#divide in group now perform a factor analysis with two factor

mod2=factanal(covmat=ability.cov, factors=2, rotation="none")

mod2

########plot

L=loadings(factanal(covmat=ability.cov, factors=2, rotation="none"))

library(MASS)

dev.new(width=30, height=30)

eqscplot(L, xlim=c(-1,1),ylim=c(-1,1), pch=19)

abline(h=0,v=0)

text(L[, 1:2]+0.01, labels = dimnames(L)[[1]])

##read the data and choose the number of factors. Plot that with varimax rotation

library(xlsx)

library(gdata)

boston\_housing = read.table(‘/Users/roberta/Desktop/lecture14/boston.csv’,sep=‘,’, header=T)

dim(boston\_housing)

colnames(boston\_housing)

boston\_housing1 = boston\_housing[,-4]

colnames(boston\_housing1) = c('crime', 'large-lots', 'nonretail', 'nitric-oxides', 'room', 'prior1940','dist-Boston', 'highway', 'tax-rate', 'pupil/teacher', 'af-american', 'lower-status', 'owner')

mod1 = factanal(boston\_housing1, factors=2, rotation='varimax')

mod2 = factanal(boston\_housing1, factors=3, rotation='varimax')

mod2

Lort\_boston=loadings(factanal(boston\_housing1, factors=3, rotation="varimax"))

p=dim(Lort\_boston)[1]

label <- colnames(boston\_housing1)

data\_plot <- data.frame(Row =rep(1:p, times= 3), Col = rep(x=c('1', '2', '3'), each=p), Y= matrix(c(Lort\_boston[,1:3]), p\*3, 1))

head(data\_plot)

##can you think about a way to plot all the important components together

library(ggplot2)

heatmap <- ggplot(data\_plot, aes(Col, Row)) + geom\_tile(aes(fill=Y))

heatmap <- heatmap + scale\_fill\_gradient(low="white", high="blue")

heatmap <- heatmap + scale\_y\_discrete('',limits=label[p:1]) + theme\_bw()

heatmap

##divide in group

##Try to change the color and to write the x axis

heatmap2 <- ggplot(data\_plot, aes(Col, Row)) + geom\_tile(aes(fill=Y))

heatmap2 <- heatmap2 + scale\_fill\_gradient(low="white", high="red")

heatmap2 <- heatmap2 + scale\_y\_discrete('',limits=label[p:1]) + theme\_bw()

heatmap2 <- heatmap2 + scale\_x\_discrete('PC')

heatmap2