EX.NO:8 **210701028**

Implement SVM/Decision tree classification technique

AIM:

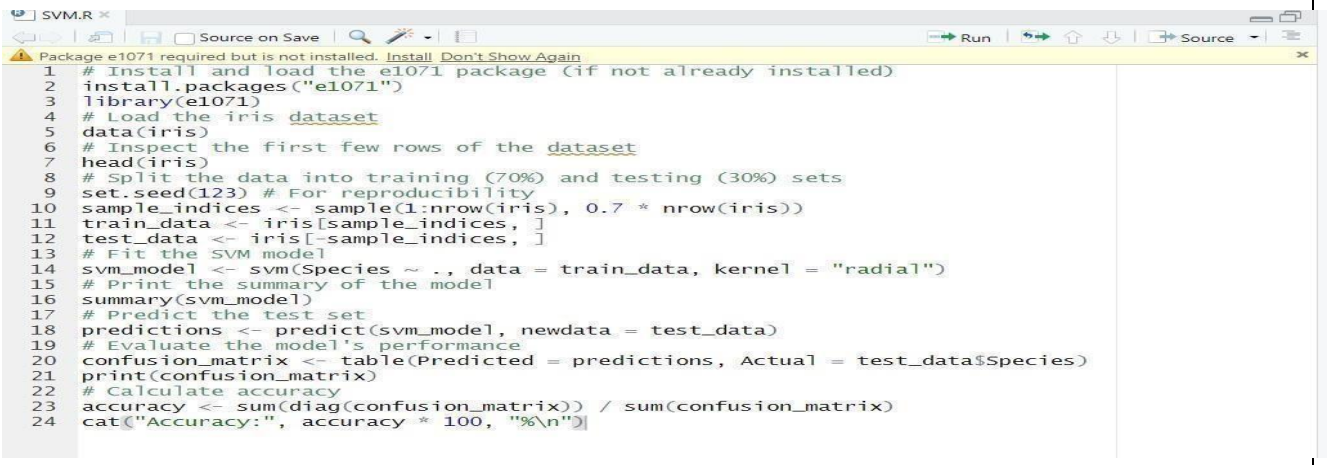
To Implement SVM and Decision tree classification techniques using R programming in R Studio.

a) 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")

OUTPUT:




```
package 'proxy' successfully unpacked and MD5 sums checked
package 'e1071' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\Jayar\AppData\Local\Temp\RtmpsHAtXR\downloaded_packages
            Actual
Predicted    setosa versicolor virginica
  setosa         14          0         0
  versicolor      0         17         0
  virginica       0          1        13
Accuracy: 97.77778 %
```

b) 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,]

EX.NO:8 **210701028**

Fit the Decision Tree model tree_model <- rpart(Species ~
., data = train_data, method = "class")

Print the summary of the model summary(tree_model)

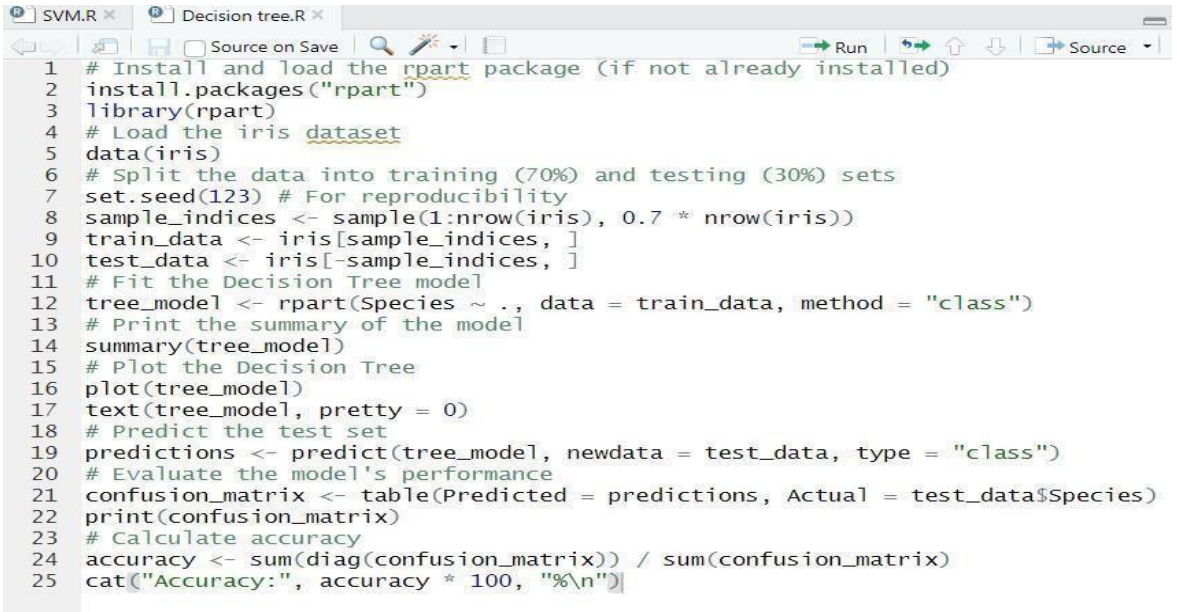
Plot the Decision Tree
plot(tree_model) text(tree_model,
pretty =
0)

Predict the test set predictions <- predict(tree_model, newdata
= test_data, type = "class")

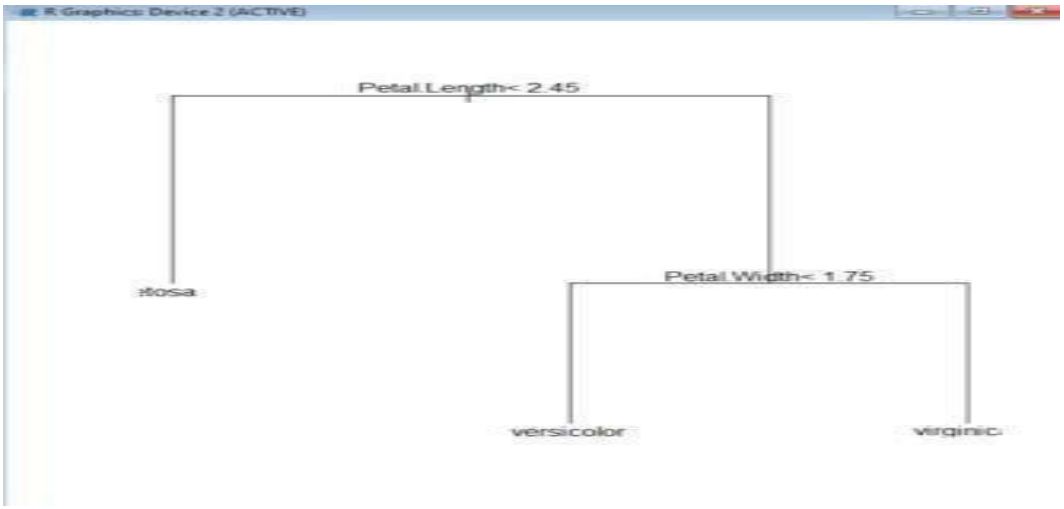
# Evaluate the model's performance
confusion_matrix <- table(Predicted = predictions, Actual = test_data$Species) print(confusion_matrix)

# Calculate accuracy
accuracy <- sum(diag(confusion_matrix)) / sum(confusion_matrix) cat("Accuracy:",
accuracy * 100, "%\n")

OUTPUT:



EX.NO:8 **210701028**



RESULT:

Thus, the Implementation SVM/Decision tree classification techniques using R programming in R Studio.