

Output:

The screenshot shows an IDE with a dark theme. The Explorer panel on the left shows a project named 'DS210 FINAL DATASET' with a 'src' directory containing 'main.rs' and several PNG files. The main editor shows 'main.rs' with Rust code for testing a linear regression model. The terminal panel at the bottom shows the output of running the program, including statistics for three clusters and linear regression results.

```
ds210final > src > main.rs > {} tests > test_perform_linear_regression
691 mod tests {
804     fn test_perform_kmeans_analysis() {
806         let students = load_students(file.path()).unwrap();
807
808         let result = perform_kmeans_analysis(&students);
809         assert!(result.is_ok());

```

Running `target\release\student-performance-analysis.exe`
Current directory: C:\Users\josen\Downloads\DS210 Final Dataset\ds210final
Attempting to load students from: student_habits_performance.csv
Successfully loaded 1000 students

Performing Machine Learning Analysis...

Cluster 0 Statistics:
Number of students: 301
Average exam score: 70.47
Average study hours: 3.28

Cluster 1 Statistics:
Number of students: 348
Average exam score: 53.01
Average study hours: 2.33

Cluster 2 Statistics:
Number of students: 351
Average exam score: 85.30
Average study hours: 5.00

Linear Regression Results:
Coefficient (study hours): 9.490
Intercept: 35.910
R-squared: 0.681

Analyzing trends in the dataset...
Correlation between study hours and exam scores: 0.825
Correlation between sleep hours and exam scores: 0.122
Correlation between mental health rating and exam scores: 0.322
Correlation between social media hours and exam scores: -0.167
Correlation between attendance percentage and exam scores: 0.090

Analysis complete! Check the generated PNG files for visualizations.
PS C:\Users\josen\Downloads\DS210 Final Dataset\ds210final> cargo clean