**EX.NO:8 REGISTER NO:210701307**

**DATE:**

**IMPLEMENT SVM/DECISION TREE CLASSIFICATION TECHNIQUES**

**AIM:**

To implement SVM/Decision tree classification techniques.

**PROGRAMCODE:**

**SVM IN R:**

#Install and load the e1071 package(ifnotalreadyinstalled) 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 r part 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

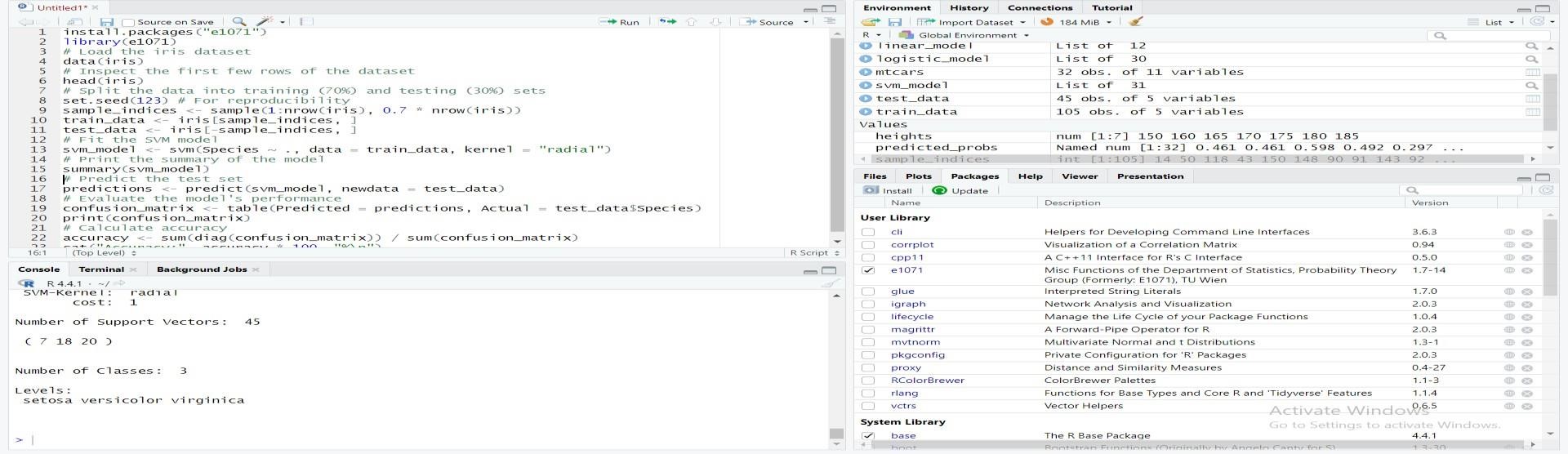
confusion\_matrix<-table(Predicted=predictions,Actual=test\_data$Species) print(confusion\_matrix)

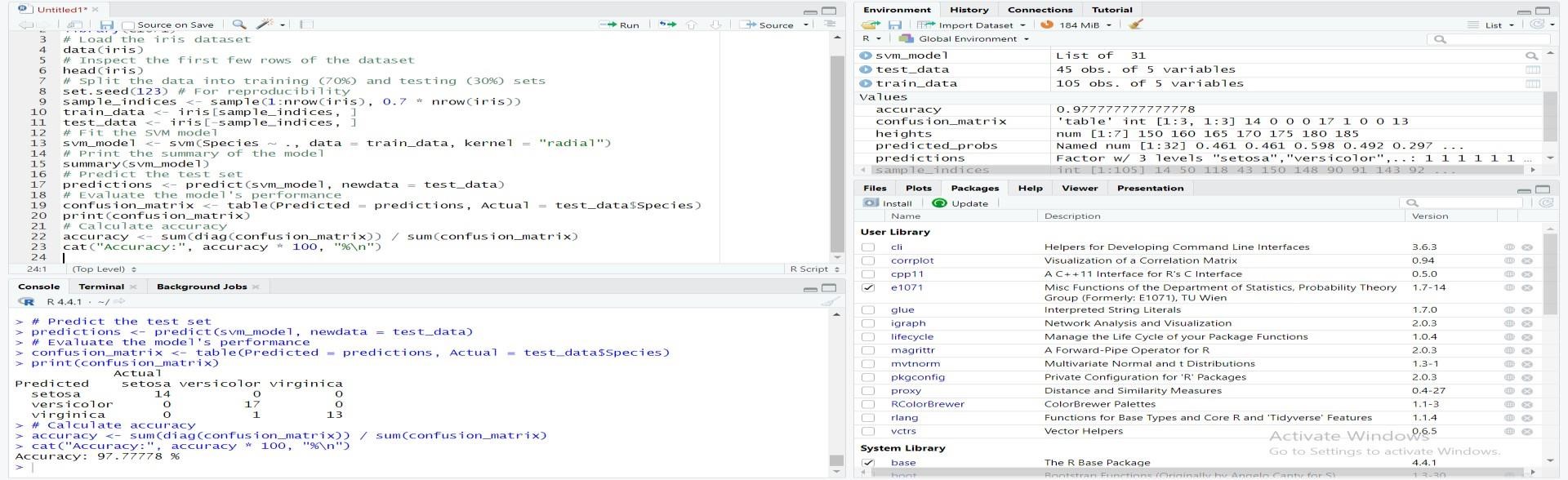
#Calculateaccuracy

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

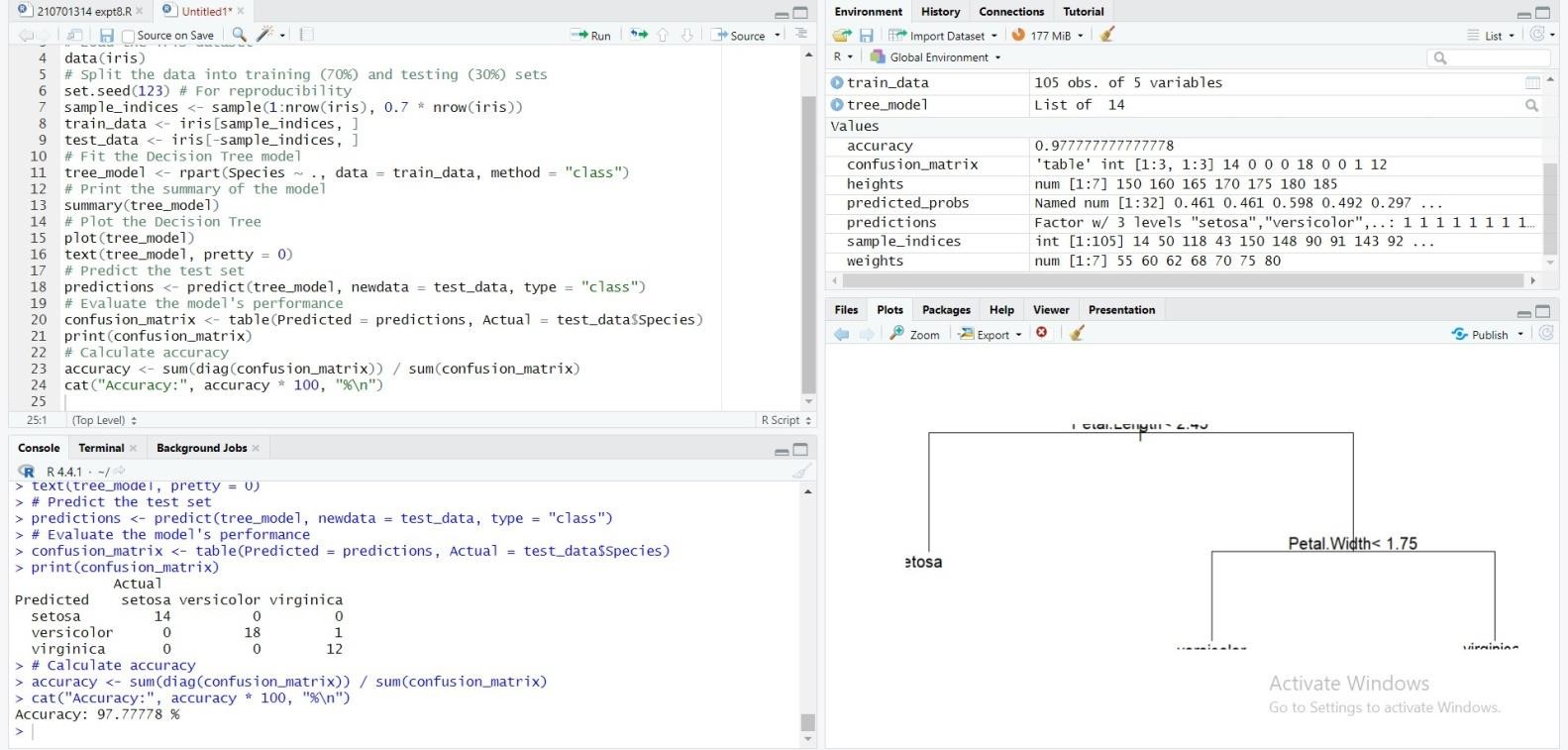
**OUTPUT:**

**SVM in R:**





**Decision Tree in R:**



**RESULT:**

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