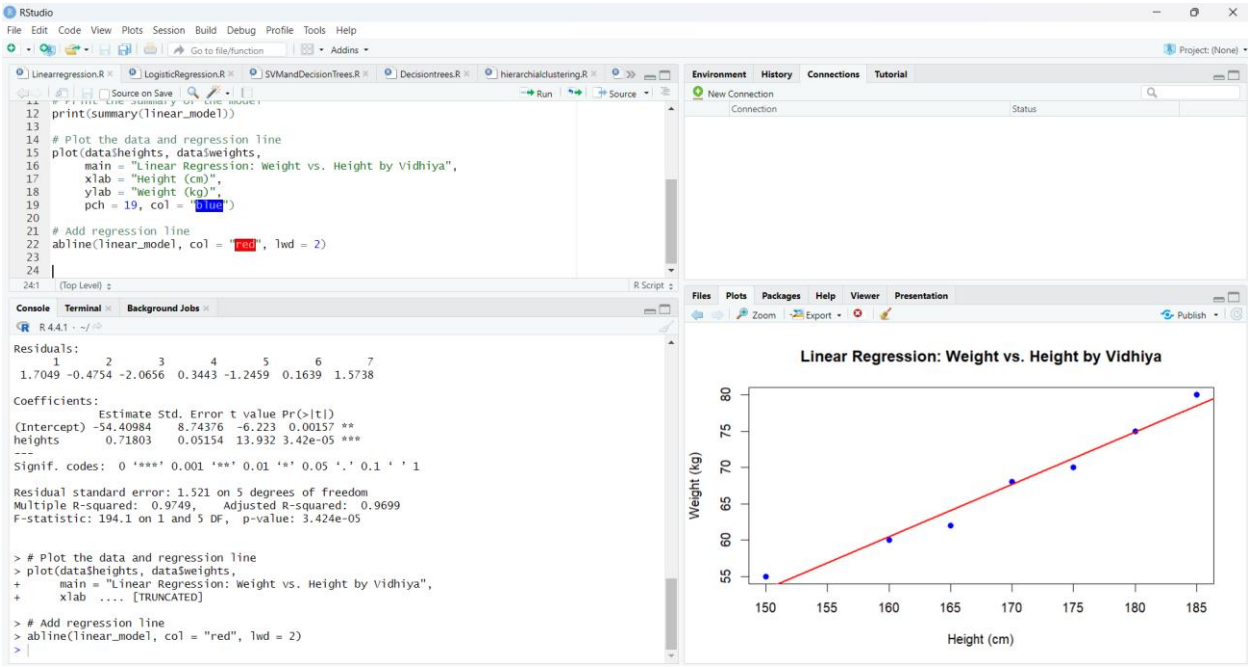
Exp:7

Implement Linear and Logistic Regressiona

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)