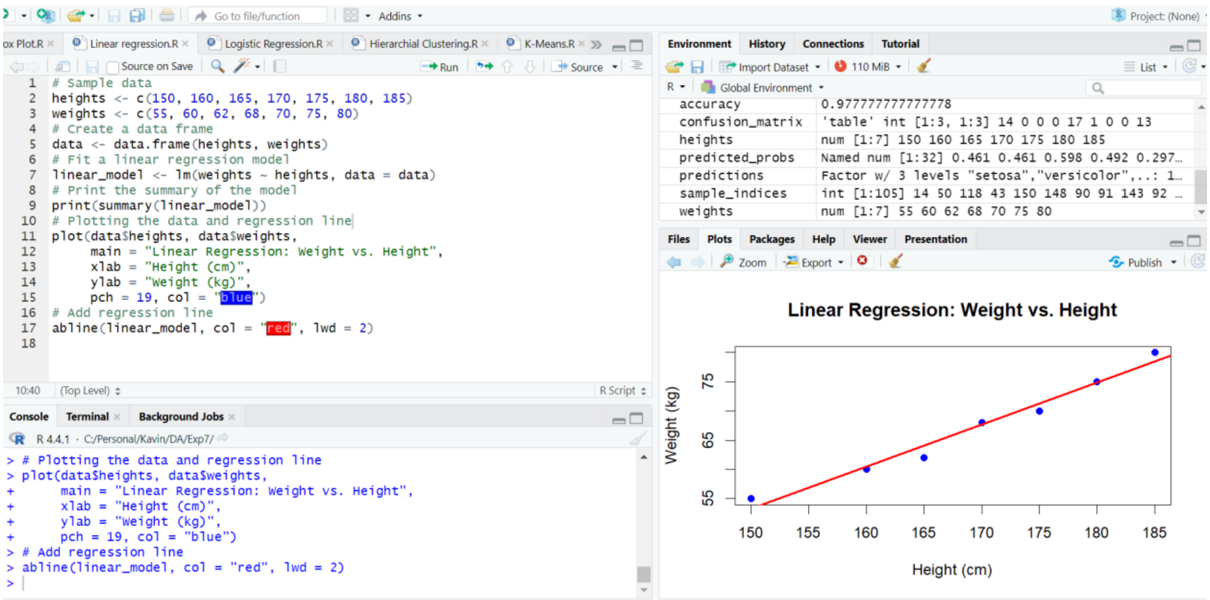
**EXP NO: 7**

## 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)

**<u>OUTPUT:</u>**



## 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)
```

**OUTPUT:**