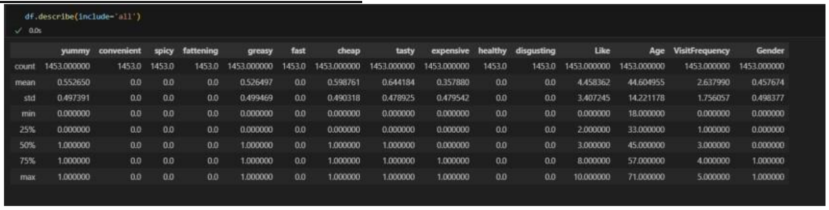
Data Collection and Preprocessing Phase

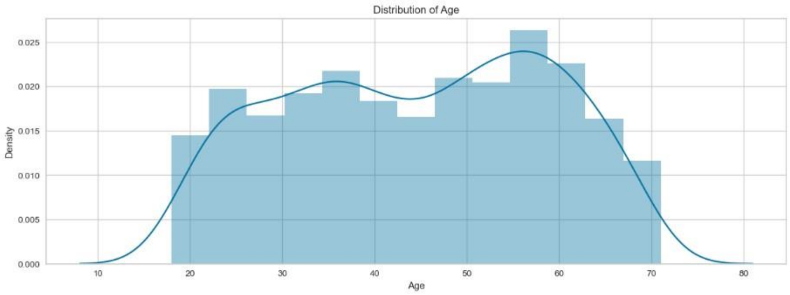
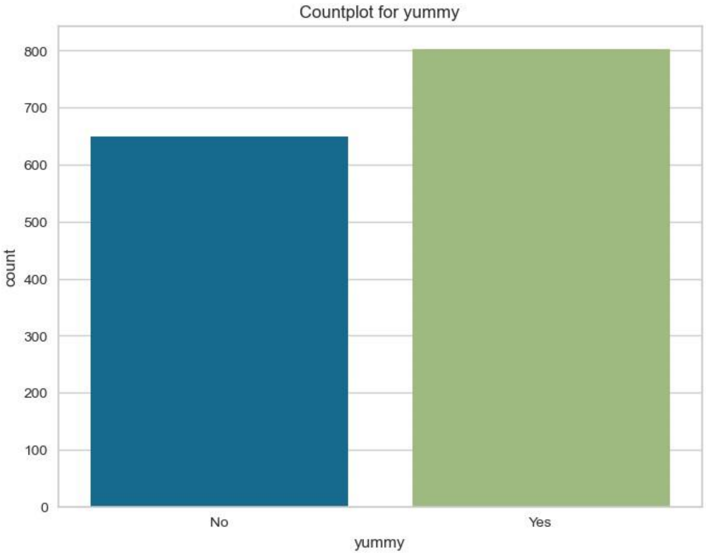
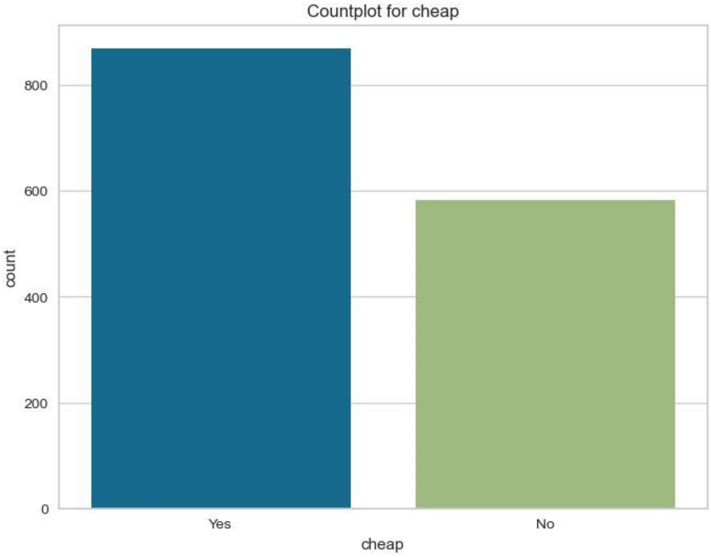
Date	15 July 2024
Team ID	739834
Project Title	MARKET SEGMENTATION ANALYSIS
Maximum Marks	6 Marks

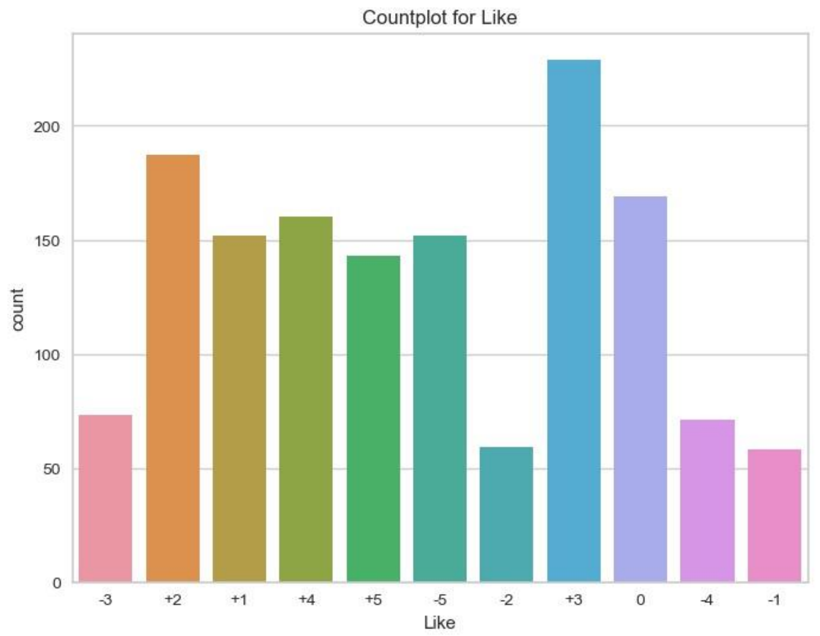
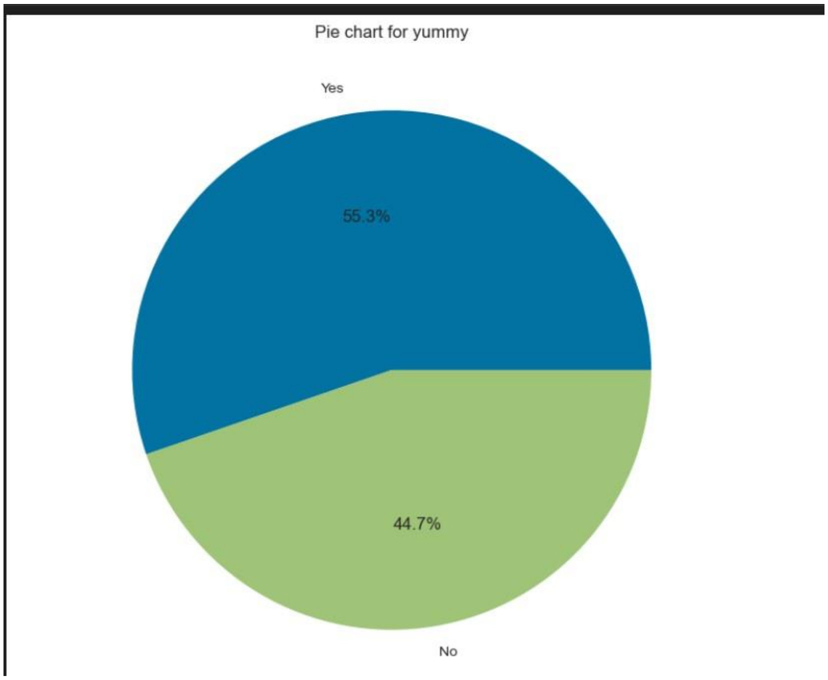
Data Exploration and Preprocessing Template

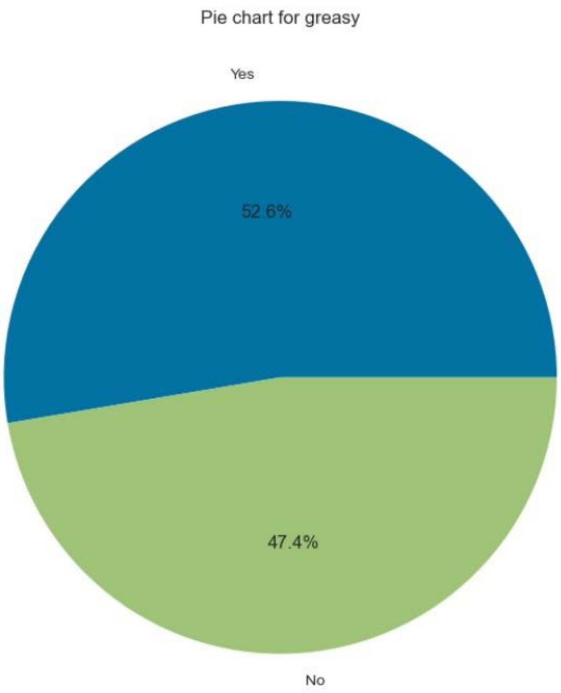
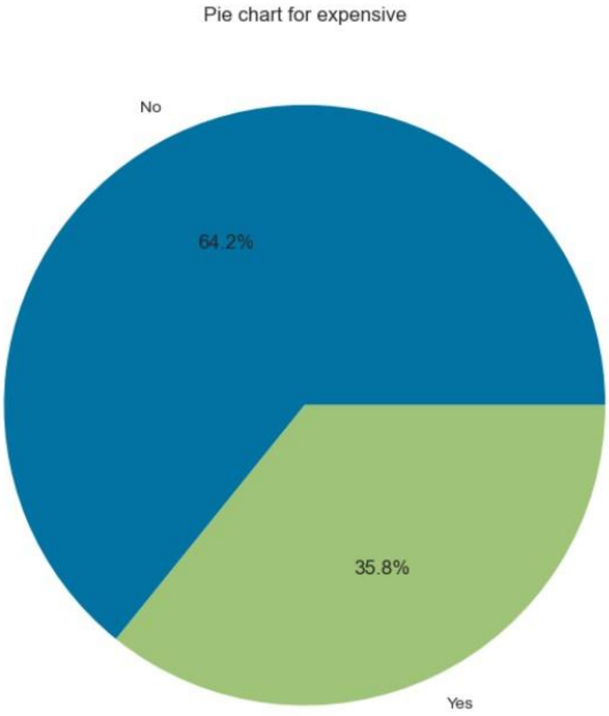
Identifies data sources, assesses quality issues like missing values and duplicates, and implements resolution plans to ensure accurate and reliable analysis.

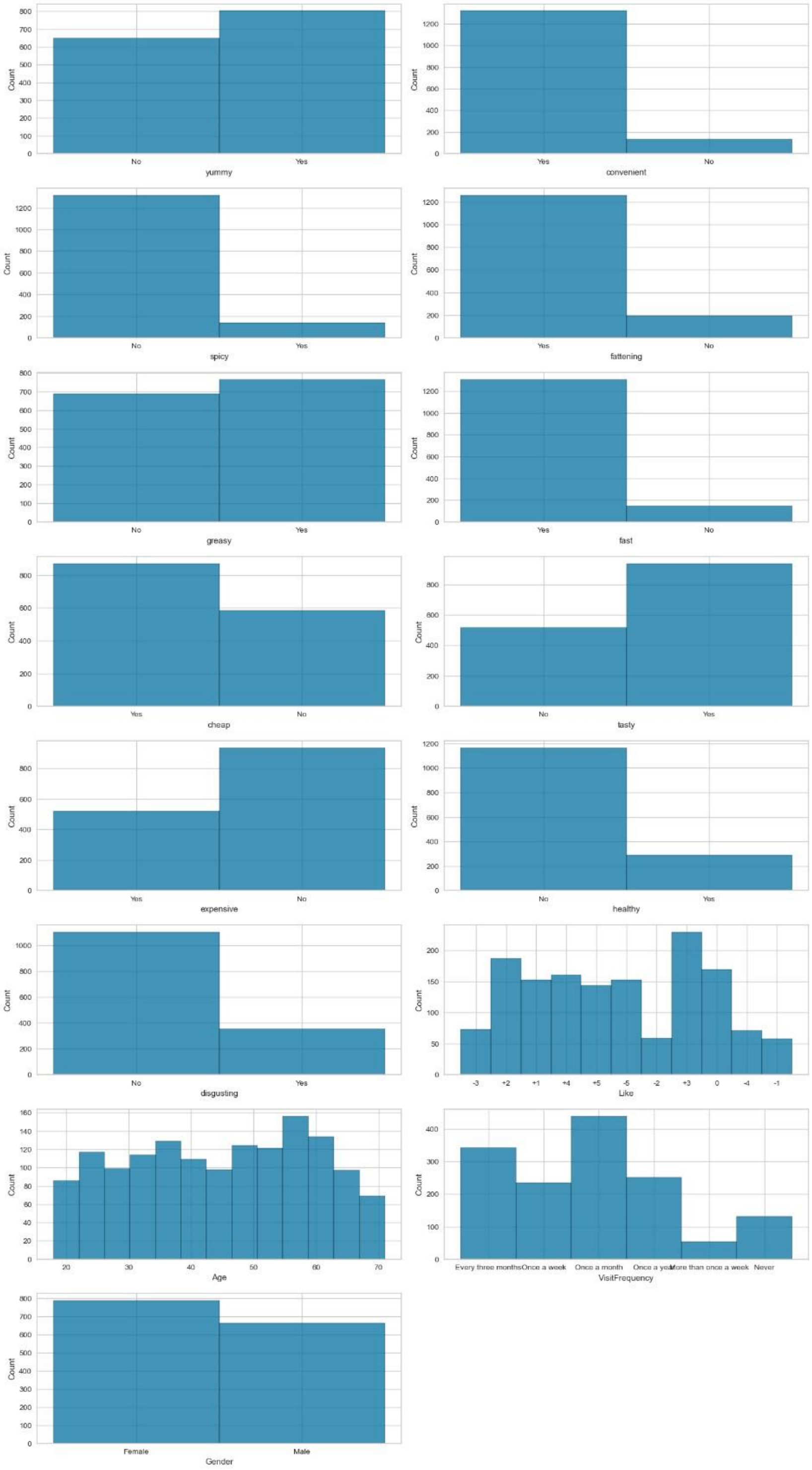
Section	**Description**
Data Overview	DIMENSIONS=1453 ROWS X 15COLUMNS DESCRIPTIVE ANALYSIS: 

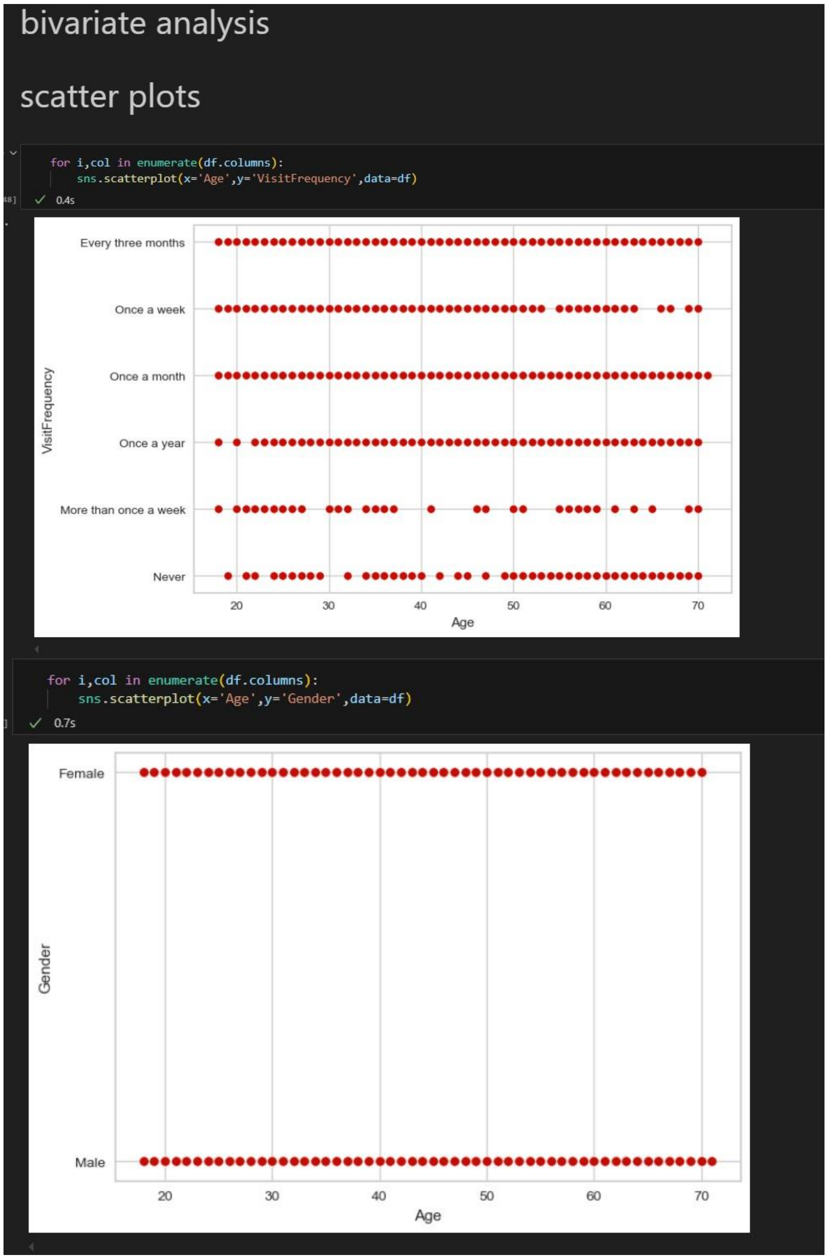
```
df.describe(include='all')
✓ 0.0s

        yummy  convenient  spicy  fattening       greasy  fast        cheap        tasty    expensive  healthy  disgusting         Like          Age  VisitFrequency       Gender
count  1453.000000  1453.0  1453.0   1453.0  1453.000000  1453.0  1453.000000  1453.000000  1453.000000   1453.0      1453.0  1453.000000  1453.000000     1453.000000  1453.000000
mean   0.552650       0.0     0.0       0.0     0.526497     0.0     0.598761     0.644184     0.357880      0.0         0.0     4.458362    44.604955        2.637990     0.457674
std    0.497391       0.0     0.0       0.0     0.499469     0.0     0.490318     0.478925     0.479542      0.0         0.0     3.407245    14.221178        1.756057     0.498377
min    0.000000       0.0     0.0       0.0     0.000000     0.0     0.000000     0.000000     0.000000      0.0         0.0     0.000000    18.000000        0.000000     0.000000
25%    0.000000       0.0     0.0       0.0     0.000000     0.0     0.000000     0.000000     0.000000      0.0         0.0     2.000000    33.000000        1.000000     0.000000
50%    1.000000       0.0     0.0       0.0     1.000000     0.0     1.000000     1.000000     0.000000      0.0         0.0     3.000000    45.000000        3.000000     0.000000
75%    1.000000       0.0     0.0       0.0     1.000000     0.0     1.000000     1.000000     1.000000      0.0         0.0     8.000000    57.000000        4.000000     1.000000
max    1.000000       0.0     0.0       0.0     1.000000     0.0     1.000000     1.000000     1.000000      0.0         0.0    10.000000    71.000000        5.000000     1.000000
```

Univariate Analysis	  

<table>
<tr>
<td></td>
<td>

Countplot for Like
count
0
50
100
150
200
-3
+2
+1
+4
+5
-5
-2
+3
0
-4
-1
Like

Pie chart for yummy
Yes
55.3%
44.7%
No
</td>
</tr>
</table>

	Pie chart for greasy Yes 52.6% 47.4% No Pie chart for expensive No 64.2% 35.8% Yes


Count
No
Yes
yummy
Yes
No
convenient
No
Yes
spicy
Yes
No
fattening
No
Yes
greasy
Yes
No
fast
Yes
No
cheap
No
Yes
tasty
Yes
No
expensive
No
Yes
healthy
No
Yes
disgusting
-3
+2
+1
+4
+5
-5
-2
+3
0
-4
-1
Like
20
30
40
50
60
70
Age
Every three months
Once a week
Once a month
Once a year
More than once a week
Never
VisitFrequency
Female
Male
Gender

<table>
<tr>
<td>Bivariate Analysis</td>
<td>


bivariate analysis

scatter plots

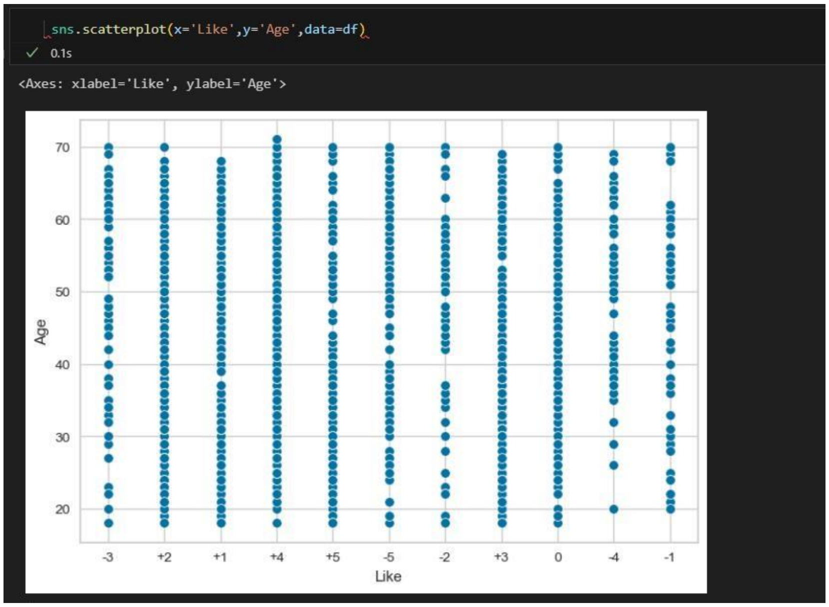
```
for i,col in enumerate(df.columns):
    sns.scatterplot(x='Age',y='VisitFrequency',data=df)
```

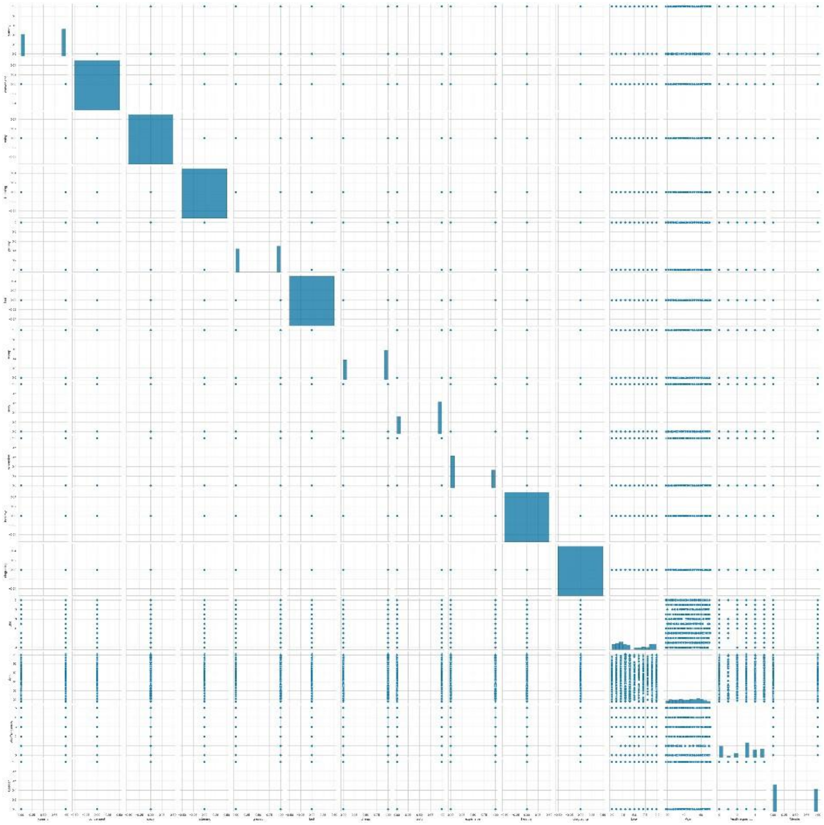
✓ 0.4s

```
for i,col in enumerate(df.columns):
    sns.scatterplot(x='Age',y='Gender',data=df)
```

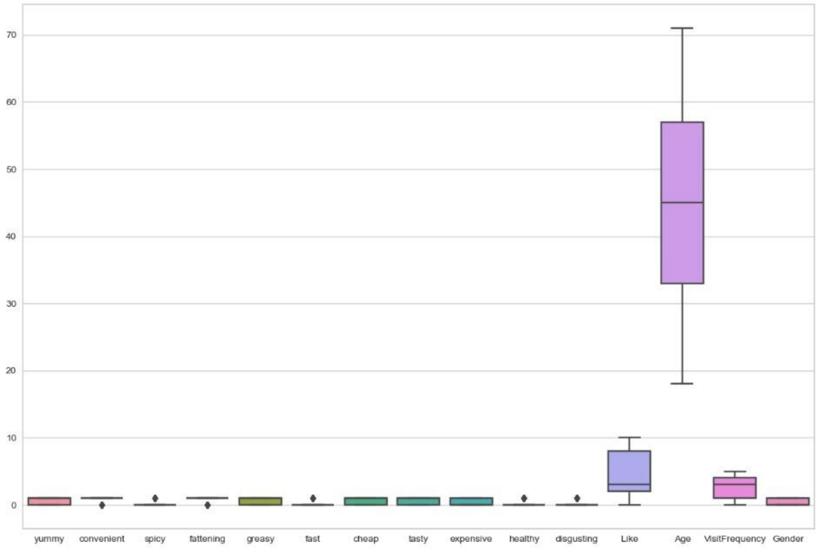
✓ 0.7s

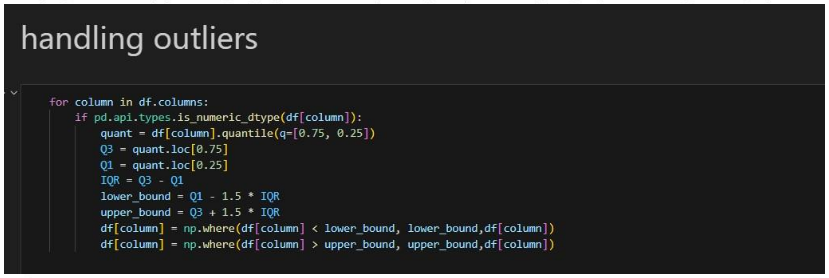
</td>
</tr>
</table>

	
	`sns.scatterplot(x='Like',y='Age',data=df)`
	`0.1s`
	`<Axes: xlabel='Like', ylabel='Age'>`
	 70
	60
	50
	40
	30
	20
	Age
	-3
	+2
	+1
	+4
	+5
	-5
	-2
	+3
	0
	-4
	-1
	Like

Multivariate Analysis	 .

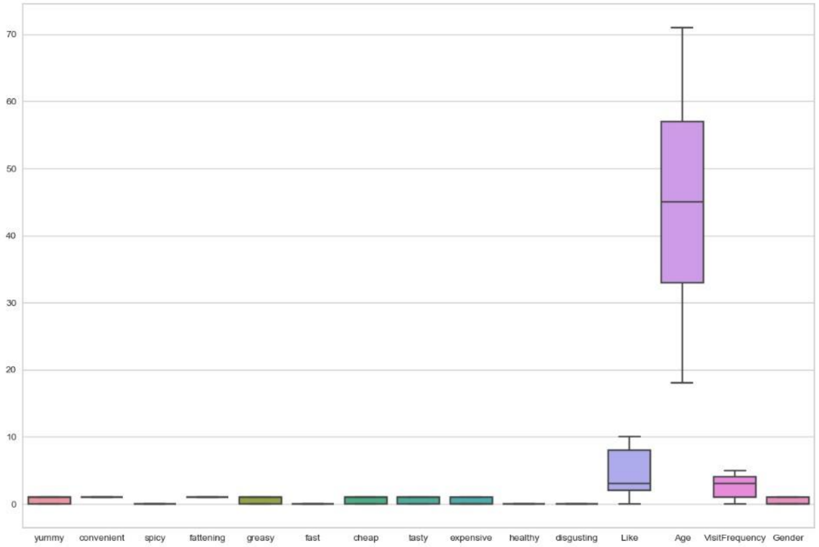
Outliers and Anomalies





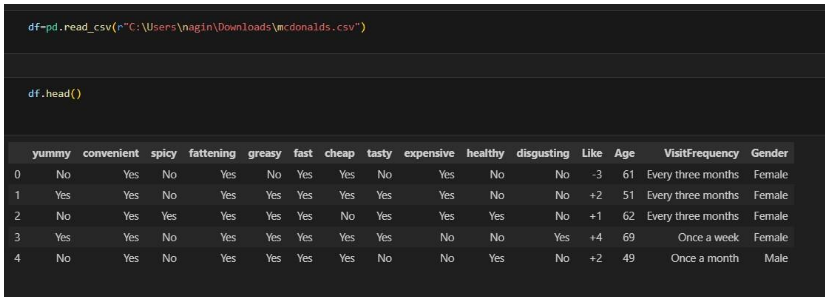
handling outliers

```
for column in df.columns:
    if pd.api.types.is_numeric_dtype(df[column]):
        quant = df[column].quantile(q=[0.75, 0.25])
        Q3 = quant.loc[0.75]
        Q1 = quant.loc[0.25]
        IQR = Q3 - Q1
        lower_bound = Q1 - 1.5 * IQR
        upper_bound = Q3 + 1.5 * IQR
        df[column] = np.where(df[column] < lower_bound, lower_bound,df[column])
        df[column] = np.where(df[column] > upper_bound, upper_bound,df[column])
```



Data Preprocessing Code Screenshots

Loading Data



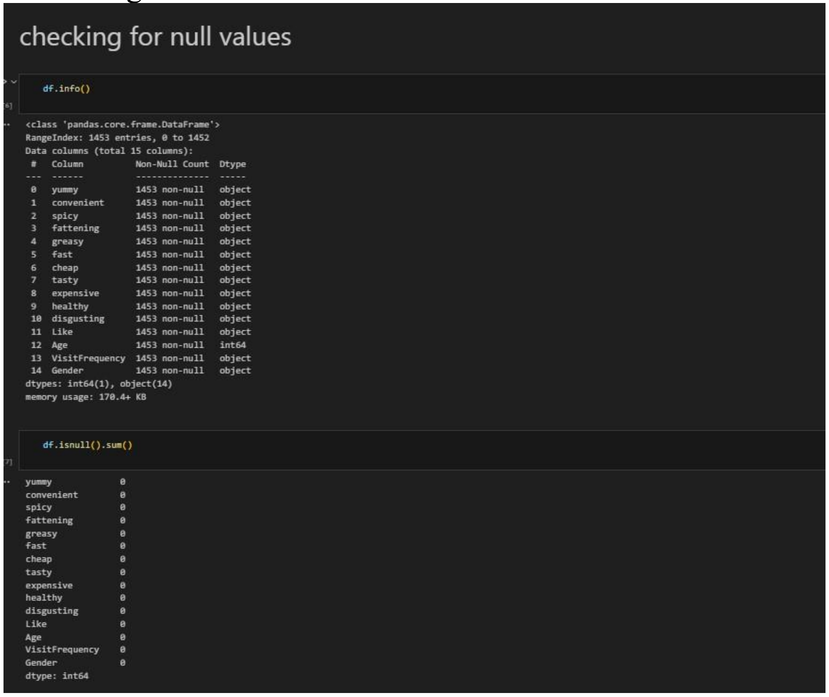
```
df=pd.read_csv(r"C:\Users\nagin\Downloads\mcdonalds.csv")
```

```
df.head()
```

	yummy	convenient	spicy	fattening	greasy	fast	cheap	tasty	expensive	healthy	disgusting	Like	Age	VisitFrequency	Gender
0	No	Yes	No	Yes	No	Yes	Yes	No	Yes	No	No	-3	61	Every three months	Female
1	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	+2	51	Every three months	Female
2	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	+1	62	Every three months	Female
3	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	+4	69	Once a week	Female
4	No	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	No	+2	49	Once a month	Male

Handling Missing Data

No missing values found



checking for null values

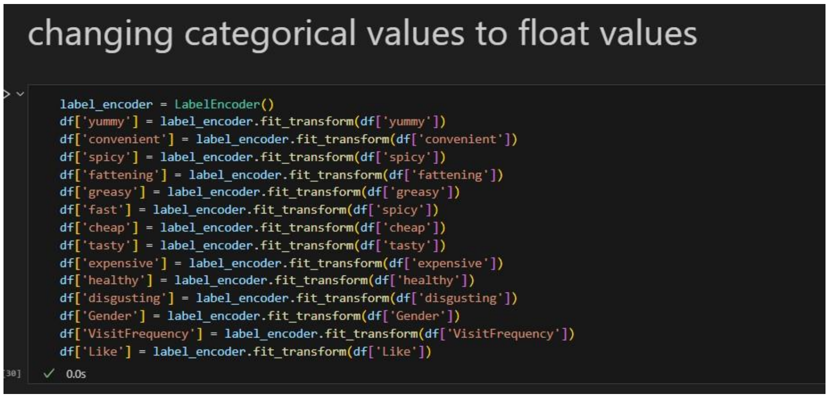
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1453 entries, 0 to 1452
Data columns (total 15 columns):
 #   Column          Non-Null Count  Dtype 
---  ------          --------------  ----- 
 0   yummy           1453 non-null   object
 1   convenient      1453 non-null   object
 2   spicy           1453 non-null   object
 3   fattening       1453 non-null   object
 4   greasy          1453 non-null   object
 5   fast            1453 non-null   object
 6   cheap           1453 non-null   object
 7   tasty           1453 non-null   object
 8   expensive       1453 non-null   object
 9   healthy         1453 non-null   object
 10  disgusting      1453 non-null   object
 11  Like            1453 non-null   object
 12  Age             1453 non-null   int64 
 13  VisitFrequency  1453 non-null   object
 14  Gender          1453 non-null   object
dtypes: int64(1), object(14)
memory usage: 170.4+ KB
```

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

```
yummy             0
convenient        0
spicy             0
fattening         0
greasy            0
fast              0
cheap             0
tasty             0
expensive         0
healthy           0
disgusting        0
Like              0
Age               0
VisitFrequency    0
Gender            0
dtype: int64
```

Data Transformation



changing categorical values to float values

```
label_encoder = LabelEncoder()
df['yummy'] = label_encoder.fit_transform(df['yummy'])
df['convenient'] = label_encoder.fit_transform(df['convenient'])
df['spicy'] = label_encoder.fit_transform(df['spicy'])
df['fattening'] = label_encoder.fit_transform(df['fattening'])
df['greasy'] = label_encoder.fit_transform(df['greasy'])
df['fast'] = label_encoder.fit_transform(df['spicy'])
df['cheap'] = label_encoder.fit_transform(df['cheap'])
df['tasty'] = label_encoder.fit_transform(df['tasty'])
df['expensive'] = label_encoder.fit_transform(df['expensive'])
df['healthy'] = label_encoder.fit_transform(df['healthy'])
df['disgusting'] = label_encoder.fit_transform(df['disgusting'])
df['Gender'] = label_encoder.fit_transform(df['Gender'])
df['VisitFrequency'] = label_encoder.fit_transform(df['VisitFrequency'])
df['Like'] = label_encoder.fit_transform(df['Like'])
```

✓ 0.0s

Feature Engineering	Attached the codes in final documentation

Save Processed Data	-