Week4 Tutorial exercise

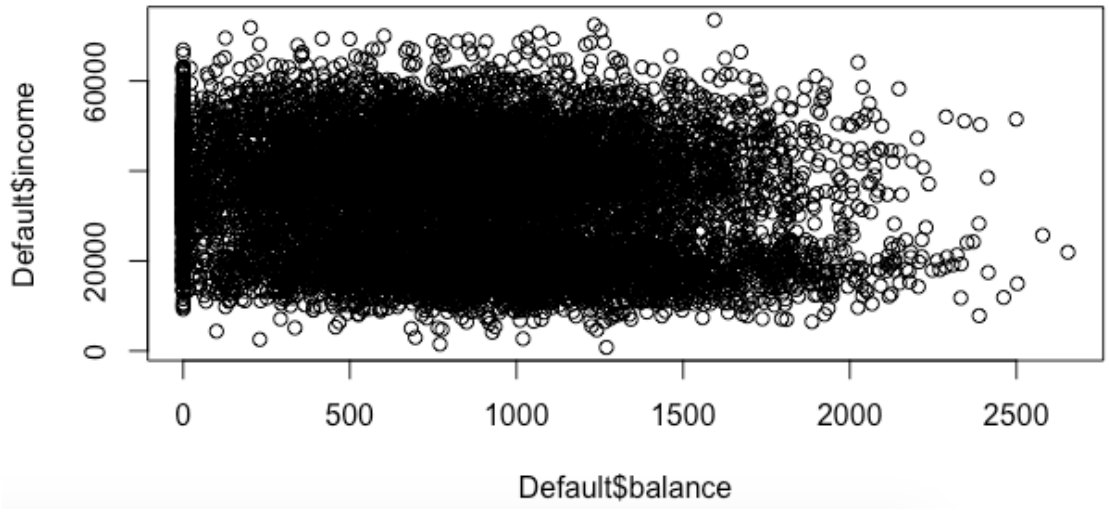
1. Start R studio.Upload following data set “Smarket” and View the data sets using the Console

```
library('ISLR')
attach(Smarket)
View(Smarket)
names(Smarket)
```

2. Plot Income verses Balance

```
plot(Default$income~Default$balance)
```

Output:



3. Construct the Multiple Linear Logistic Model for Direction in terms of the Predictors Lag1, Lag2, Lag3, Lag4, Lag5 and Volume.

```
Directio.code = as.numeric(Directio.code)

model.smarket = glm(  Directio.code~Smarket$Lag1+
                      Smarket$Lag2+Smarket$Lag3+
```

```
                Smarket$Lag4+Smarket$Lag5+
                Smarket$Volume,
                data = Smarket,
                family=binomial)
summary(model.smarket)
```

Output:

```
Call:
glm(formula = Directio.code ~ Smarket$Lag1 + Smarket$Lag2 + Smarket$Lag3 +
    Smarket$Lag4 + Smarket$Lag5 + Smarket$Volume, family = binomial,
    data = Smarket)

Deviance Residuals:
   Min      1Q  Median      3Q     Max
-1.446  -1.203   1.065   1.145   1.326

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)    -0.126000   0.240736  -0.523    0.601
Smarket$Lag1   -0.073074   0.050167  -1.457    0.145
Smarket$Lag2   -0.042301   0.050086  -0.845    0.398
Smarket$Lag3    0.011085   0.049939   0.222    0.824
Smarket$Lag4    0.009359   0.049974   0.187    0.851
Smarket$Lag5    0.010313   0.049511   0.208    0.835
Smarket$Volume  0.135441   0.158360   0.855    0.392
```

4. Show how you would calculate the probability (the Direction = “up”) for a given set of X (predictor) values.
contrasts(Direction)

5. Construct the Misclassification Martrix
predict(glm_fit, type="response")

6. Calculate the Prob (Misclassification) or Misclassification Rate 7. Calculate the False Positive rate 8. Calculate the False Negative Rate

```
Misclassification_Rate<-(141+457)/(145+141+457+507)
Misclassification_Rate
```

7.Calculate the False Positive rate

```
False_Positive_Rate<-(457)/(145+457)
False_Positive_Rate
```

8.Calculate the False Negative Rate

```
False_Negative_rate<-(141)/(141+507)
False_Negative_rate
```