Data Collection and Preprocessing Phase

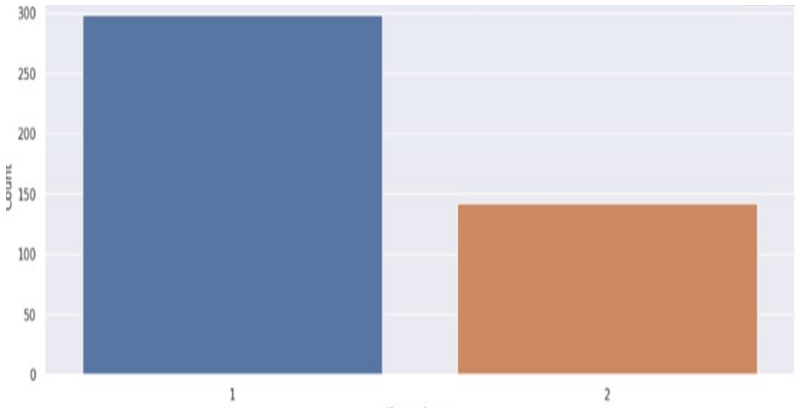
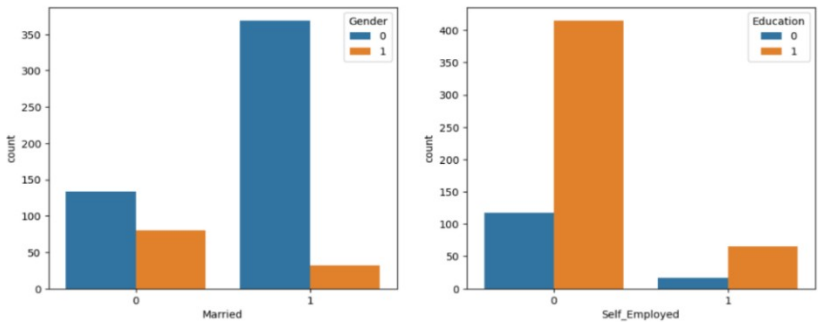
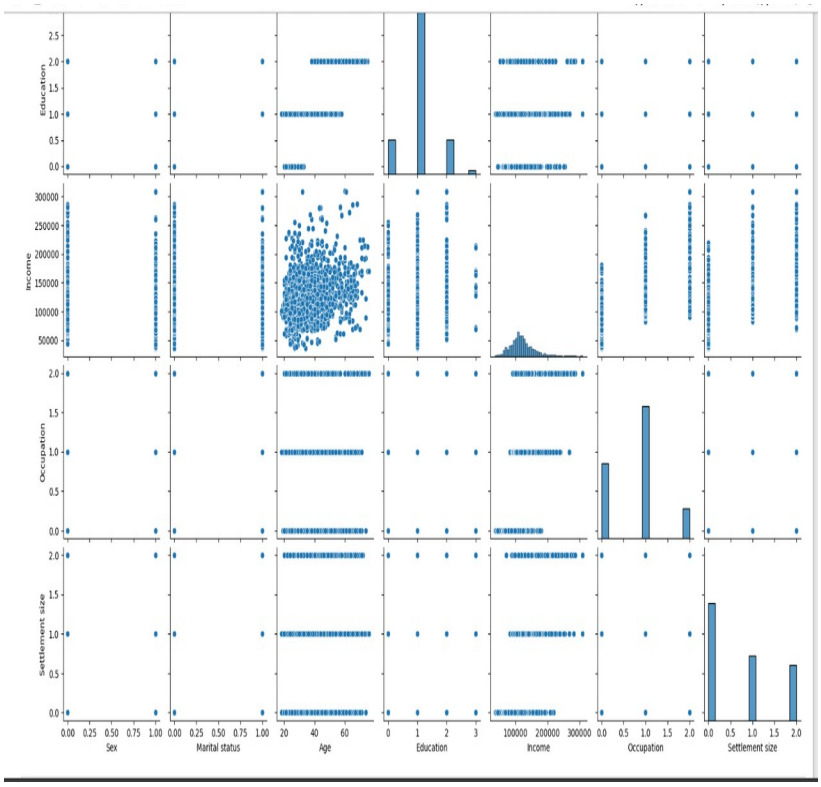
Date	July 5, 2024
Team ID	739683
Project Title	Customer Segmentation using Machine Learning
Maximum Marks	6 Marks

Data Exploration and Preprocessing Template

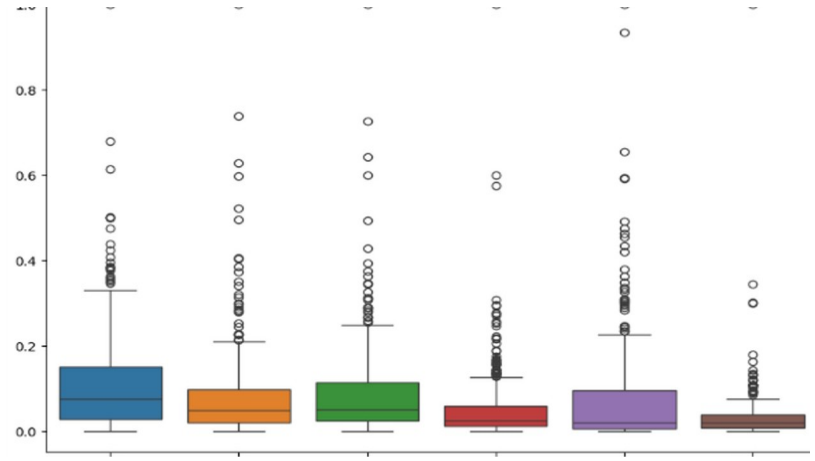
Identifies data sources, assesses quality issues like missing values and duplicates, and implements resolution plans to ensure accurate and reliable analysis.

Section	Description
Data Overview	

	Sex	Marital status	Age	Education	Income	Occupation	Settlement size
count	2000.000000	2000.000000	2000.000000	2000.00000	2000.000000	2000.000000	2000.000000
mean	0.457000	0.496500	35.909000	1.03800	120954.419000	0.810500	0.739000
std	0.498272	0.500113	11.719402	0.59978	38108.824679	0.638587	0.812533
min	0.000000	0.000000	18.000000	0.00000	35832.000000	0.000000	0.000000
25%	0.000000	0.000000	27.000000	1.00000	97663.250000	0.000000	0.000000
50%	0.000000	0.000000	33.000000	1.00000	115548.500000	1.000000	1.000000
75%	1.000000	1.000000	42.000000	1.00000	138072.250000	1.000000	1.000000
max	1.000000	1.000000	76.000000	3.00000	309364.000000	2.000000	2.000000

Univariate Analysis	
Bivariate Analysis	
Multivariate Analysis	

Outliers and Anomalies



Data Preprocessing Code Screenshots

Loading Data

```
os.chdir(r"C:/Users/kusur/Downloads")
data = pd.read_csv('segmentation data.csv',header='infer')
data.head()
```

	ID	Sex	Marital status	Age	Education	Income	Occupation	Settlement size
0	100000001	0	0	67	2	124670	1	2
1	100000002	1	1	22	1	150773	1	2
2	100000003	0	0	49	1	89210	0	0
3	100000004	0	0	45	1	171565	1	1
4	100000005	0	0	53	1	149031	1	1

Handling Missing Data

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2000 entries, 0 to 1999
Data columns (total 7 columns):
 #   Column            Non-Null Count  Dtype
---  ------            --------------  -----
 0   Sex               2000 non-null   int64
 1   Marital status    2000 non-null   int64
 2   Age               2000 non-null   int64
 3   Education         2000 non-null   int64
 4   Income            2000 non-null   int64
 5   Occupation        2000 non-null   int64
 6   Settlement size   2000 non-null   int64
dtypes: int64(7)
memory usage: 109.5 KB
```

Data Transformation	`data = minmax_scale(data,feature_range=(0,1))`
	
	`import pickle`
	
	`pickle.dump(data,open("scale.pk2",'wb'))`
	
	`names = ['Sex','Martial status','Age','Education','Income','Occupation','Settlement size']`
	`data = pd.DataFrame(data,columns=names)`
	
	`wcss = []`
	`for i in range(1, 11):`
	`  kmeans = sk.cluster.KMeans(n_clusters=i, init='k-means++', random_state=0)`
	`  kmeans.fit(data)`
	`  wcss.append(kmeans.inertia_)`

Feature Engineering	Attached the codes in final submission
Save Processed Data	-