Data Collection and Preprocessing Phase

Date	June 2024
Team ID	739663
Project Title	Estimating the stock keeping units using Machine Learning
Maximum Marks	6 Marks

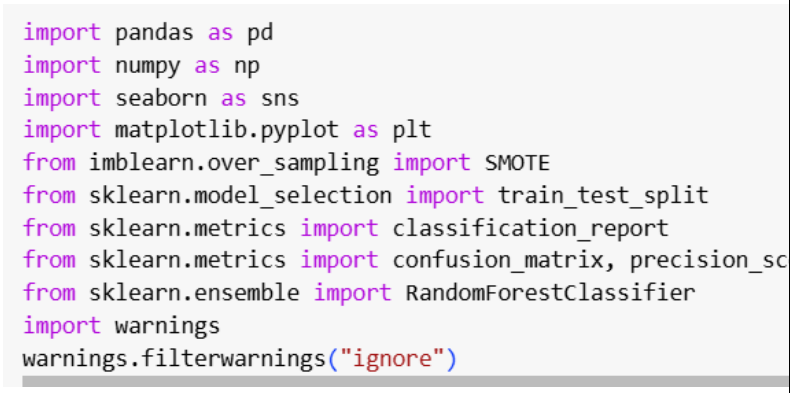
Preparation Template

The images will be preprocessed by resizing, normalizing, augmenting, denoising, adjusting contrast, detecting edges, converting color space, cropping, batch normalizing, and whitening data. These steps will enhance data quality, promote model generalization, and improve convergence during neural network training, ensuring robust and efficient performance across various computer vision tasks.

Section	**Description**
Data Overview	There are many popular open sources for collecting the data. Eg: kaggle.com, UCI repository, etc. In this project we have used .csv data.
Data Preparation	These are the general steps of pre-processing the data before using it for machine learning
Handling missing values	We use Handling missing values For checking the null values
Handling categorical data	As we can see our dataset has categorical data we must convert the categorical data to integer encoding or binary encoding
Handling Outliers in Data	With the help of boxplot, outliers are visualized. And here we are going to find upper bound and lower bound of numerical features with some mathematical formula.

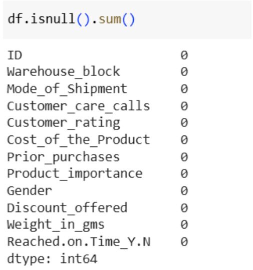
Data Preparation

<table>
<tr><td>Collect the dataset</td><td>Please refer to the link given below to download the dataset.
Link: https://www.kaggle.com/datasets/prachi13/customer-analytics?select=Train.csv</td></tr>
<tr><td>Importing the libraries</td><td>



```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from imblearn.over_sampling import SMOTE
from sklearn.model_selection import train_test_split
from sklearn.metrics import classification_report
from sklearn.metrics import confusion_matrix, precision_sc
from sklearn.ensemble import RandomForestClassifier
import warnings
warnings.filterwarnings("ignore")
```

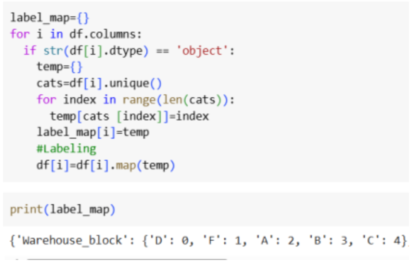
</td></tr>
<tr><td>Loading Data</td><td>We use the code
df=pd.read_csv("/content/Train.csv")
For reading the dataset</td></tr>
<tr><td>Handling missing values</td><td>



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

```
ID                    0
Warehouse_block       0
Mode_of_Shipment      0
Customer_care_calls   0
Customer_rating       0
Cost_of_the_Product   0
Prior_purchases       0
Product_importance    0
Gender                0
Discount_offered      0
Weight_in_gms         0
Reached.on.Time_Y.N   0
dtype: int64
```

</td></tr>
<tr><td>Handling Categorical values</td><td>



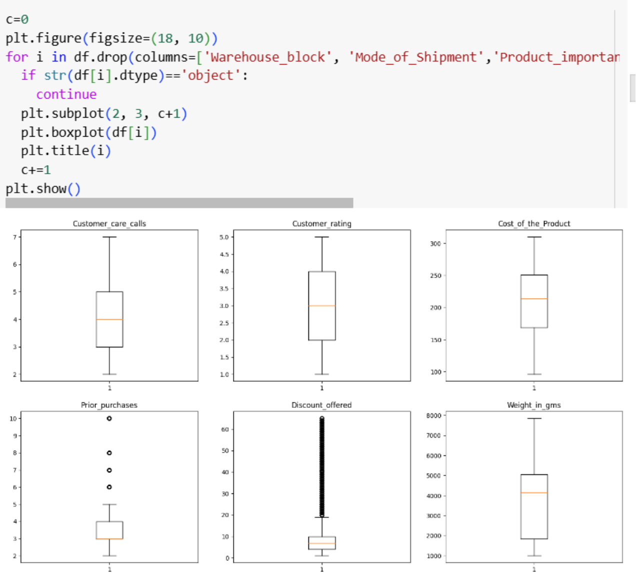
```
label_map={}
for i in df.columns:
  if str(df[i].dtype) == 'object':
    temp={}
    cats=df[i].unique()
    for index in range(len(cats)):
      temp[cats [index]]=index
    label_map[i]=temp
    #Labeling
    df[i]=df[i].map(temp)
```

```
print(label_map)
```

```
{'Warehouse_block': {'D': 0, 'F': 1, 'A': 2, 'B': 3, 'C': 4}
```

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

Handling Outliers



```
c=0
plt.figure(figsize=(18, 10))
for i in df.drop(columns=['Warehouse_block', 'Mode_of_Shipment','Product_importar
  if str(df[i].dtype)=='object':
    continue
  plt.subplot(2, 3, c+1)
  plt.boxplot(df[i])
  plt.title(i)
  c+=1
plt.show()
```