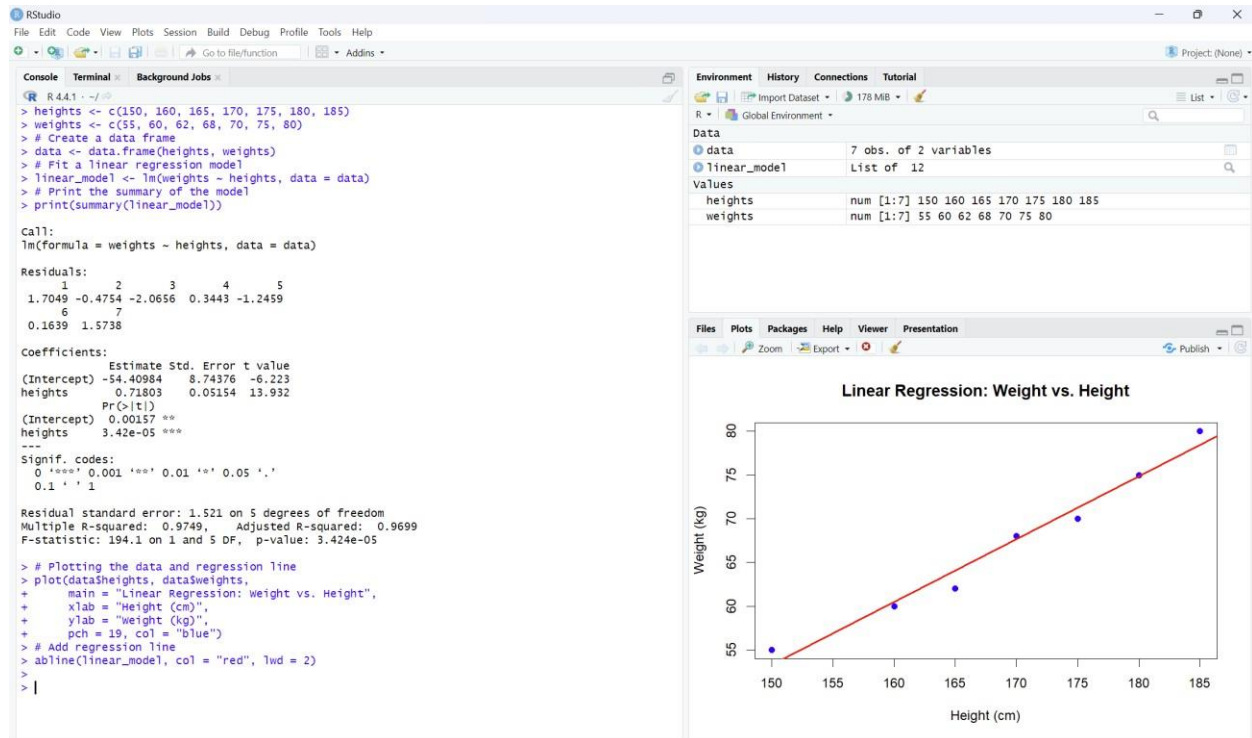


Exp No: 7

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)
```

