

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              1
## 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
```