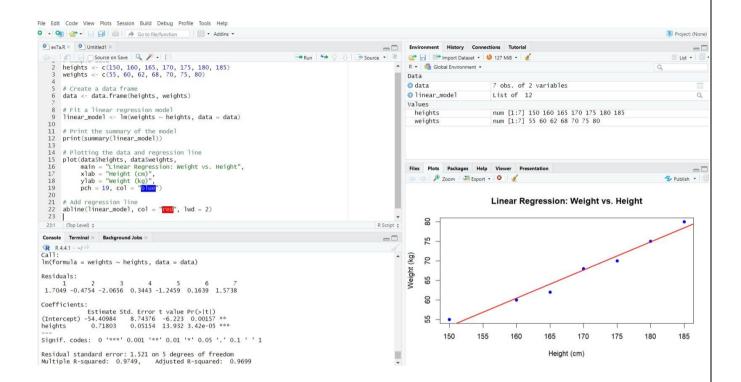
Implement Linear and Logistic Regression

a) Linear regression

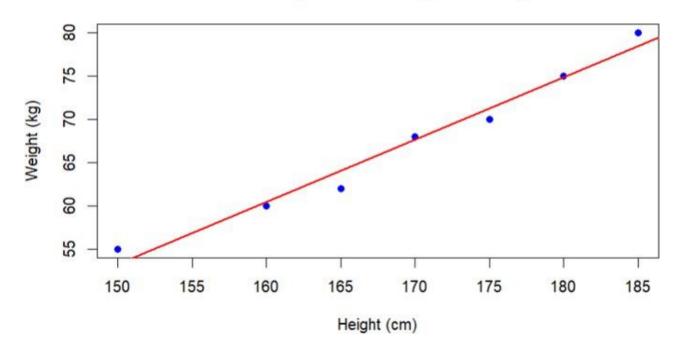
CODE:

```
# Sample data
heights <- c(150, 160, 165, 170, 175, 180, 185)
weights <- c(55, 60, 62, 68, 70, 75, 80)
# Create a data frame
data <- data.frame(heights, weights)
# Fit a linear regression model
linear_model <- lm(weights ~ heights, data = data)
# Print the summary of the model
print(summary(linear_model))
# Plotting the data and regression line
plot(data$heights, data$weights,
  main = "Linear Regression: Weight vs. Height",
  xlab = "Height (cm)",
  ylab = "Weight (kg)",
  pch = 19, col = "blue")
# Add regression line
abline(linear_model, col = "red", lwd = 2)
```

OUTPUT:



Linear Regression: Weight vs. Height

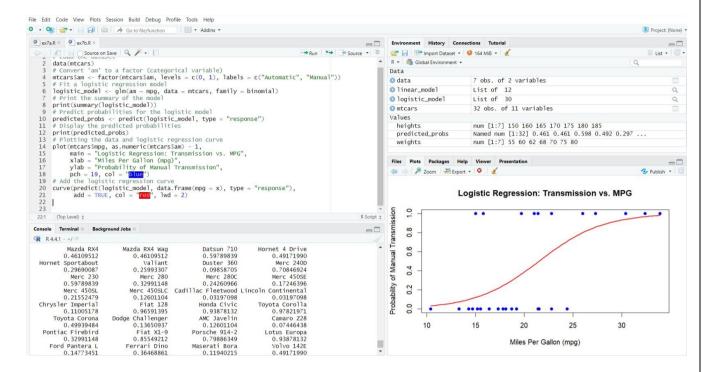


a) LOGISTIC REGRESSION

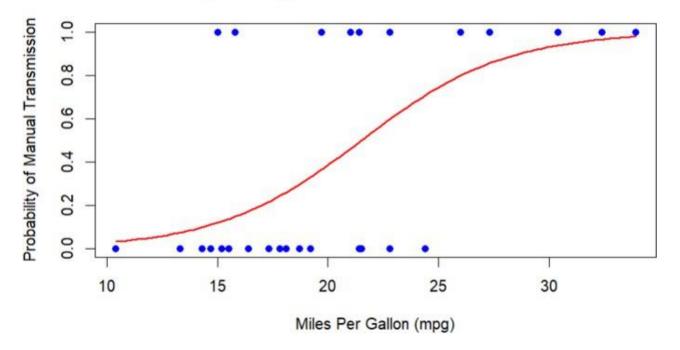
CODE:

```
# Load the dataset
data(mtcars)
# Convert 'am' to a factor (categorical variable)
mtcarsam <- factor(mtcarsam, levels = c(0, 1), labels = c("Automatic", "Manual"))
# Fit a logistic regression model
logistic_model <- glm(am ~ mpg, data = mtcars, family = binomial)
# Print the summary of the model
print(summary(logistic_model))
# Predict probabilities for the logistic model
predicted_probs <- predict(logistic_model, type = "response")</pre>
# Display the predicted probabilities
print(predicted_probs)
# Plotting the data and logistic regression curve
plot(mtcars$mpg, as.numeric(mtcars$am) - 1,
  main = "Logistic Regression: Transmission vs. MPG",
  xlab = "Miles Per Gallon (mpg)",
  ylab = "Probability of Manual Transmission",
  pch = 19, col = "blue")
# Add the logistic regression curve
curve(predict(logistic_model, data.frame(mpg = x), type = "response"),
   add = TRUE, col = "red", lwd = 2)
```

OUTPUT:



Logistic Regression: Transmission vs. MPG



RESULT:

Linear and Logistic Regression is implemented successfully.