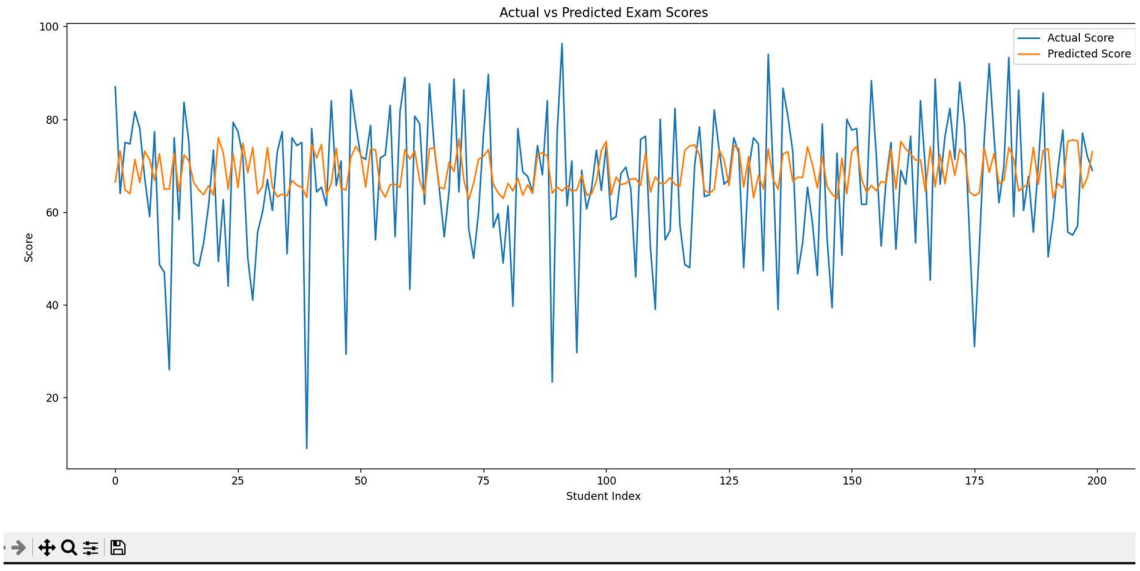
MULTI-LINEAR AND POLYNOMIAL REGRESSION

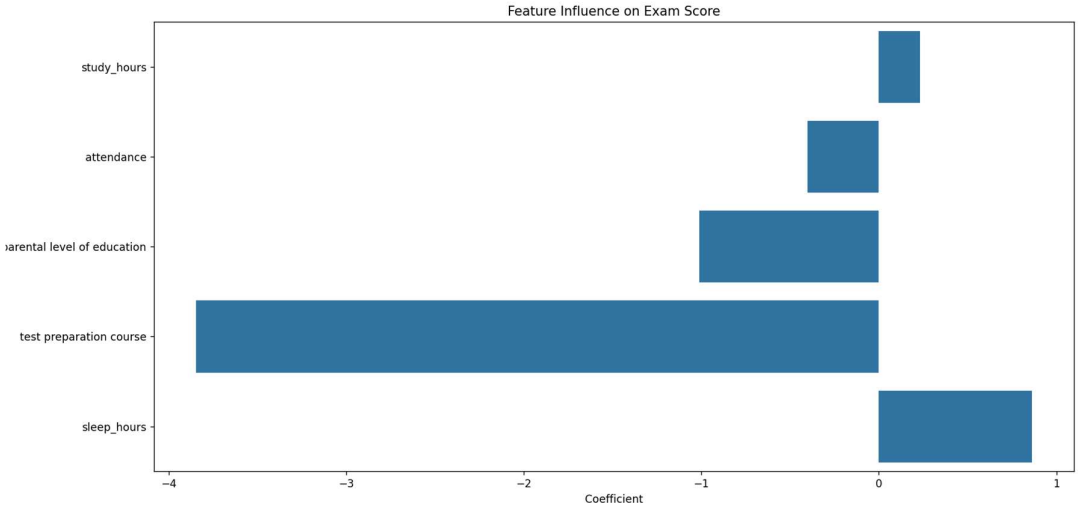
1.Student Performance

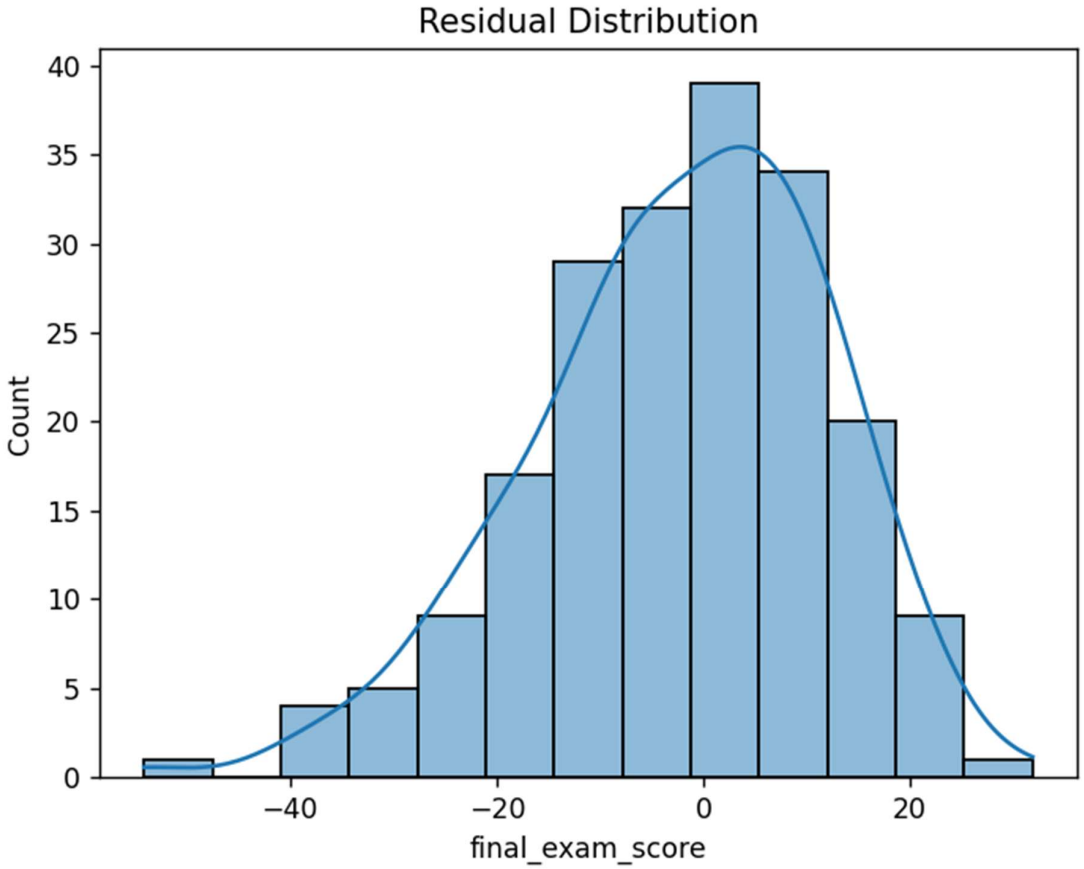
Output:

```
JANASREE P 24BAD040
MSE: 207.05407001047286
RMSE: 14.389373510006363
R² Score: 0.03411211351611809
Ridge R²: 0.034151725820846 8
Lasso R²: 0.03431998082853116
```

Plots and figures:




Feature Influence on Exam Score
study_hours
attendance
arental level of education
test preparation course
sleep_hours
−4
−3
−2
−1
0
1
Coefficient

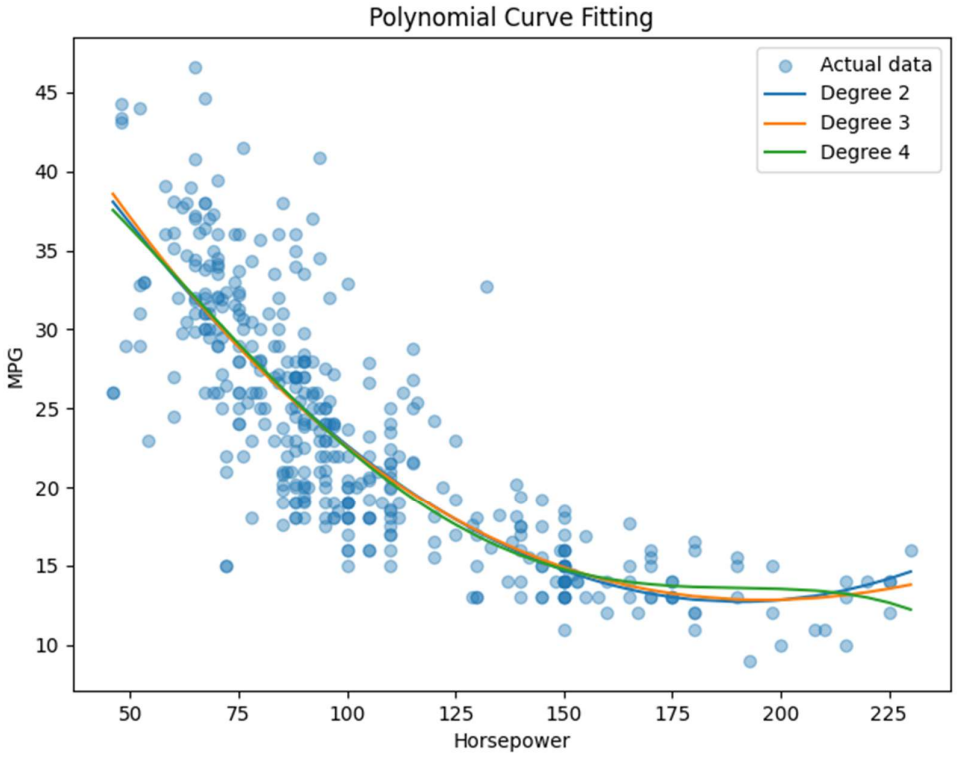

Residual Distribution
Count
40
35
30
25
20
15
10
5
0
−40
−20
0
20
final_exam_score

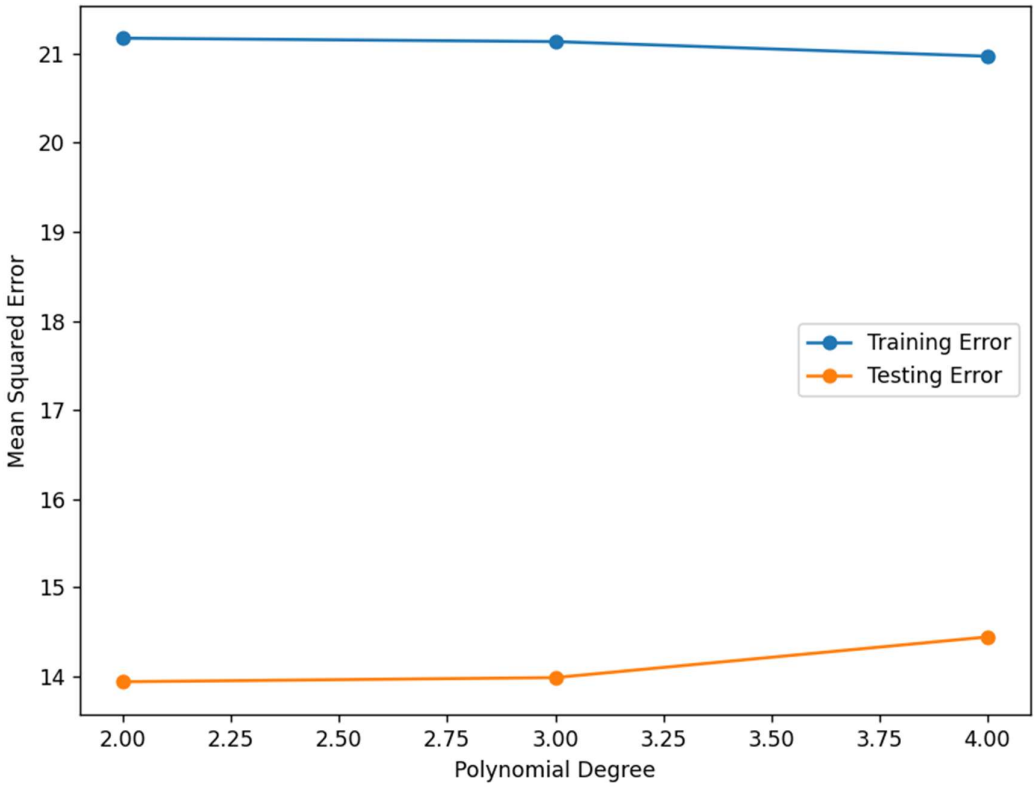
2.Vehicle Fuel efficiency

Output:

```
Degree 2: MSE=13.941158940364417, RMSE=3.7337861401484176, R2=0.7407089260880414
Degree 3: MSE=13.98754305379455, RMSE=3.7399923868631806, R2=0.7398462297630657
Degree 4: MSE=14.443392221902418, RMSE=3.8004463187765745, R2=0.73136790878228
Ridge R²: 0.7408954599024051
```

Plots and figures




Mean Squared Error
21
20
19
18
17
16
15
14
2.00
2.25
2.50
2.75
3.00
3.25
3.50
3.75
4.00
Polynomial Degree
Training Error
Testing Error