Q3:

Index(['Length(ft)', 'Listing Price (USD)', 'Year', 'LWL (ft)', 'Beam (ft)',

'Draft (ft)', 'Displacement (lbs)', 'Sail Area (sq ft)',

'Average cargo throughput (tons)', 'GDP (USD billion)',

'GDP per capita (USD)', 'logistics costs to GDP%'],

dtype='object')

Length(ft) Listing Price (USD) Year LWL (ft) Beam (ft) Draft (ft) Displacement (lbs) Sail Area (sq ft) Average cargo throughput (tons) GDP (USD billion) GDP per capita (USD) logistics costs to GDP%

0 38.0 219000 0 37.92 21.50 3.75 16093.0 753.0 240000000.0 1000.0 47682 9.5

1 39.0 210000 0 38.67 21.08 3.67 19800.0 958.0 270000000.0 1150.0 9293 12.8

2 39.0 200000 0 38.08 22.08 4.08 22046.0 1033.0 76000000.0 66.8 16466 13.2

3 39.5 188252 0 39.33 22.08 4.17 19621.0 1087.0 595000.0 57.8 13647 9.4

4 39.5 188252 0 39.33 22.08 4.17 19621.0 1087.0 595000.0 57.8 13647 9.4

Mean absolute percentage error:0.047

r2\_score 0.937958872935742

MLPRegressor regression:

Mean absolute percentage error of the training set:0.352

Test set mean absolute percentage error:0.369

r2\_score -0.2488038985415486

LinearRegression regression:

Mean absolute percentage error of the training set:0.150

Test set mean absolute percentage error:0.116

Mean absolute error: 46797.75788217451

r2\_score 0.8564302347946298

DecisionTreeRegressor regression:

Mean absolute percentage error of the training set:0.031

Test set mean absolute percentage error:0.073

r2\_score 0.9118019020789236

RandomForestRegressor regression:

Mean absolute percentage error of the training set:0.048

Test set mean absolute percentage error:0.069

r2\_score 0.9330933186180159

LGBMRegressor regression:

Mean absolute percentage error of the training set:0.067

Test set mean absolute percentage error:0.078

r2\_score 0.9158420395904603

XGBRegressor regression:

Mean absolute percentage error of the training set:1.172

Test set mean absolute percentage error:1.099

r2\_score -16314.616510395597

GradientBoostingRegressor regression:

Mean absolute percentage error of the training set:0.079

Test set mean absolute percentage error:0.080

r2\_score 0.9121088431089677

ExtraTreesRegressor regression:

Mean absolute percentage error of the training set:0.031

Test set mean absolute percentage error:0.067

r2\_score 0.9308298527336135

AdaBoostRegressor regression:

Mean absolute percentage error of the training set:0.147

Test set mean absolute percentage error:0.129

r2\_score 0.7985932909511703

Stacking regression:

Mean absolute percentage error of the training set:0.060

Test set mean absolute percentage error:0.082

r2\_score 0.9081233068558626

RandomForestRegressor regression and output shapefile:

Mean absolute percentage error of the training set:0.048

Test set mean absolute percentage error:0.069

r2\_score 0.9330933186180159