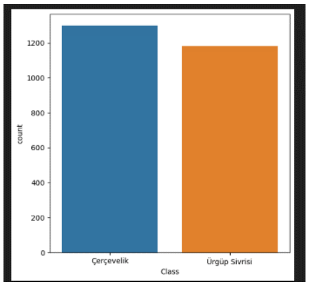
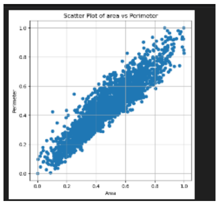
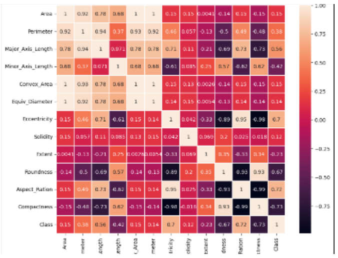
Data Collection and Preprocessing Phase

Date	03 June2024
Team ID	739676
Project Title	Harvesting Brilliance: A Taxanomic Tale of Pumpkin Seeds Varieties
Maximum Marks	6 Marks

Data Exploration and Preprocessing Template

Identifies data sources, assesses quality issues like missing values and duplicates, and implements resolution plans to ensure accurate and reliable analysis.

Section	Description	Screenshot
Data Overview	This section provides an overview of the pumpkin seed varieties dataset. It includes basic statistics such as the number of varieties, dimensions of the dataset (e.g., number of rows and columns), and the general structure of the data (e.g., types of variables, data types)	
Univariate Analysis	This section focuses on analyzing individual variables within the pumpkin seed varieties dataset. It involves calculating and interpreting descriptive statistics like mean, median, mode, and standard deviation for each variable.	
Bivariate Analysis	This section examines the relationships between two variables in the pumpkin seed varieties dataset. It includes techniques like correlation analysis and scatter plots to understand how different variables interact with each other.	

<table>
<tr>
<td>Multivariate Analysis</td>
<td>This section investigates patterns and relationships involving multiple variables simultaneously. It involves more complex statistical methods to understand how different variables collectively influence certain outcomes.</td>
<td>
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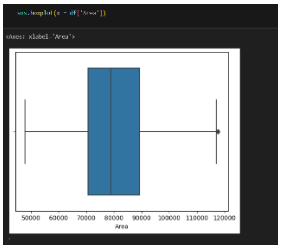
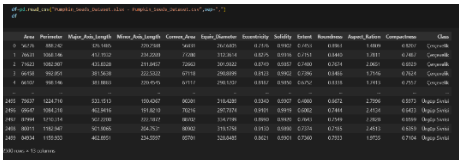
<tr>
<td>Outliers and Anomalies</td>
<td>This section focuses on identifying and treating outliers and anomalies within the pumpkin seed varieties dataset. Outliers are data points that deviate significantly from the rest of the data, which can affect the analysis.</td>
<td>
<pre>sns.boxplot(x = df['Area'])

<Axes: xlabel='Area'></pre>
</td>
</tr>
<tr>
<td colspan="2"><b>Data Preprocessing Code Screenshots</b></td>
<td></td>
</tr>
<tr>
<td>Loading Data</td>
<td>
<pre>df=pd.read_csv("Pumpkin_Seeds_Dataset.xlsx - Pumpkin_Seeds_Dataset.csv",sep=",")
df

      Area Perimeter Major_Axis_Length Minor_Axis_Length Convex_Area Equiv_Diameter Eccentricity Solidity Extent Roundness Aspect_Ration Compactness   Class
0   56276   888.242   326.1485   220.2388   56831   267.6805   0.7376   0.9902 0.7453   0.8963   1.4809   0.8207   Çerçevelik
1   76631   1068.146   417.1932   234.2289   77280   312.3614   0.8275   0.9916 0.7151   0.8440   1.7811   0.7487   Çerçevelik
2   71623   1082.987   435.8328   211.0457   72663   301.9822   0.8749   0.9857 0.7400   0.7674   2.0651   0.6929   Çerçevelik
3   66458   992.051   381.5638   222.5322   67118   290.8899   0.8123   0.9902 0.7396   0.8486   1.7146   0.7624   Çerçevelik
4   66107   998.146   383.8883   220.4545   67117   290.1207   0.8187   0.9850 0.6752   0.8338   1.7413   0.7557   Çerçevelik
...   .
2495 79637   1224.710   533.1513   190.4367   80381   318.4289   0.9340   0.9907 0.4888   0.6672   2.7996   0.5973 Ürgüp Sivrisi
2496 69647   1084.318   462.9416   191.8210   70216   297.7874   0.9101   0.9919 0.6002   0.7444   2.4134   0.6433 Ürgüp Sivrisi
2497 87994   1210.314   507.2200   222.1872   88702   334.7199   0.8990   0.9920 0.7643   0.7549   2.2828   0.6599 Ürgüp Sivrisi
2498 80011   1182.947   501.9065   204.7531   80902   319.1758   0.9139   0.9890 0.7374   0.7185   2.4513   0.6359 Ürgüp Sivrisi
2499 84934   1159.933   462.8951   234.5597   85781   328.8485   0.8621   0.9901 0.7360   0.7933   1.9735   0.7104 Ürgüp Sivrisi

2500 rows × 13 columns</pre></td>
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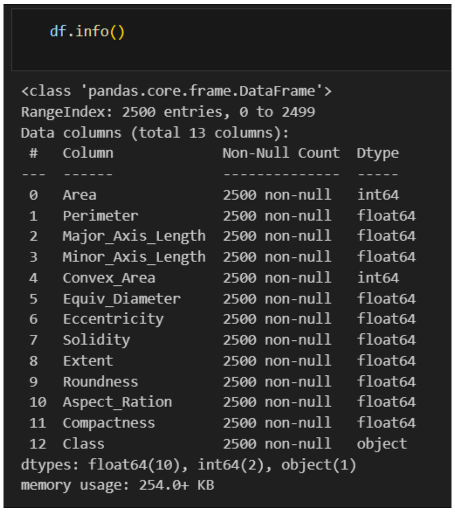
<tr>
<td>Handling Missing Data</td>
<td>
<pre>df.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2500 entries, 0 to 2499
Data columns (total 13 columns):
 #   Column   Non-Null Count Dtype
--- ------   -------------- -----
 0   Area   2500 non-null   int64
 1   Perimeter   2500 non-null   float64
 2   Major_Axis_Length 2500 non-null   float64
 3   Minor_Axis_Length 2500 non-null   float64
 4   Convex_Area   2500 non-null   int64
 5   Equiv_Diameter   2500 non-null   float64
 6   Eccentricity   2500 non-null   float64
 7   Solidity   2500 non-null   float64
 8   Extent   2500 non-null   float64
 9   Roundness   2500 non-null   float64
 10 Aspect_Ration   2500 non-null   float64
 11 Compactness   2500 non-null   float64
 12 Class   2500 non-null   object
dtypes: float64(10), int64(2), object(1)
memory usage: 254.0+ KB</pre></td>
<td></td>
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