R Assignment 2

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Exercise 4.1

Part A

```
#Created vector of 15 values for part A
mydata=c(6,9,7,3,6,7,9,6,3,6,6,7,1,9,1)

#i (Those equal to six)
mydata==6
```

```
##  [1]  TRUE FALSE FALSE FALSE  TRUE FALSE FALSE  TRUE FALSE  TRUE  TRUE FALSE
## [13] FALSE FALSE FALSE
```

```
#ii (Those greater than or equal to 6)
mydata>=6
```

```
##  [1]  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE
## [13] FALSE  TRUE FALSE
```

```
#iii (those less than 6 + 2)
mydata<6+2
```

```
##  [1]  TRUE FALSE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE
## [13]  TRUE FALSE  TRUE
```

```
#iv (Those equal to six)
mydata!=6
```

```
##  [1] FALSE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE FALSE  TRUE FALSE FALSE  TRUE
## [13]  TRUE  TRUE  TRUE
```

Part B

```
#creation of array
b<-array(c(3,6,7,9,6,3,6,6,7,1,9,1))

#i those less than or equal to 6 divided by 2, plus 4
b1<-b==6/2+4

#ii those less than or equal to 6 divided by 2, plus 4, after increasign every element in the array by
b2<-b+2<=6/2+4
```

Part C

```
#c confirmation of locations of elements equal to 0 in the 10 x 10 identity matrix I10
c<-diag(,10)==0
c==0
```

```
##        [,1]  [,2]  [,3]  [,4]  [,5]  [,6]  [,7]  [,8]  [,9] [,10]
##  [1,]  TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [2,] FALSE  TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [3,] FALSE FALSE  TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##  [4,] FALSE FALSE FALSE  TRUE FALSE FALSE FALSE FALSE FALSE FALSE
##  [5,] FALSE FALSE FALSE FALSE  TRUE FALSE FALSE FALSE FALSE FALSE
##  [6,] FALSE FALSE FALSE FALSE FALSE  TRUE FALSE FALSE FALSE FALSE
##  [7,] FALSE FALSE FALSE FALSE FALSE FALSE  TRUE FALSE FALSE FALSE
##  [8,] FALSE FALSE FALSE FALSE FALSE FALSE FALSE  TRUE FALSE FALSE
##  [9,] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  TRUE FALSE
## [10,] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  TRUE
```

Part D

```
#d Check wheter any of th evalues of the logical array created in (b) are true. If they are, check whet
d1<-any(b1)
d2<-all(b1)
d3<-any(b2)
d4<-all(b2)
c(d1,d2,d3,d4)
```

```
## [1]  TRUE FALSE  TRUE FALSE
```

Part E

```
#e By extracting the diagonal elements of the logical matrix created in (c), use any to confirm there a
e<-any(diag(c))
```

Exercise 16.2

```
#the mean number of cars passing in 120 min is 107

#(a) probability of more than 100 cars pass her on any given Saturday
1-ppois(100,107)
```

```
## [1] 0.7319128
```

```
#(b) probability that no cars pass
dpois(0,107)
```

```
## [1] 3.39227e-47
```

```
#(c) Plot of the relevant Poisson mass function over the values in 60 <= x <= 150
barplot(
      dpois(60:150, 107),
      main = "Number of cars distribution",
      xlab = "x cars",
      ylab = "Pr(X = x)",
      names.arg = seq(60,150,1),
      space=0
)
```