Exercise-section18

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library(MASS)  
 y1\_m = c(15,17,15,13,20,15,15,13,14,17,17,17,15,18,18,15,18,10,18,18,13,16,11,16,16,18,16,15,18,18,17,19)  
 y2\_m = c(17,15,14,12,17,21,13,5,7,15,17,20,15,19,18,14,17,14,21,21,17,16,15,13,13,18,15,16,19,16,20,19)  
 y3\_m = c(24,32,29,10,26,26,26,22,30,30,26,28,29,32,31,26,33,19,30,34,30,16,25,26,23,34,28,29,32,33,21,30)  
 y4\_m = c(14,26,23,16,28,21,22,22,17,27,20,24,24,28,27,21,26,17,29,26,24,16,23,16,21,24,27,24,23,23,21,28)  
 y1\_f = c(13,14,12,12,11,12,10,10,12,11,12,14,14,13,14,13,16,14,16,13,2,14,17,16,15,12,14,13,11,7,12,6)  
 y2\_f = c(14,12,19,13,20,9,13,8,20,10,18,18,10,16,8,16,21,17,16,16,6,16,17,13,14,10,17,15,16,7,15,5)  
 y3\_f = c(12,14,21,10,16,14,18,13,19,11,25,13,25,8,13,23,26,14,15,23,16,22,22,16,20,12,24,18,18,19,7,6)  
 y4\_f = c(21,26,21,16,16,18,24,23,23,27,25,26,28,14,25,28,26,14,23,24,21,26,28,14,26,9,23,20,28,18,28,13)  
Data = data.frame(y1 = c(y1\_m , y1\_f),  
 y2 = c(y2\_m , y2\_f),  
 y3 = c(y3\_m , y3\_f),  
 y4 = c(y4\_m , y4\_f),  
 Gender = c(rep(c(0,1),each= 32)))  
m1 = lda(Gender ~ . , data = Data)  
m1

## Call:  
## lda(Gender ~ ., data = Data)  
##   
## Prior probabilities of groups:  
## 0 1   
## 0.5 0.5   
##   
## Group means:  
## y1 y2 y3 y4  
## 0 15.96875 15.90625 27.18750 22.7500  
## 1 12.34375 13.90625 16.65625 21.9375  
##   
## Coefficients of linear discriminants:  
## LD1  
## y1 -0.20666253  
## y2 0.08231041  
## y3 -0.18869343  
## y4 0.12538063

pp = predict(m1)$x  
#ldahist(data =pp, g=Data$Gender)  
  
p1 <- predict(m1, Data)$class  
tab <- table(Predicted = p1, Actual = Data$Gender)  
tab

## Actual  
## Predicted 0 1  
## 0 28 4  
## 1 4 28

sum(diag(tab))/sum(tab)

## [1] 0.875