Date: 22/Feb/2024 EXPERIMENT – 05	SUPPORT VECTOR MACHINE

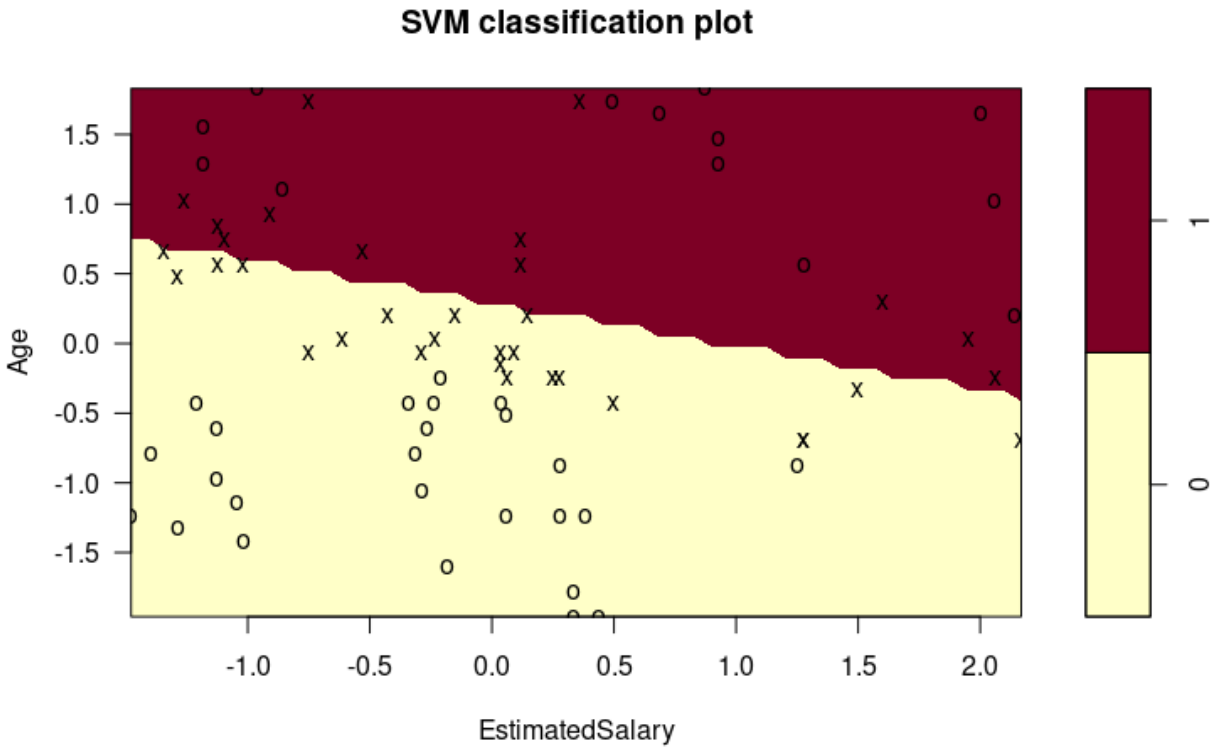
AIM: To perform support vector machine

SOFTWARE REQUIRED: RStudio

R CODE:

```
rm(list=ls())
data =read.csv('social.csv' )
library (dplyr)
data=sample_n(data, 80)
data=data [3:5]
data$Purchased= factor(data$Purchased, levels=c(0,1))
data_TRAIN<-sample_n(data,0.9*length(data$Purchased))
data_TEST<-setdiff(data, data_TRAIN)
data_TRAIN[-3] <- scale (data_TRAIN[-3])
data_TEST[-3] <- scale(data_TEST[-3])
library(e1071)
SVMclassifier =svm(formula=Purchased ~ ., data= data_TRAIN,type=
'C-classification', kernel ='linear')
plot(SVMclassifier, data_TRAIN)
y_p =predict(SVMclassifier, newdata =data_TEST[-3])
install.packages('caret')
library (caret)
library (ggplot2)
install.packages('lattice')
library (lattice)
confusionMatrix(table (y_p, data_TEST$Purchased))
```

OUTPUT:



Data	
data	80 obs. of 3 variables
data_TEST	8 obs. of 3 variables
data_TRAIN	72 obs. of 3 variables
SVMclassifier	List of 31
Values	
data$Purchased	Factor w/ 2 levels "0","1": 1 2 1 2 1 1 2 2 1 2 ...
y_p	Factor w/ 2 levels "0","1": 1 1 2 1 2 2 1 1

```
Confusion Matrix and Statistics


y_p 0 1
  0 4 1
  1 0 3

               Accuracy : 0.875
                 95% CI : (0.4735, 0.9968)
    No Information Rate : 0.5
    P-Value [Acc > NIR] : 0.03516

                  Kappa : 0.75

 Mcnemar's Test P-Value : 1.00000

            Sensitivity : 1.000
            Specificity : 0.750
         Pos Pred Value : 0.800
         Neg Pred Value : 1.000
             Prevalence : 0.500
         Detection Rate : 0.500
   Detection Prevalence : 0.625
      Balanced Accuracy : 0.875

       'Positive' Class : 0
```

	Age	EstimatedSalary	Purchased
1	33	28000	0
2	60	34000	1
3	42	64000	0
4	37	79000	1
5	39	59000	0
6	26	72000	0
7	45	22000	1
8	32	150000	1
9	34	43000	0
10	51	23000	1
11	31	18000	0
12	37	62000	0
13	33	60000	0
14	18	82000	0
15	40	47000	0
16	35	61000	0
17	43	129000	1

```
User ID,Gender,Age,EstimatedSalary,Purchased
15624510,Male,19,19000,0
15810944,Male,35,20000,0
15668575,Female,26,43000,0
15603246,Female,27,57000,0
15804002,Male,19,76000,0
15728773,Male,27,58000,0
15598044,Female,27,84000,0
15694829,Female,32,150000,1
15600575,Male,25,33000,0
15727311,Female,35,65000,0
15570769,Female,26,80000,0
15606274,Female,26,52000,0
15746139,Male,20,86000,0
15704987,Male,32,18000,0
15628972,Male,18,82000,0
15697686,Male,29,80000,0
15733883,Male,47,25000,1
15617482,Male,45,26000,1
15704583,Male,46,28000,1
15621083,Female,48,29000,1
15649487,Male,45,22000,1
15736760,Female,47,49000,1
15714658,Male,48,41000,1
15599081,Female,45,22000,1
15705113,Male,46,23000,1
15631159,Male,47,20000,1
15792818,Male,49,28000,1
15633531,Female,47,30000,1
```