Med-Sem exam on R software

#q1

```
> x=1:5
> f=c(7,11,9,8,3)
> y=rep(x,f)
> median(y)
[1] 3
> ftable=table(y)
> mode=x[which.max(f)]
> mode
[1] 2
> fixi=sum(x*f)
> mean=fixi/sum(f)
> mean
[1] 2.710526
> d7=quantile(y,0.7)
> d7
70%
  3
> p29=quantile(y,0.29)
> p29
29%
  2
```

> #q2

```
> p=c(10,15,30,42,50,60)
> q=c(4,20,15,10,16,8)
> d=data.frame("price"=p,"qty"=q)
> d
  price qty
1    10   4
2    15  20
3    30  15
4    42  10
5    50  16
6    60   8
> d=transform(d,"value"=price*qty)
> d
```

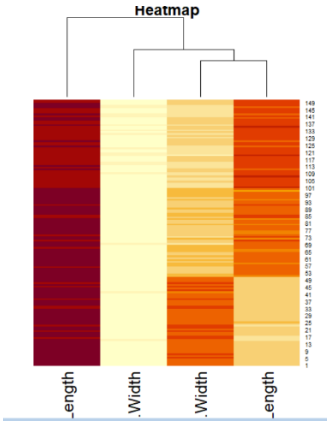
```
  price qty value
1    10   4    40
2    15  20   300
3    30  15   450
4    42  10   420
5    50  16   800
6    60   8   480
```

> #q3

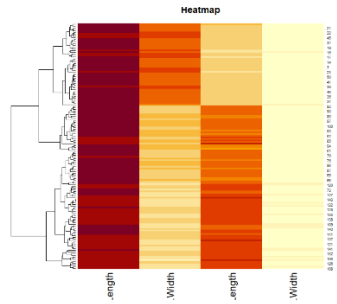
```
> age=c(22,27,31,41,30,25,19,20,23,35)
> age[c(-5,-7)]
[1] 22 27 31 41 25 20 23 35
> age30=age[age>30]
> age30
[1] 31 41 35
> age[4:6]
[1] 41 30 25
> age2=age[age>20 & age<25]
> age2
[1] 22 23
> age[8:10]
[1] 20 23 35
```

> #q4

```
> data(iris)
> subData=iris[,1:4]
> heatmap(as.matrix(subData),main="Heatmap", Rowv=NA,Colv=TRUE)
```




```
heatmap(as.matrix(subData),main="Heatmap", Rowv=TRUE,Colv=NA)
```



> #q5

> y=c(1965,1975,1985)

> arts=c(300,400,500)

> sci=c(180,300,380)

> com=c(300,500,600)

> law=c(200,250,300)

> d=data.frame(arts,sci,com,law)

> dl=as.matrix(d)

> barplot(t(dl),main="population of college",names.arg=y)

> #q6 a

> id=1:5

> name=c("abc","def","ghi","jkl","mno")

> sal=c(500,1500,800,4000,3000)

> df=data.frame(id,name,sal)

> summary(df)

```
       id        name                sal
 Min.   :1   Length:5           Min.   : 500
 1st Qu.:2   Class :character   1st Qu.: 800
 Median :3   Mode  :character   Median :1500
 Mean   :3                      Mean   :1960
 3rd Qu.:4                      3rd Qu.:3000
 Max.   :5                      Max.   :4000
```

#q6 b

> a = array(seq(from = 50, length.out = 15, by = 2), c(5, 3))

> a

```
     [,1] [,2] [,3]
```

```
[1,]   50   60   70
[2,]   52   62   72
[3,]   54   64   74
[4,]   56   66   76
[5,]   58   68   78
```

> #q6 c

```
> v=c(1, 2, 3, 3, 4, NA, 3, 2, 4, 5, NA, 5)
> f=as.factor(v)
> f
 [1] 1    2    3    3    4    <NA> 3    2    4    5    <NA> 5
Levels: 1 2 3 4 5
```

#q6 d

```
> l
[[1]]
[1] 1 2 3
[[2]]
[1] TRUE
[[3]]
[1] FALSE
[[4]]
[1] TRUE
[[5]]
[1] "string"
[[6]]
[1] "words"
[[7]]
[1] 5
[[8]]
[1] 1
```

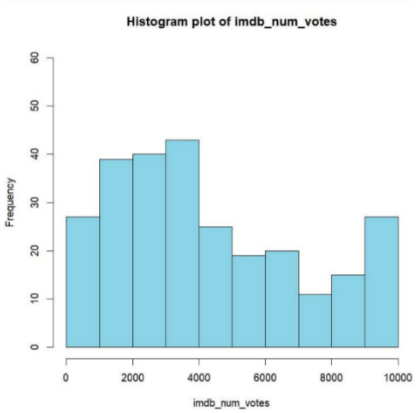
#q6 e

```
> v2=seq(-50,50,10)
> v2
 [1] -50 -40 -30 -20 -10   0  10  20  30  40  50
```

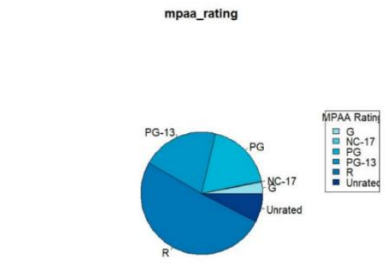
#q7

```
movies = read.csv("moviesData.csv")
View(movies)
dim(movies)
```

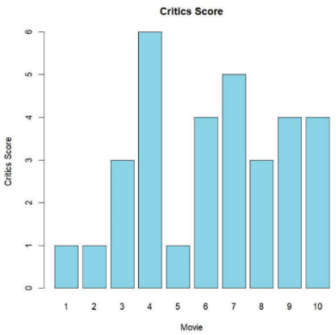
```
imdb_num_votes_vec = c(movies$imdb_num_votes)

hist(imdb_num_votes_vec[imdb_num_votes_vec < 10000], main = "Histogram plot of imdb_num_votes", xlab ="imdb_num_votes", ylim = c(0, 60), col = "#8BD3E6")
```



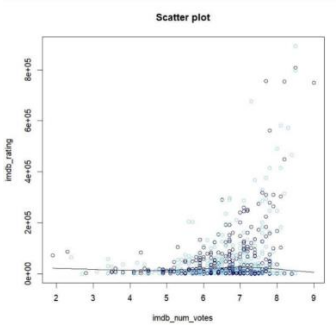

```
mpa_rating_count = table(movies$mpaa_rating)

pie(mpa_rating_count, main = "mpaa_rating", col = c("#90e0ef", "#48cae4", "#00b4d8", "#0096c7", "#0077b6", "#023e8a"))

legend("topright", legend = c("G", "NC-17", "PG", "PG-13", "R", "Unrated"), fill = c("#90e0ef", "#48cae4", "#00b4d8", "#0096c7", "#0077b6", "#023e8a"), title = "MPAA Rating")
```




```
table_movies = table(movies$critics_score)

barplot(table_movies[1:10], xlab = "Movie", main ="Critics Score", ylab = "Critics Score", col = "#8BD3E6")
```




```
scatter.smooth(movies$imdb_rating,imdb_num_votes_vec, main = "Scatter plot", ylab = "imdb_rating", xlab = "imdb_num_votes", col = c("#8BD3E6", "#03045e"))
```



#q8

```
> data("CO2")
> uptake <- CO2$uptake
> sd_value <- sd(uptake)
> qdev_value <- IQR(uptake) / 2
> range_value <- max(uptake) - min(uptake)
> uniq_values <- unique(uptake)
> mode_count <- table(uptake)[which.max(table(uptake))]
> mode_value <- uniq_values[mode_count == max(mode_count)]
> coef_range <- range_value / (max(uptake) + min(uptake))
> sd_value
[1] 10.81441
> qdev_value
[1] 9.6125
> range_value
[1] 37.8
> mode_value
 [1] 16.0 30.4 34.8 37.2 35.3 39.2 39.7 13.6 27.3 37.1 41.8 40.6 41.4 44.3 16.2
[16] 32.4 40.3 42.1 42.9 43.9 45.5 14.2 24.1 30.3 34.6 32.5 35.4 38.7  9.3 35.0
[31] 38.8 38.6 37.5 42.4 15.1 21.0 38.1 34.0 38.9 39.6 10.6 19.2 26.2 30.0 30.9
[46] 35.5 12.0 22.0 30.6 31.8 31.1 31.5 11.3 19.4 25.8 27.9 28.5 28.1 27.8 10.5
[61] 14.9 18.1 18.9 19.5 22.2 21.9  7.7 11.4 12.3 13.0 12.5 13.7 14.4 18.0 17.9
[76] 19.9
> coef_range
[1] 0.7105263
```