5206hw9b_br2498

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```r
filename <- "~/Downloads/ckm_nodes-1.csv"
nodes<- read.csv(file=filename, header=T)
index_num<-which(nodes$adoption_date%in%c(1:17,"Inf"))
nodes<-nodes[index_num,]
filename <- "~/Downloads/ckm_network-1.txt"
network<- read.table(file=filename, header=F)
A<-network[index_num,index_num]
```

```r
#1.
adopters<-function(month,not.yet=FALSE,data=nodes){
  if(not.yet==FALSE)
  return(which(nodes$adoption_date==month))
  if(not.yet==TRUE)
  return(which(nodes$adoption_date>month))
}
adopters(2)
```

```
## [1]   10  13  20  56  71  75  76  87 107
```

```r
adopters(month = 14, not.yet = TRUE)
```

```
## [1]    7  14  16  17  30  39  42  50  52  62  67  79  82  85  88  89  91
## [18]  94  96  97 108 109 125
```

```r
#2.
B<-apply(data.frame(A), 1, sum)
B<-as.vector(B)
B[41]
```

```
## [1] 3
```

```r
#3.
count_peer_pressure<-function(indnum,month){
  return(length(which(A[indnum]==1&nodes$adoption_date<=month)))
}
count_peer_pressure(37,5)
```

```
## [1] 3
```

```r
#4.
prop_peer_pressure<-function(indnum,month){
  return(length(which(A[indnum]==1&nodes$adoption_date<=month))/B[indnum])}
prop_peer_pressure(37,5)
```

```
## [1] 0.6
```

```
prop_peer_pressure(102,14)
```

```
## [1] NaN
```

```
#5.
avg<-function(month){
  prop_peer_pressure1<-function(indnum,month){
  return(length(which(A[indnum]==1&nodes$adoption_date==month))/B[indnum])}
  t1<-mean(mapply(prop_peer_pressure1, 1:125, month),na.rm = T)
  prop_peer_pressure2<-function(indnum,month){
  return(length(which(A[indnum]==1&nodes$adoption_date>month))/B[indnum])}
  t2<-mean(mapply(prop_peer_pressure2, 1:125, month),na.rm = T)
  return(c(t1,t2))
 }
```

```
#6.
months<-c(1:17,Inf)
plotframe<-as.data.frame(lapply(months,avg))
plot(months,plotframe[1,], type = "l",col="black",ylim = c(0,1.2),ylab = "average proportions")
lines(months,plotframe[2,],type="l",col="red")
legend = c("avg prop in month","avg prop after month")
legend("topright",legend=legend,lwd=c(2.5,2.5),col = c(1:2,2),cex=1.5)
```