**Exp No: 7**

# Implement Linear and Logistic Regression

**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,

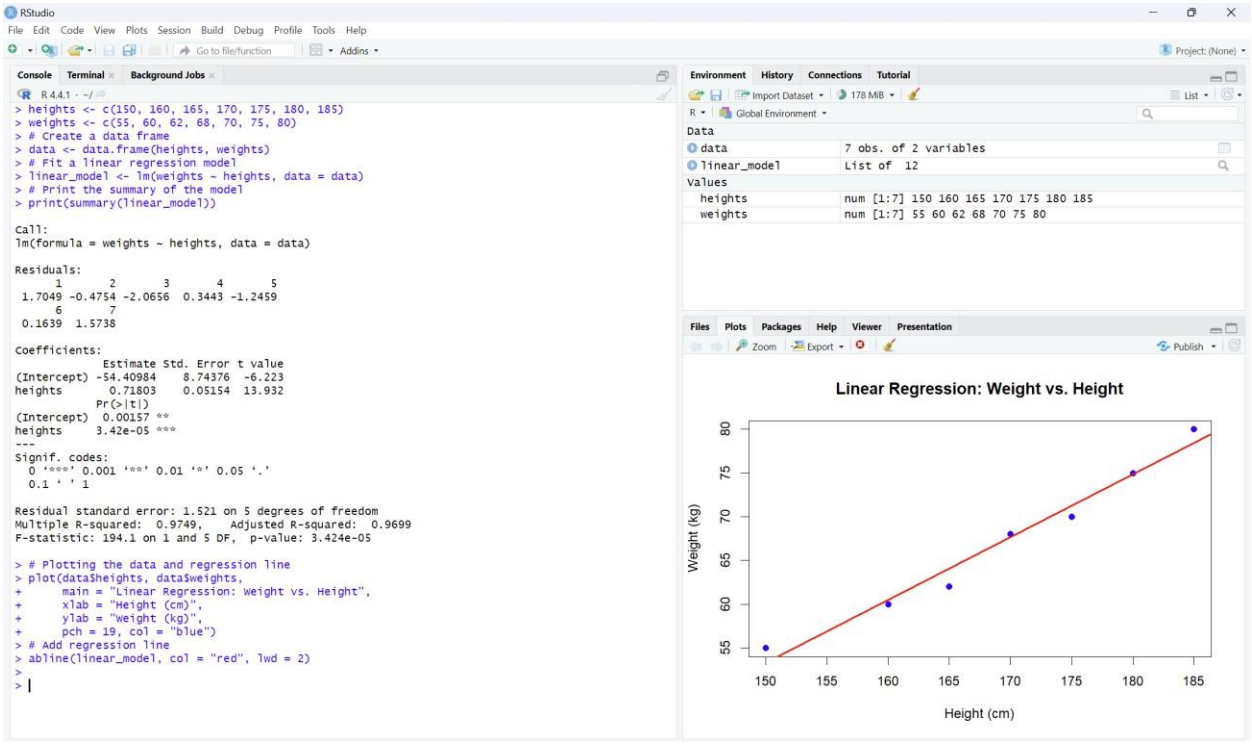
data$weights,  main = "Linear Regression:

Weight vs. Height",  xlab = "Height (cm)",  ylab

= "Weight (kg)",  pch = 19, col = "blue") # Add

regression line

abline(linear_model, col = "red", lwd = 2)




**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 = "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)",

```
 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)
```