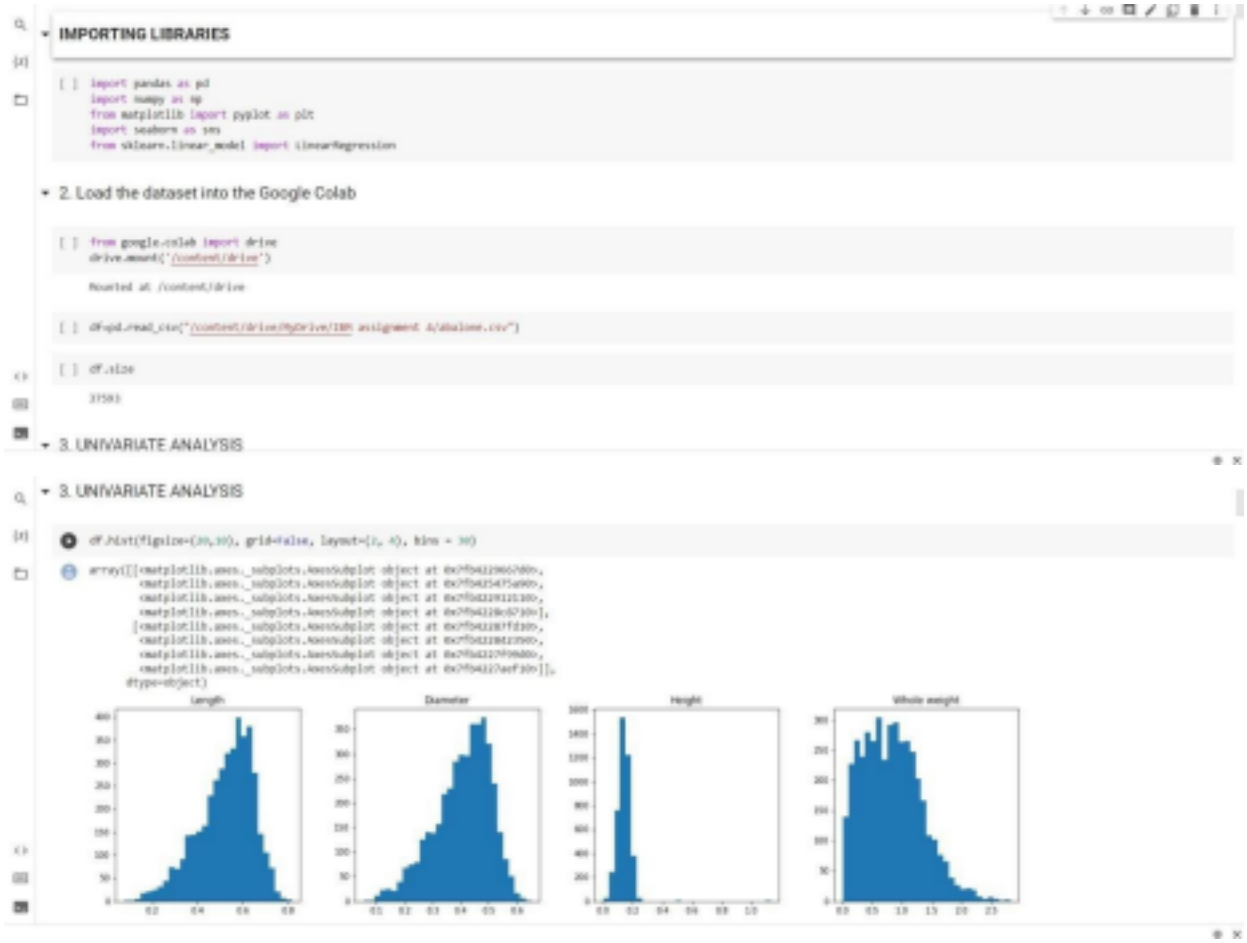
Assignment-4

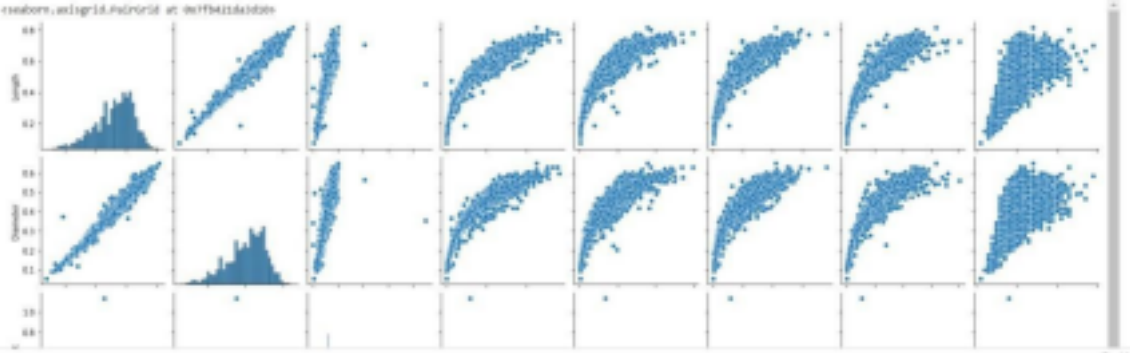
Date	**03.11.2022**
Team Id	**PNT2022TMID24195**
Project Name	**Estimated The Crop Yelid using Data Analytics**
Team Leader	**Divi Nandhu**
Team Member	**Bharathkumar S** **Induja H** **Chaithanya Babu K**

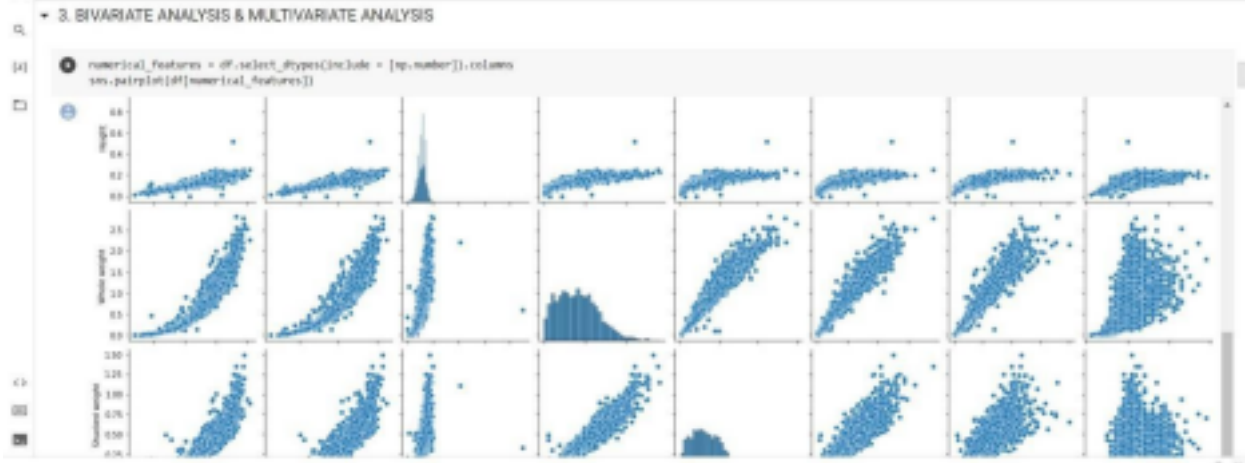


3. BIVARIATE ANALYSIS & MULTIVARIATE ANALYSIS

```
numerical_features = df.select_dtypes(include = [np.number]).columns
sns.pairplot(df[numerical_features])
```

```
<seaborn.axisgrid.PairGrid at 0x7fb41da1da50>
```





4. Descriptive statistics

```
df.describe()
```

	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
count	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000
mean	0.523992	0.407881	0.139516	0.828742	0.359367	0.180594	0.238831	9.933684
std	0.120093	0.099240	0.041827	0.490389	0.221963	0.109614	0.139203	3.224169
min	0.075000	0.055000	0.000000	0.002000	0.001000	0.000500	0.001500	1.000000
25%	0.450000	0.350000	0.115000	0.441500	0.186000	0.093500	0.130000	8.000000
50%	0.545000	0.425000	0.140000	0.799500	0.336000	0.171000	0.234000	9.000000
75%	0.615000	0.480000	0.165000	1.153000	0.502000	0.253000	0.329000	11.000000
max	0.815000	0.650000	1.130000	2.825500	1.488000	0.760000	1.005000	29.000000

5. Check for Missing Values

```
df.isnull().sum()
```

```
Sex               0
Length            0
Diameter          0
Height            0
Whole weight      0
Shucked weight    0
Viscera weight    0
Shell weight      0
Rings             0
dtype: int64
```

6. OUTLIER HANDLING

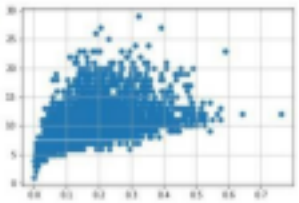
```
df = pd.get_dummies(df)
dummy_data = df.copy()
```

```
var = 'Viscera weight'
plt.scatter(x = df[var], y = df['Rings'],)
plt.grid(True)
```

6. OUTLIER HANDLING

```
df = pd.get_dummies(df)
dummy_data = df.copy()
```

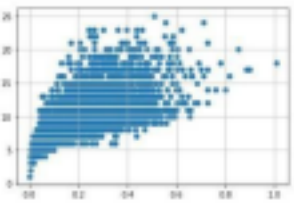
```
var = 'Viscera weight'
plt.scatter(x = df[var], y = df['Rings'],)
plt.grid(True)
```



```
# outliers removal
df.drop(df[(df['Viscera weight']> 0.5) & (df['Rings'] < 20)].index, inplace=True)
```

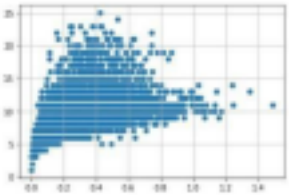
```
# outliers removal
df.drop(df[(df['Viscera weight']> 0.5) & (df['Rings'] < 20)].index, inplace=True)
df.drop(df[(df['Viscera weight']<0.5) & (df['Rings'] > 25)].index, inplace=True)
```

```
var = 'Shell weight'
plt.scatter(x = df[var], y = df['Rings'],)
plt.grid(True)
#outliers removal
df.drop(df[(df['Shell weight']> 0.6) & (df['Rings'] < 25)].index, inplace=True)
df.drop(df[(df['Shell weight']<0.8) & (df['Rings'] > 25)].index, inplace=True)
```



```
var = 'Shucked weight'
plt.scatter(x = df[var], y = df['Rings'],)
plt.grid(True)

#outlier removal
df.drop(df[(df['Shucked weight']>= 1) & (df['Rings'] < 20)].index, inplace=True)
df.drop(df[(df['Shucked weight']<1) & (df['Rings'] > 20)].index, inplace=True)
```

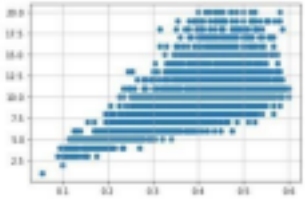


```
var = 'Whole weight'
plt.scatter(x = df[var], y = df['Rings'])
plt.grid(True)

df.drop(df[(df['Whole weight'] >= 2.5) &
           (df['Rings'] < 25)].index, inplace = True)
```

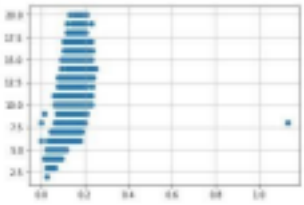
```
var = 'Diameter'
plt.scatter(x = df[var], y = df['Rings'])
plt.grid(True)

df.drop(df[(df['Diameter'] <0.1) &
           (df['Rings'] < 5)].index, inplace = True)
df.drop(df[(df['Diameter']<0.6) & (
df['Rings'] > 25)].index, inplace = True)
df.drop(df[(df['Diameter']>=0.6) & (
df['Rings'] < 25)].index, inplace = True)
```



```
var = 'Height'
plt.scatter(x = df[var], y = df['Rings'])
plt.grid(True)
```

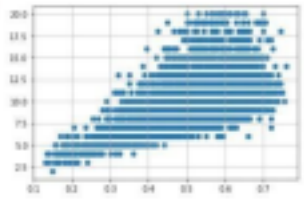
```
var = 'Height'
plt.scatter(x = df[var], y = df['Rings'])
plt.grid(True)
df.drop(df[(df['Height'] > 0.4) &
           (df['Rings'] < 15)].index, inplace = True)
df.drop(df[(df['Height']>0.4) &
df['Rings'] > 25)].index, inplace = True)
```



```
var = 'Length'
plt.scatter(x = df[var], y = df['Rings'])
plt.grid(True)
```

```
var = 'Length'
plt.scatter(x = df[var], y = df['Rings'])
plt.grid(True)

df.drop(df[(df['Length'] <0.1) &
           (df['Rings'] < 5)].index, inplace = True)
df.drop(df[(df['Length']>0.8) & (
df['Rings'] > 25)].index, inplace = True)
df.drop(df[(df['Length']>=0.8) & (
df['Rings'] < 25)].index, inplace = True)
```



7. Categorical columns

```
numerical_features = df.select_dtypes(include = [np.number]).columns
categorical_features = df.select_dtypes(include = [np.object]).columns
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1: DeprecationWarning: `np.object` is a deprecated alias for the builtin `object`. To silence this warning, use `object` by
Deprecated in NumPy 1.20; for more details and guidance: https://numpy.org/devdocs/release/1.20.0-notes.html#deprecations
```

```
numerical_features
```

```
Index(['Length', 'Diameter', 'Height', 'Whole weight', 'Shucked weight',
       'Viscera weight', 'Shell weight', 'Rings', 'Sex_F', 'Sex_I', 'Sex_M'],
      dtype='object')
```

```
categorical_features
```

```
Index([], dtype='object')
```

ENCODING

```
from sklearn.preprocessing import LabelEncoder
le=LabelEncoder()
print(df.Length.value_counts())
```

```
0.575    93
0.580    92
0.550    92
0.625    91
0.600    85
         ..
0.135     1
0.130     1
0.755     1
0.150     1
0.760     1
Name: Length, Length: 126, dtype: int64
```

8. Split the dependent and independent variables

```
x=df.iloc[:,:8]
x
```

	Length	Diameter	Height	Whole weight	Shucked weight

8. Split the dependent and independent variables

```
x=df.iloc[:,:5]
x
```

	Length	Diameter	Height	Whole weight	Shucked weight
0	0.455	0.365	0.095	0.5140	0.2245
1	0.350	0.265	0.090	0.2255	0.0995
2	0.530	0.420	0.135	0.6770	0.2565
3	0.440	0.365	0.125	0.5160	0.2155
4	0.330	0.255	0.080	0.2050	0.0895
...	...	...	...	...	...
4172	0.565	0.450	0.165	0.8870	0.3700
4173	0.590	0.440	0.135	0.9660	0.4390
4174	0.600	0.475	0.205	1.1760	0.5255
4175	0.625	0.485	0.150	1.0945	0.5310
4176	0.710	0.555	0.195	1.9485	0.9455

4048 rows × 5 columns