Homework_1

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#Q1)

```
v1<-c(2,3,4,5,6)
v2<-c(5,6,7,8,9)
v2-v1
```

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

```
v3<-v1*v2
v3
```

```
## [1] 10 18 28 40 54
```

```
v1 %*% v2
```

```
##      [,1]
## [1,]  150
```

```
v<-v1+v2
v[which(v>10)]<-0
v
```

```
## [1] 7 9 0 0 0
```

#Q2)

```
m1<-matrix(1:25,5,5)
m1
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    6   11   16   21
## [2,]    2    7   12   17   22
## [3,]    3    8   13   18   23
## [4,]    4    9   14   19   24
## [5,]    5   10   15   20   25
```

```
m1%*%v1
```

```
##      [,1]
## [1,]  270
## [2,]  290
## [3,]  310
## [4,]  330
## [5,]  350
```

```
v1%*%m1
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]   70  170  270  370  470
```

```
m1[,3]<-rep(1,5)
m1
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    6    1   16   21
## [2,]    2    7    1   17   22
## [3,]    3    8    1   18   23
## [4,]    4    9    1   19   24
## [5,]    5   10    1   20   25
```

```
m1[(m1[,5]>10),5]<-rep(0,5)
m1
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    6    1   16    0
## [2,]    2    7    1   17    0
## [3,]    3    8    1   18    0
## [4,]    4    9    1   19    0
## [5,]    5   10    1   20    0
```

#Q3)

```
Date<-c("2019-05-14","2019-05-15","2019-05-16","2019-05-17","2019-05-18")
df<-data.frame(Date,c("M","F","F","M","F"),c(1,5,7,4,2))
colnames(df)<-c("DOJ","Gender","Count")
df
```

DOJ <fctr>	**Gender** <fctr>	**Count** <dbl>
2019-05-14	M	1
2019-05-15	F	5
2019-05-16	F	7
2019-05-17	M	4

DOJ <fctr>	Gender <fctr>	Count <dbl>
2019-05-18	F	2

5 rows

```
df$DOJ<-as.Date(df$DOJ)
df$Gender<-as.character(df$Gender)
str(df)
```

```
## 'data.frame':    5 obs. of  3 variables:
##  $ DOJ   : Date, format: "2019-05-14" "2019-05-15" ...
##  $ Gender: chr  "M" "F" "F" "M" ...
##  $ Count : num  1 5 7 4 2
```

```
write.table(df,file="EMPLOYEEdata.csv",row.names=FALSE,sep=",")
newdf<-read.table(file="EMPLOYEEdata.csv",header=TRUE,sep=",",stringsAsFactors=FALSE)
newdf
```

DOJ <chr>	Gender <chr>	Count <int>
2019-05-14	M	1
2019-05-15	F	5
2019-05-16	F	7
2019-05-17	M	4
2019-05-18	F	2

5 rows

```
df1<-df[c(1,3,5),c("DOJ","Gender")]
df1
```

	DOJ <date>	Gender <chr>
1	2019-05-14	M
3	2019-05-16	F
5	2019-05-18	F

3 rows

```
df[df[,"Count"]%%2==0,"Count"]<-0
df
```

DOJ <date>	Gender <chr>	Count <dbl>
2019-05-14	M	1
2019-05-15	F	5
2019-05-16	F	7
2019-05-17	M	0
2019-05-18	F	0

5 rows

```
list1<-list(v1,v2,m1,df)
list1
```

```
## [[1]]
## [1] 2 3 4 5 6
##
## [[2]]
## [1] 5 6 7 8 9
##
## [[3]]
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    6    1   16    0
## [2,]    2    7    1   17    0
## [3,]    3    8    1   18    0
## [4,]    4    9    1   19    0
## [5,]    5   10    1   20    0
##
## [[4]]
##          DOJ Gender Count
## 1 2019-05-14      M     1
## 2 2019-05-15      F     5
## 3 2019-05-16      F     7
## 4 2019-05-17      M     0
## 5 2019-05-18      F     0
```

```
names(list1)<-c("Vector1","Vector2","Matrix","Dataframe")
list1
```

```
## $Vector1
## [1] 2 3 4 5 6
##
## $Vector2
## [1] 5 6 7 8 9
##
## $Matrix
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    6    1   16    0
## [2,]    2    7    1   17    0
## [3,]    3    8    1   18    0
## [4,]    4    9    1   19    0
## [5,]    5   10    1   20    0
##
## $Dataframe
##          DOJ Gender Count
## 1 2019-05-14      M     1
## 2 2019-05-15      F     5
## 3 2019-05-16      F     7
## 4 2019-05-17      M     0
## 5 2019-05-18      F     0
```

```
str(list1)
```

```
## List of 4
##  $ Vector1  : num [1:5] 2 3 4 5 6
##  $ Vector2  : num [1:5] 5 6 7 8 9
##  $ Matrix   : num [1:5, 1:5] 1 2 3 4 5 6 7 8 9 10 ...
##  $ Dataframe:'data.frame':   5 obs. of  3 variables:
##   ..$ DOJ   : Date[1:5], format: "2019-05-14" ...
##   ..$ Gender: chr [1:5] "M" "F" "F" "M" ...
##   ..$ Count : num [1:5] 1 5 7 0 0
```

```
list1[[2]][2]
```

```
## [1] 6
```

#Q4)

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$