Implement Linear and Logistic Regression

AIM:

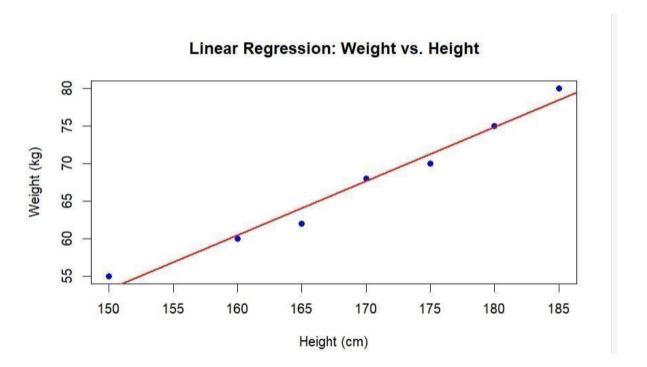
To implement Linear and Logistic Regression using R programming in R Studio. a)Linear

regression

```
# 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.
           xlab = "Height (cm)",
Height",
                                     ylab
= "Weight (kg)",
= 19, col = "blue")
# Add regression line
abline(linear_model, col = "red", lwd = 2)
```

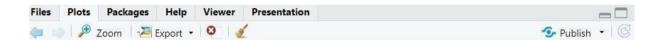
OUTPUT:

```
| linear regression - RStudio | lile Edit Code View Plots Session Build Debug Profile Tools Help | linear | lin
```

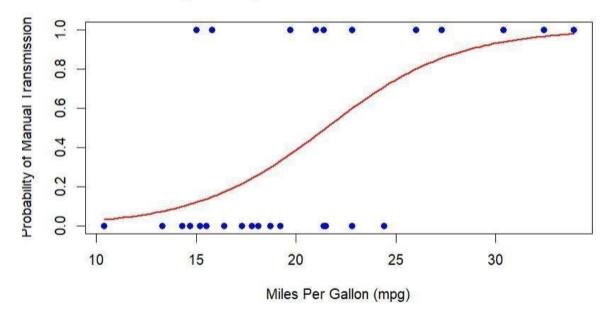


b) Logistic regression

```
# Load the dataset
data(mtcars)
# Convert 'am' to a factor (categorical variable) mtcars$am <- factor(mtcars$am,
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 =</pre>
"response")
# 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)",
= "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:

Thus the implementation Linear and Logistic Regression using R programming in R Studio have been successfully executed.