

Assignment 3

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Load all of the packages

```
library(base)
library(caret)

## Loading required package: ggplot2

## Loading required package: lattice

library(knitr)
library(class)
library(rmarkdown)
library(gmodels)
library(tinytex)
library(e1071)
```

Import all of the data and show the first few rows.

```
UBdata<-read.csv("UniversalBank.csv")
head(UBdata)

##   ID Age Experience Income ZIP.Code Family CCAvg Education Mortgage
## 1  1   25          1     49    91107      4    1.6        1        0
## 2  2   45          19    34    90089      3    1.5        1        0
## 3  3   39          15    11    94720      1    1.0        1        0
## 4  4   35           9   100    94112      1    2.7        2        0
## 5  5   35           8    45    91330      4    1.0        2        0
## 6  6   37          13    29    92121      4    0.4        2     155
##   Personal.Loan Securities.Account CD.Account Online CreditCard
## 1                 0                  1                  0                  0
## 2                 0                  1                  0                  0
## 3                 0                  0                  0                  0
## 4                 0                  0                  0                  0
## 5                 0                  0                  0                  0
## 6                 0                  0                  0                  1
```

Partitioning the data.

```

set.seed(123)
Index_Train<-createDataPartition(UBdata$Online, p=0.6, list = FALSE)
Train<-UBdata[Index_Train,]
Test<-UBdata[-Index_Train,]

```

Computing the naive Bayes probability for the data to answer question G for the assignment.

```

nb_train = Train[,c(10,13:14)]
nb_test = Test[,c(10,13:14)]
nb = naiveBayes(Personal.Loan~.,data=nb_train)
nb

##
## Naive Bayes Classifier for Discrete Predictors
##
## Call:
## naiveBayes.default(x = X, y = Y, laplace = laplace)
##
## A-priori probabilities:
## Y
##      0          1
## 0.90733333 0.09266667
##
## Conditional probabilities:
##     Online
## Y      [,1]      [,2]
## 0 0.5951506 0.4909531
## 1 0.6438849 0.4797134
##
##     CreditCard
## Y      [,1]      [,2]
## 0 0.2909625 0.4542897
## 1 0.3273381 0.4700881

```