Implement SVM/Decision tree classification techniques

1. **SVM IN R**

**CODE:**

# Install and load the e1071 package (if not already installed) install.packages("e1071")

library(e1071)

# Load the iris dataset data(iris)

# Inspect the first few rows of the dataset head(iris)

# Split the data into training (70%) and testing (30%) sets set.seed(123) # For reproducibility

sample\_indices <- sample(1:nrow(iris), 0.7 \* nrow(iris)) train\_data <- iris[sample\_indices, ]

test\_data <- iris[-sample\_indices, ] # Fit the SVM model

svm\_model <- svm(Species ~ ., data = train\_data, kernel = "radial") # Print the summary of the model

summary(svm\_model) # Predict the test set

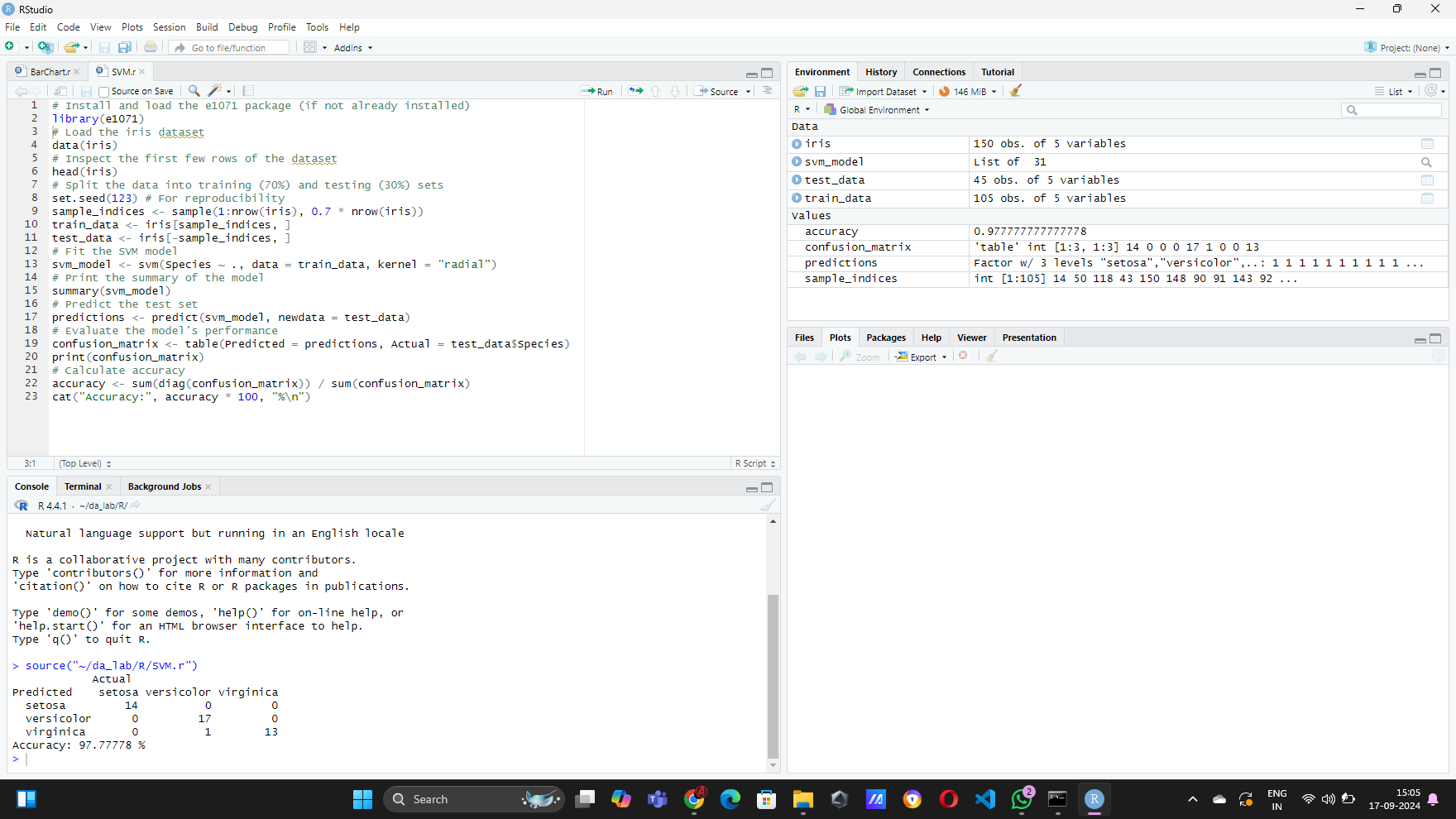
predictions <- predict(svm\_model, newdata = test\_data) # Evaluate the model's performance

confusion\_matrix <- table(Predicted = predictions, Actual = test\_data$Species) print(confusion\_matrix)

# Calculate accuracy

accuracy <- sum(diag(confusion\_matrix)) / sum(confusion\_matrix) cat("Accuracy:", accuracy \* 100, "%\n"

**OUTPUT:**



1. **DECISION TREE IN R**

**CODE:**

# Install and load the rpart package (if not already installed) install.packages("rpart")

library(rpart)

# Load the iris dataset data(iris)

# Split the data into training (70%) and testing (30%) sets set.seed(123) # For reproducibility

sample\_indices <- sample(1:nrow(iris), 0.7 \* nrow(iris)) train\_data <- iris[sample\_indices, ]

test\_data <- iris[-sample\_indices, ]

# Fit the Decision Tree model

tree\_model <- rpart(Species ~ ., data = train\_data, method = "class")

# Print the summary of the model summary(tree\_model)

# Plot the Decision Tree plot(tree\_model) text(tree\_model, pretty = 0)

# Predict the test set

predictions <- predict(tree\_model, newdata = test\_data, type = "class")

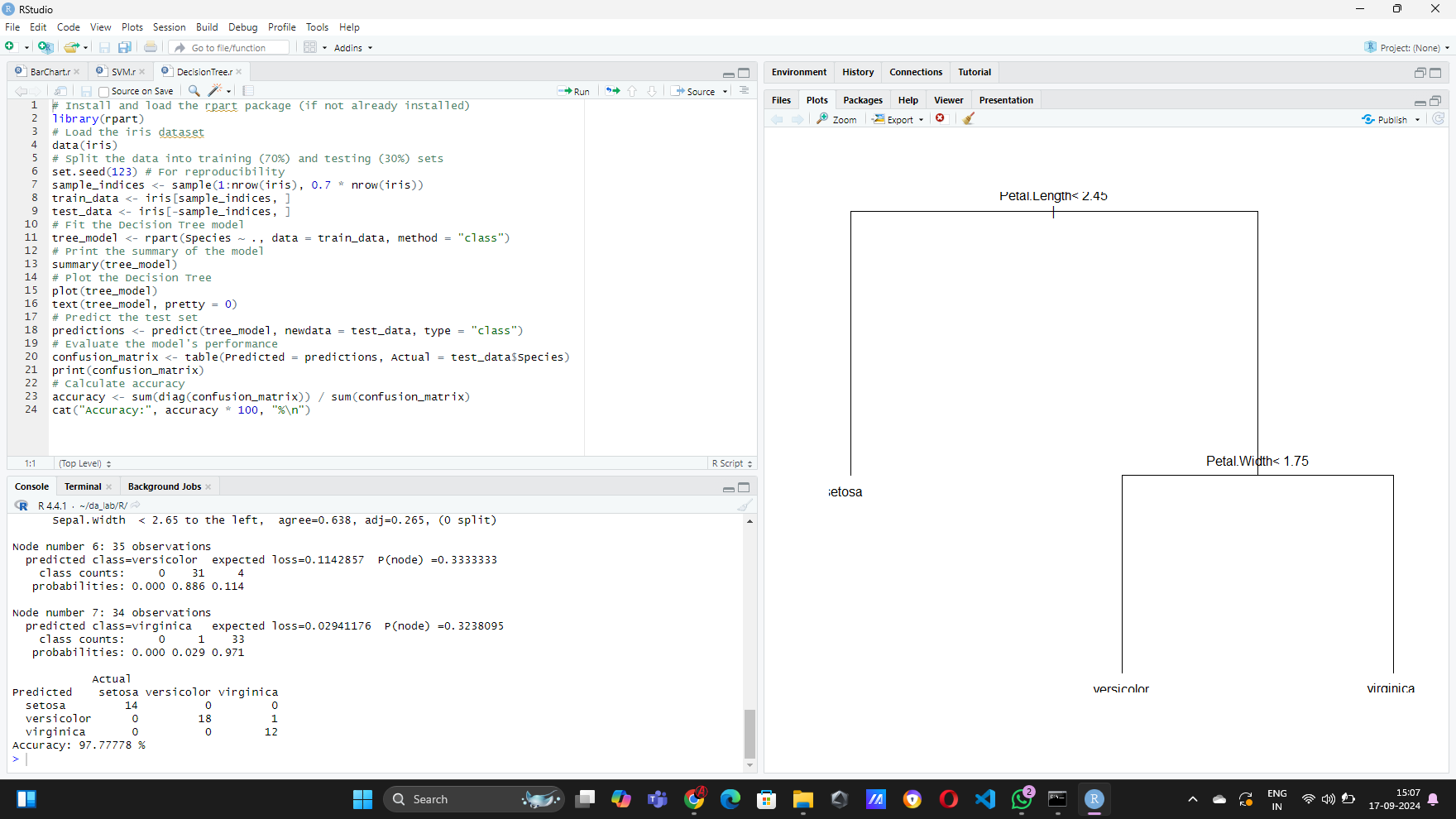
# Evaluate the model's performance

confusion\_matrix <- table(Predicted = predictions, Actual = test\_data$Species) print(confusion\_matrix)

# Calculate accuracy

accuracy <- sum(diag(confusion\_matrix)) / sum(confusion\_matrix) cat("Accuracy:", accuracy \* 100, "%\n")

**OUTPUT:**



**RESULT:**

SVM and Decision tree classification techniques are implemented Successfully.