**Title:**

Future Sales Prediction with Machine Learnings

**Introduction:**

Preprocessing data for future sales prediction with machine learning is a crucial step to ensure that your model can learn effectively from the data because it ensures data quality and prepares it for effective model training, resulting in accurate predictions, which are essential for business decision-making and customer satisfaction. Here are some common preprocessing steps:

**Steps involved in future sales prediction:**

**I) Data Selection and loading:**

Data selection and loading are vital steps in the data preparation process for machine learning.

**II) Data Cleaning:**

Cleaning data ensures that the model is not influenced by errors or outliers, leading to more robust and accurate predictions.

**III) Feature Selection:**

Selecting the right features reduces model complexity, improves performance, and speeds up training.

**IV) Train-Validation-Test Split:**

Separating data into different sets allows for unbiased model evaluation and helps prevent overfitting. Proper data splitting ensures that the model can be trained, tuned, and evaluated effectively without introducing bias.

**V) Feature Scaling:**

Feature scaling ensures that all features contribute equally to the model's learning process, preventing any one feature from dominating.

**Code:**

# Data selection and loading

import pandas

df=pandas.read\_csv("Sales.csv")

print(df.tail())

print(df.head(8))

print(df.info())

print(df.describe())

# Data cleaning and handling missing values

print(df.drop\_duplicates())

print(df.dropna())

print(df.isna().any())

print(df.isna().sum())

cf=df.copy()

# Feature selection

x=df[[“TV”,”Radio”,”Newspaper”]]

y=df[“Sales”]

# Data splitting

from sklearn.model\_selection import train\_test\_split

x\_train,x\_test,y\_train,y\_test=train\_test\_split(x,y,test\_size=0.25)

# Feature scaling

from sklearn.preprocessing import StandardScaler

scaler = StandardScaler()

x\_train\_scaled = scaler.fit\_transform(x\_train)

x\_test\_scaled = scaler.transform(x\_test)

**Conclusion:**

In summary, preprocessing is a critical phase in Future Sales prediction with machine learning. Proper data preparation ensures that the model is trained on high-quality, relevant data, which ultimately results in more accurate predictions. Each preprocessing step plays a crucial role in addressing different data challenges and improving the model's ability to forecast sales .