Data Collection and Preprocessing Phase

Date	03 June2024
Team ID	739692
Project Title	Harvesting Brilliance: A Taxanomic Tale of Pumpkin Seeds Varieties
Maximum Marks	6 Marks

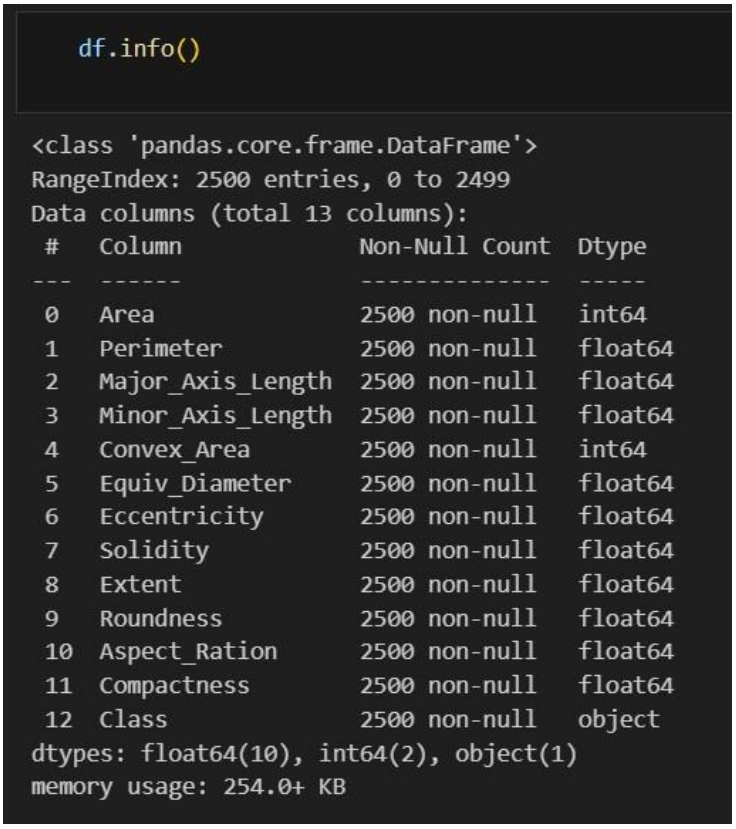
Data Exploration and Preprocessing Template

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

Section	Description
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.
Multivariate Analysis	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.

Outliers and Anomalies	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.

Data Preprocessing Code Screenshots

Loading Data	
Handling Missing Data	

```
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	0.9130	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

```
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
```