# HW8

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## Part I

## 1

(a) How many doctors began prescribing tetracycline in each month of the study? (b) How many never prescribed it? (c) How many are NAs?

```
ckm_nodes.1 <- read.csv("~/Desktop/ckm_nodes-1.csv")
ckm= ckm_nodes.1
date = ckm$adoption_date
na = length(date[date =="NA"]);na
```

```
## [1] 121
```

```
never = length(na.omit(date[date =="Inf"]));never
```

```
## [1] 16
```

```
begin = length(date)- length(date[date =="NA"]) - length(na.omit(date[date =="Inf"]));begin
```

```
## [1] 109
```

(a)There are 109 doctors begin prescribing tetracyline in each month of the study;(b)There are 16 doctors never prescribing it.(c) There are 121 NA.

2. Create a vector which records the index numbers of the doctors for whom adoption date is not NA.

```
not.na = na.omit(date)
ind_na = which(is.element(date=="NA",date))
vect = 1:246
dr_ind = vect[-ind_na]
```

3. Create a plot of the number of doctors who began prescribing tetracycline each month versus time.

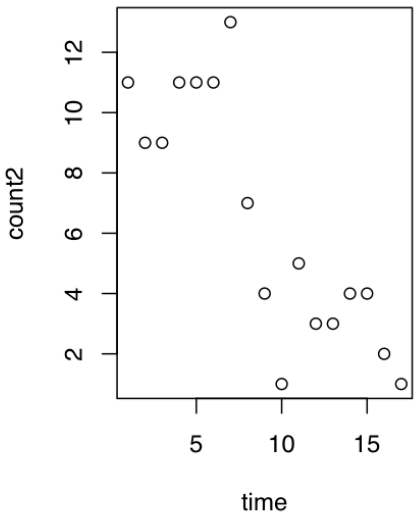
```
ind_inf = which(is.element(not.na=="Inf",not.na))
dr_num = not.na[-ind_inf]
dr_num = sort(dr_num);dr_num
```

```
##   [1]  1  1  1  1  1  1  1  1  1  1  1  2  2  2  2  2  2  2  2  2  3  3  3
##  [24]  3  3  3  3  3  3  4  4  4  4  4  4  4  4  4  4  4  5  5  5  5  5  5
##  [47]  5  5  5  5  5  6  6  6  6  6  6  6  6  6  6  6  7  7  7  7  7  7  7
##  [70]  7  7  7  7  7  7  8  8  8  8  8  8  8  9  9  9  9 10 11 11 11 11 11
##  [93] 12 12 12 13 13 13 14 14 14 14 15 15 15 15 16 16 17
```

```
count2 = NULL
i=1
while(i <= max(dr_num)){
  count1 = NULL
  for(k in 1:length(dr_num)){
    if(dr_num[k] == i){
      count1[k] = 0
      }
    }
  count2[i] = length(na.omit(count1))
    i = i +1
  }
count2
```

```
##  [1] 11  9  9 11 11 11 13  7  4  1  5  3  3  4  4  2  1
```

```
time = c(1:17)
par(mfrow=c(1,2))
plot(time,count2)
```




4.Create a logical vector which indicates for each doctor whether they had begun pre- scribing tetracycline by month 2.

```
logic = NULL
for(i in 1:length(not.na)){
  if(not.na[i]<=2) {
    logic[i] = 0
    }
  }
vect1 = 1:length(logic)
ind_m2 = vect1[-which(is.element(logic == 0,logic))]
length(ind_m2)
```

```
## [1] 20
```

```
logic2 = NULL
for(i in 1:length(not.na)){
  if(not.na[i]>14) {
    logic2[i] = 0
    }
  }
vect2 = 1:length(logic2)
ind_m14 = vect2[-which(is.element(logic2 == 0,logic2))]
length(ind_m14)
```

```
## [1] 23
```

# Part II

5.

```
ckm_network.1 <- read.table("~/Desktop/ckm_network-1.txt", quote="\"")
ckm_txt = ckm_network.1
dim(ckm_txt)
```

```
## [1] 246 246
```

```
network = ckm_txt[-ind_na,-ind_na]
dim(network)
```

```
## [1] 125 125
```

```
View(network)
```

6. Create a vector which stores the number of contacts each doctor has. Do not use a loop. Check that doctor number 41 has 3 contacts.

```
apply(network,1,sum)[41]
```

```
## 70
##  3
```

7.

```
apply(network,1,sum)[37]
```

```
## 37
##  5
```