##logistic Regression

library(ISLR)

fix(Default)

names(Default)

par(mfrow=c(1,2))

boxplot(Default$income~Default$default)

boxplot(Default$balance~Default$default)

plot(Default1,Default$balance,col="red")

default1<-as.numeric(Default$default)

plot(Default$balance,default1)

lm.fit<-glm(default1~Default$balance)

summary(lm.fit)

abline(glm(default1~Default$balance))

lm.fit1<-glm(Default$default~Default$balance,family=binomial)

summary(lm.fit1)

lm.fit2<-glm(Default$default~Default$student,family=binomial)

lm.fit3<-glm(Default$default~Default$balance+Default$student+Default$income,family=binomial)

summary(lm.fit3)

heart

write.csv(Default,file="C:/Users/siba.panda/Desktop/2018-19/B.tech-DS/default1.csv")

library(ISLR)

names(Smarket)

dim(Smarket)

summary(Smarket)

pairs(Smarket,col=Smarket$Direction)

cor(Smarket)

cor(Smarket[,-9])

attach(Smarket)

plot(Volume)

glm.fits=glm(Direction~Lag1+Lag2+Lag3+Lag4+Lag5+Volume,data=Smarket,family=binomial)

summary(glm.fits)

coef(glm.fits)

summary(glm.fits)$coef

summary(glm.fits)$coef[,4]

glm.probs=predict(glm.fits,type="response")

glm.probs[1:10]

contrasts(Direction)

glm.pred=rep("Down",1250)

glm.pred[glm.probs>.5]="Up"

table(glm.pred,Direction)

##The diagonal elements of the confusion matrix indicate correct predictions,

##while the off-diagonals represent incorrect predictions

(507+145)/1250

mean(glm.pred==Direction)

train=(Year<2005)

Smarket.2005=Smarket[!train,]

dim(Smarket.2005)

Direction.2005=Direction[!train]

glm.fits=glm(Direction~Lag1+Lag2+Lag3+Lag4+Lag5+Volume,data=Smarket,family=binomial,subset=train)

glm.probs=predict(glm.fits,Smarket.2005,type="response")

glm.pred=rep("Down",252)

glm.pred[glm.probs>.5]="Up"

table(glm.pred,Direction.2005)

mean(glm.pred==Direction.2005)

mean(glm.pred!=Direction.2005)

##small model

glm.fits=glm(Direction~Lag1+Lag2,data=Smarket,family=binomial,subset=train)

glm.probs=predict(glm.fits,Smarket.2005,type="response")

glm.pred=rep("Down",252)

glm.pred[glm.probs>.5]="Up"

table(glm.pred,Direction.2005)

mean(glm.pred==Direction.2005)