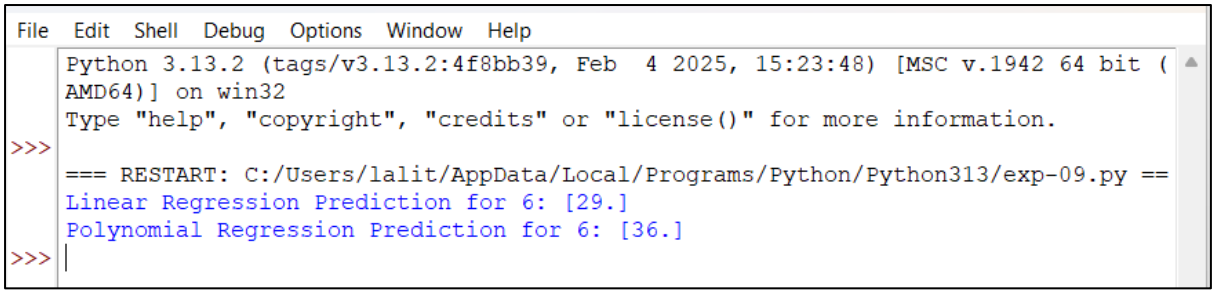
EXPERIMENT – 09

Compare Linear and Polynomial Regression using Python

CODE :

```
# Compare Linear Regression and Polynomial Regression

import numpy as np
from sklearn.linear_model import LinearRegression
from sklearn.preprocessing import PolynomialFeatures

# Sample data
X = np.array([[1], [2], [3], [4], [5]])
y = np.array([1, 4, 9, 16, 25])   # Non-linear (square relationship)

# ----- Linear Regression -----
lin_reg = LinearRegression()
lin_reg.fit(X, y)
lin_pred = lin_reg.predict([[6]])

# ----- Polynomial Regression (degree = 2) -----
poly = PolynomialFeatures(degree=2)
X_poly = poly.fit_transform(X)

poly_reg = LinearRegression()
poly_reg.fit(X_poly, y)
poly_pred = poly_reg.predict(poly.transform([[6]]))

print("Linear Regression Prediction for 6:", lin_pred)
print("Polynomial Regression Prediction for 6:", poly_pred)
```

OUTPUT :


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-09.py ==
Linear Regression Prediction for 6: [29.]
Polynomial Regression Prediction for 6: [36.]
>>>