```
R version 3.2.4 Revised (2016-03-16 r70336) -- "Very Secure Dishes"
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Platform: i386-w64-mingw32/i386 (32-bit)

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[Previously saved workspace restored]

> getwd()
[1] "C:/Users/Yash Phogat/Documents"
> setwd("C:/Users/Yash Phogat/Desktop/btp_amazon_access_challenge/")
> train<-read.csv("train.csv")
> table(train)
Error in table(train) : attempt to make a table with >= 2^31 elements
> str(train)
'data.frame':   32769 obs. of  13 variables:
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 $ X.1             : logi  NA NA NA NA NA NA ...
 $ X.2             : logi  NA NA NA NA NA NA ...
> train<-read.csv("train.csv")
> str(train)
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..
> nrow(train)
[1] 32769
> index<-sample((1:nrow(train)),size=5000,replace=FALSE)
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> workset<-train[index,]
> testset<-train[-index,]
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> str(workset)
'data.frame':   5000 obs. of  10 variables:
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 $ RESOURCE        : int  39511 42914 33248 19816 76860 4675 20115 73133 25993 17308 ...
 $ MGR_ID          : int  2378 61948 4887 3692 91868 51127 6890 46476 25686 1903 ...
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..
> best.tune(svm, ACTION ~ ., type="C",data = workset, kernel = "linear")
Error: could not find function "best.tune"
> library(e1071)
Warning message:
package ‘e1071’ was built under R version 3.2.5
> best.tune(svm, ACTION ~ ., type="C",data = workset, kernel = "linear")
Error in tune(...) : Dependent variable has wrong type!
> best.tune(svm, ACTION ~ ., type="C",data = workset, kernel = "radial")
Error in tune(...) : Dependent variable has wrong type!
> best.tune(svm,train.x=as.matrix(workset[,-1]),train.y=as.factor(workset$ACTION),type="C-classif
ication",data = workset, kernel = "radial")

Call:
best.tune(svm, train.x = as.matrix(workset[, -1]), train.y = as.factor(workset$ACTION),
    type = "C-classification", data = workset, kernel = "radial")


Parameters:
   SVM-Type:  C-classification
 SVM-Kernel:  radial
       cost:  1
      gamma:  0.1111111

Number of Support Vectors:  1021

> str(testset)
'data.frame':   27769 obs. of  10 variables:
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 $ RESOURCE        : int  39353 17183 36724 36135 45333 25993 19666 31246 78766 4675 ...
 $ MGR_ID          : int  85475 1540 14457 5396 14561 17227 4209 783 56683 3005 ...
 $ ROLE_ROLLUP_1   : int  117961 117961 118219 117961 117951 117961 117961 117961 118079 117961 .
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 $ ROLE_ROLLUP_2   : int  118300 118343 118220 118343 117952 118343 117969 118413 118080 118413 .
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 $ ROLE_DEPTNAME   : int  123472 123125 117884 119993 118008 123476 118910 120584 117878 118481 .
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 $ ROLE_TITLE      : int  117905 118536 117879 118321 118568 118980 126820 128230 117879 118784 .
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 $ ROLE_FAMILY_DESC: int  117906 118536 267952 240983 118568 301534 269034 302830 304519 117906 .
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 $ ROLE_CODE       : int  117908 118539 117880 118322 118570 118982 126822 128231 117880 118786 .
..
> best.tune(svm,train.x=as.matrix(testset[,-1]),train.y=as.factor(testset$ACTION),type="C-classif
ication",data = testset, kernel = "radial")

Call:
best.tune(svm, train.x = as.matrix(testset[, -1]), train.y = as.factor(testset$ACTION),
    type = "C-classification", data = testset, kernel = "radial")


Parameters:
```

```
   SVM-Type:  C-classification
 SVM-Kernel:  radial
       cost:  1
      gamma:  0.1111111

Number of Support Vectors:  4672

> save.image("C:\\Users\\Yash Phogat\\Desktop\\btp_amazon_access_challenge\\best tune")
> svm.model<-svm(ACTION~.,data=workset,kernel="radial",cost=1,gamma=0.1111)
> summary(svm.model)

Call:
svm(formula = ACTION ~ ., data = workset, kernel = "radial", cost = 1,
    gamma = 0.1111)


Parameters:
   SVM-Type:  eps-regression
 SVM-Kernel:  radial
       cost:  1
      gamma:  0.1111
    epsilon:  0.1


Number of Support Vectors:  1039




> svm.model<-svm(ACTION~.,data=workset,type="C-classification",kernel="radial",cost=1,gamma=0.111
1)
> summary(svm.model)

Call:
svm(formula = ACTION ~ ., data = workset, type = "C-classification",
    kernel = "radial", cost = 1, gamma = 0.1111)


Parameters:
   SVM-Type:  C-classification
 SVM-Kernel:  radial
       cost:  1
      gamma:  0.1111

Number of Support Vectors:  1022

 ( 723 299 )


Number of Classes:  2

Levels:
 0 1



> pred<-predict(svm.model,testset)
> pred<-predict(svm.model,testset[,-1])
> table(pred,testset[,1])

pred     0     1
   0     0     0
   1  1598 26171
> library(carat)
Error in library(carat) : there is no package called ‘carat’
> library(caret)
Loading required package: lattice
Loading required package: ggplot2
Warning message:
```

```
package 'caret' was built under R version 3.2.5
> confusionMatrix(pred)
Error in is.factor(reference) :
  argument "reference" is missing, with no default
> confusionMatrix(table(pred,testset[,-1]))
Error in table(pred, testset[, -1]) :
  all arguments must have the same length
> confusionMatrix(table(pred,testset[,1]))
$positive
[1] "0"

$table

pred     0     1
   0     0     0
   1  1598 26171

$overall
      Accuracy          Kappa  AccuracyLower  AccuracyUpper   AccuracyNull
     0.9424538      0.0000000      0.9396501      0.9451645      0.9424538
AccuracyPValue  McnemarPValue
     0.5066556      0.0000000

$byClass
         Sensitivity          Specificity       Pos Pred Value
          0.00000000           1.00000000                  NaN
      Neg Pred Value            Precision               Recall
          0.94245382                  NA           0.00000000
                  F1           Prevalence       Detection Rate
                  NA           0.05754618           0.00000000
Detection Prevalence    Balanced Accuracy
          0.00000000           0.50000000

$mode
[1] "sens_spec"

$dots
list()

attr(,"class")
[1] "confusionMatrix"
> svm.model<-svm(ACTION~.,data=testset,type="C-classification",kernel="radial",cost=1,gamma=0.111
1)
> pred<-predict(svm.model,workset[,-1])
> confusionMatrix(table(pred,workset[,1]))
$positive
[1] "0"

$table

pred    0    1
   0    0    0
   1  299 4701

$overall
      Accuracy          Kappa  AccuracyLower  AccuracyUpper   AccuracyNull
  9.402000e-01   0.000000e+00   9.332665e-01   9.466138e-01   9.402000e-01
AccuracyPValue  McnemarPValue
  5.153817e-01   1.481332e-66

$byClass
         Sensitivity          Specificity       Pos Pred Value
              0.0000               1.0000                  NaN
      Neg Pred Value            Precision               Recall
              0.9402                  NA               0.0000
                  F1           Prevalence       Detection Rate
                  NA               0.0598               0.0000
Detection Prevalence    Balanced Accuracy
              0.0000               0.5000
```

```
$mode
[1] "sens_spec"

$dots
list()

attr(,"class")
[1] "confusionMatrix"
> svm.model<-svm(ACTION~.,data=train,type="C-classification",kernel="radial",cost=1,gamma=0.1111)
> pred<-predict(svm.model,workset[,-1])
> confusionMatrix(table(pred,workset[,1]))
$positive
[1] "0"

$table

pred    0    1
   0    0    0
   1  299 4701

$overall
      Accuracy          Kappa  AccuracyLower  AccuracyUpper   AccuracyNull
  9.402000e-01   0.000000e+00   9.332665e-01   9.466138e-01   9.402000e-01
AccuracyPValue  McnemarPValue
  5.153817e-01   1.481332e-66

$byClass
         Sensitivity          Specificity       Pos Pred Value
              0.0000               1.0000                  NaN
      Neg Pred Value            Precision               Recall
              0.9402                  NA               0.0000
                  F1           Prevalence       Detection Rate
                  NA               0.0598               0.0000
Detection Prevalence    Balanced Accuracy
              0.0000               0.5000

$mode
[1] "sens_spec"

$dots
list()

attr(,"class")
[1] "confusionMatrix"
> test<-read.csv("test.csv")
> str(test)
'data.frame':   58921 obs. of  10 variables:
 $ id              : int  1 2 3 4 5 6 7 8 9 10 ...
 $ RESOURCE        : int  78766 40644 75443 43219 42093 44722 75834 4675 18072 22680 ...
 $ MGR_ID          : int  72734 4378 2395 19986 50015 1755 21135 3077 15575 4474 ...
 $ ROLE_ROLLUP_1   : int  118079 117961 117961 117961 117961 117961 117961 117961 117902 117961 .
..
 $ ROLE_ROLLUP_2   : int  118080 118327 118300 118225 118343 117962 118343 118300 118041 118446 .
..
 $ ROLE_DEPTNAME   : int  117878 118507 119488 118403 119598 119223 123494 120312 118623 119064 .
..
 $ ROLE_TITLE      : int  117879 118863 118172 120773 118422 125793 118054 124194 280788 118321 .
..
 $ ROLE_FAMILY_DESC: int  118177 122008 301534 136187 300136 146749 118054 124195 280788 118448 .
..
 $ ROLE_FAMILY     : int  19721 118398 249618 118960 118424 118643 117887 118363 292795 290919 ..
.
 $ ROLE_CODE       : int  117880 118865 118175 120774 118425 125795 118055 124196 119082 118322 .
..
> pred<-predict(svm.model,test[,-1])
> str(pred)
 Factor w/ 2 levels "0","1": 2 2 2 2 2 2 2 2 2 2 ...
 - attr(*, "names")= chr [1:58921] "1" "2" "3" "4" ...
> summary(pred)
    0     1
```

```
    0 58921
> head(pred)
1 2 3 4 5 6
1 1 1 1 1 1
Levels: 0 1
> submission$ACTION<-pred
Error in submission$ACTION <- pred : object 'submission' not found
> submit<-data.frame(str=c(1:58921))
> head(submit)
  str
1   1
2   2
3   3
4   4
5   5
6   6
> submit<-data.frame(str=c(1:58921),ACTION=c(0))
> head(submit)
  str ACTION
1   1      0
2   2      0
3   3      0
4   4      0
5   5      0
6   6      0
> submit$ACTION<-pred
> head(submit)
  str ACTION
1   1      1
2   2      1
3   3      1
4   4      1
5   5      1
6   6      1
> write.csv(submit,file="submission.csv",row.names=FALSE)
> head(submit)
  str ACTION
1   1      1
2   2      1
3   3      1
4   4      1
5   5      1
6   6      1
> svm.model<-rpart(ACTION~.,data=train,type="C-classification",kernel="radial",cost=1,gamma=0.111
1)
Error: could not find function "rpart"
> library(rpart)
> res<-rpart(ACTION~.,method="class",data=testset)
> str(res)
List of 12
 $ frame    :'data.frame':      1 obs. of  9 variables:
  ..$ var       : Factor w/ 1 level "<leaf>": 1
  ..$ n         : int 27769
  ..$ wt        : num 27769
  ..$ dev       : num 1598
  ..$ yval      : num 2
  ..$ complexity: num 0
  ..$ ncompete  : int 0
  ..$ nsurrogate: int 0
  ..$ yval2     : num [1, 1:6] 2.00 1.60e+03 2.62e+04 5.75e-02 9.42e-01 ...
  .. ..- attr(*, "dimnames")=List of 2
  .. .. ..$ : NULL
  .. .. ..$ : chr [1:6] "" "" "" "" ...
 $ where    : Named int [1:27769] 1 1 1 1 1 1 1 1 1 1 ...
  ..- attr(*, "names")= chr [1:27769] "1" "2" "3" "4" ...
 $ call     : language rpart(formula = ACTION ~ ., data = testset, method = "class")
 $ terms    :Classes 'terms', 'formula' length 3 ACTION ~ RESOURCE + MGR_ID + ROLE_ROLLUP_1 + ROL
E_ROLLUP_2 + ROLE_DEPTNAME +      ROLE_TITLE + ROLE_FAMILY_DESC + ROLE_FAMILY + ROLE_CODE
  .. ..- attr(*, "variables")= language list(ACTION, RESOURCE, MGR_ID, ROLE_ROLLUP_1, ROLE_ROLLUP
_2, ROLE_DEPTNAME,      ROLE_TITLE, ROLE_FAMILY_DESC, ROLE_FAMILY, ROLE_CODE)
```

```
  .. ..- attr(*, "factors")= int [1:10, 1:9] 0 1 0 0 0 0 0 0 0 0 ...
  .. .. ..- attr(*, "dimnames")=List of 2
  .. .. .. ..$ : chr [1:10] "ACTION" "RESOURCE" "MGR_ID" "ROLE_ROLLUP_1" ...
  .. .. .. ..$ : chr [1:9] "RESOURCE" "MGR_ID" "ROLE_ROLLUP_1" "ROLE_ROLLUP_2" ...
  .. ..- attr(*, "term.labels")= chr [1:9] "RESOURCE" "MGR_ID" "ROLE_ROLLUP_1" "ROLE_ROLLUP_2" ..
.
  .. ..- attr(*, "order")= int [1:9] 1 1 1 1 1 1 1 1 1
  .. ..- attr(*, "intercept")= int 1
  .. ..- attr(*, "response")= int 1
  .. ..- attr(*, ".Environment")=<environment: R_GlobalEnv>
  .. ..- attr(*, "predvars")= language list(ACTION, RESOURCE, MGR_ID, ROLE_ROLLUP_1, ROLE_ROLLUP_
2, ROLE_DEPTNAME,      ROLE_TITLE, ROLE_FAMILY_DESC, ROLE_FAMILY, ROLE_CODE)
  .. ..- attr(*, "dataClasses")= Named chr [1:10] "numeric" "numeric" "numeric" "numeric" ...
  .. .. ..- attr(*, "names")= chr [1:10] "ACTION" "RESOURCE" "MGR_ID" "ROLE_ROLLUP_1" ...
 $ cptable  : num [1, 1:5] 0 0 1 0 0
  ..- attr(*, "dimnames")=List of 2
  .. ..$ : chr "1"
  .. ..$ : chr [1:5] "CP" "nsplit" "rel error" "xerror" ...
 $ method   : chr "class"
 $ parms    :List of 3
  ..$ prior: num [1:2(1d)] 0.0575 0.9425
  .. ..- attr(*, "dimnames")=List of 1
  .. .. ..$ : chr [1:2] "1" "2"
  ..$ loss : num [1:2, 1:2] 0 1 1 0
  ..$ split: num 1
 $ control  :List of 9
  ..$ minsplit      : int 20
  ..$ minbucket     : num 7
  ..$ cp            : num 0.01
  ..$ maxcompete    : int 4
  ..$ maxsurrogate  : int 5
  ..$ usesurrogate  : int 2
  ..$ surrogatestyle: int 0
  ..$ maxdepth      : int 30
  ..$ xval          : int 10
 $ functions:List of 3
  ..$ summary:function (yval, dev, wt, ylevel, digits)
  ..$ print  :function (yval, ylevel, digits)
  ..$ text   :function (yval, dev, wt, ylevel, digits, n, use.n)
 $ numresp  : int 4
 $ y        : int [1:27769] 2 2 2 2 1 2 2 2 2 2 ...
 $ ordered  : Named logi [1:9] FALSE FALSE FALSE FALSE FALSE FALSE ...
  ..- attr(*, "names")= chr [1:9] "RESOURCE" "MGR_ID" "ROLE_ROLLUP_1" "ROLE_ROLLUP_2" ...
 - attr(*, "xlevels")= Named list()
 - attr(*, "ylevels")= chr [1:2] "0" "1"
 - attr(*, "class")= chr "rpart"
> printcp(res)

Classification tree:
rpart(formula = ACTION ~ ., data = testset, method = "class")

Variables actually used in tree construction:
character(0)

Root node error: 1598/27769 = 0.057546

n= 27769

  CP nsplit rel error xerror xstd
1  0      0         1      0    0
> res<-rpart(ACTION~.,method="class",data=train)
> printcp(res)

Classification tree:
rpart(formula = ACTION ~ ., data = train, method = "class")

Variables actually used in tree construction:
character(0)

Root node error: 1897/32769 = 0.05789
```

```
n= 32769

  CP nsplit rel error xerror xstd
1  0      0         1      0    0
> pred<-predict(res,test[,-1])
> head(pred)
              0         1
[1,] 0.05789008 0.9421099
[2,] 0.05789008 0.9421099
[3,] 0.05789008 0.9421099
[4,] 0.05789008 0.9421099
[5,] 0.05789008 0.9421099
[6,] 0.05789008 0.9421099
> table(pred,test[,1])
Error in table(pred, test[, 1]) : all arguments must have the same length
> table(pred,testset[,1])
Error in table(pred, testset[, 1]) :
  all arguments must have the same length
> pred<-predict(res,testset[,-1])
> table(pred,testset[,1])
Error in table(pred, testset[, 1]) :
  all arguments must have the same length
> table(pred,testset[,1])
```