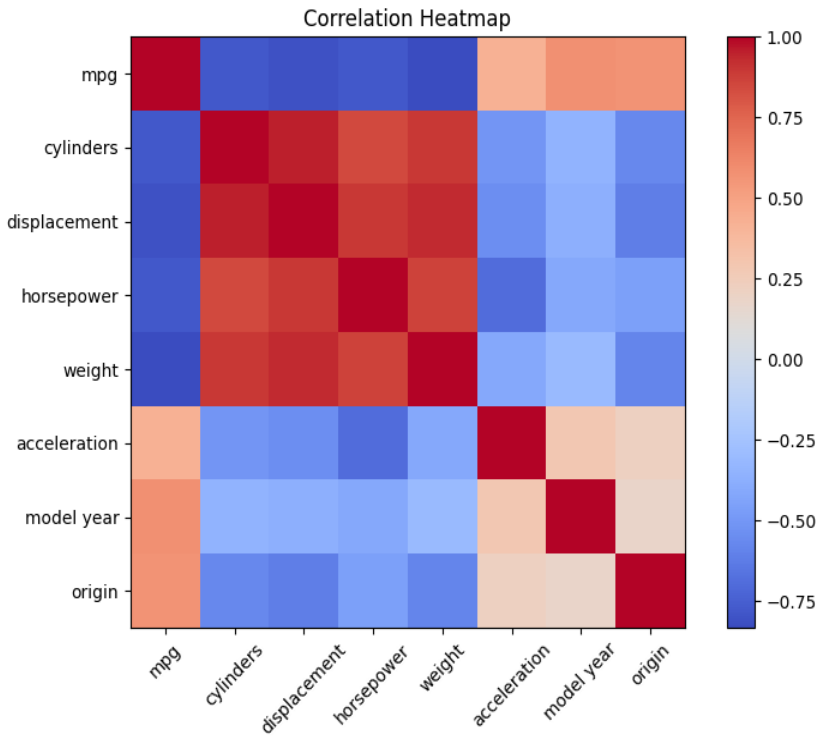
Regression Metrics Explanation

R^2 Score (0.566): This means that approximately 56.6% of the variation in MPG is explained solely by horsepower. A value around 0.56 indicates a moderate relationship: horsepower strongly affects MPG, but other factors like weight, cylinders, and displacement also influence fuel efficiency.

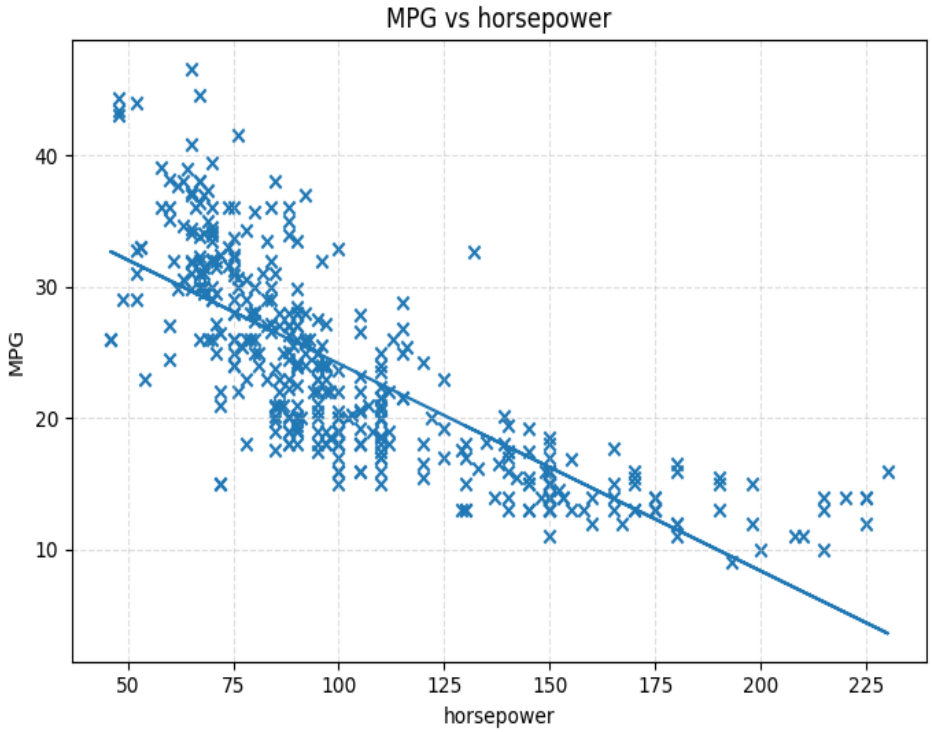
MSE (22.153): Mean Squared Error measures the average squared difference between predicted and actual MPG. A value of 22.15 means predictions deviate moderately, showing that horsepower alone cannot perfectly predict MPG. Lower MSE = better accuracy; this value is reasonable for a single-variable model.

Regression Equation: MPG = 40.606 + (-0.163 × horsepower)
Interpretation: • The intercept 40.606 represents the estimated MPG when horsepower = 0 (theoretical baseline). • The slope -0.163 means MPG decreases by 0.163 units for every 1 HP increase. This confirms a negative relationship: more powerful cars consume more fuel.

Correlation Heatmap

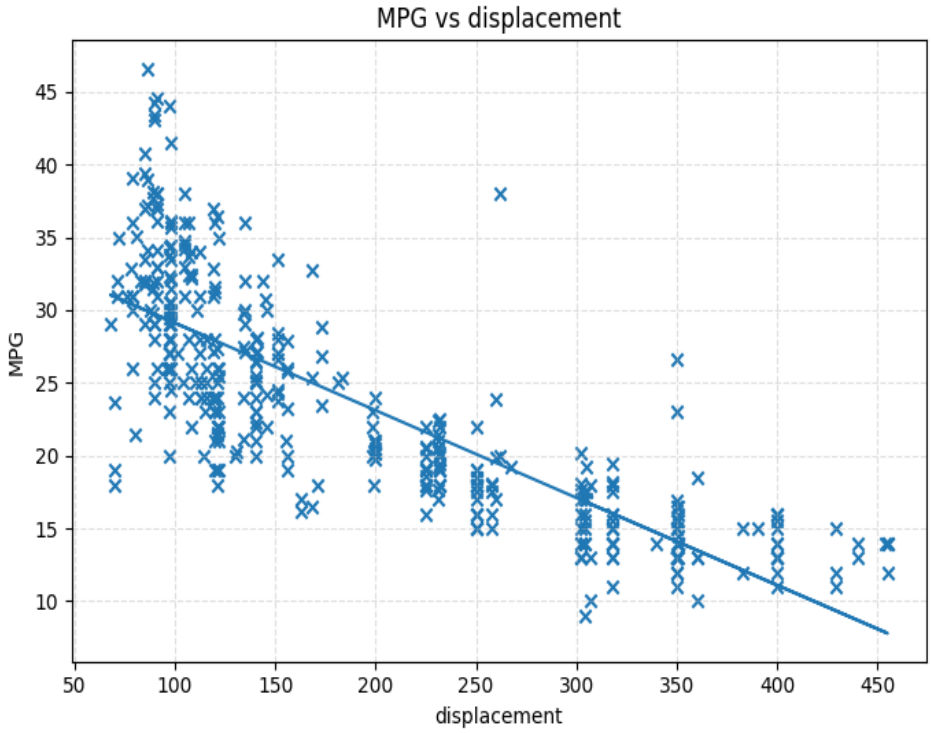


MPG vs Horsepower Scatter Plot

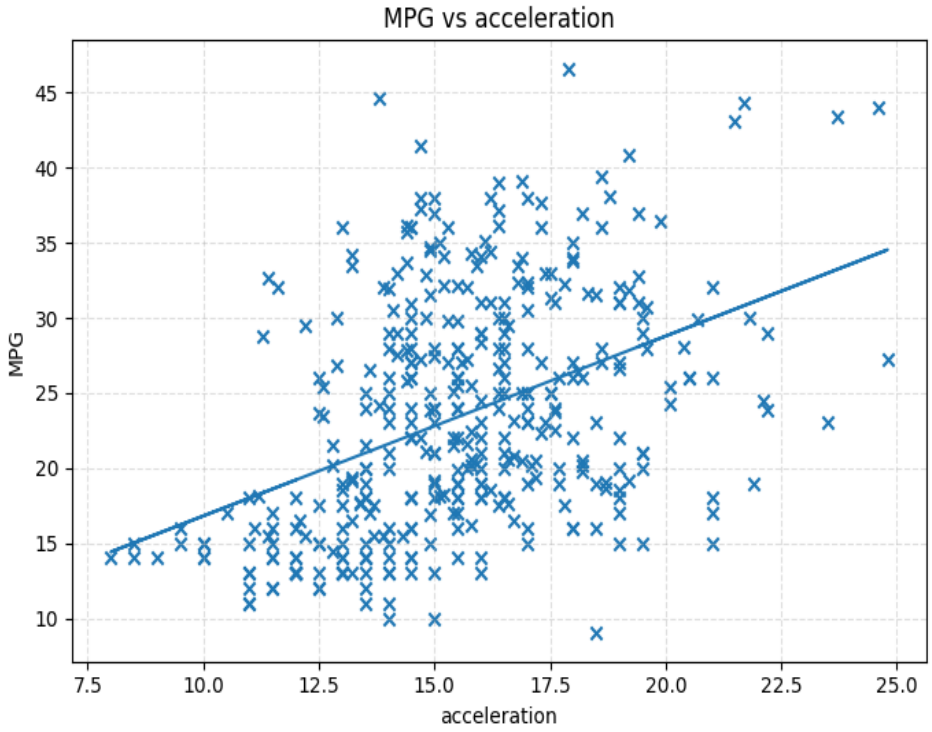


MPG vs Weight Scatter Plot

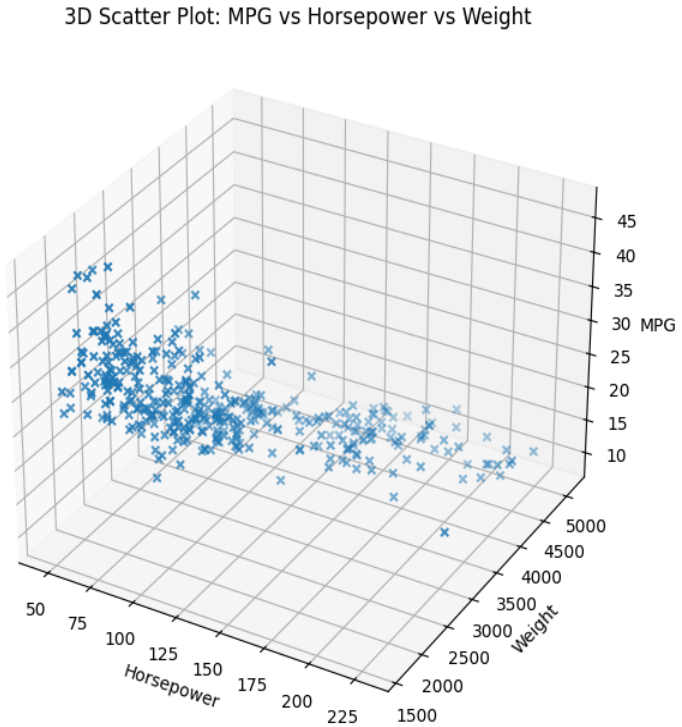
MPG vs Displacement Scatter Plot



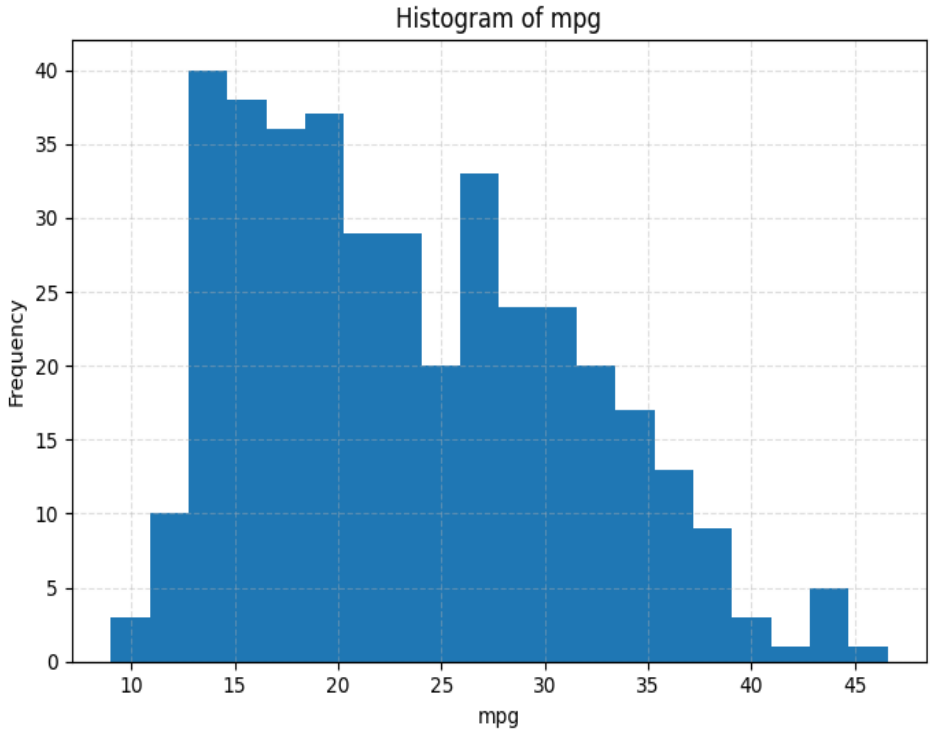
MPG vs Acceleration Scatter Plot



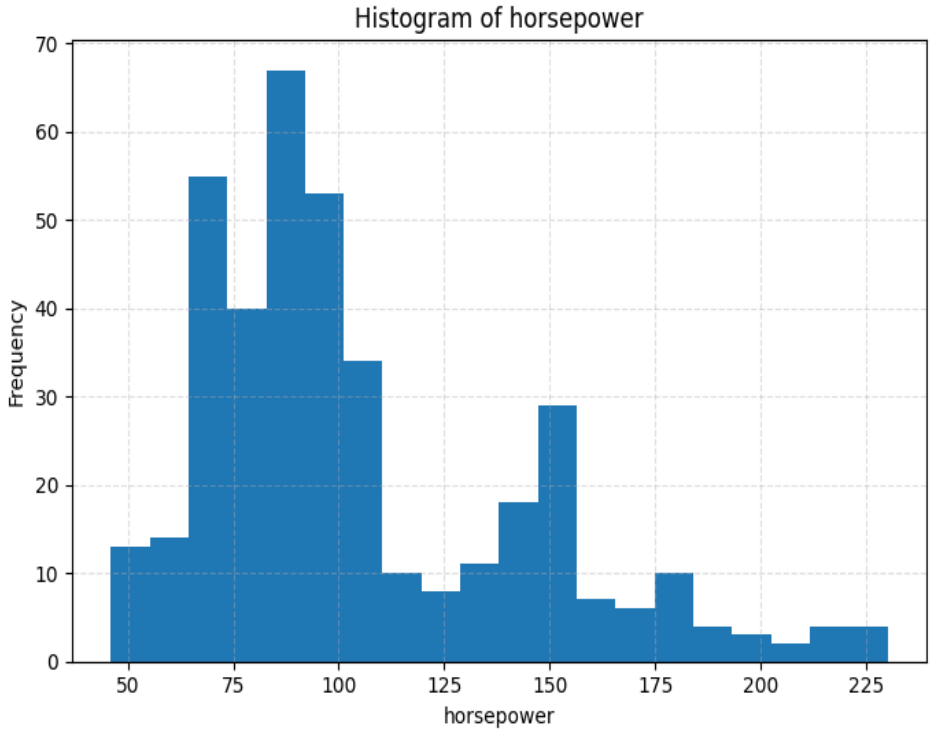
3D Scatter Plot



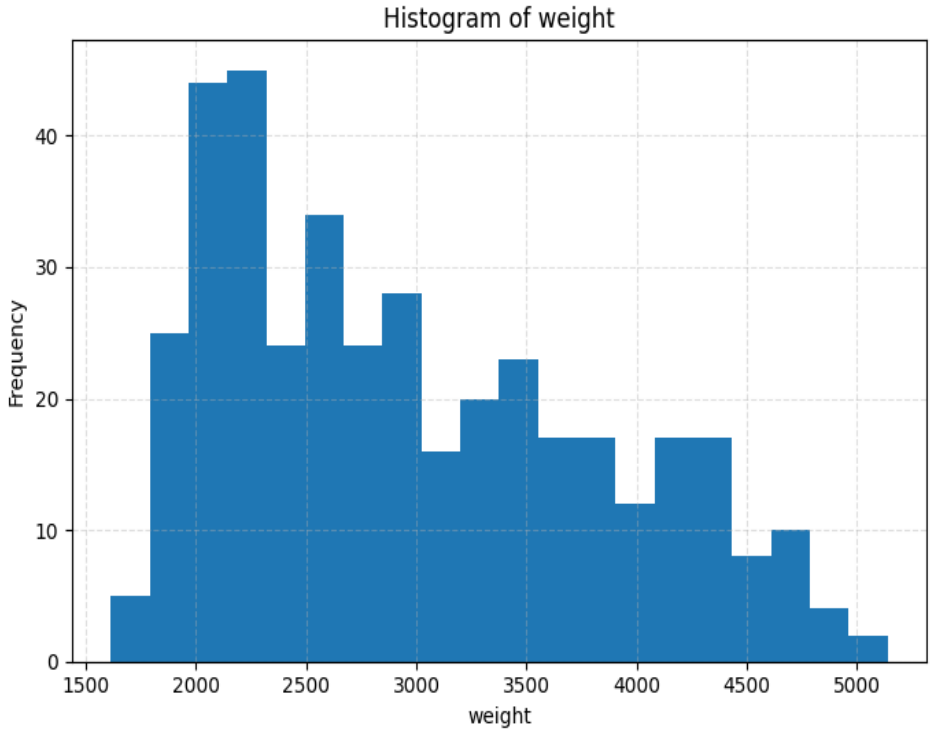
Histogram: MPG



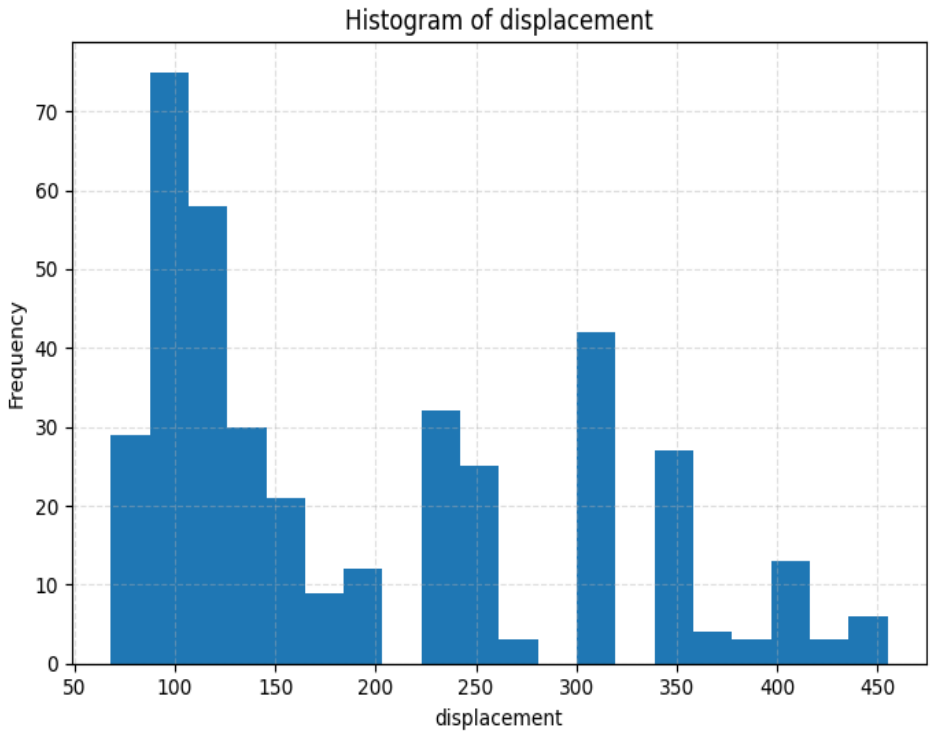
Histogram: Horsepower



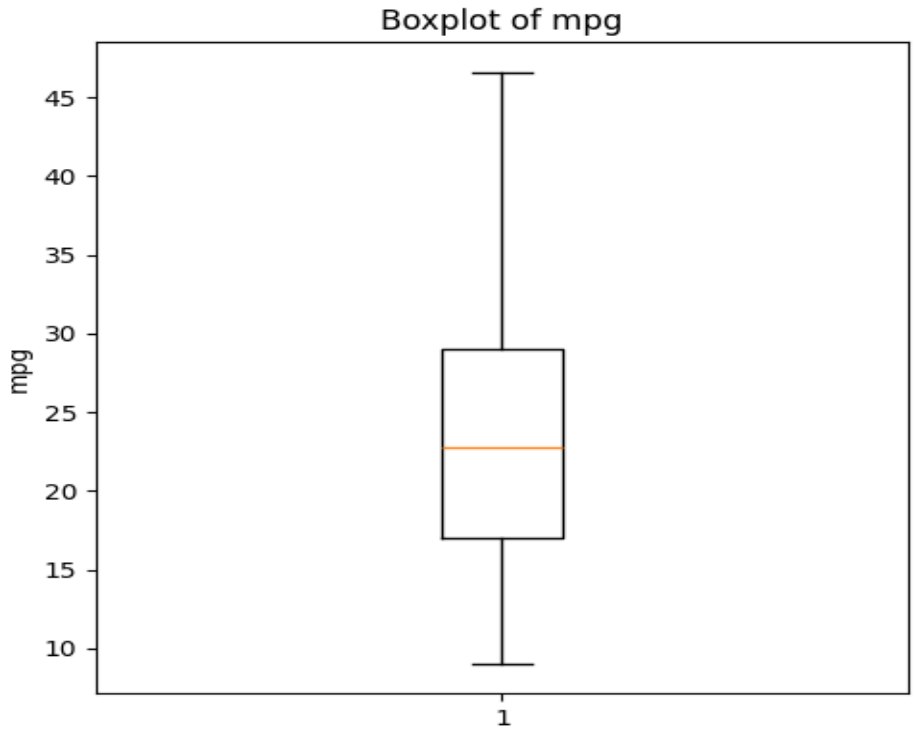
Histogram: Weight



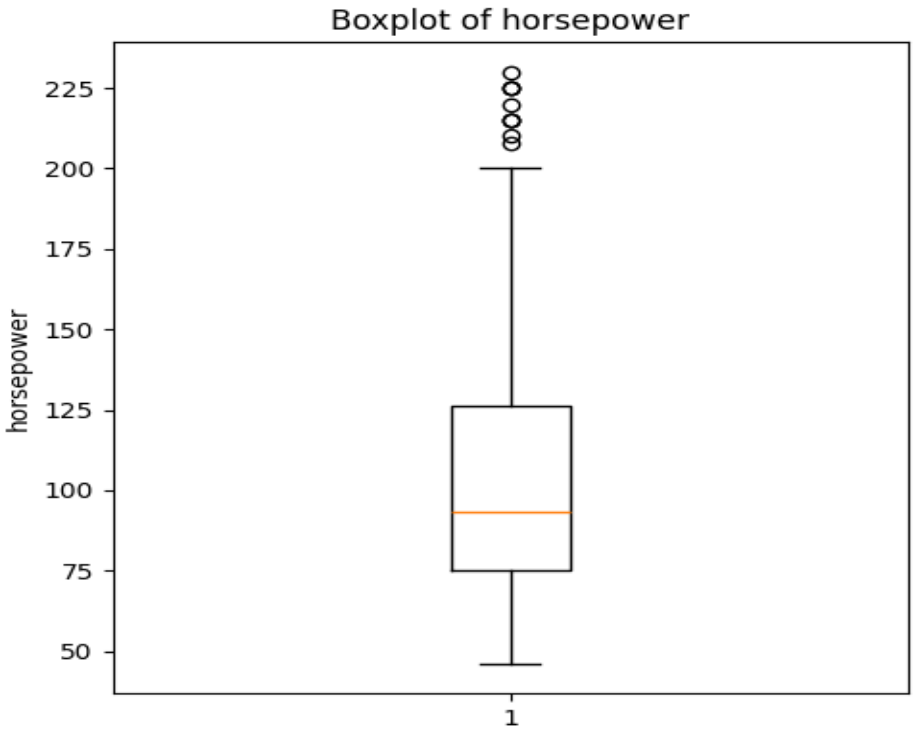
Histogram: Displacement



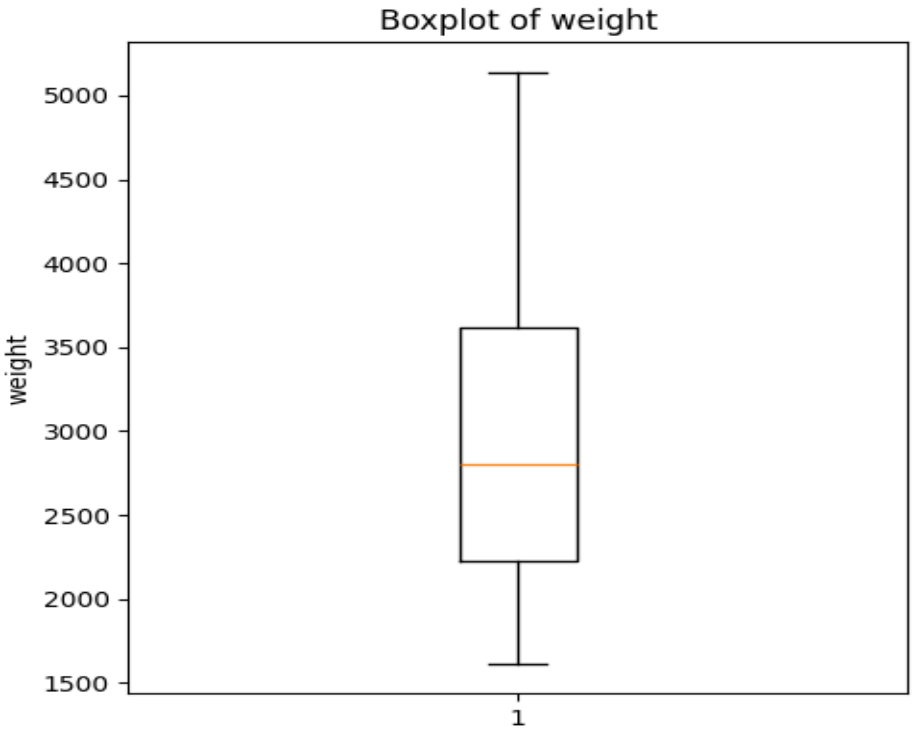
Boxplot: MPG



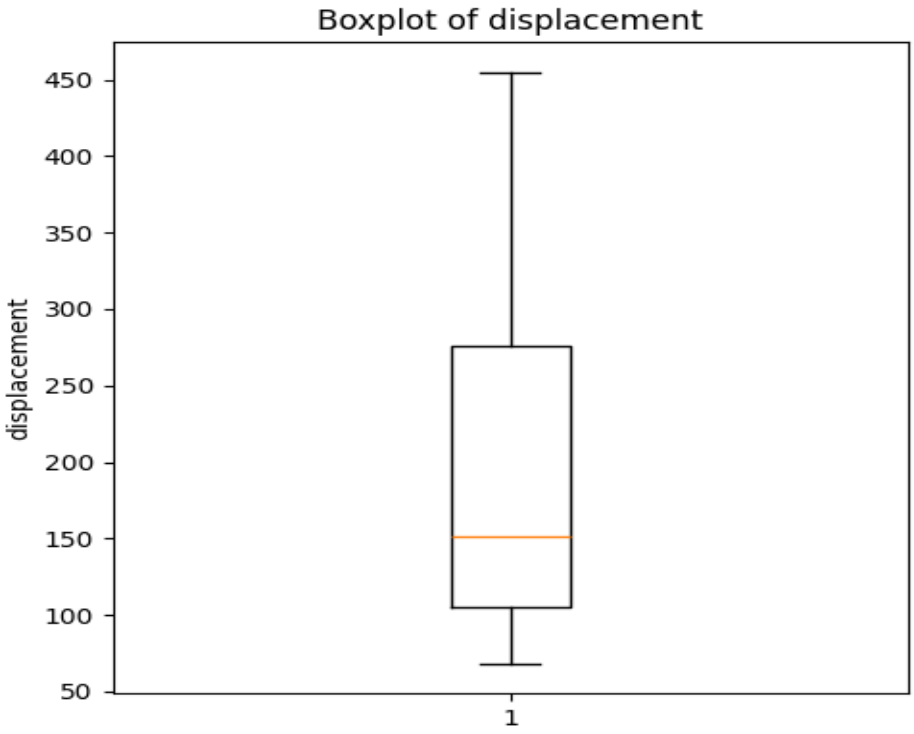
Boxplot: Horsepower



Boxplot: Weight



Boxplot: Displacement


Boxplot of displacement
displacement
450
400
350
300
250
200
150
100
50
1