EX.NO: 8 **REGISTER NO: 210701315**

DATE:

IMPLEMENT SVM/DECISION TREE CLASSIFICATION TECHNIQUES

AIM:

To implement SVM/Decision tree classification techniques.

PROGRAM CODE:

SVM IN R:

```
# 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")
```

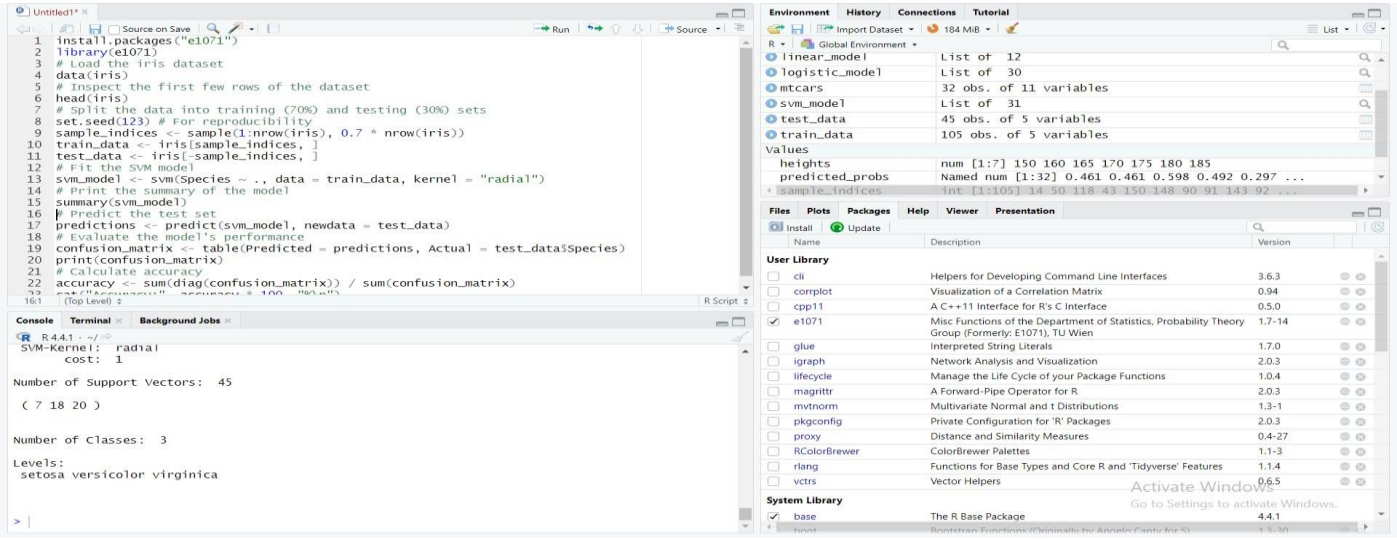
Decision tree in R:

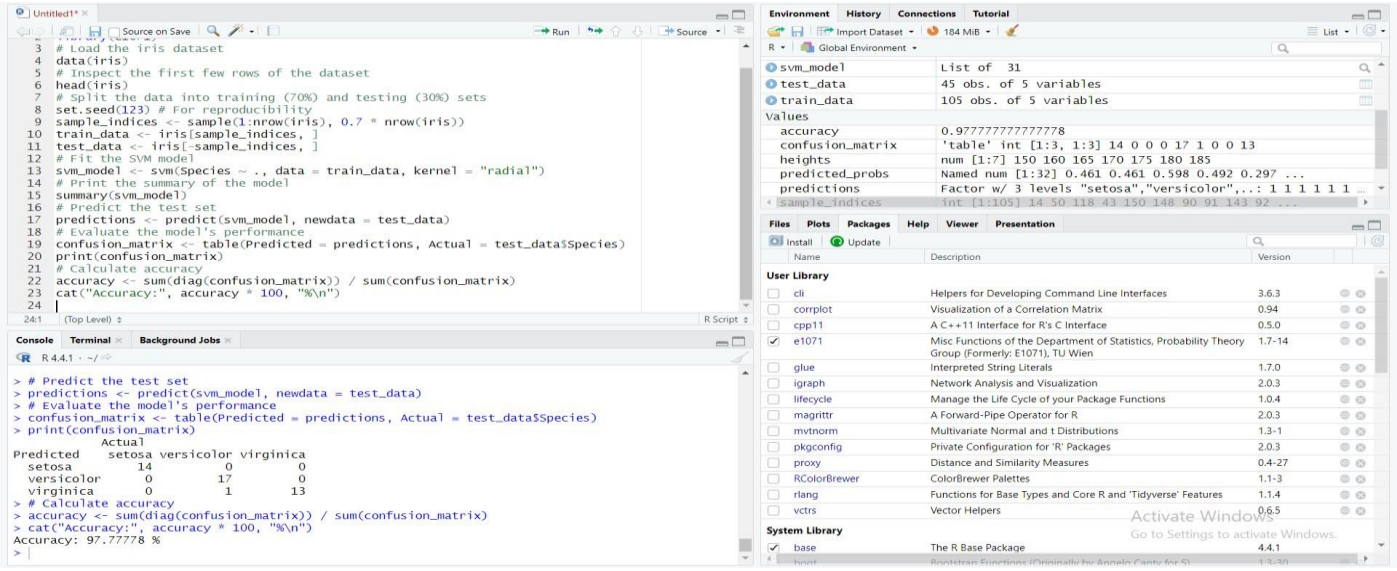
```
# Install and load the rpart package (if not already installed)
install.packages("rpart")  library(rpart)
# Load the iris dataset
data(iris)
# Split the data into training (70%) and testing (30%) sets  set.seed(123)
# For reproducibility
sample_indices <- sample(1:nrow(iris), 0.7 * nrow(iris))
train_data <- 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")
```

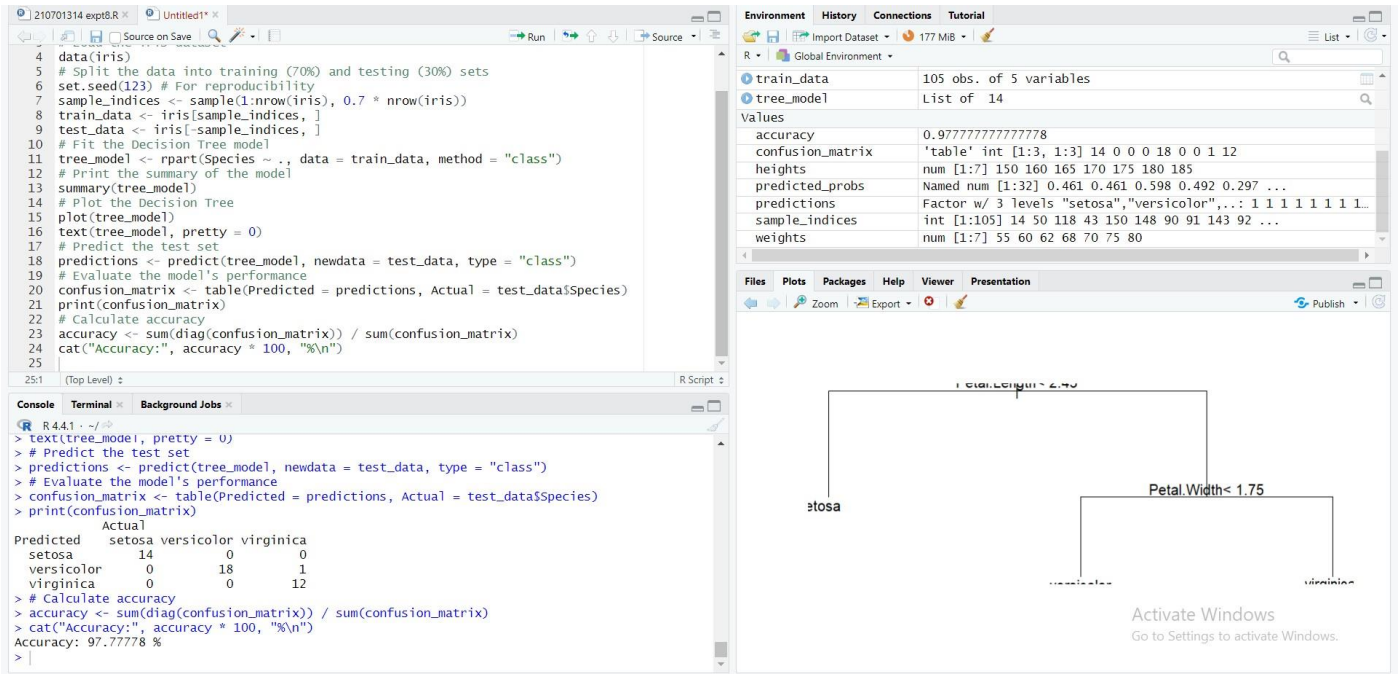
OUTPUT:

SVM in R:





Decision Tree in R:



RESULT:

Thus the implementation of SVM/Decision tree classification techniques done successfully.