

Experiment-3 Outputs

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SCENARIO 1

```
Problems Output Debug Console Terminal Ports

PS C:\Users\kamal\Downloads> & C:/Users/kamal/AppData/Local/Programs/Python/Python312/python.exe c:/Users/kamal/Downloads/ML_Lab_Scenario_1_Multilinear.py
Student Name: Kamalesh N
Roll Number: 24BAD054

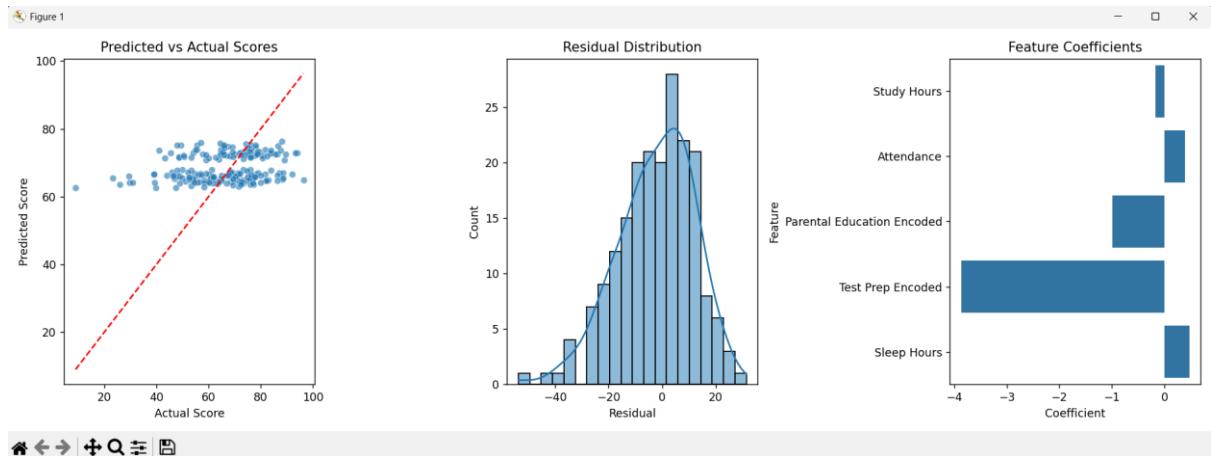
-----  
Dataset loaded successfully.  
Added synthetic features: Study Hours, Attendance, Sleep Hours  
Computed Target Variable: Final Score  
No missing values found in input features.

--- Model Performance (Linear Regression) ---  
MSE: 207.7921  
RMSE: 14.4150  
R2 Score: 0.0307

--- Coefficient Analysis ---  
In 11, Col 32 Sp:  
Problems Output Debug Console Terminal Ports

--- Model Performance (Linear Regression) ---  
MSE: 207.7921  
RMSE: 14.4150  
R2 Score: 0.0307

--- Coefficient Analysis ---  
          Feature  Coefficient  
0           Study Hours -0.171371  
1           Attendance  0.389401  
2 Parental Education Encoded -0.984556  
3           Test Prep Encoded -3.861227  
4           Sleep Hours   0.472210  
Ridge Regression R2: 0.0307  
Lasso Regression R2: 0.0312  
Visualization saved as scenario_1_plots.png  
PS C:\Users\kamal\Downloads>
```



SCENARIO 2

```
PS C:\Users\kamal\Downloads> & C:/Users/kamal/AppData/Local/Programs/Python/Python312/python.exe c
:/Users/kamal/Downloads/Untitled-1.py
Kamalesh N
Roll Number: 24BAD054
-----
   mpg cylinders displacement ... model year origin      car name
0 18.0          8         307.0 ...    70     1 chevrolet chevelle malibu
1 15.0          8         350.0 ...    70     1 buick skylark 320
2 18.0          8         318.0 ...    70     1 plymouth satellite
3 16.0          8         304.0 ...    70     1 amc rebel sst
4 17.0          8         302.0 ...    70     1 ford torino
[5 rows x 9 columns]
c:\Users\kamal\Downloads\Untitled-1.py:17: FutureWarning: A value is trying to be set on a copy of
a DataFrame or Series through chained assignment using an inplace method.
The behavior will change in pandas 3.0. This inplace method will never work because the intermedia
te object on which we are setting values always behaves as a copy.
```

Ln 12, Col 69 Spaces

Problems Output Debug Console Terminal Ports

```
df['horsepower'].fillna(df['horsepower'].mean(), inplace=True)
```

```
Polynomial Degree: 2
Train MSE: 21.68
Test MSE: 13.76
RMSE: 3.71
R2 Score: 0.74
```

```
Polynomial Degree: 3
Train MSE: 21.64
Test MSE: 13.81
RMSE: 3.72
R2 Score: 0.74
```

```
Polynomial Degree: 4
Train MSE: 21.54
```

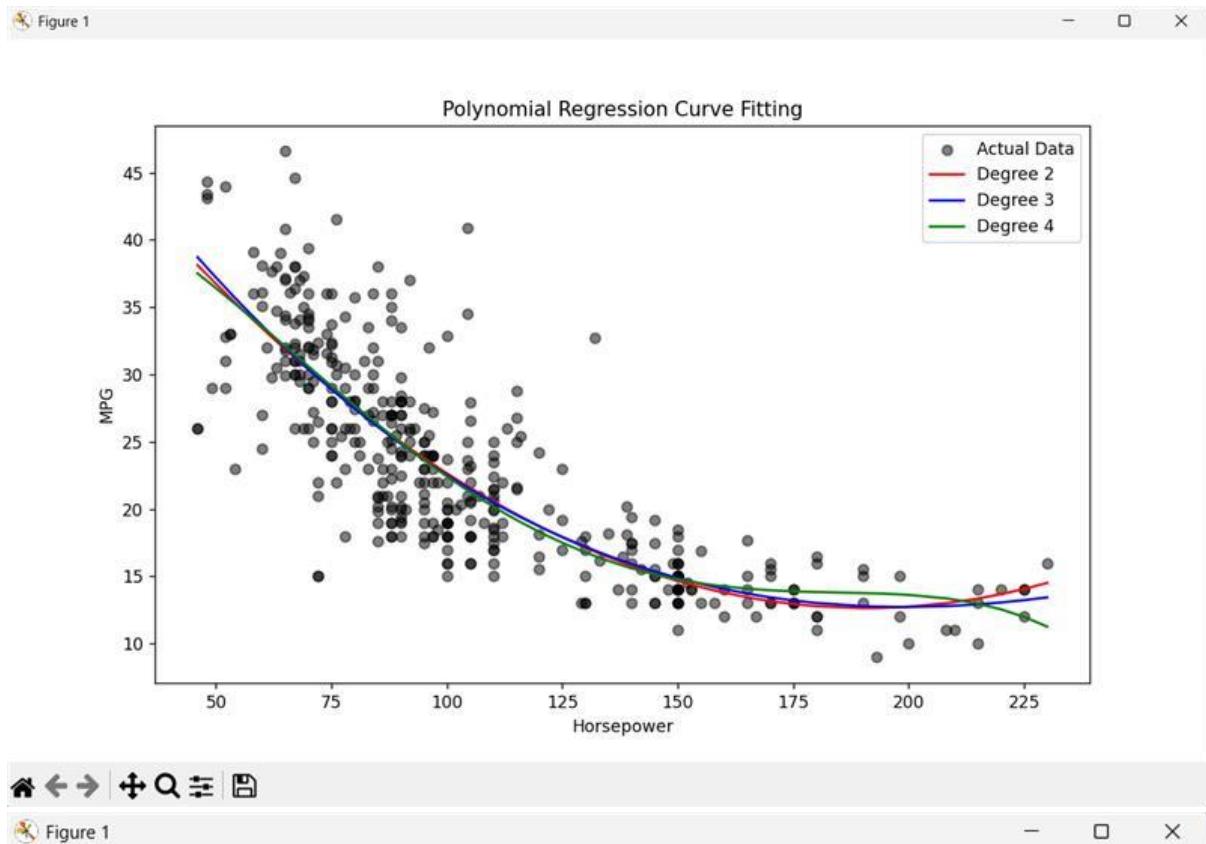
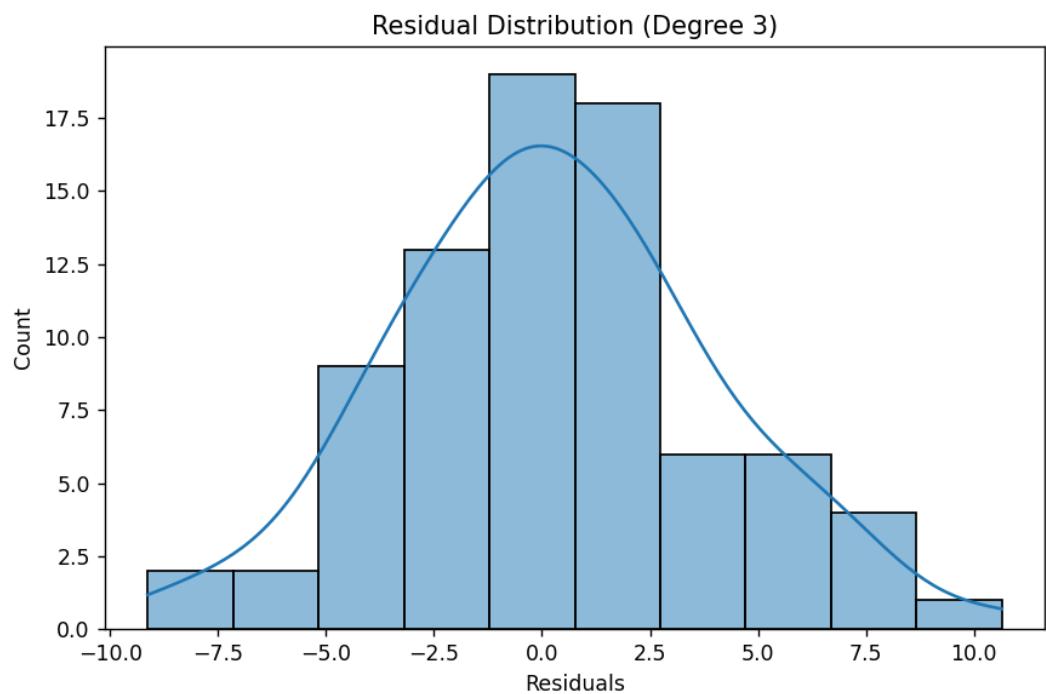


Figure 1

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