```
# load the dataset into R
data <- read.csv(file.choose())
car_data <- data[1:300, ]
str(car_data)

#run simple linear regression
slr_model <- lm(car_data$mpg ~ car_data$weight, data = car_data)
summary(slr_model)

#run multiple linear regression
mlr_model <- lm(mpg ~ weight + cylinder + modelyear, data = car_data)
summary(mlr_model)

# access the last 98 records
end_data <- data[301:399, ]

#predict mpg using the mlr model
predict_mlr <- predict(mlr_model, newdata = end_data)
predict_mlr

# retrieve actual mpg for last 98 records
actual_mpg <- end_data$mpg

#calculate residuals
residuals <- actual_mpg - predict_mlr
residuals

#plot residuals vs predicted values
plot(predict_mlr, residuals,
     xlab = "Predicted MPG",
     ylab = "Residuals",
     main = "Residual Plot for Multiple Linear Regression Model",
     pch = 16, col = "pink")
abline(h = 0, col = "hotpink", lwd = 2)

# Plot a histogram of the residuals
hist(residuals,
     main = "Histogram of Residuals for MLR",
     xlab = "Residuals",
     col = "hotpink",
     border = "white",
     breaks = 15)
```