Homework13

Yi Chen

4/24/2020

## Homework 13

#### Question 1

similiarity\_matrix <-read.csv(file="assn13dissims.txt",header=TRUE)  
dissimilarities <- 1 - similiarity\_matrix  
diag(dissimilarities) <- 0  
dissimilarities

## clin\_02 dev\_05 math\_10 meas\_11 soc\_15  
## clin\_02 0.00 0.50 0.0 0.00 0.50  
## dev\_05 0.60 0.00 0.2 0.60 0.80  
## math\_10 0.33 0.33 0.0 0.67 0.33  
## meas\_11 0.75 0.75 0.5 0.00 0.75  
## soc\_15 0.86 0.86 0.0 0.57 0.00

#### Question 2

n<-ncol(dissimilarities)  
  
INC<-matrix(rep(0,n^2),n,n) ## create an empty copy of the matrix  
  
for (i in 1:n) {   
 for (j in 1:n) {  
 if (i != j) {  
 check <- dissimilarities[i,j]  
 max\_stack <- c()  
 for (k in 1:n){   
 if ((k != i) & (k != j)) {   
 max\_stack <- c(max\_stack,  
 max(dissimilarities[i,k],dissimilarities[k,j]))  
 }  
 }  
 if (check <= min(max\_stack)) {  
 INC[i,j] <- 1 }  
 }  
 }  
}   
rownames(INC)=rownames(dissimilarities)  
colnames(INC)=colnames(dissimilarities)  
INC # incidence matrix of graph with "necessary" nodes

## clin\_02 dev\_05 math\_10 meas\_11 soc\_15  
## clin\_02 0 0 1 1 0  
## dev\_05 0 0 1 1 0  
## math\_10 1 1 0 0 1  
## meas\_11 0 0 1 0 0  
## soc\_15 0 0 1 1 0

#### Question 3

library(igraph)  
g\_a12<-graph\_from\_adjacency\_matrix(INC,mode="directed")  
plot(g\_a12)

