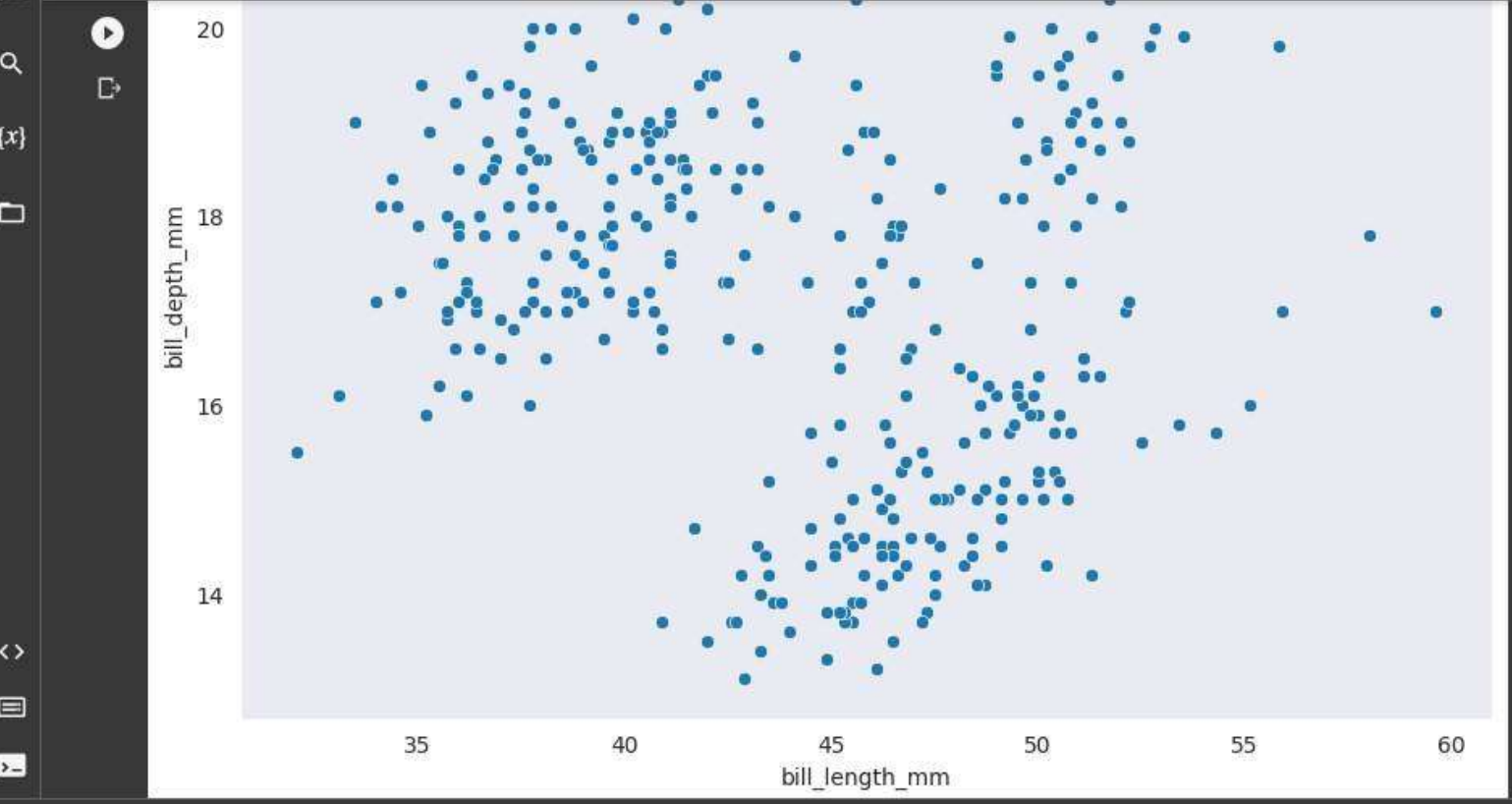
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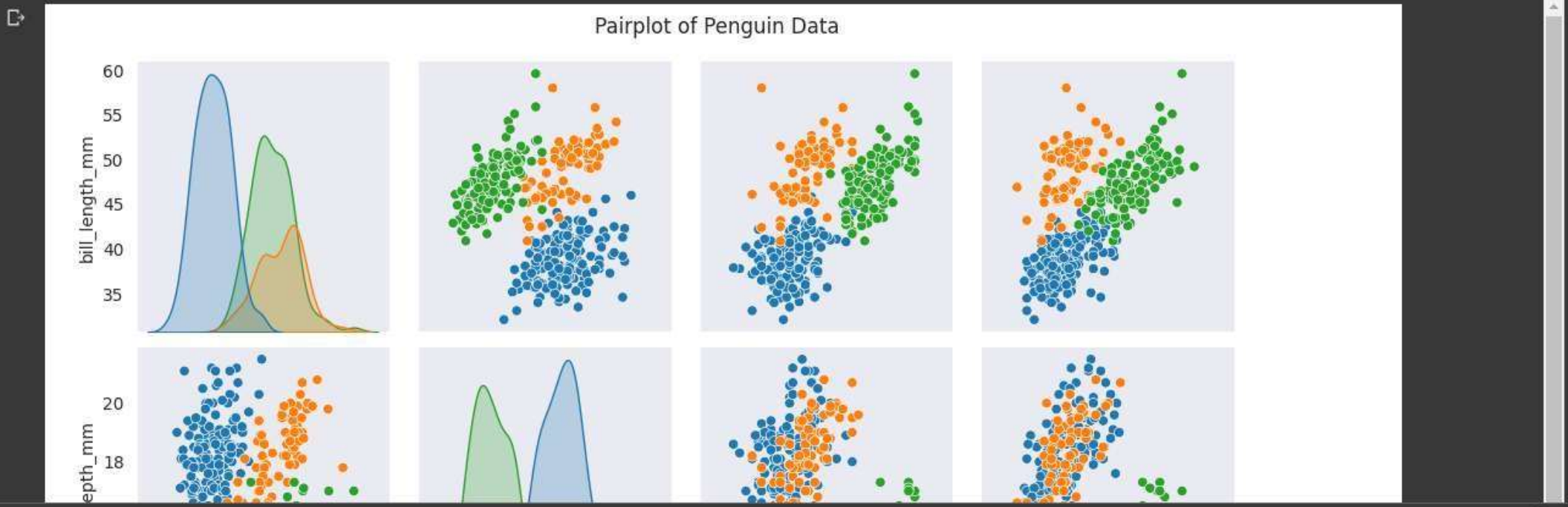
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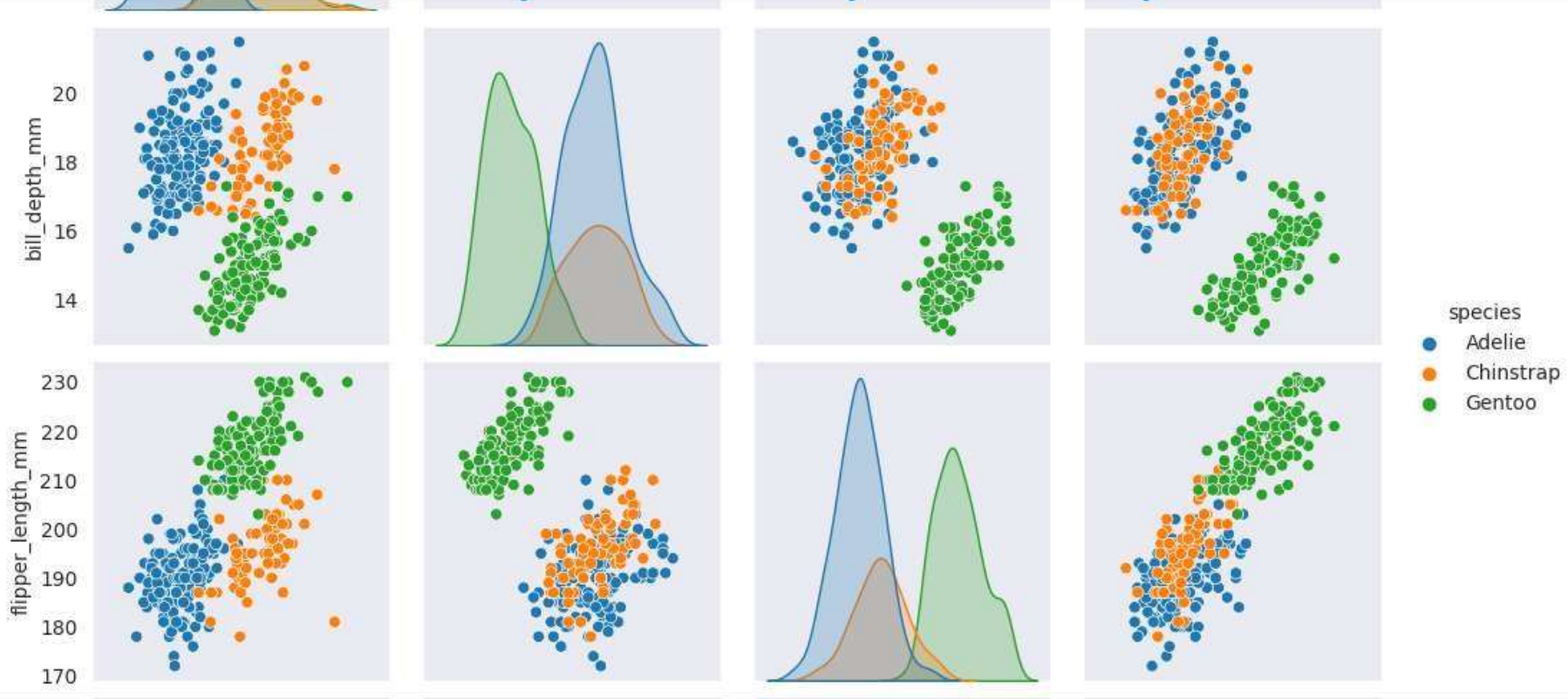
```
sns.scatterplot(data=df, x="bill_length_mm", y="bill_depth_mm")  
plt.title("Scatter Plot: Bill Length vs Bill Depth")  
plt.show()
```

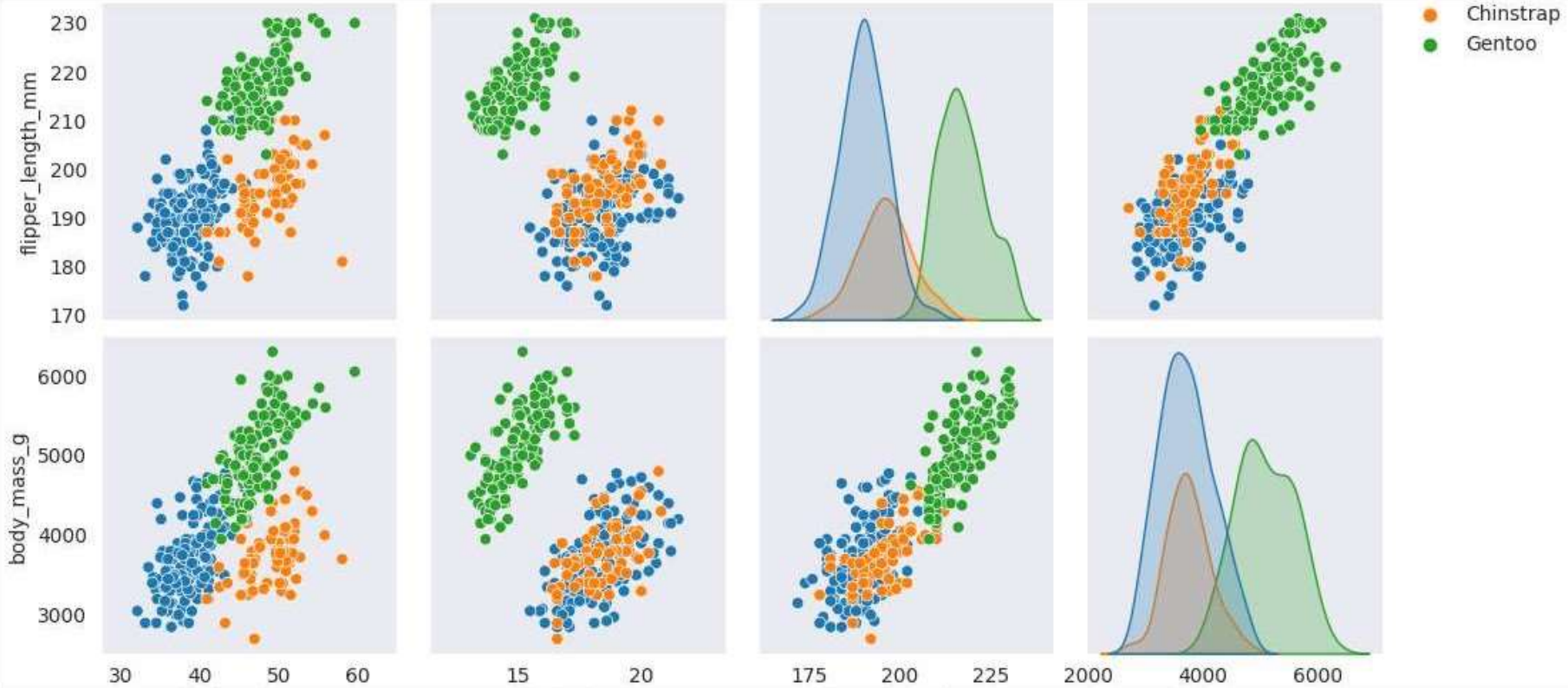


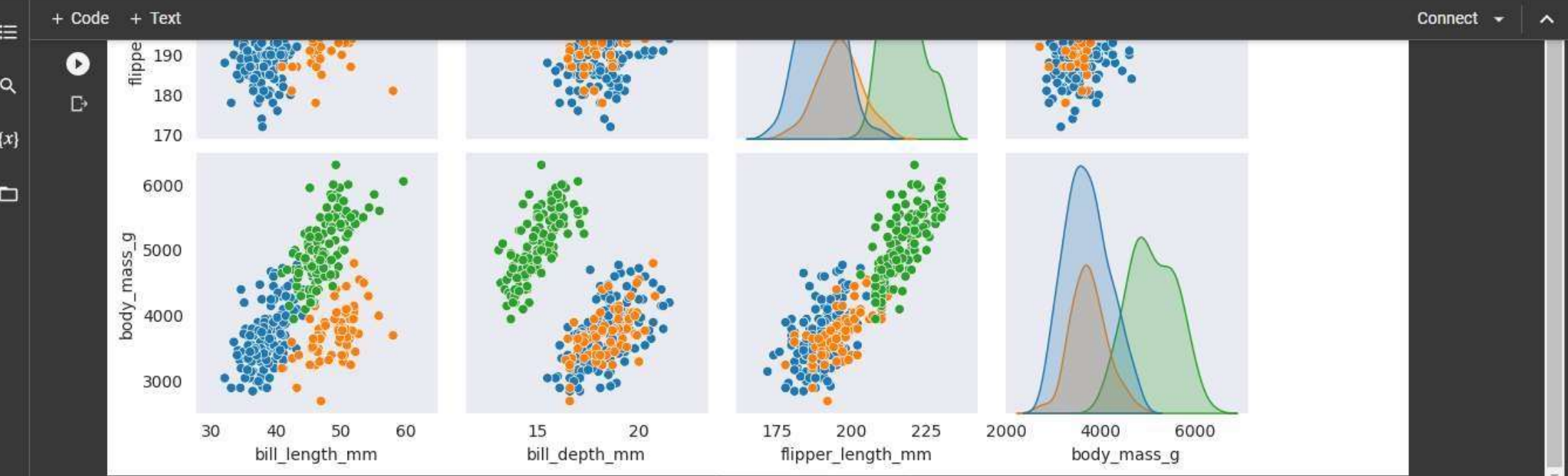


```
sns.pairplot(data=df, hue="species")
plt.suptitle("Pairplot of Penguin Data", y=1.02)
plt.show()
```

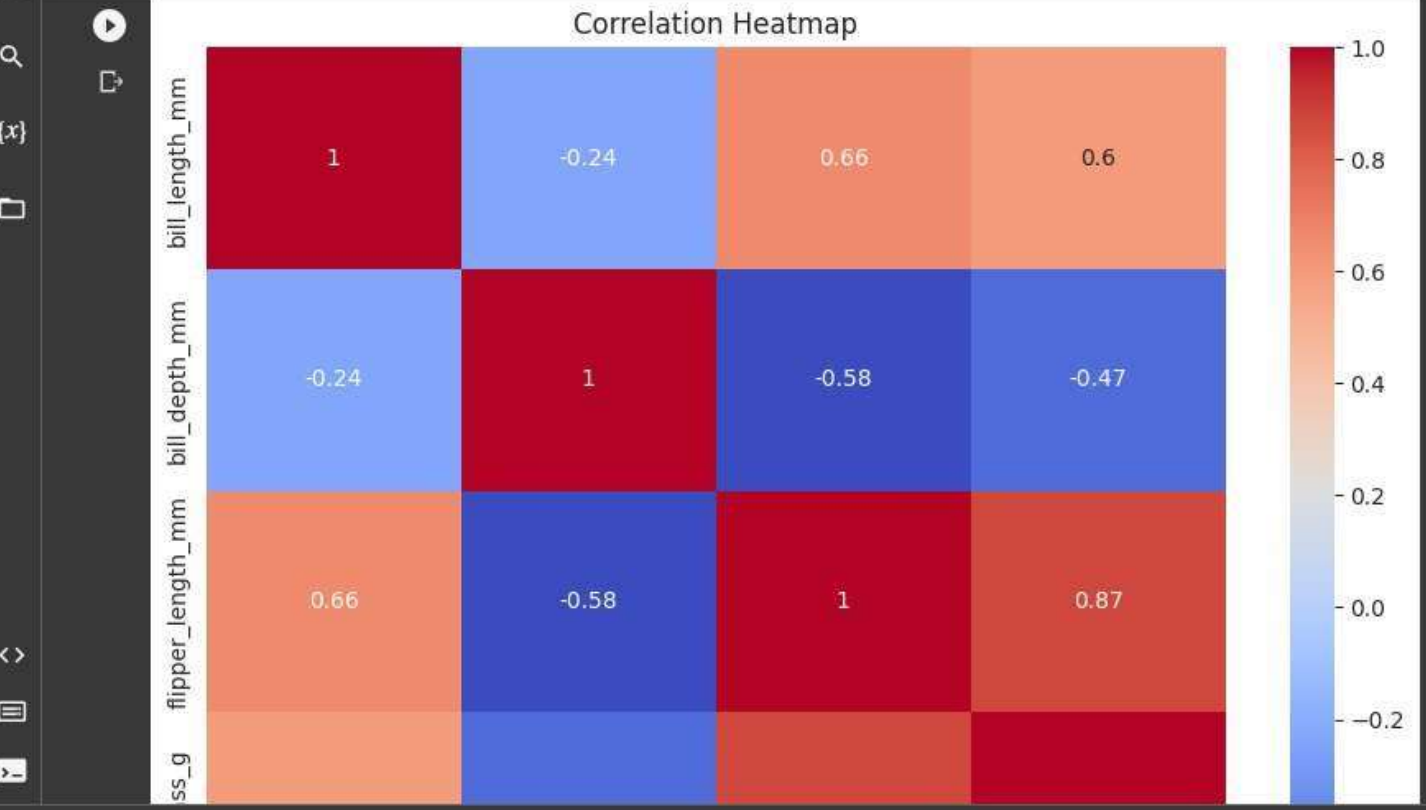


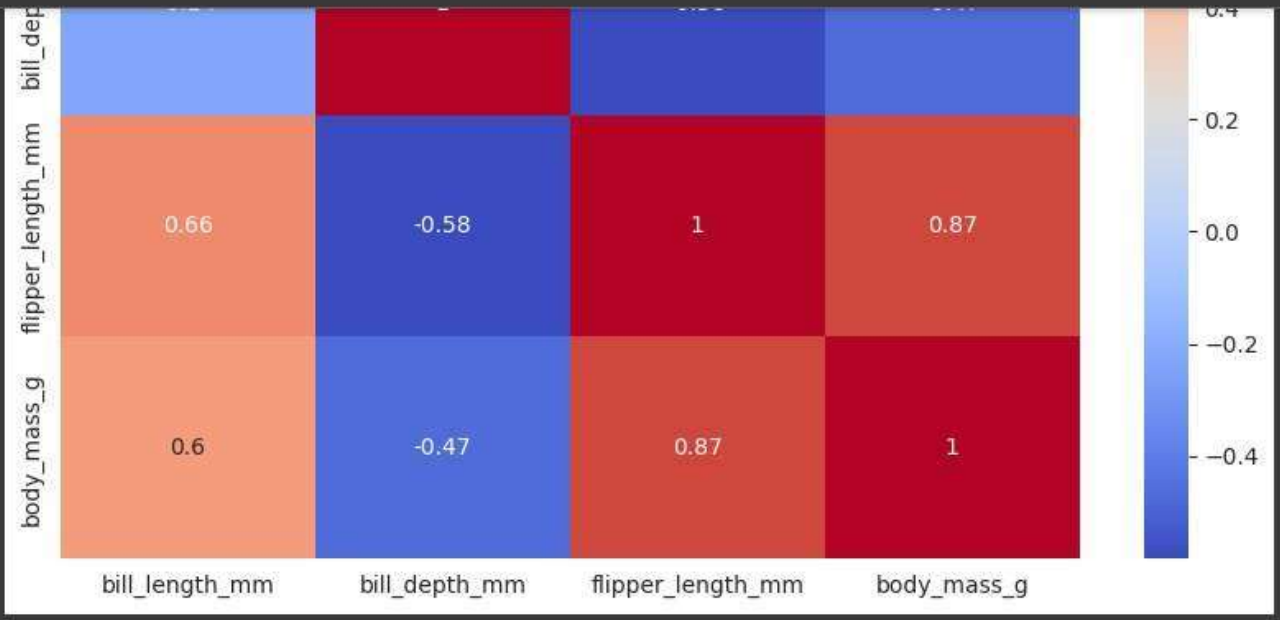




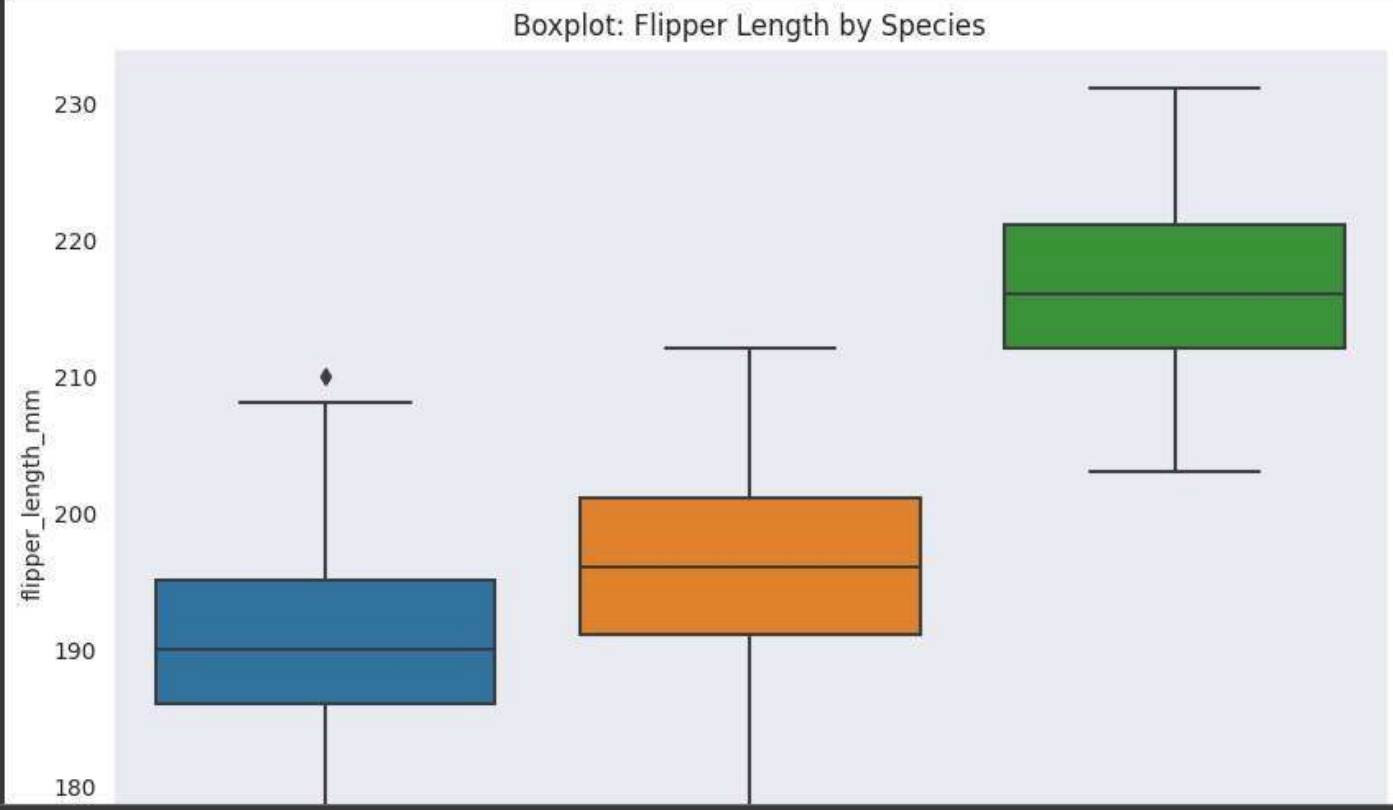


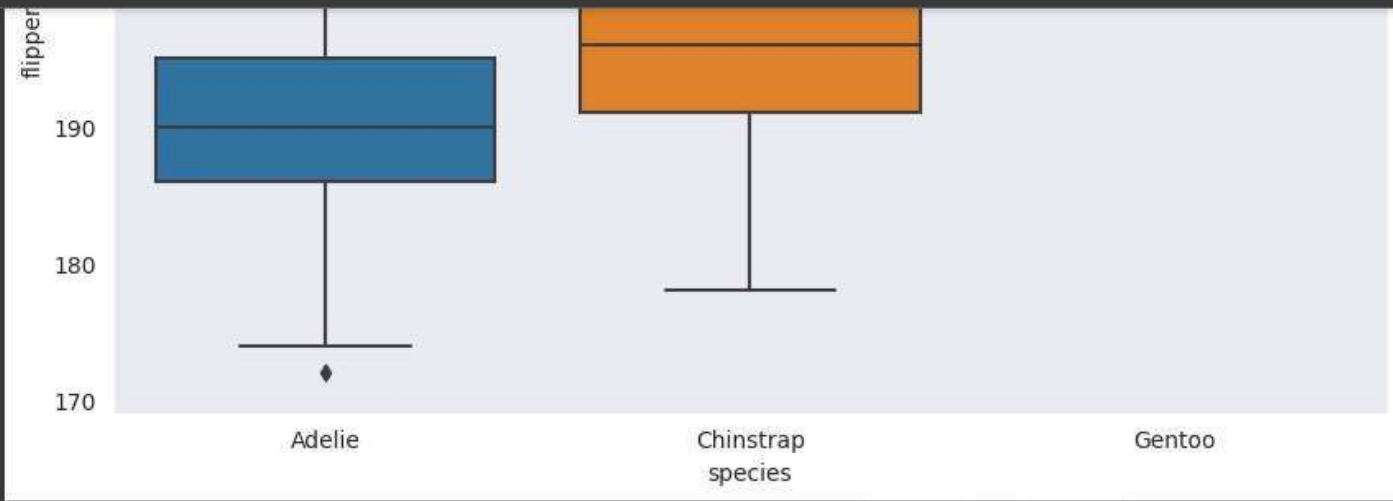
```
[ ] correlation_matrix = df.corr()
sns.heatmap(correlation_matrix, annot=True, cmap="coolwarm")
plt.title("Correlation Heatmap")
plt.show()
```

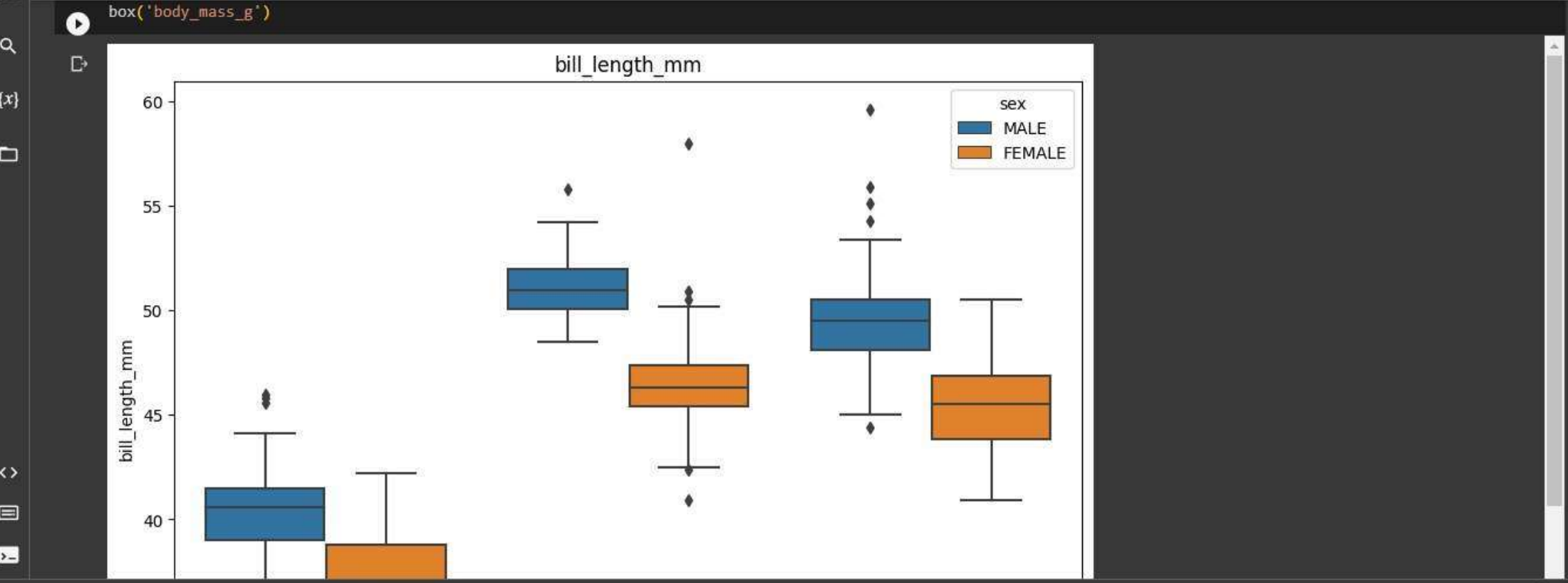


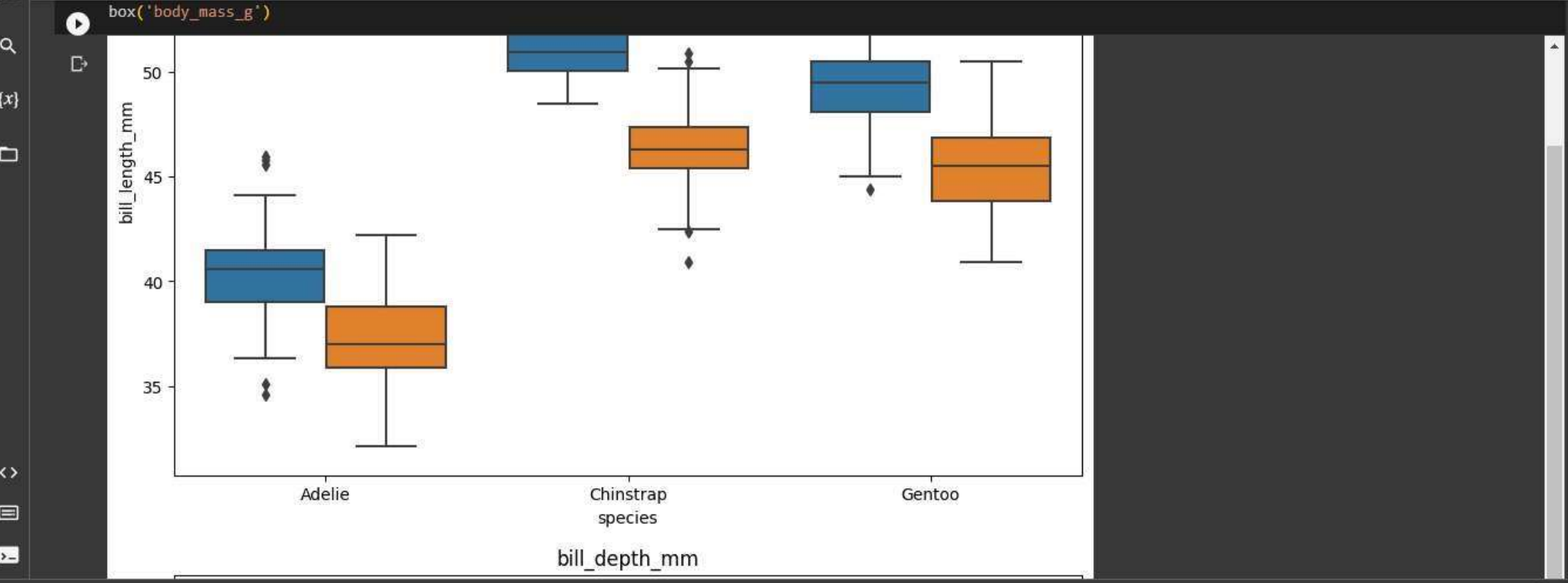
```
[ ] sns.boxplot(data=df, x="species", y="flipper_length_mm")  
plt.title("Boxplot: Flipper Length by Species")  
plt.show()
```

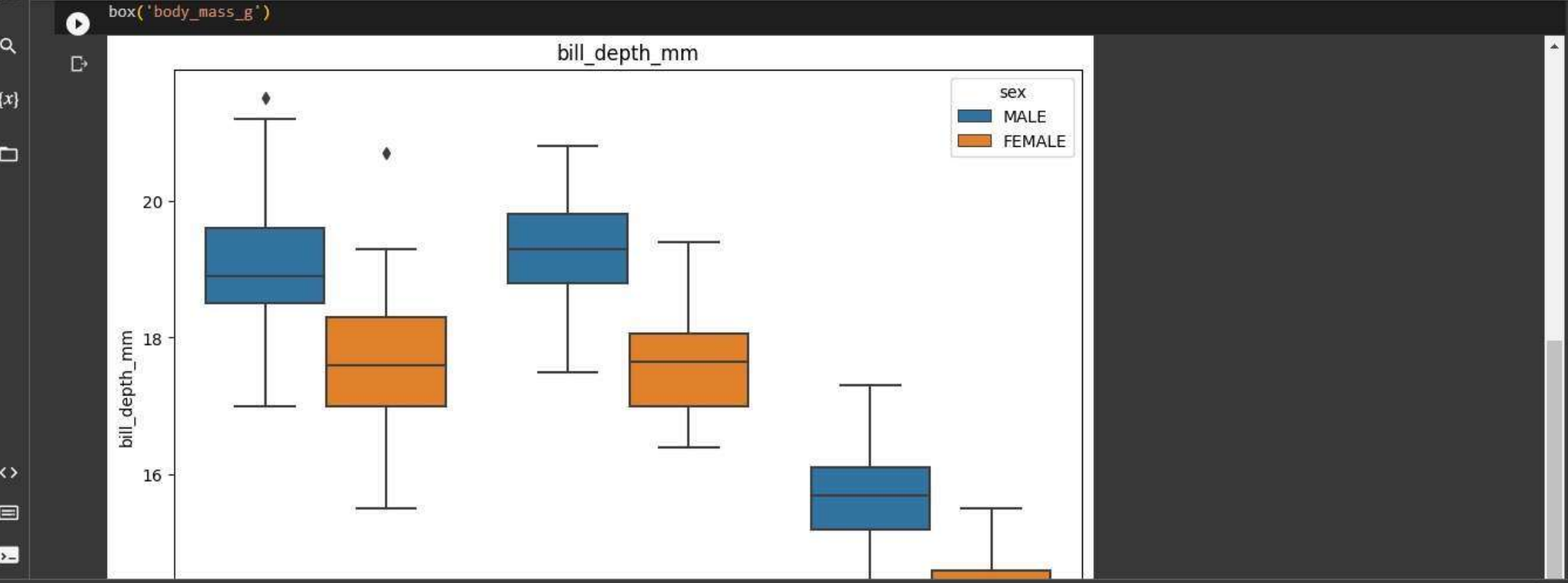


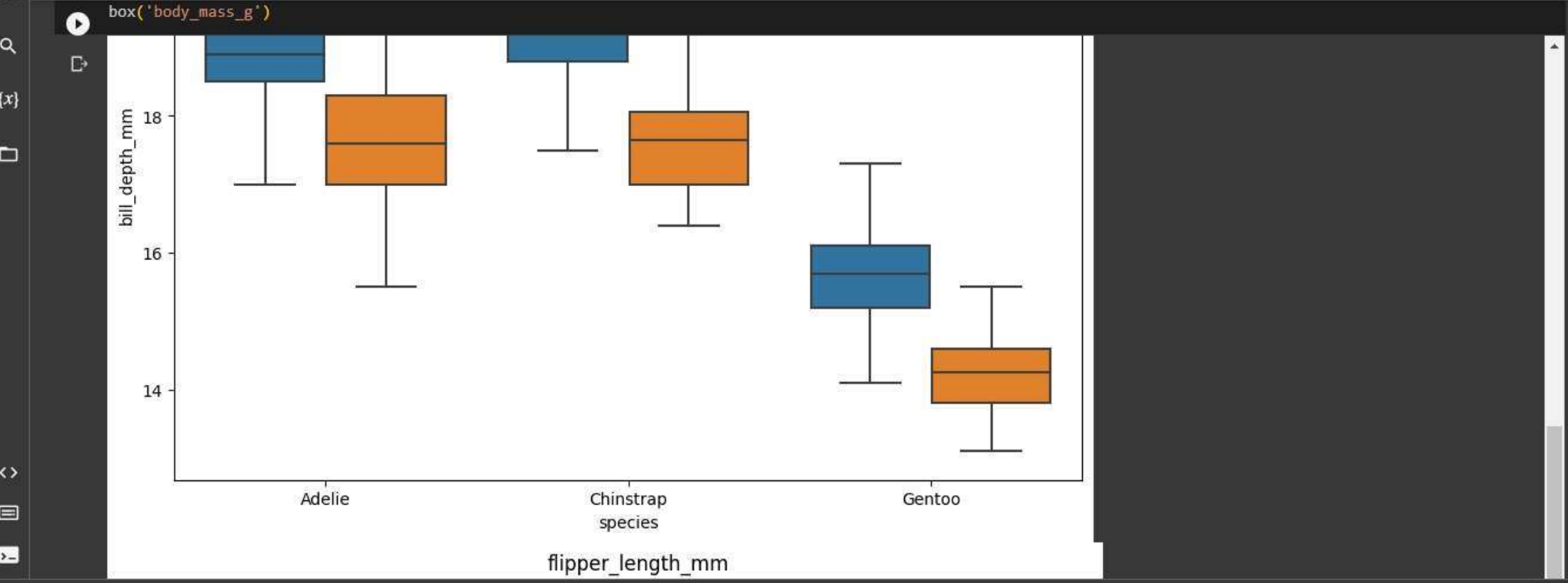


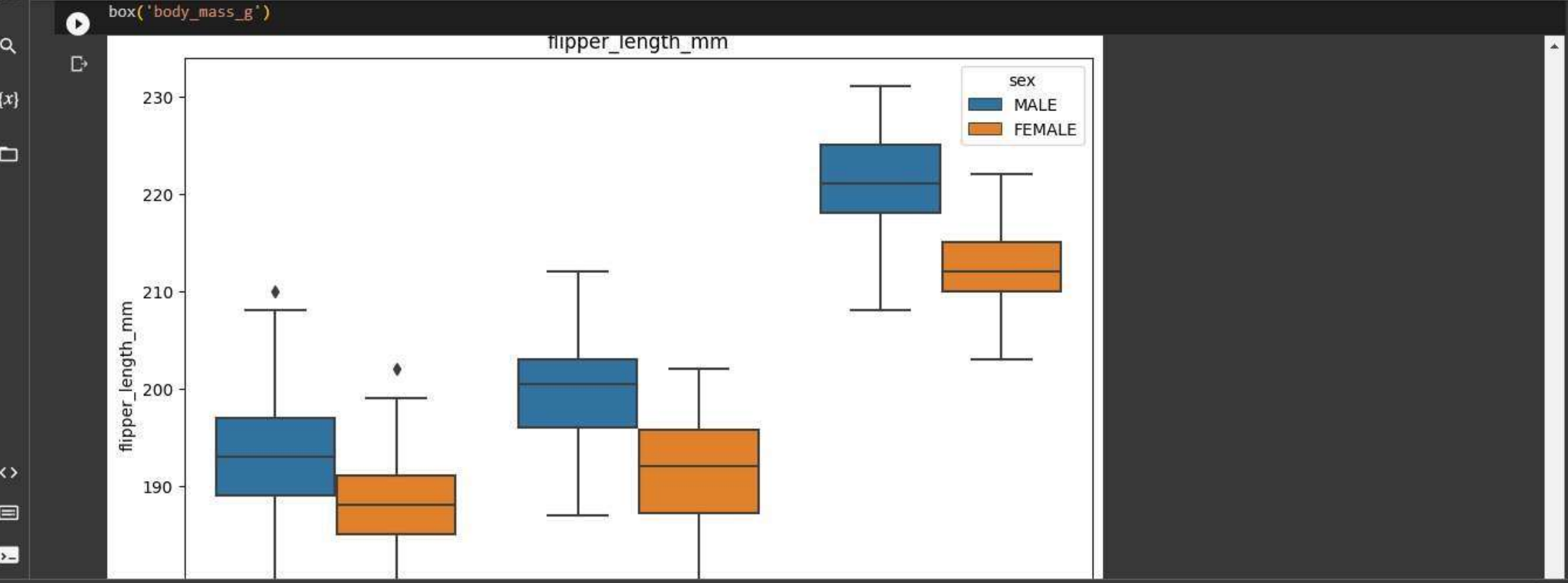
```
[ ] def box(f):
    sns.boxplot(y = f, x = 'species', hue = 'sex', data = df)
    plt.title(f)
    plt.show()
box('bill_length_mm')
box('bill_depth_mm')
box('flipper_length_mm')
box('body_mass_g')
```

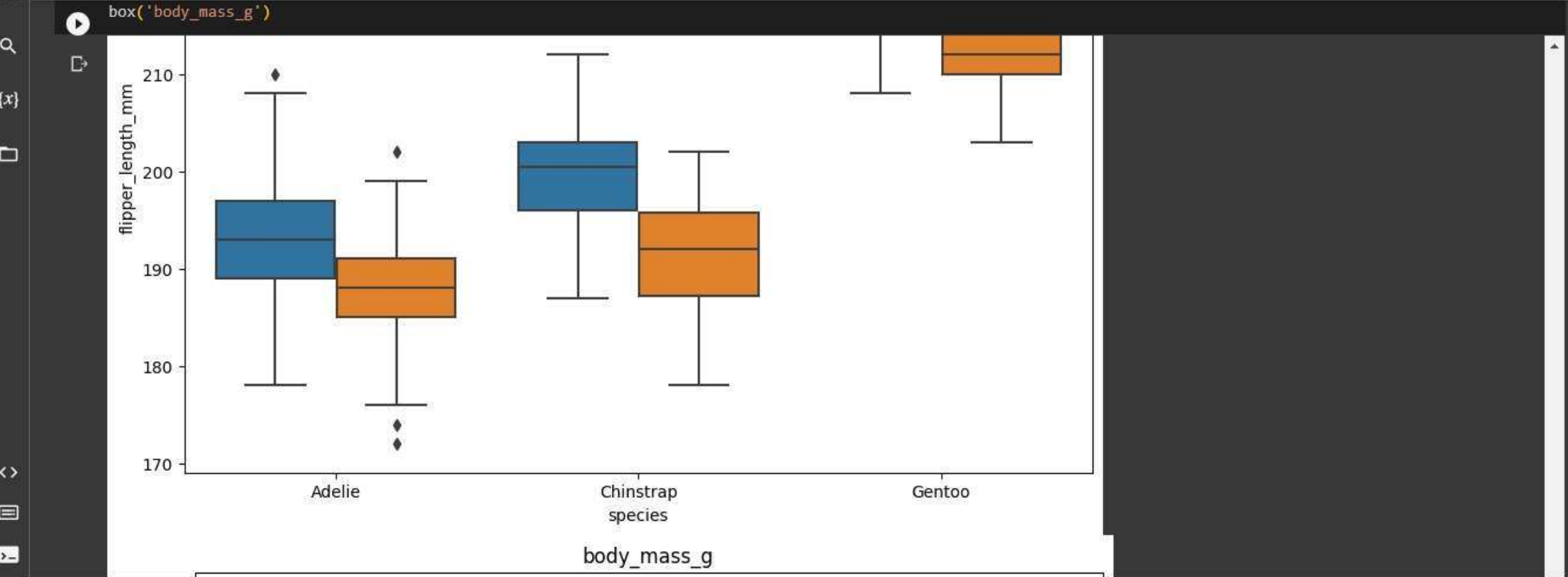



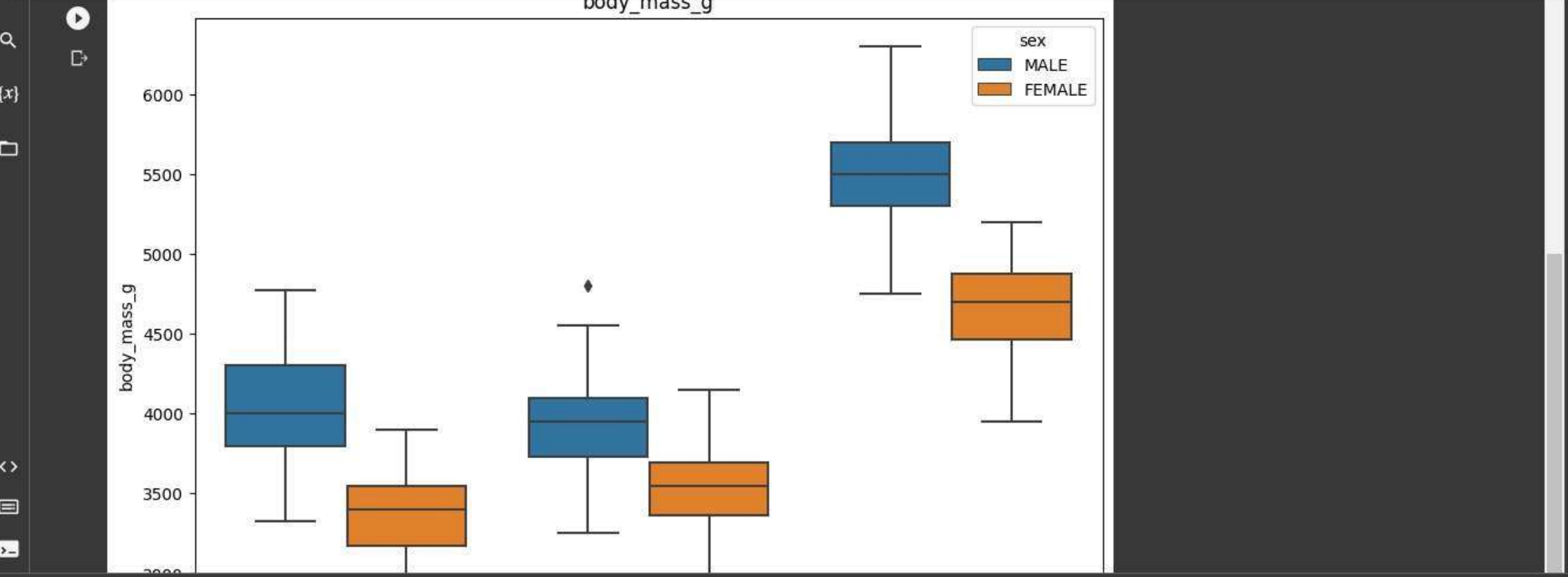


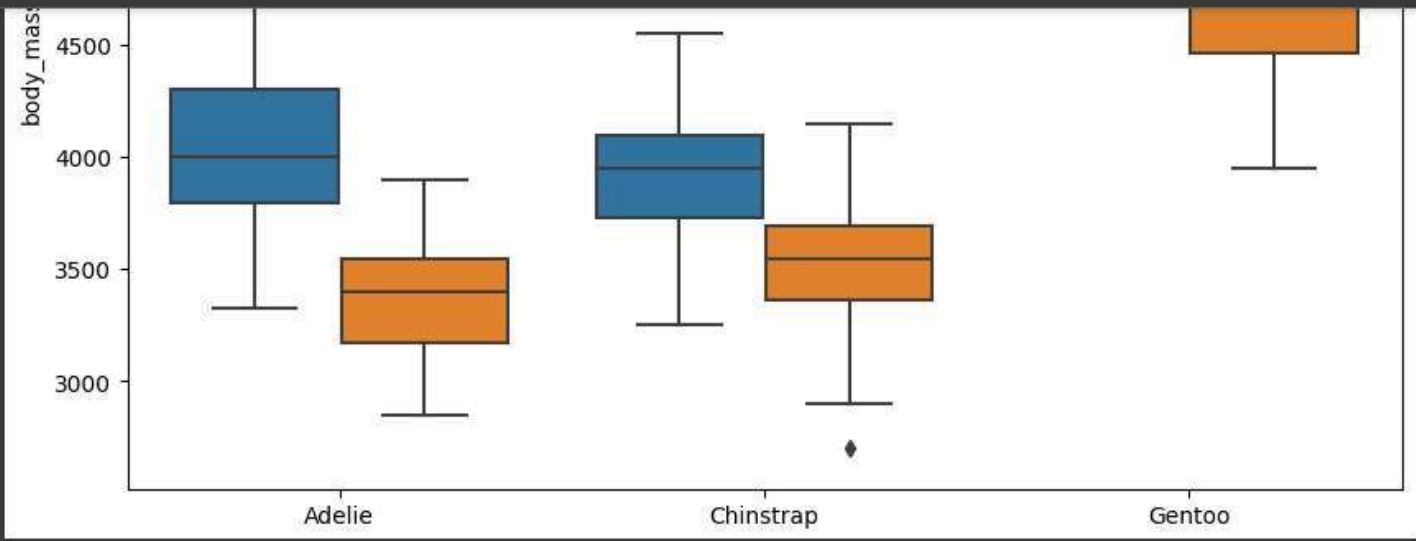




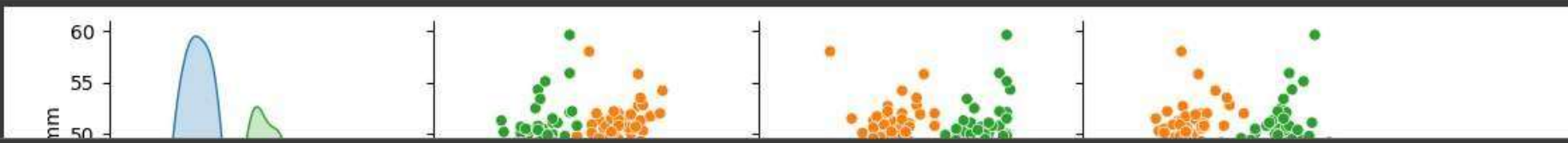


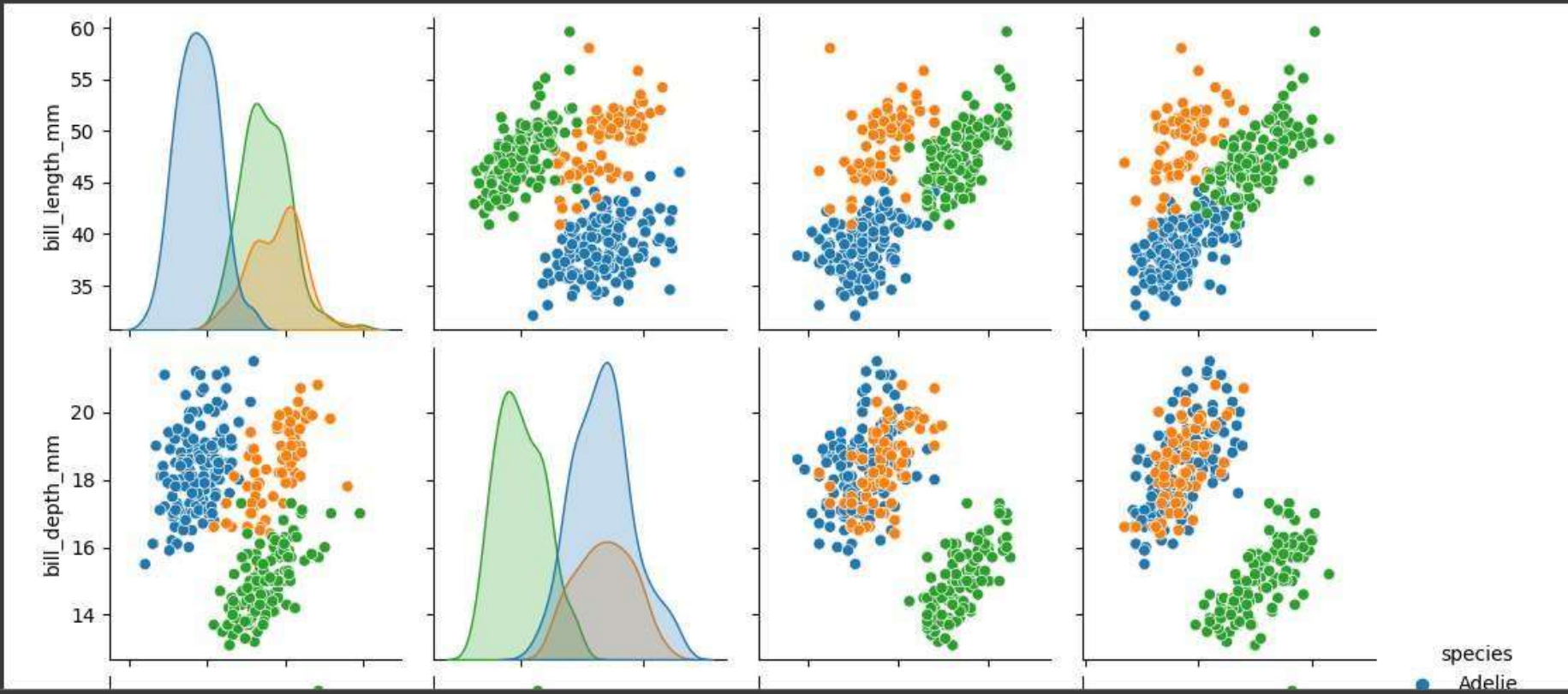


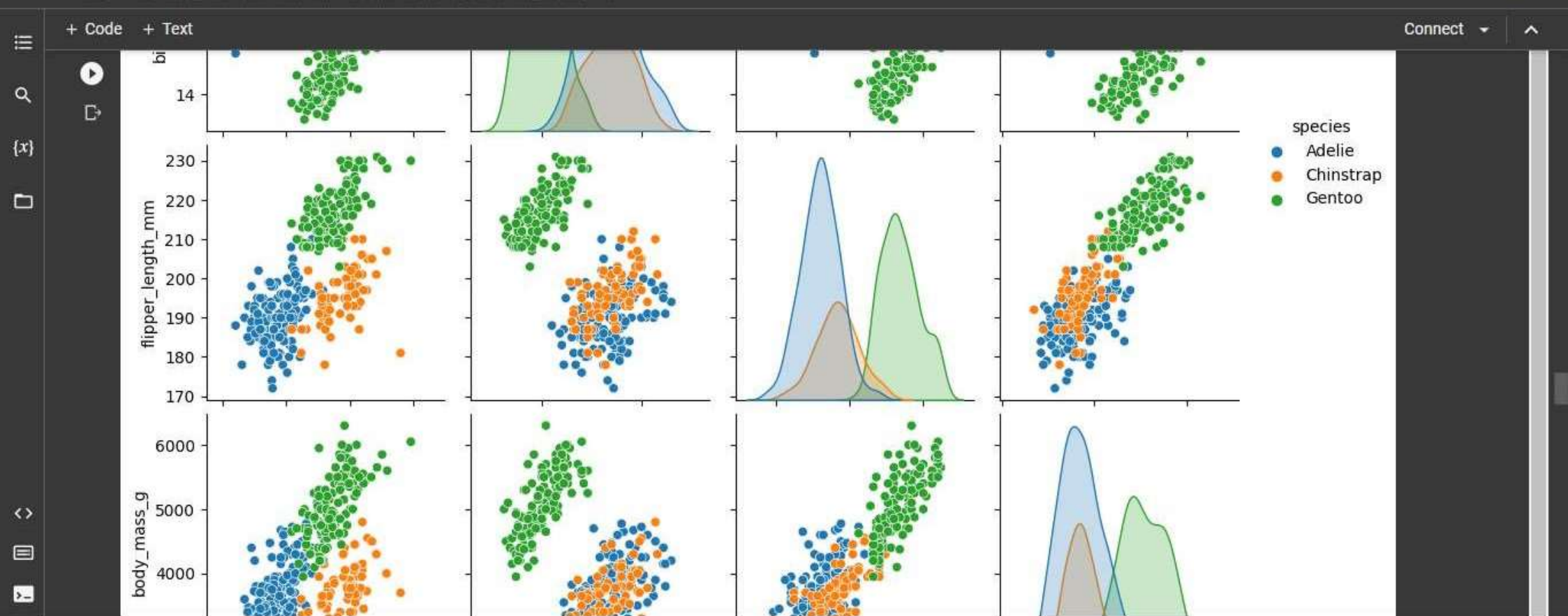


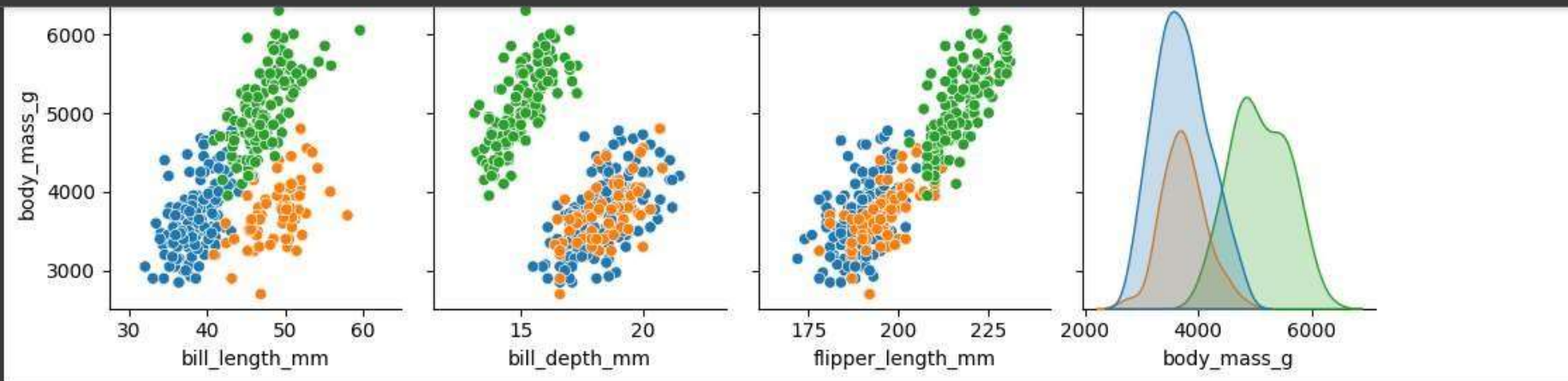


```
sns.pairplot(df, hue = 'species')  
plt.show()
```





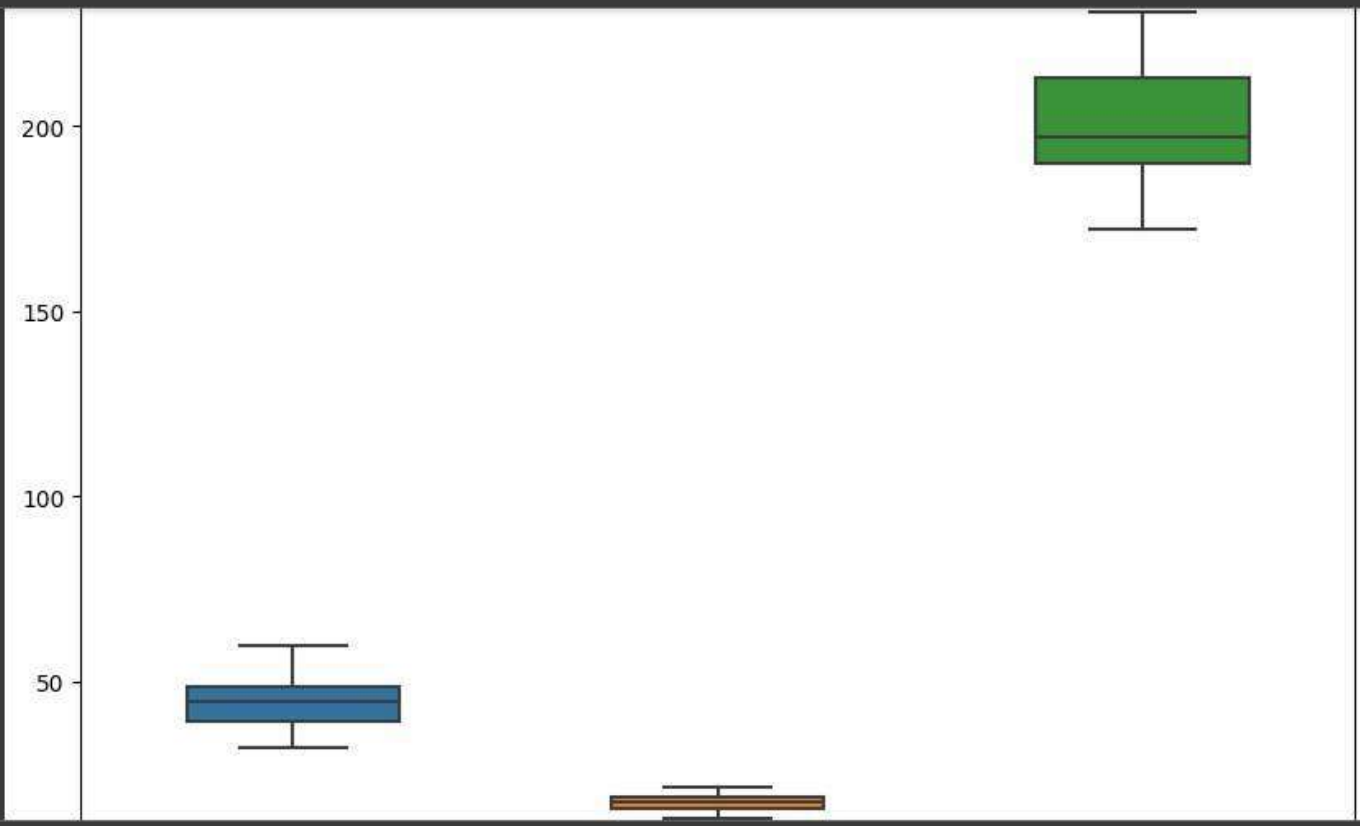




```
df1 = df[['bill_length_mm', 'bill_depth_mm', 'flipper_length_mm']]
sns.boxplot(data=df1, width=0.5, fliersize=5)
```



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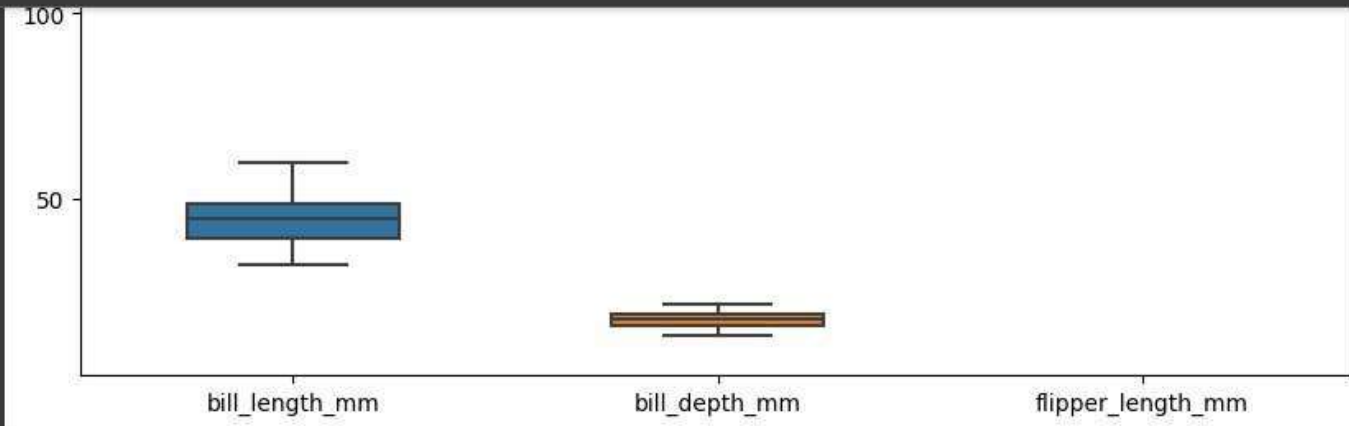


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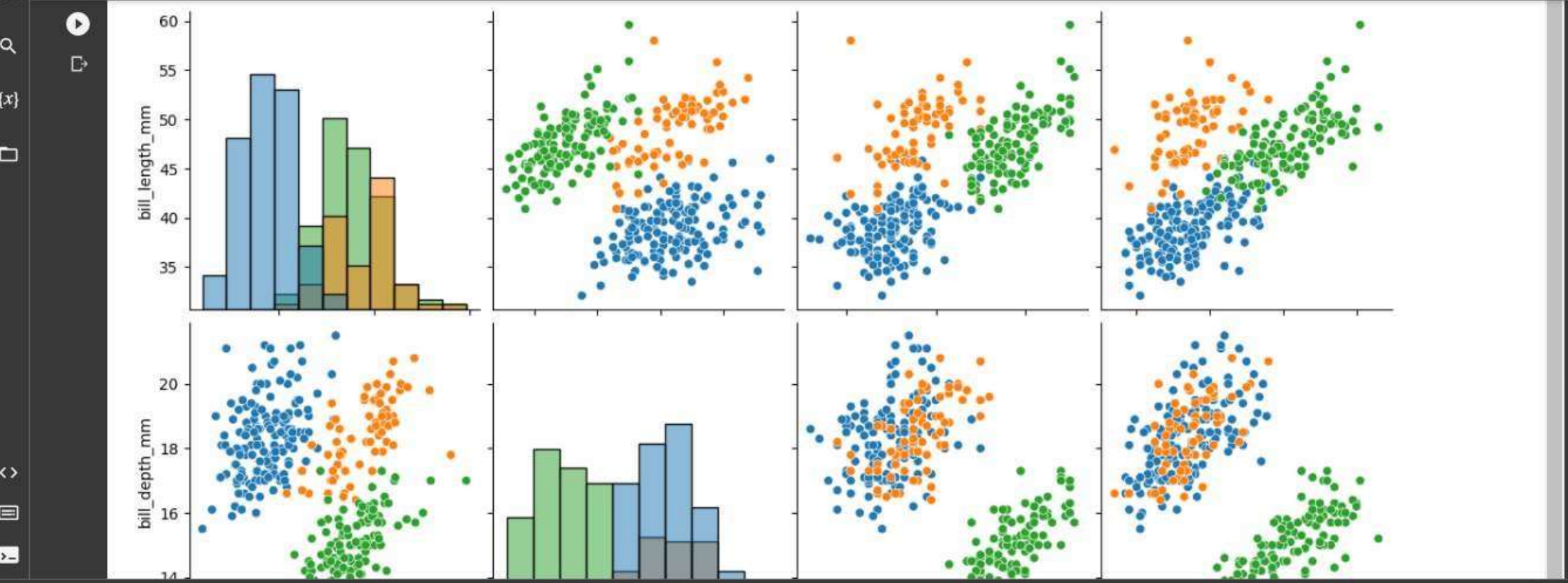
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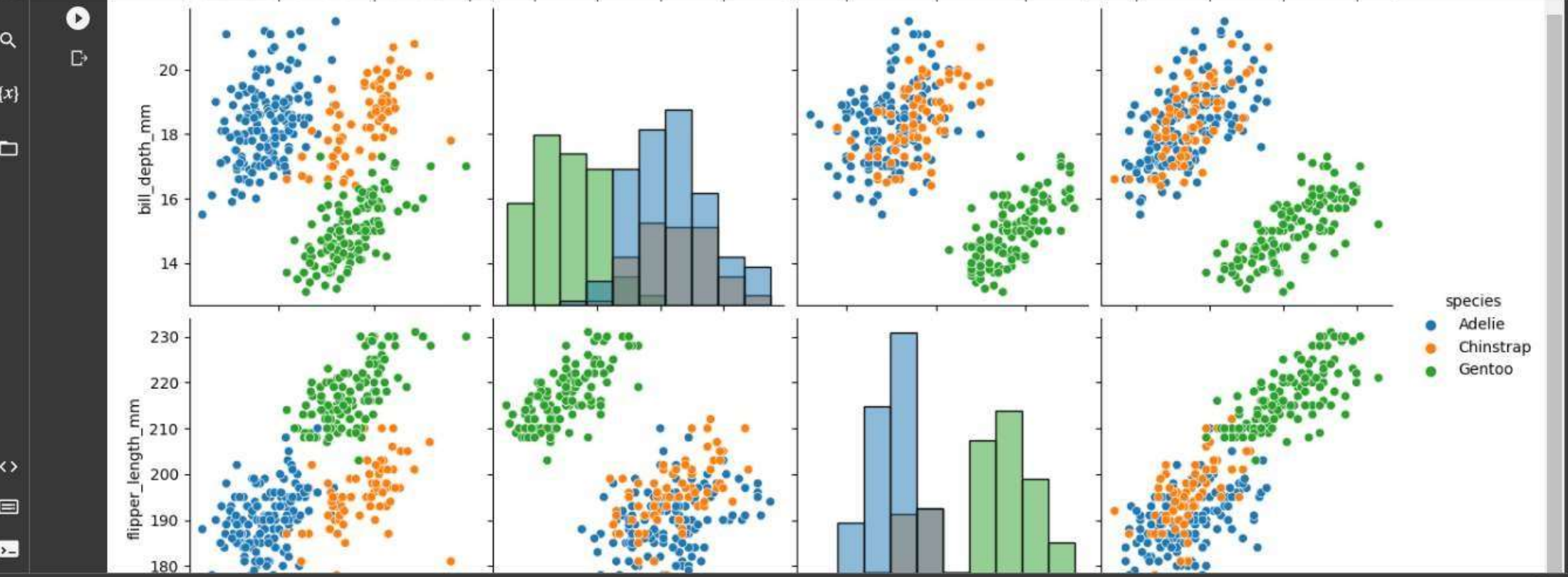


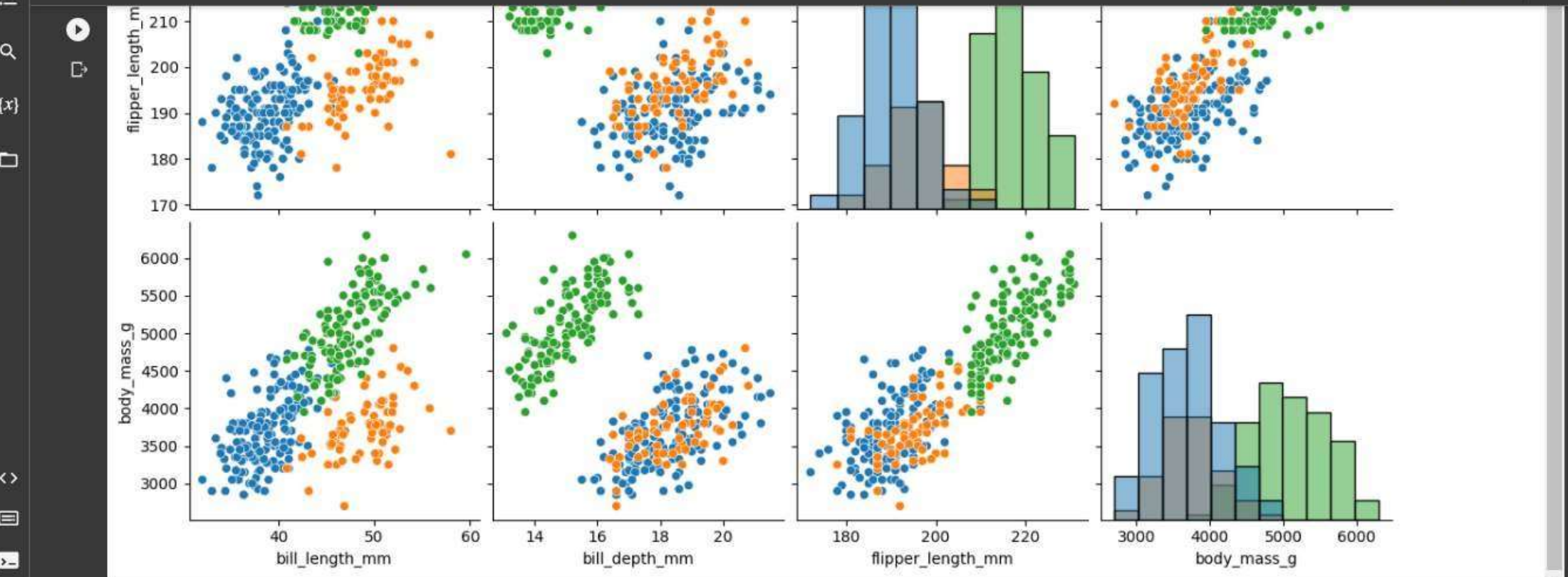
```
sns.pairplot(df, hue="species", size=3,diag_kind="hist")
```

```
/usr/local/lib/python3.10/dist-packages/seaborn/axisgrid.py:2095: UserWarning: The `size` parameter has been renamed to `height`; please update your code.
warnings.warn(msg, UserWarning)
<seaborn.axisgrid.PairGrid at 0x78355f96be20>
```



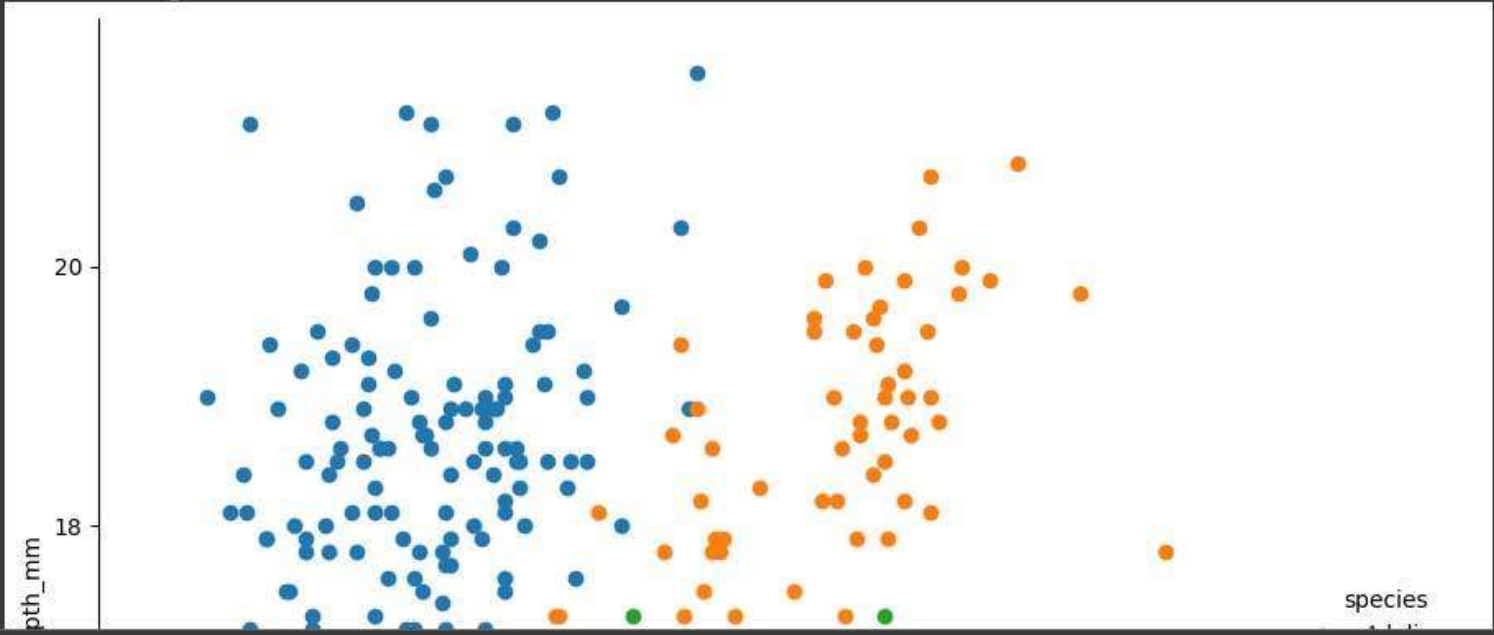


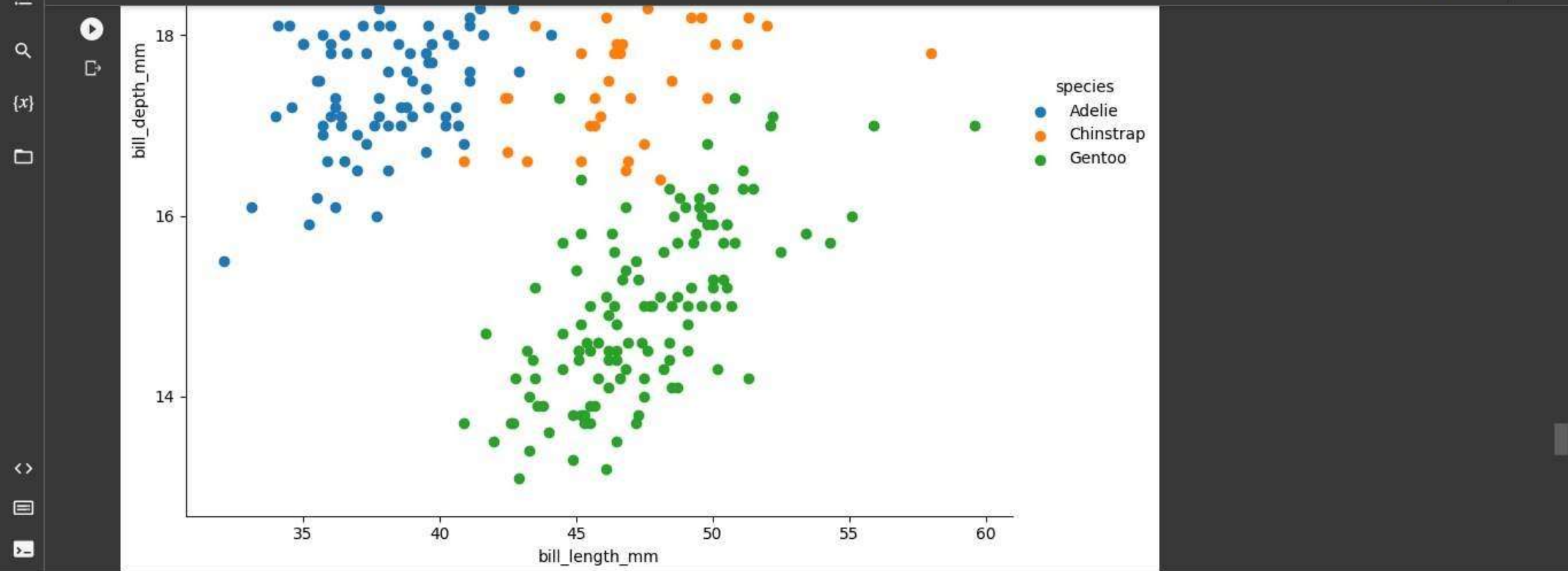




```
sns.FacetGrid(df, hue="species", height=8) \
    .map(plt.scatter, "bill_length_mm", "bill_depth_mm") \
    .add_legend()
```

<seaborn.axisgrid.FacetGrid at 0x78355954d5d0>







Assignment-III.ipynb

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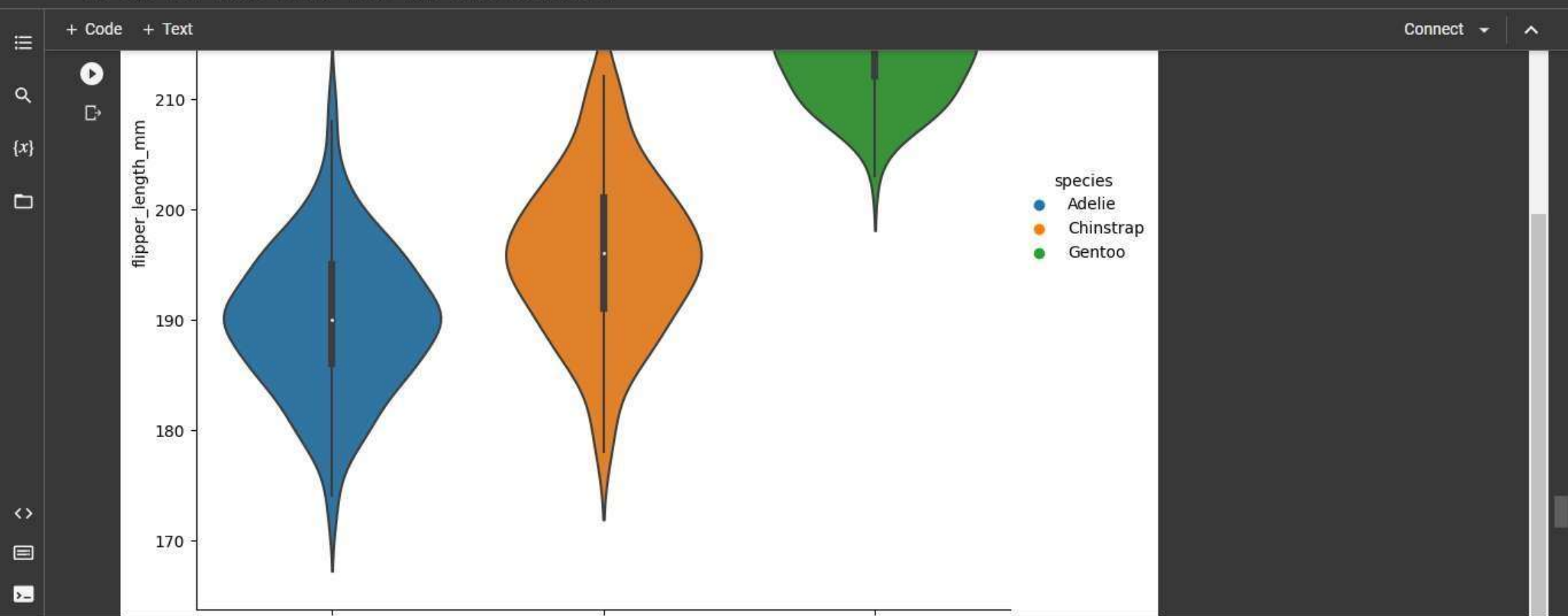
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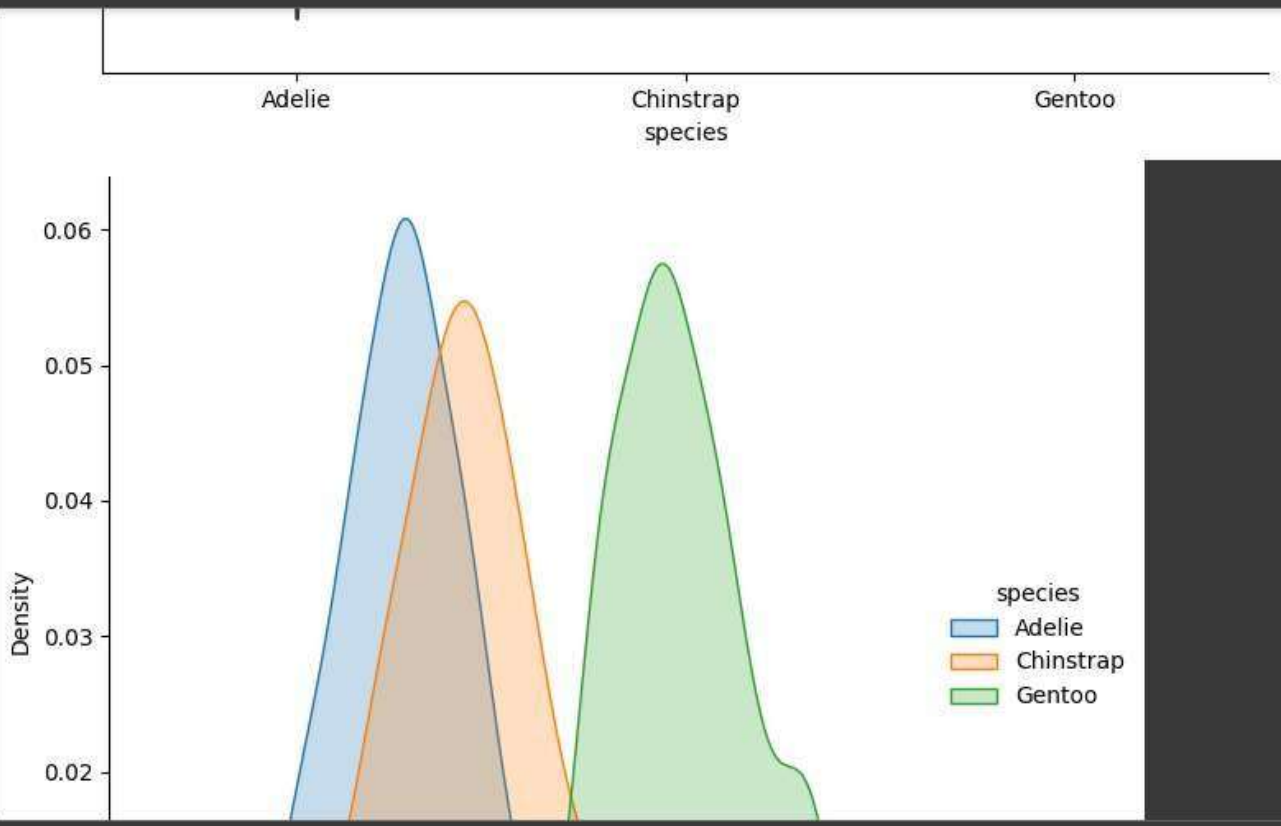
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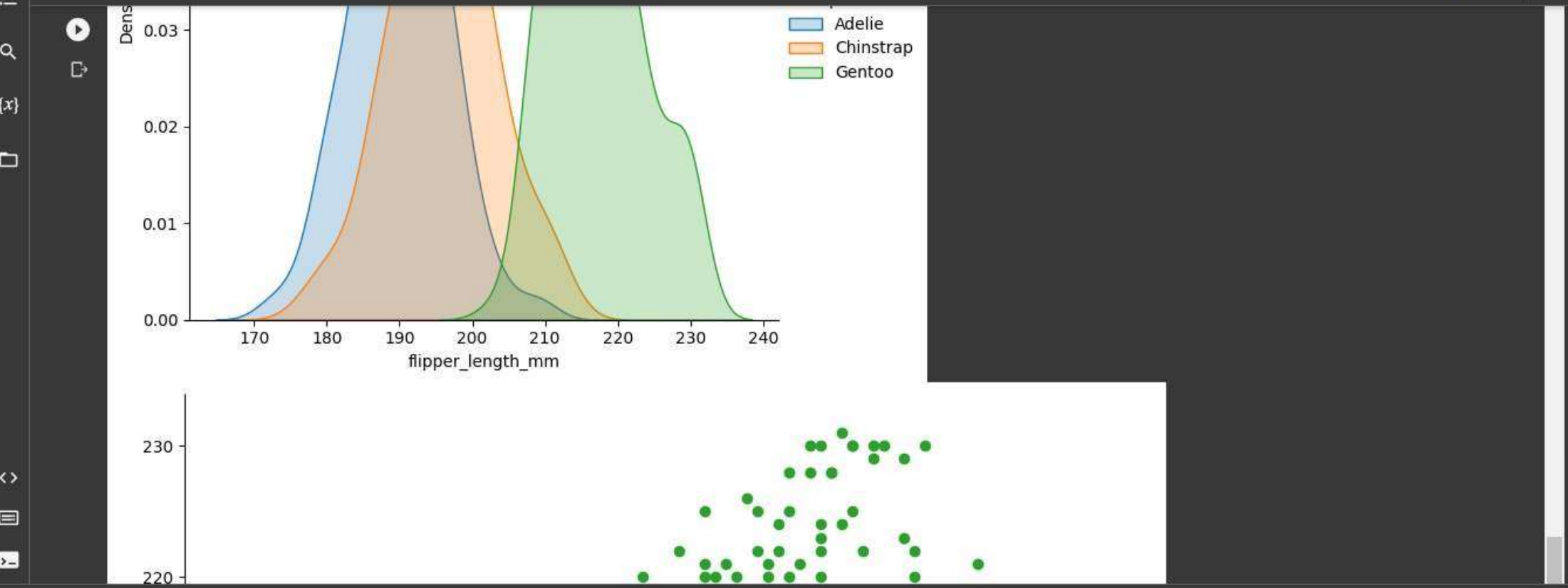
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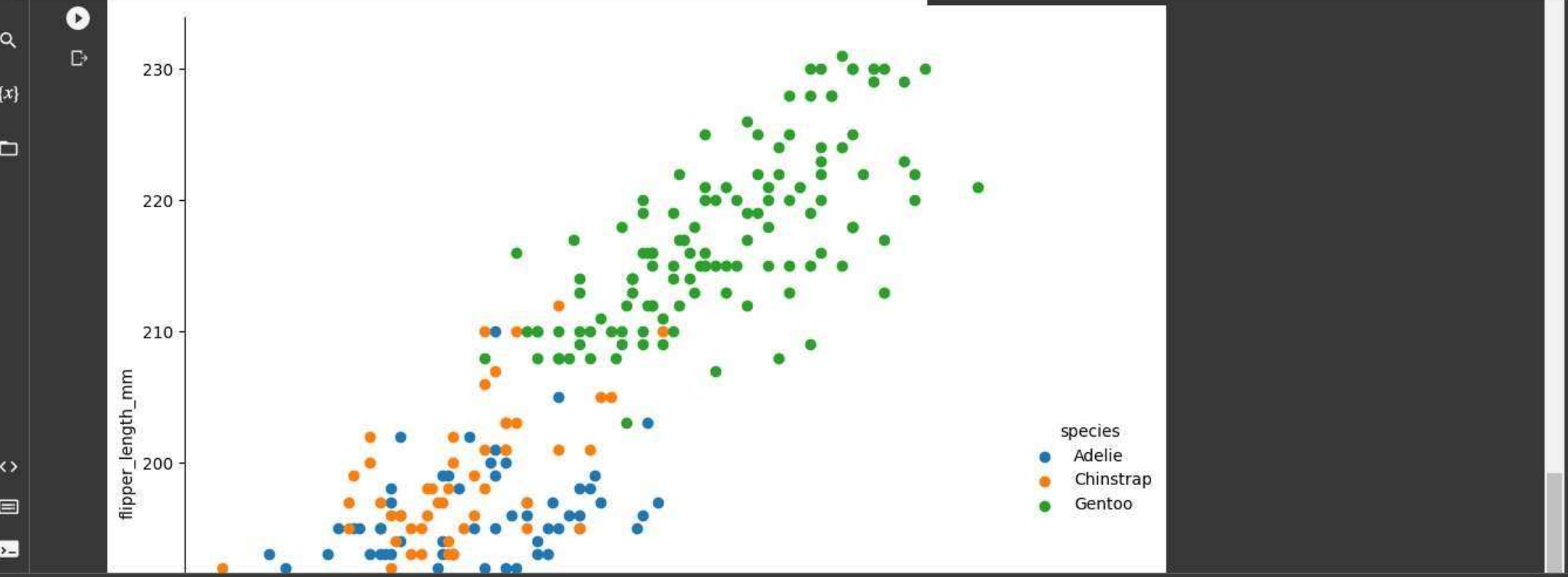
```
sns.FacetGrid(df, hue="species", height=8) \
    .map(plt.scatter, "bill_length_mm", "flipper_length_mm") \
    .add_legend()
ax = sns.violinplot(x="species", y="flipper_length_mm", data=df, height=8)
sns.FacetGrid(df, hue="species", height=6,) \
    .map(sns.kdeplot, "flipper_length_mm", shade=True) \
    .add_legend()
sns.FacetGrid(df, hue="species", height=8) \
    .map(plt.scatter, "body_mass_g", "flipper_length_mm") \
    .add_legend()
```

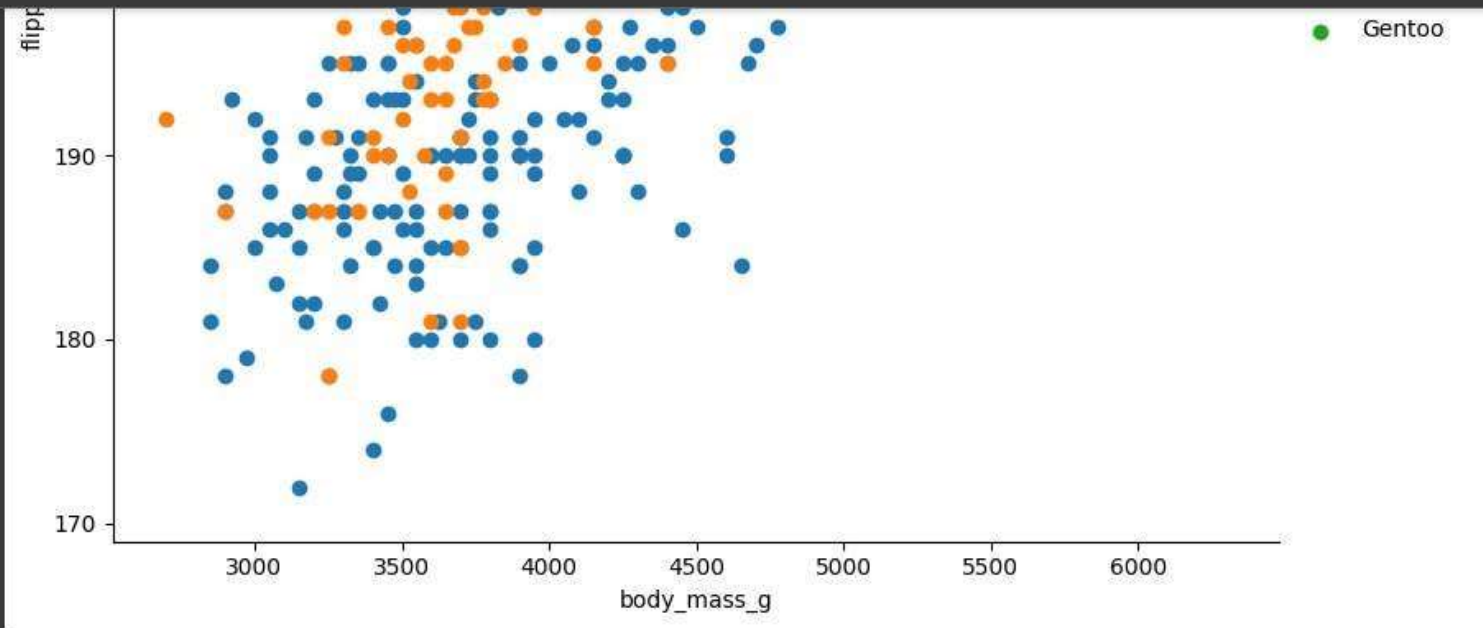




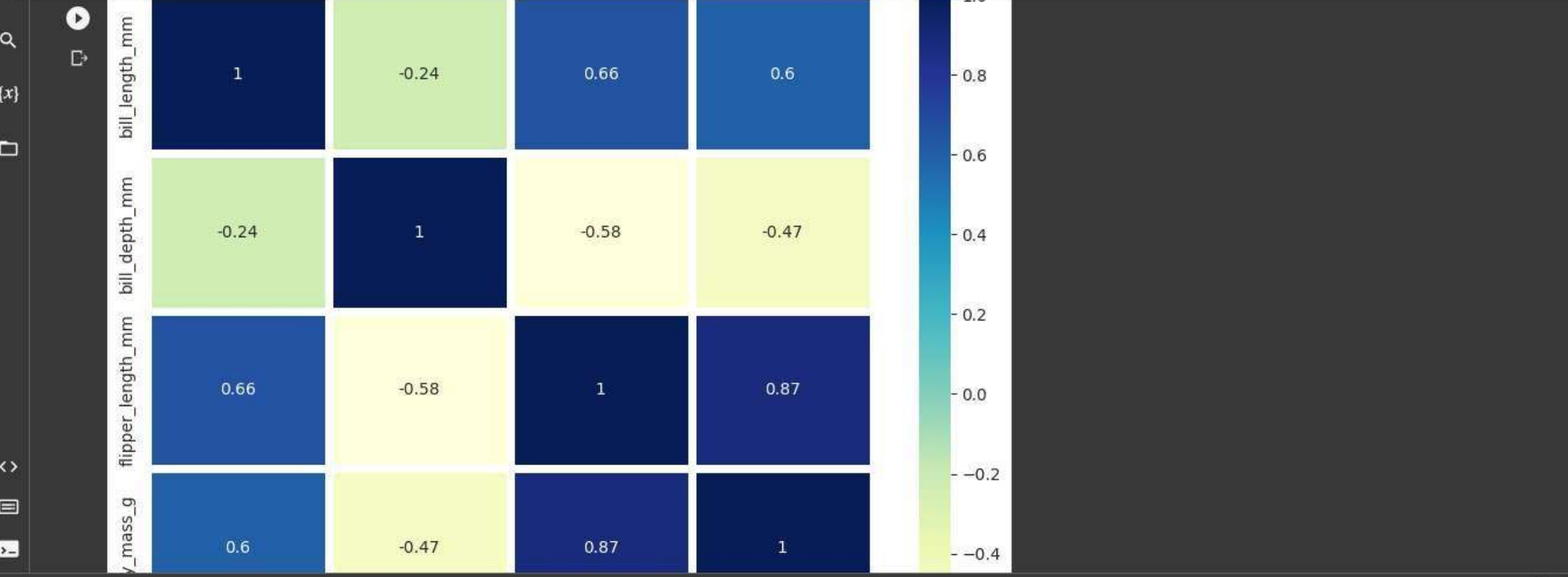


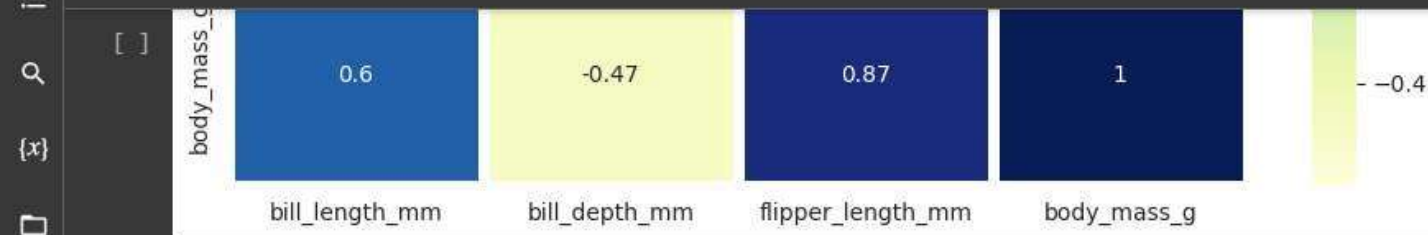






```
[ ] correlation_matrix=df.corr()  
correlation_matrix  
sns.set_style('dark')  
sns.heatmap(correlation_matrix,annot=True,linecolor='white',linewidths=5,cmap="YlGnBu")
```



```
def missing_values_table(df):  
    mis_val = df.isnull().sum()  
  
    mis_val_percent = 100 * df.isnull().sum() / len(df)  
  
    mis_val_table = pd.concat([mis_val, mis_val_percent], axis=1)  
  
    mis_val_table_ren_columns = mis_val_table.rename(  
        columns = {0 : 'Missing Values', 1 : '% of Total Values'})  
  
    mis_val_table_ren_columns = mis_val_table_ren_columns[  
        mis_val_table_ren_columns.iloc[:,1] != 0].sort_values(  
        '% of Total Values', ascending=False).round(1)  
  
    print ("Your selected dataframe has " + str(df.shape[1]) + " columns.\n" +  
        "There are " + str(mis_val_table_ren_columns.shape[0]) +  
        " columns that have missing values.")
```

```
mis_val_table_ren_columns = mis_val_table.rename(
    columns = {0 : 'Missing Values', 1 : '% of Total Values'})

mis_val_table_ren_columns = mis_val_table_ren_columns[
    mis_val_table_ren_columns.iloc[:,1] != 0].sort_values(
    '% of Total Values', ascending=False).round(1)

print ("Your selected dataframe has " + str(df.shape[1]) + " columns.\n"
      " columns that have missing values.")
return mis_val_table_ren_columns
missing= missing_values_table(df)
missing
```

Your selected dataframe has 7 columns.
There are 5 columns that have missing values.

Missing Values % of Total Values

	Missing Values	% of Total Values
sex	11	3.2
bill_length_mm	2	0.6
bill_depth_mm	2	0.6
flipper_length_mm	2	0.6
body_mass_g	2	0.6

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flipper_length_mm	2	0.6
body_mass_g	2	0.6

```
[ ] from sklearn.impute import SimpleImputer
imputer = SimpleImputer(strategy='most_frequent')
df.iloc[:, :] = imputer.fit_transform(df)
df.isnull().sum()
```

```
species      0
island       0
bill_length_mm  0
bill_depth_mm  0
flipper_length_mm  0
body_mass_g   0
sex          0
dtype: int64
```



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14-09-2023

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