Assignment 5

Task 1

Model 1: Predicting the Price of a Toyota Car

Process:

A screenshot of a computer program

Description automatically generated

Result:

A screenshot of a computer code

Description automatically generated

A graph of a comparison of prices

Description automatically generated with medium confidence

a)

For this question, a linear regression model could be appropriate because we are trying to predict a continuous variable (price) based on other explanatory variables.

b)

Target Variable: Price

c)

Key Attributes: age\_08\_04 (age of the car), km (kilometers driven), hp (horsepower), fuel\_type (type of fuel), and met\_color (whether the car has a metallic color).

d)

This is a simple complexity model based on a simple linear regression. We can add some interaction terms or polynomial terms to make the model more complex if the relationship between the target variable and independent variables is non-linear.

Model 2: Predicting the popularity of a Toyota Car Model

Process:A screenshot of a computer program

Description automatically generated

Results:

A screenshot of a computer

Description automatically generated

a)

For this question, We use a support vector machine to make a binary classification for the popularity of the car model.

b)

Target Variable: Popularity (0: not, 1: popular)

c)

popular, fuel\_type, hp, sport\_model, metallic\_rim, radio\_cassette, parking\_assistant, tow\_bar, mistlamps, backseat\_divider

d)

The accuracy of SVM model is not as high as expected. We can consider introducing more variables, or we can try other classification model like decision tree or neural network.

Task 2:

a)

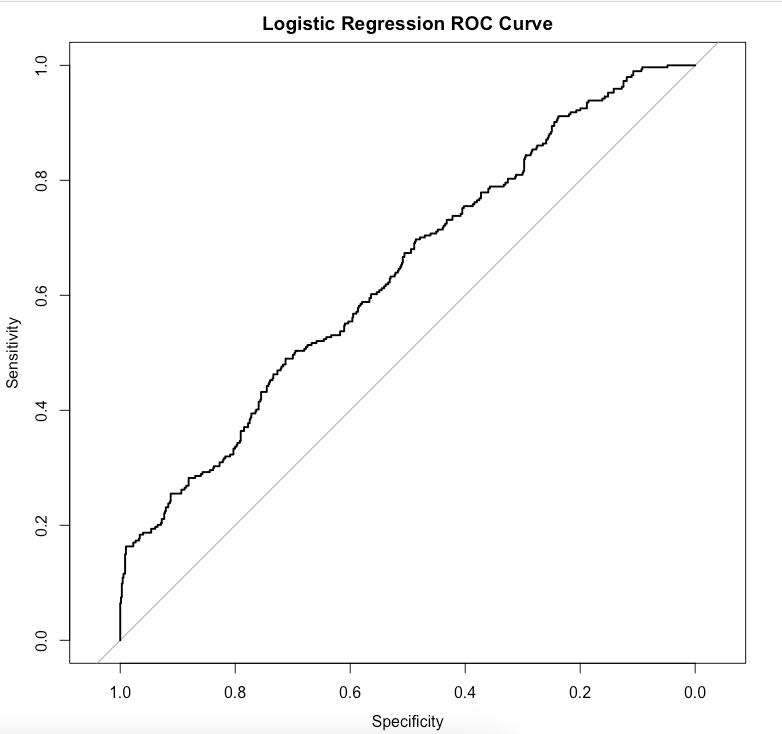
A screenshot of a computer program

Description automatically generated

A screenshot of a computer program

Description automatically generated

b)A graph of a curve

Description automatically generatedA graph of a logistic regression roc curve

Description automatically generatedA graph of a graph

Description automatically generated

c)A screenshot of a computer code

Description automatically generated