

## **EXPERIMENT – 20**

Implement Future Sales Prediction using a suitable machine learning algorithm

### **CODE :**

```
# Future Sales Prediction using Linear Regression

import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
import numpy as np

# Sample dataset: Month vs Sales
data = {
    "Month": [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12],
    "Sales": [200, 220, 250, 270, 300, 320, 340, 360, 380, 400, 420, 450]
}

df = pd.DataFrame(data)

# Features and target
X = df[["Month"]] # Predictor: Month
y = df["Sales"] # Target: Sales

# Train-test split
X_train, X_test, y_train, y_test = train_test_split(
    X, y, test_size=0.25, random_state=42
)

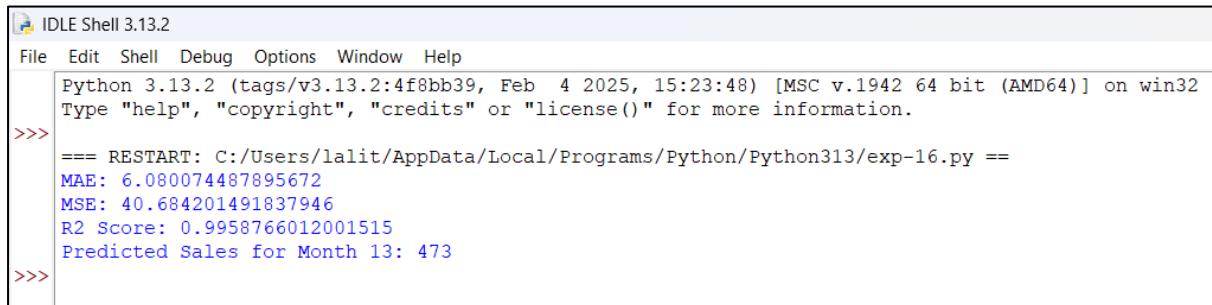
# Model
model = LinearRegression()
model.fit(X_train, y_train)

# Prediction
y_pred = model.predict(X_test)

# Evaluation
print("MAE:", mean_absolute_error(y_test, y_pred))
print("MSE:", mean_squared_error(y_test, y_pred))
print("R2 Score:", r2_score(y_test, y_pred))
```

```
# Predict future sales (e.g., Month 13)
future_month = pd.DataFrame([[13]], columns=["Month"])
future_sales = model.predict(future_month)
print("Predicted Sales for Month 13:", int(future_sales[0]))
```

## OUTPUT :



The screenshot shows the IDLE Shell interface with the title bar "IDLE Shell 3.13.2". The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. The main window displays the Python interpreter's welcome message, the command prompt (>>>), and the output of a script named "exp-16.py". The output includes the restart path, MAE, MSE, R2 Score, and the predicted sales value.

```
IDLE Shell 3.13.2
File Edit Shell Debug Options Window Help
Python 3.13.2 (tags/v3.13.2:4f8bb39, Feb 4 2025, 15:23:48) [MSC v.1942 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
==== RESTART: C:/Users/lalit/AppData/Local/Programs/Python/Python313/exp-16.py ==
MAE: 6.080074487895672
MSE: 40.684201491837946
R2 Score: 0.9958766012001515
Predicted Sales for Month 13: 473
```