IMPORTING LIBRARIES

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
```

```
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

```
#load the data
df = pd.read_csv('/content/drive/My Drive/Machine Learning/abalone.csv')
```

```
df
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
0	M	0.455	0.365	0.095	0.5140	0.2245	0.1010	0.1500	15
1	M	0.350	0.265	0.090	0.2255	0.0995	0.0485	0.0700	7
2	F	0.530	0.420	0.135	0.6770	0.2565	0.1415	0.2100	9
3	M	0.440	0.365	0.125	0.5160	0.2155	0.1140	0.1550	10
4	I	0.330	0.255	0.080	0.2050	0.0895	0.0395	0.0550	7
...	...	...	...	...	...	...	...	...	...
4172	F	0.565	0.450	0.165	0.8870	0.3700	0.2390	0.2490	11
4173	M	0.590	0.440	0.135	0.9660	0.4390	0.2145	0.2605	10
4174	M	0.600	0.475	0.205	1.1760	0.5255	0.2875	0.3080	9
4175	F	0.625	0.485	0.150	1.0945	0.5310	0.2610	0.2960	10
4176	M	0.710	0.555	0.195	1.9485	0.9455	0.3765	0.4950	12

4177 rows × 9 columns

```
df.head()
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
0	M	0.455	0.365	0.095	0.5140	0.2245	0.1010	0.150	15

```
df.describe()
```

	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight
count	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
std	0.120093	0.099240	0.041827	0.490389	0.221963	0.109614
min	0.075000	0.055000	0.000000	0.002000	0.001000	0.000500
25%	0.450000	0.350000	0.115000	0.441500	0.186000	0.093500
50%	0.545000	0.425000	0.140000	0.799500	0.336000	0.171000
75%	0.615000	0.480000	0.165000	1.153000	0.502000	0.253000

```
df['age'] = df['Rings']+1.5
df = df.drop('Rings', axis = 1)
```

```
from sklearn.preprocessing import  StandardScaler
from sklearn.model_selection import  train_test_split, cross_val_score
from sklearn.feature_selection import SelectKBest
from sklearn.metrics import r2_score, mean_squared_error
import warnings
warnings.filterwarnings("ignore", category=DeprecationWarning)
```

UNIVARIATE ANALYSIS

```
sns.heatmap(df.isnull())
```

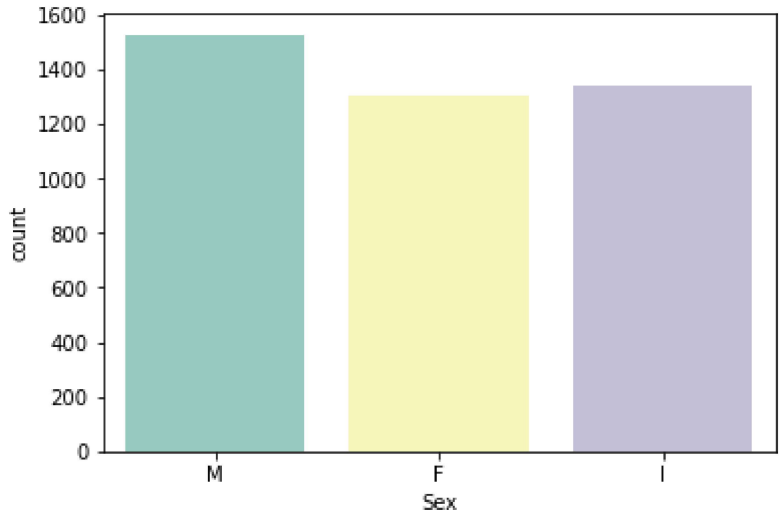
```
<AxesSubplot:>
```


```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4177 entries, 0 to 4176
Data columns (total 9 columns):
 #   Column          Non-Null Count  Dtype  
---  ------          --------------  -----  
 0   Sex             4177 non-null   object 
 1   Length          4177 non-null   float64
 2   Diameter        4177 non-null   float64
 3   Height          4177 non-null   float64
 4   Whole weight    4177 non-null   float64
 5   Shucked weight  4177 non-null   float64
 6   Viscera weight  4177 non-null   float64
 7   Shell weight    4177 non-null   float64
 8   age             4177 non-null   float64
dtypes: float64(8), object(1)
memory usage: 293.8+ KB
```

```
sns.countplot(x = 'Sex', data = df, palette = 'Set3')
```

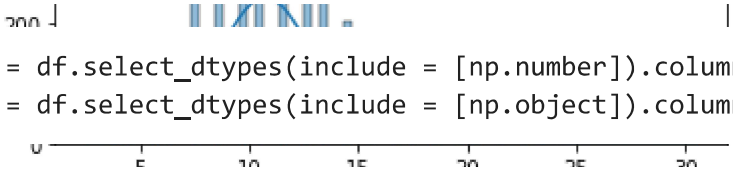
```
<AxesSubplot:xlabel='Sex', ylabel='count'>
```




```
sns.histplot(df.age,kde=True)
```

```
<AxesSubplot:xlabel='age', ylabel='Count'>
```

BIVARIATE ANALYSIS



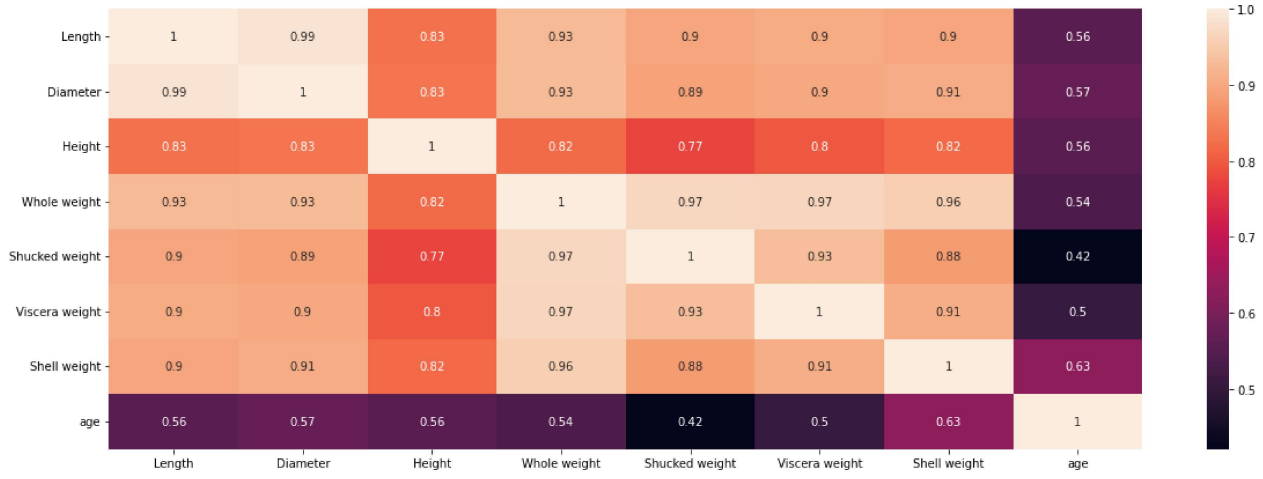
```
num_fea = df.select_dtypes(include = [np.number]).columns
ctg_fea = df.select_dtypes(include = [np.object]).columns
```

```
num_fea
```

```
Index(['Length', 'Diameter', 'Height', 'Whole weight', 'Shucked weight',
       'Viscera weight', 'Shell weight', 'age'],
      dtype='object')
```

```
plt.figure(figsize = (20,7))
sns.heatmap(df[num_fea].corr(),annot = True)
```

```
<AxesSubplot:>
```



MULTI VARIATE ANALYSIS

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MISSING VALUES

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OUTLIERS

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CATEGORICAL COLUMNS

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INDEPENDENT AND DEPENDENT VARIABLE

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SCALING THE INDEPENDENT VARIABLE

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SPLITING THE DATA

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BUILDING MODEL

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TRAINING THE MODEL

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TESTING THE MODEL

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