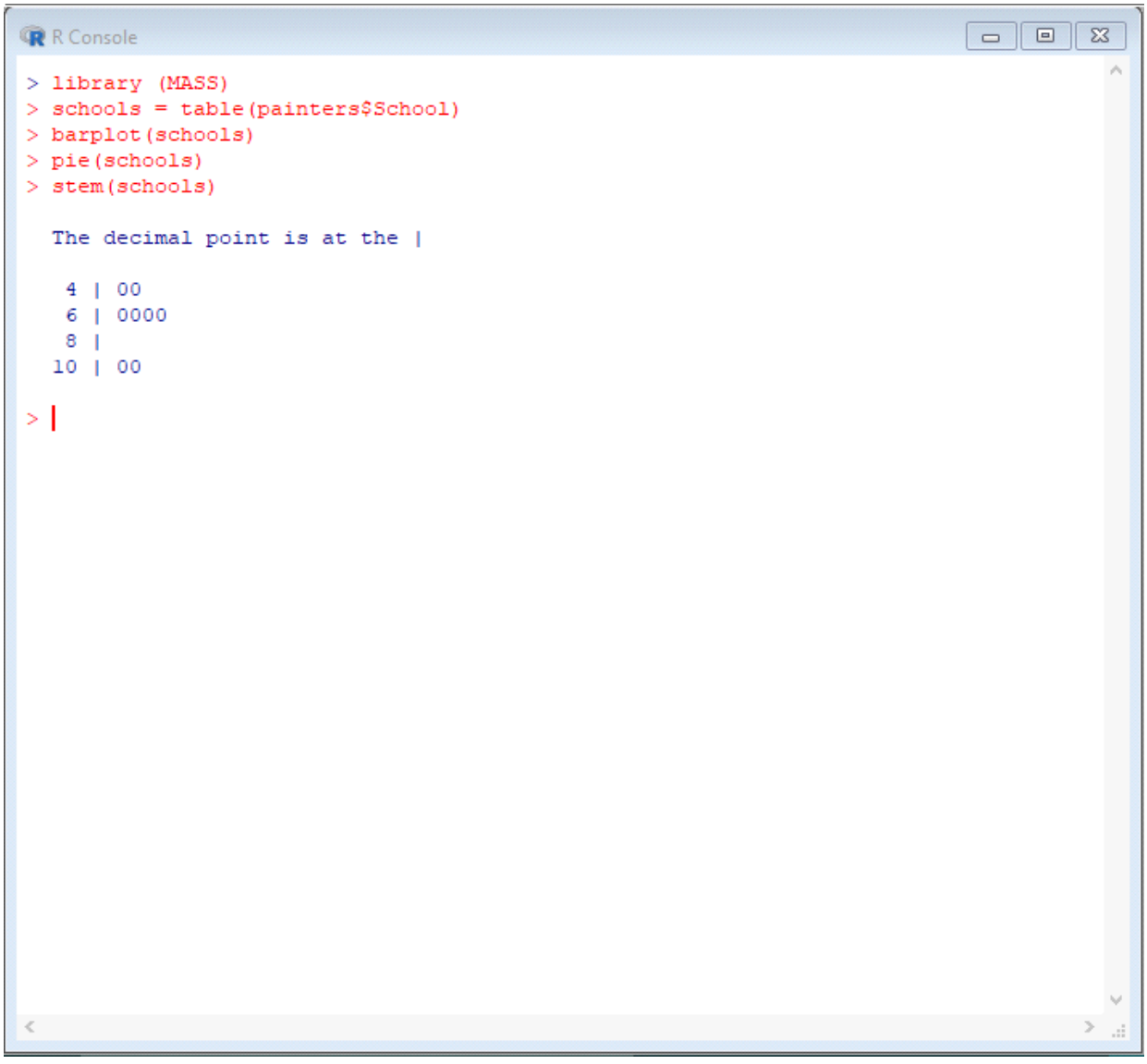
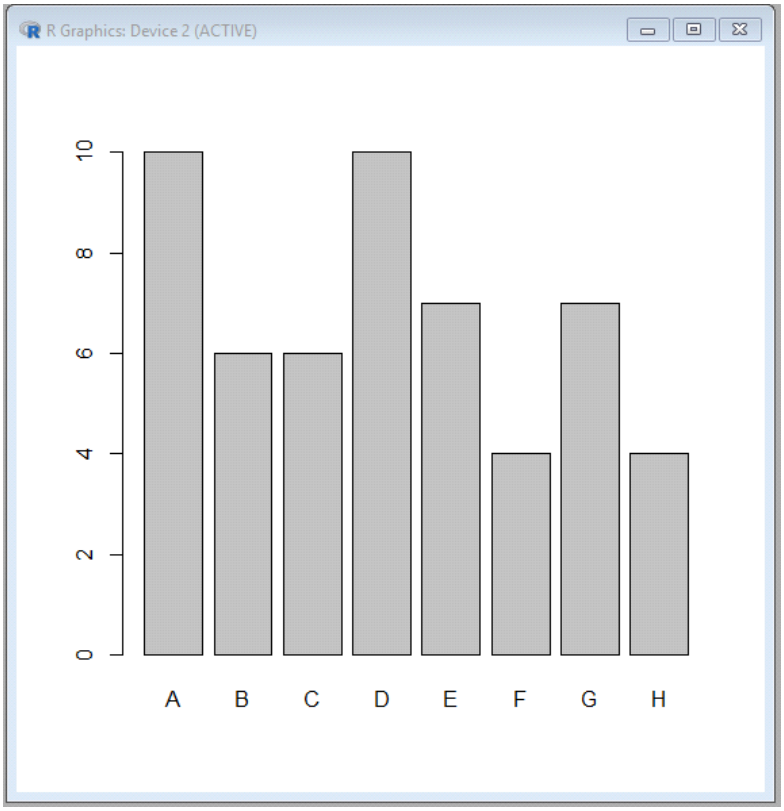
PRACTICAL 1

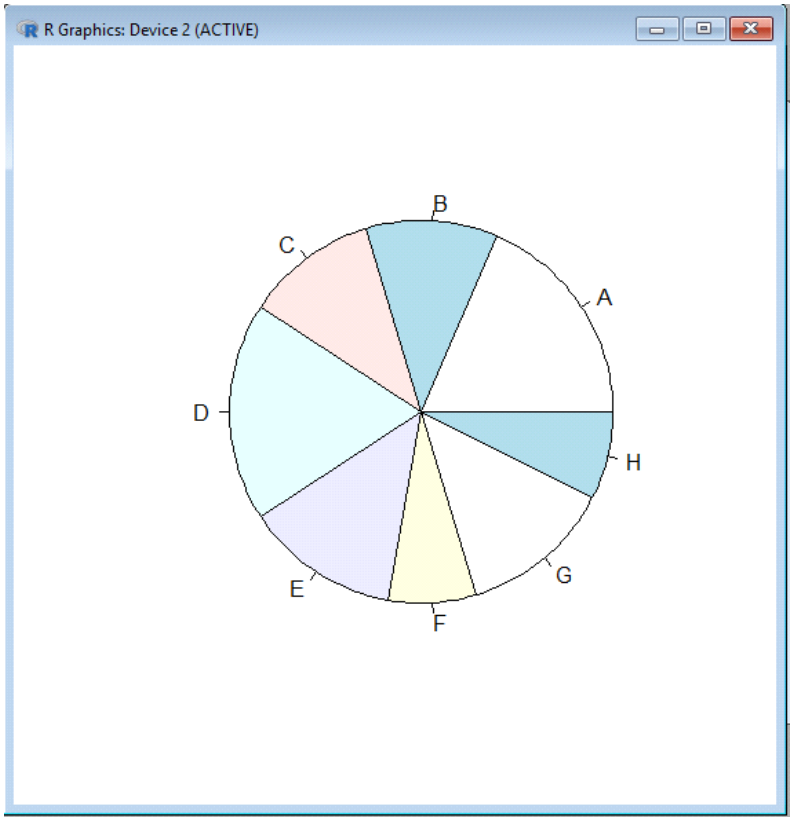
Aim:- Data presentation.

```
library (MASS)
schools = table(painters$School)
barplot(schools)
pie(schools)
stem(schools)
painters
```

Output:-




R Graphics: Device 2 (ACTIVE)
0
2
4
6
8
10
A
B
C
D
E
F
G
H


R Graphics: Device 2 (ACTIVE)
B
C
A
D
H
G
E
F

PRACTICAL 2.a

Aim:- Data entry using, functions, c(), scan (), Creating vectors, Mathematical Operations: ** +/-/*/ / ^ , exp, log, log10, etc, creating vector of text type, useful functions: data, frame, matrix operations, seq(), split() etc.

#Practical 2.a

```
x = scan("",what = "int")
x
v1 = c(3,8,4,5,0,11)
v2 = c(4,11,0,8,1,2)
result.add = v1 + v2
result.add
result.sub = v1 - v2
result.sub
result.mul = v1 * v2
result.mul
result.div = v1 / v2
result.div
exp(v1)
exp(v2)
log10(v1)
log10(v2)
v1 = c(5:13)
v1
v2 = c(6.6:12.6)
v2
```

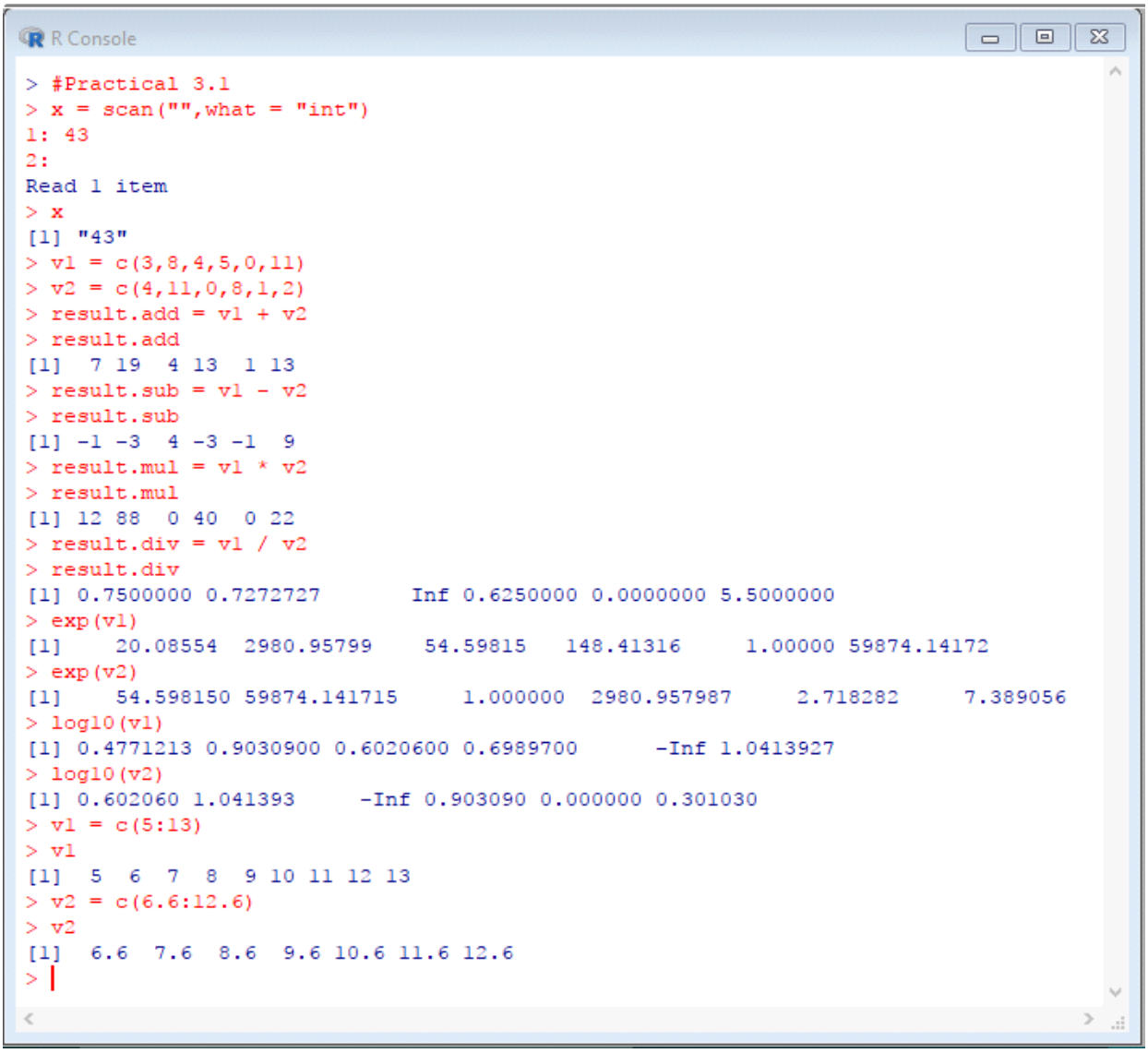
#Practical 2.b

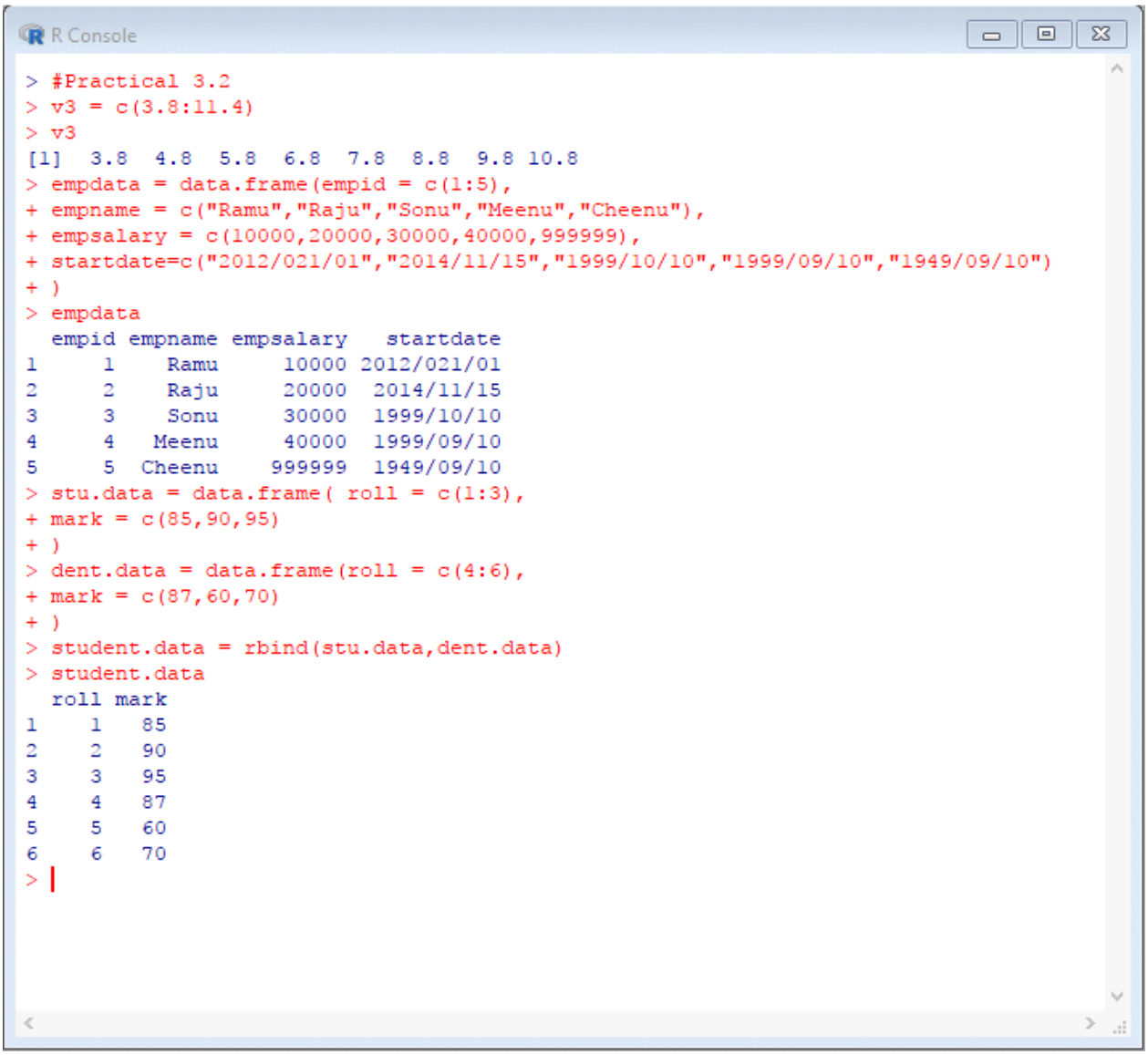
```
 v3 = c(3.8:11.4)
 v3
empdata = data.frame(empid = c(1:5),
empname = c("Ramu","Raju","Sonu","Meenu","Cheenu"),
empsalary = c(10000,20000,30000,40000,999999),
startdate=c("2012/021/01","2014/11/15","1999/10/10","1999/09/10","1949/09/10") )
empdata
stu.data = data.frame( roll = c(1:3),
mark = c(85,90,95)
)
dent.data = data.frame(roll = c(4:6),
mark = c(87,60,70)
)
student.data = rbind(stu.data,dent.data)
student.data
```

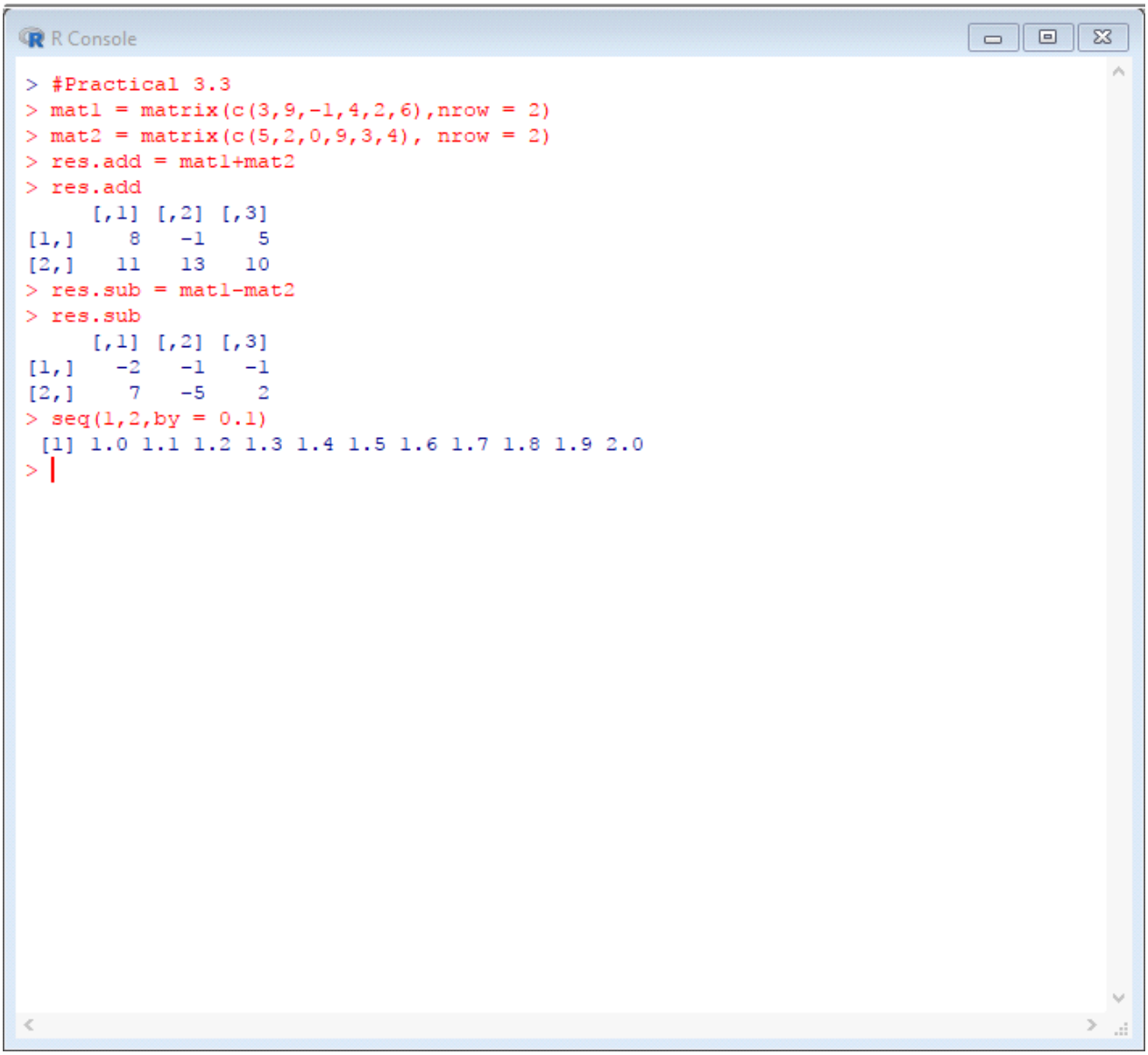
#Practical 2.c

```
mat1 = matrix(c(3,9,-1,4,2,6),nrow = 2)
mat2 = matrix(c(5,2,0,9,3,4), nrow = 2)
res.add = mat1+mat2
res.add
res.sub = mat1-mat2
res.sub
seq(1,2,by = 0.1)
```

Output:-




R Console
> #Practical 3.2
> v3 = c(3.8:11.4)
> v3
[1] 3.8 4.8 5.8 6.8 7.8 8.8 9.8 10.8
> empdata = data.frame(empid = c(1:5),
+ empname = c("Ramu","Raju","Sonu","Meenu","Cheenu"),
+ empsalary = c(10000,20000,30000,40000,999999),
+ startdate=c("2012/021/01","2014/11/15","1999/10/10","1999/09/10","1949/09/10")
+)
> empdata
  empid empname empsalary   startdate
1   1   Ramu   10000 2012/021/01
2   2   Raju   20000 2014/11/15
3   3   Sonu   30000 1999/10/10
4   4   Meenu   40000 1999/09/10
5   5 Cheenu   999999 1949/09/10
> stu.data = data.frame(roll = c(1:3),
+ mark = c(85,90,95)
+)
> dent.data = data.frame(roll = c(4:6),
+ mark = c(87,60,70)
+)
> student.data = rbind(stu.data,dent.data)
> student.data
  roll mark
1   1   85
2   2   90
3   3   95
4   4   87
5   5   60
6   6   70
>


R Console
> #Practical 3.3
> mat1 = matrix(c(3,9,-1,4,2,6),nrow = 2)
> mat2 = matrix(c(5,2,0,9,3,4), nrow = 2)
> res.add = mat1+mat2
> res.add
[,1] [,2] [,3]
[1,] 8 -1 5
[2,] 11 13 10
> res.sub = mat1-mat2
> res.sub
[,1] [,2] [,3]
[1,] -2 -1 -1
[2,] 7 -5 2
> seq(1,2,by = 0.1)
[1] 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0
>

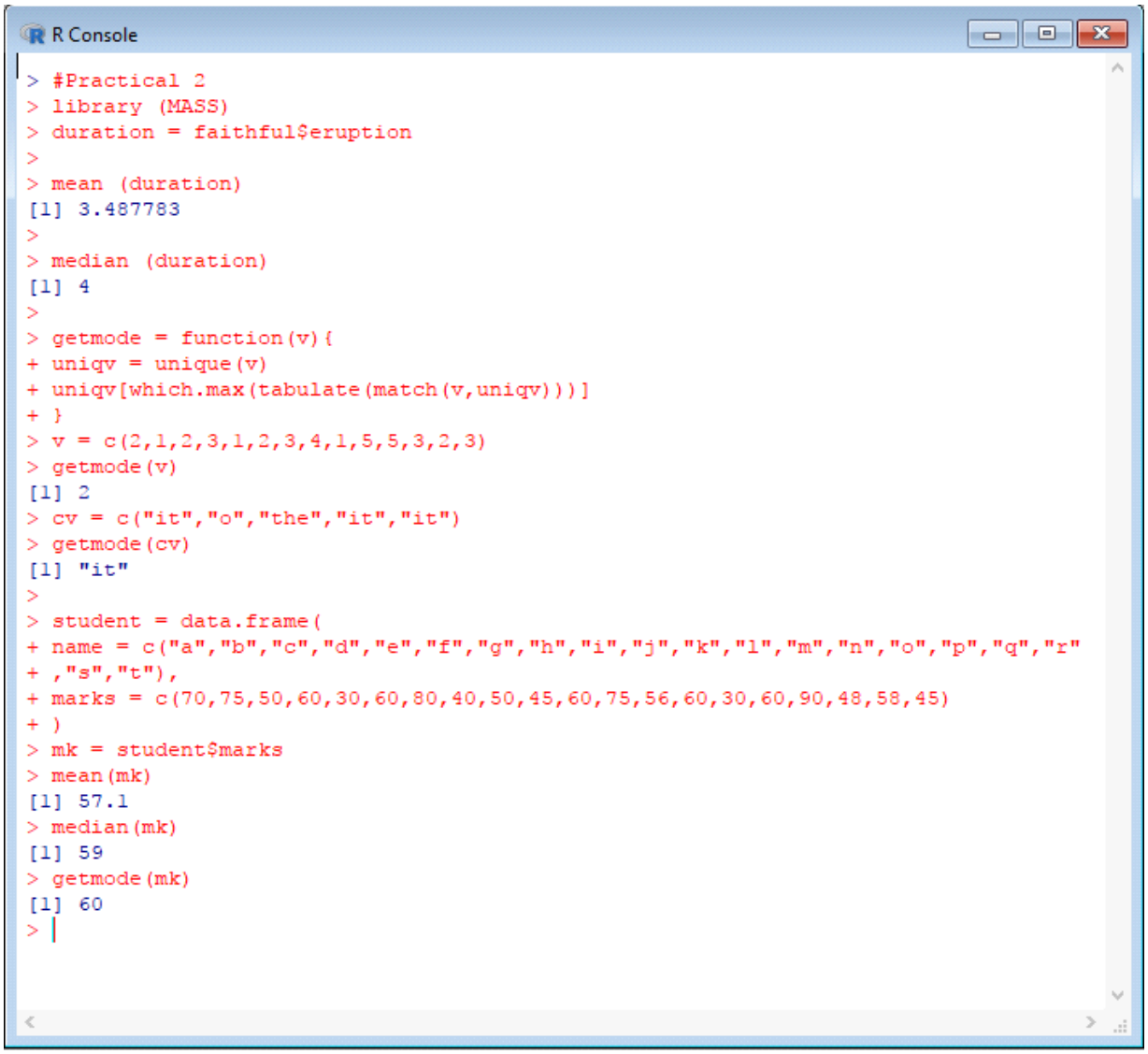
PRACTICAL 3

Aim:- Measures of central tendency

```
library (MASS)
duration = faithful$eruption
mean (duration)
median (duration)
getmode = function(v){
        uniqv = unique(v)
        uniqv[which.max(tabulate(match(v,uniqv)))]
}
v = c(2,1,2,3,1,2,3,4,1,5,5,3,2,3)
getmode(v)
cv = c("it","o","the","it","it")
getmode(cv)

student = data.frame(
name = c("a","b","c","d","e","f","g","h","i","j","k","l","m","n","o","p","q","r"
,"s","t"),
marks = c(70,75,50,60,30,60,80,40,50,45,60,75,56,60,30,60,90,48,58,45)
)
mk = student$marks
mean(mk)
median(mk)
getmode(mk)
```

Output:-



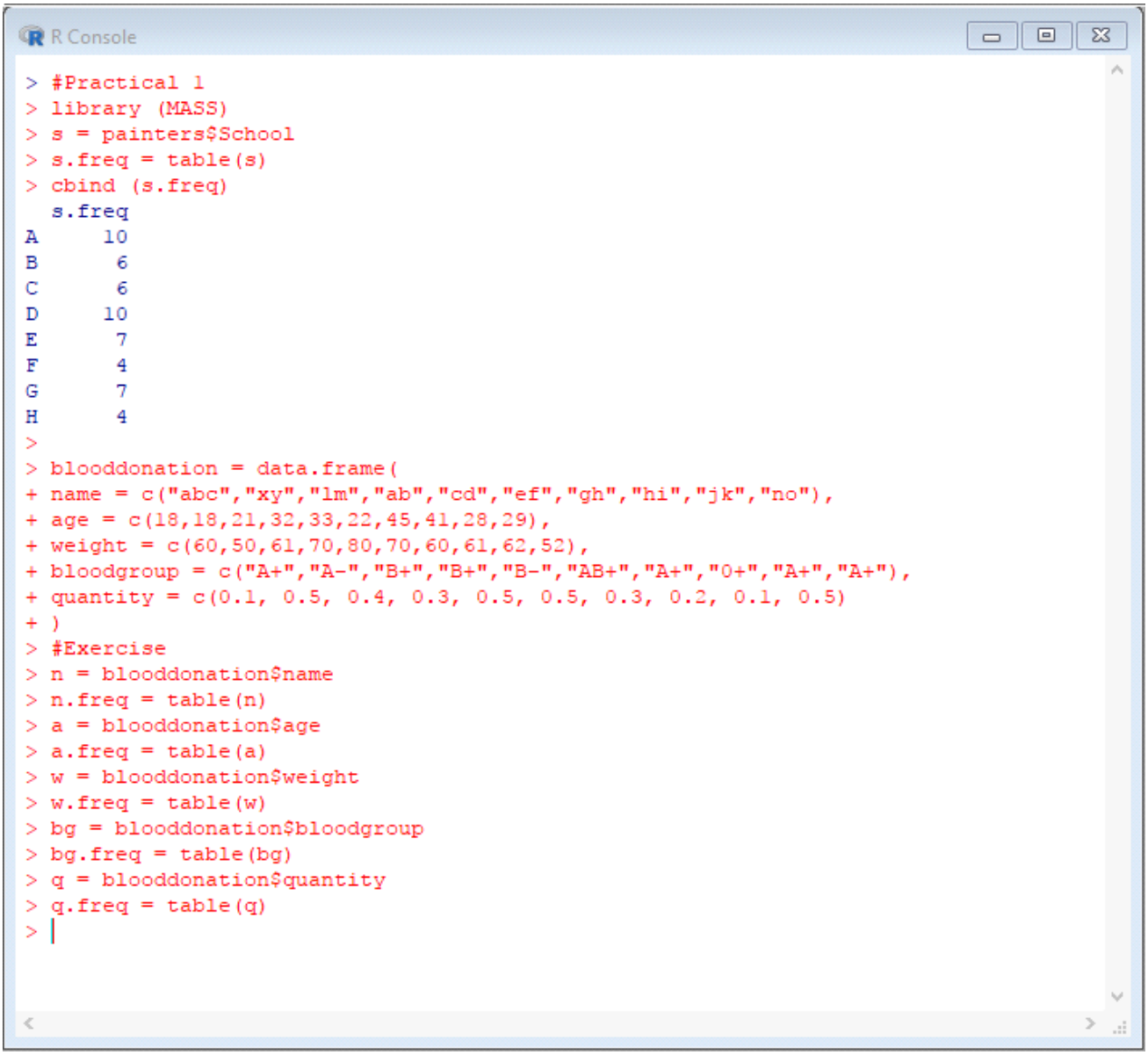
PRACTICAL 4

Aim:- Frequency distribution and data presentation

```
library (MASS)
s = painters$School
s.freq = table(s)
cbind (s.freq)

blooddonation = data.frame(
name = c("abc","xy","lm","ab","cd","ef","gh","hi","jk","no"),
age = c(18,18,21,32,33,22,45,41,28,29),
weight = c(60,50,61,70,80,70,60,61,62,52),
bloodgroup = c("A+","A-","B+","B+","B-","AB+","A+","0+","A+","A+"),
quantity = c(0.1, 0.5, 0.4, 0.3, 0.5, 0.5, 0.3, 0.2, 0.1, 0.5)
)
#Exercise
n = blooddonation$name
n.freq = table(n)
a = blooddonation$age
a.freq = table(a)
w = blooddonation$weight
w.freq = table(w)
bg = blooddonation$bloodgroup
bg.freq = table(bg)
q = blooddonation$quantity
q.freq = table(q)
```

Output:-



PRACTICAL 5.a

Aim:- Frequency distribution using cut(), table()

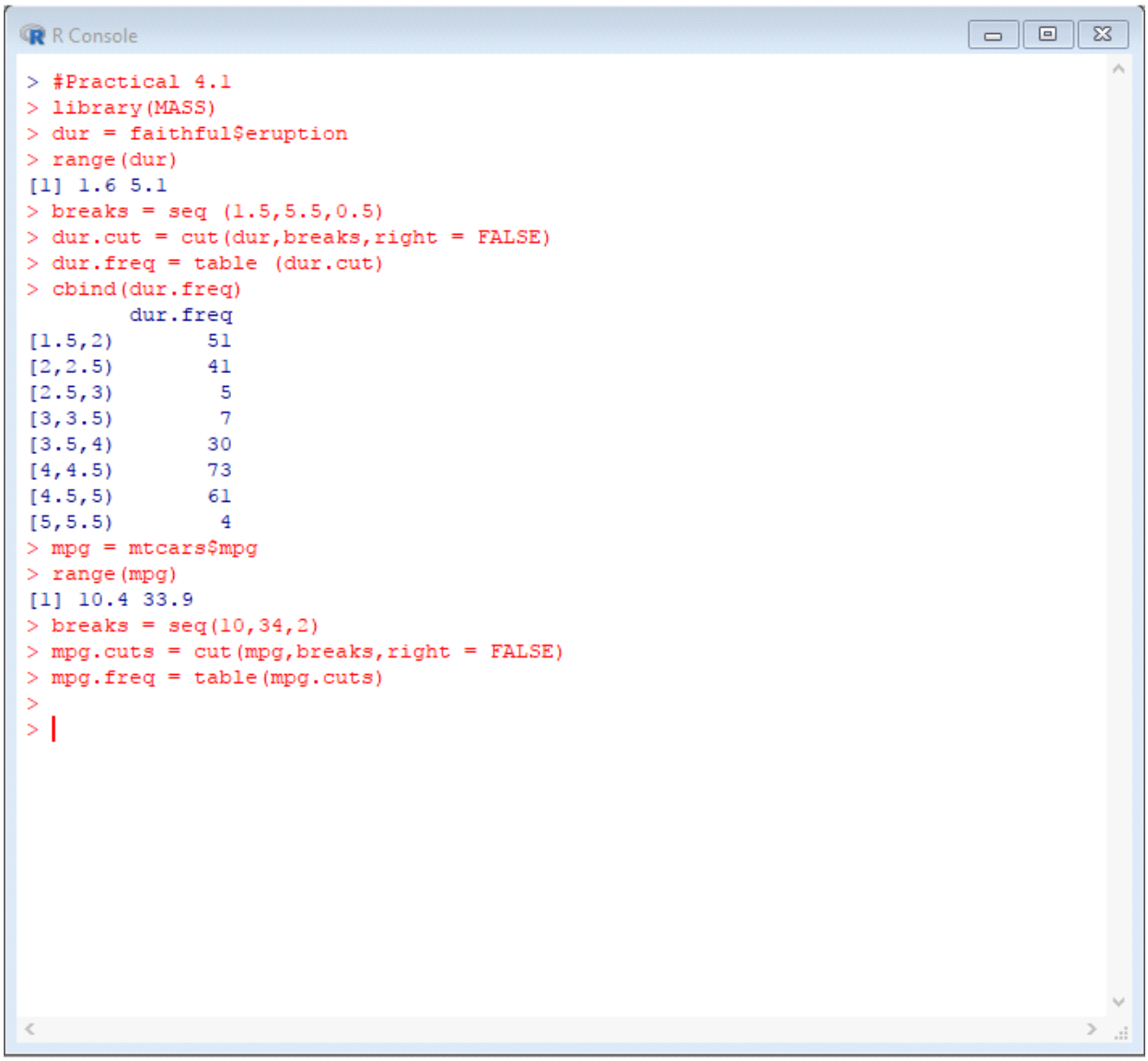
#Practical 5.a

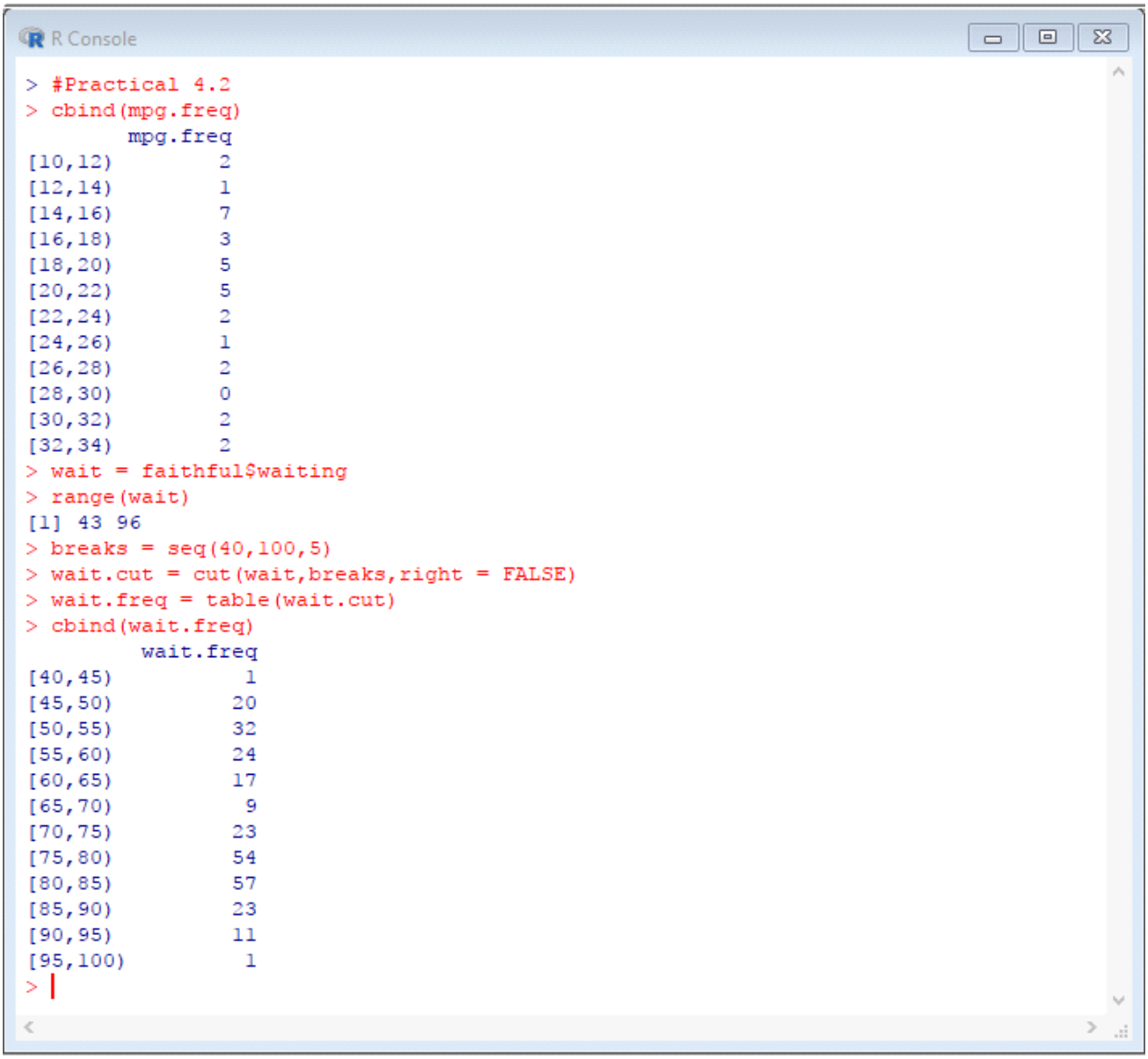
```
library(MASS)
dur = faithful$eruption
range(dur)
breaks = seq (1.5,5.5,0.5)
dur.cut = cut(dur,breaks,right = FALSE)
dur.freq = table (dur.cut)
cbind(dur.freq)
mpg = mtcars$mpg
range(mpg)
breaks = seq(10,34,2)
mpg.cuts = cut(mpg,breaks,right = FALSE)
mpg.freq = table(mpg.cuts)
```

#Practical 5.b

```
cbind(mpg.freq)
 wait = faithful$
waiting range(wait)
breaks = seq(40,100,5)
wait.cut = cut(wait,breaks,right = FALSE)
wait.freq = table(wait.cut)
cbind(wait.freq)
```

Output:-



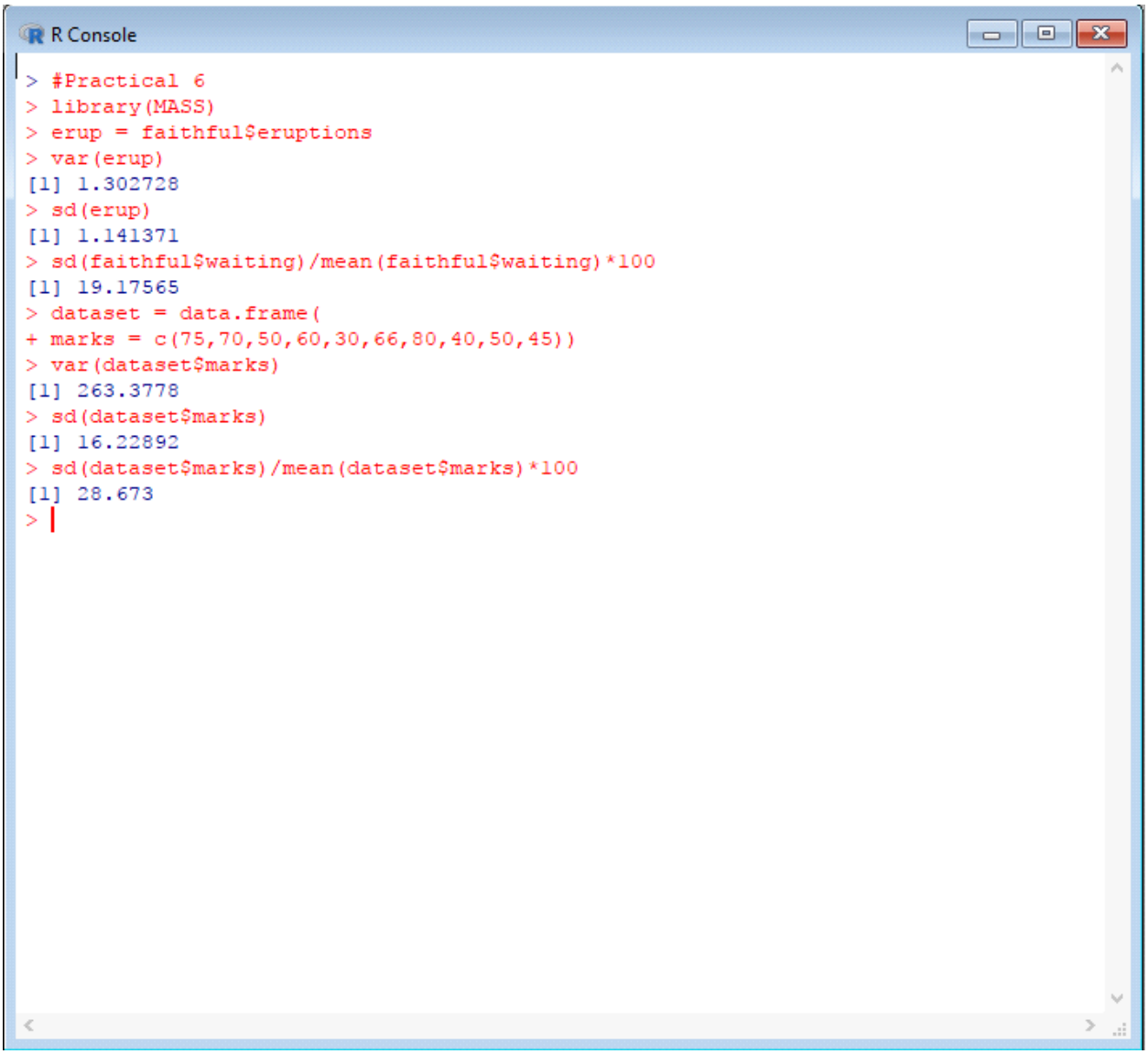

R Console
> #Practical 4.2
> cbind(mpg.freq)
mpg.freq
[10,12) 2
[12,14) 1
[14,16) 7
[16,18) 3
[18,20) 5
[20,22) 5
[22,24) 2
[24,26) 1
[26,28) 2
[28,30) 0
[30,32) 2
[32,34) 2
> wait = faithful$waiting
> range(wait)
[1] 43 96
> breaks = seq(40,100,5)
> wait.cut = cut(wait,breaks,right = FALSE)
> wait.freq = table(wait.cut)
> cbind(wait.freq)
wait.freq
[40,45) 1
[45,50) 20
[50,55) 32
[55,60) 24
[60,65) 17
[65,70) 9
[70,75) 23
[75,80) 54
[80,85) 57
[85,90) 23
[90,95) 11
[95,100) 1
>

PRACTICAL 6

Aim:- Summary Statistics (measures of central tendency, dispersion)

```
library(MASS)
erup = faithful$eruptions
var(erup)
sd(erup)
sd(faithful$waiting)/mean(faithful$waiting)*100
dataset = data.frame(
marks = c(75,70,50,60,30,66,80,40,50,45))
var(dataset$marks)
sd(dataset$marks)
sd(dataset$marks)/mean(dataset$marks)*100
```

Output:-

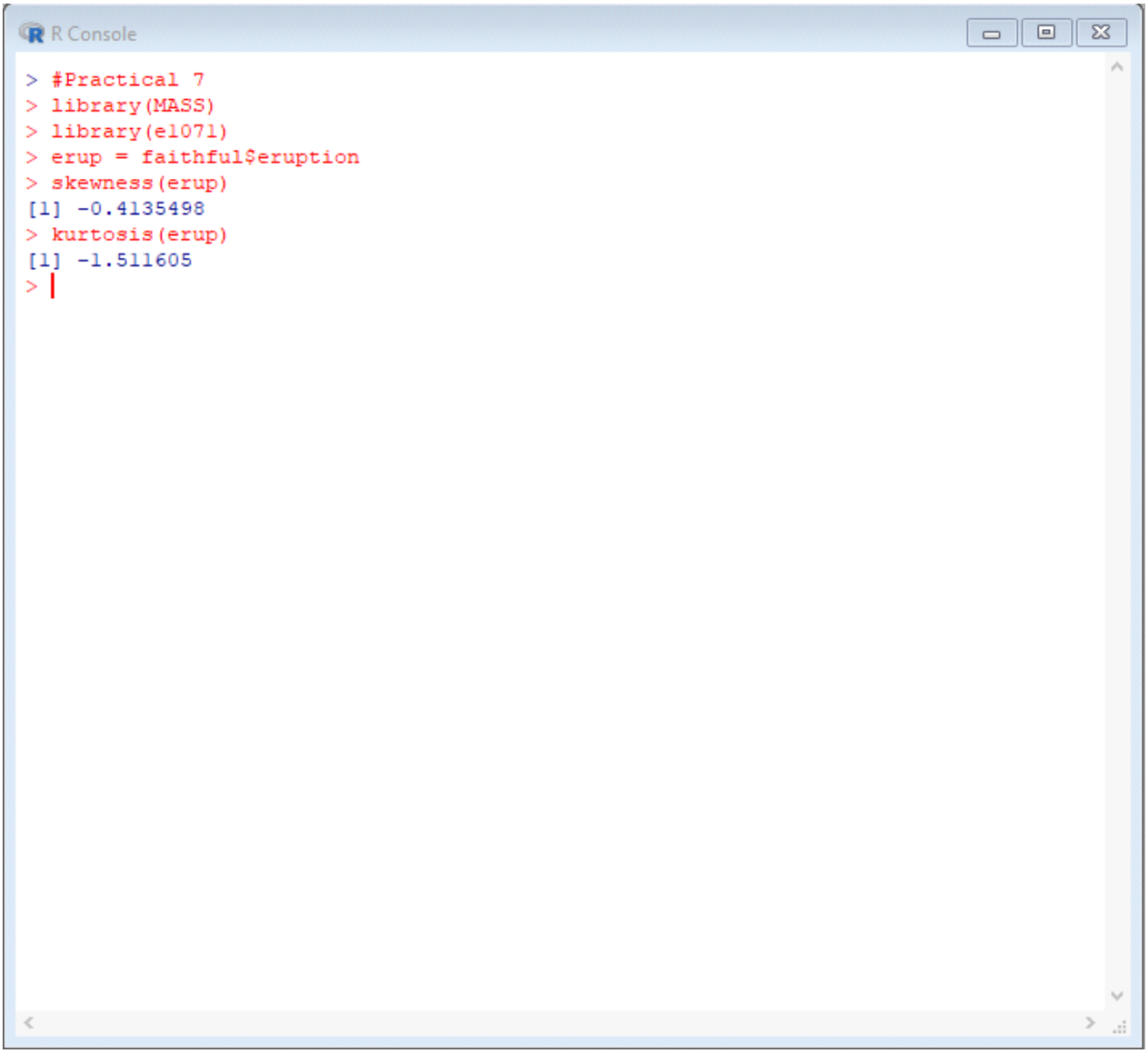


PRACTICAL 7

Aim:- Measures of skewness and kurtosis

```
library(MASS)
library(e1071)
erup = faithful$eruption
skewness(erup)
kurtosis(erup)
```


Output:-

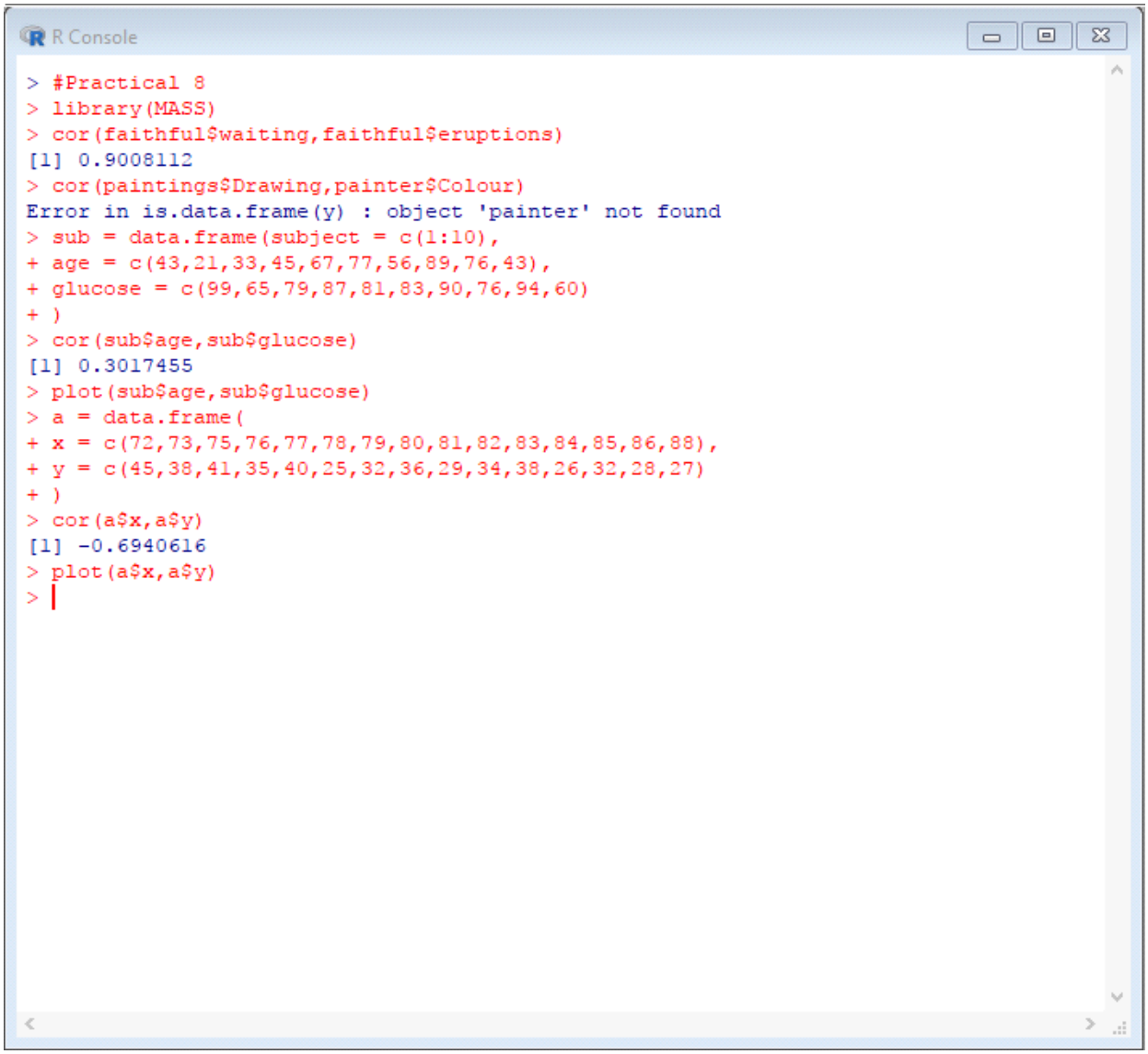


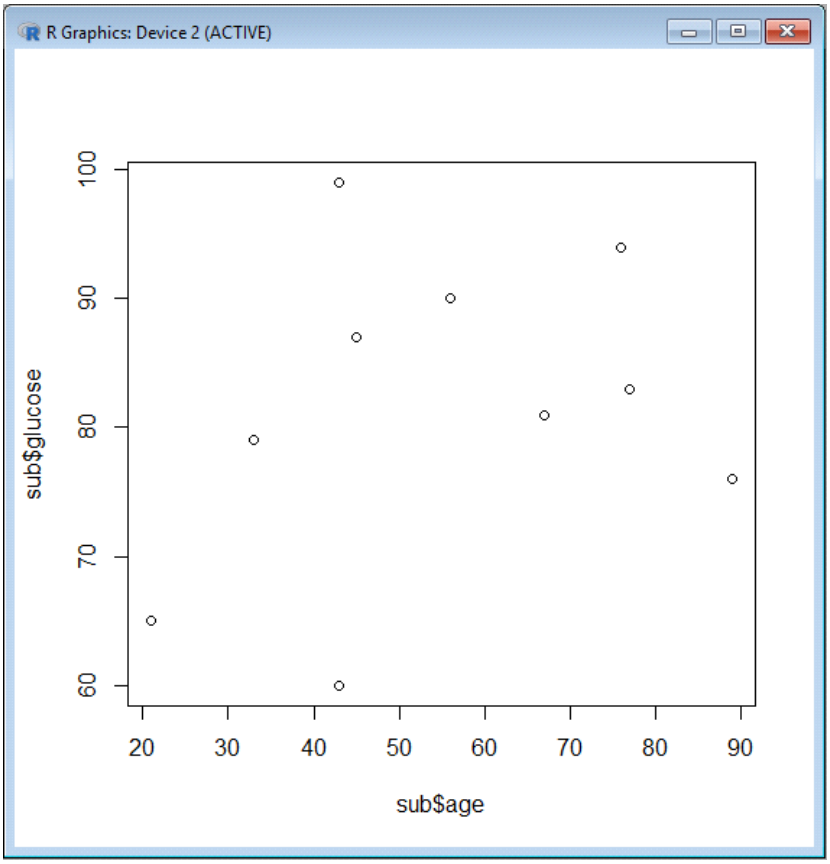
PRACTICAL NO:8

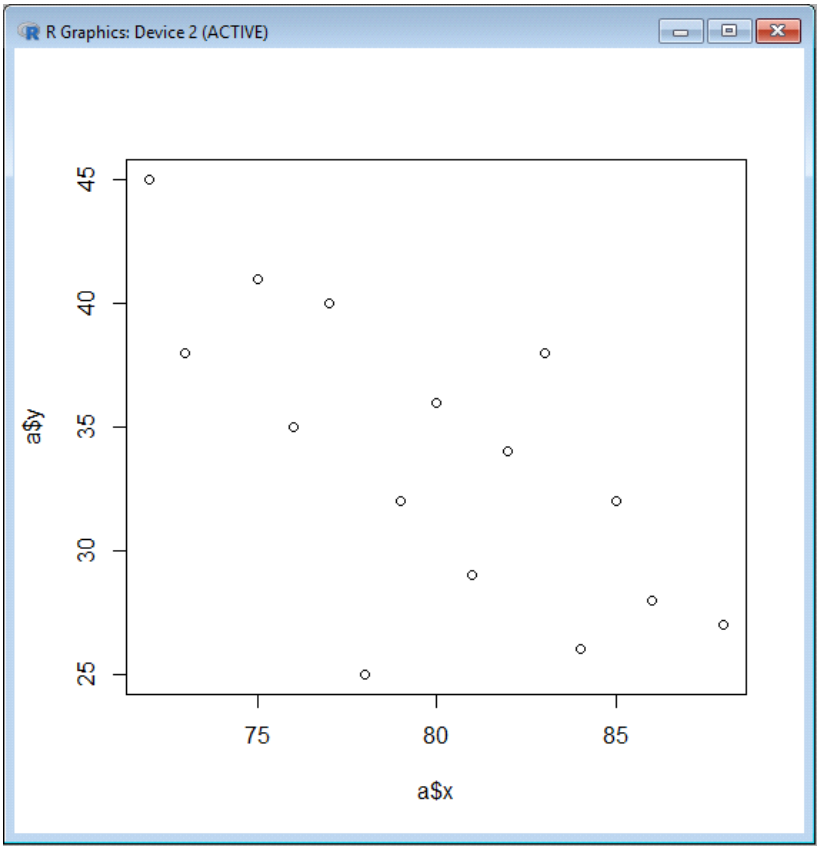
Aim:- Correlation and regression

```
library(MASS)
cor(faithful$waiting,faithful$eruptions)
cor(painters$Drawing,painters$Colour)
sub = data.frame(subject = c(1:10),
age = c(43,21,33,45,67,77,56,89,76,43),
glucose = c(99,65,79,87,81,83,90,76,94,60)
)
cor(sub$age,sub$glucose)
plot(sub$age,sub$glucose)
a = data.frame(
x = c(72,73,75,76,77,78,79,80,81,82,83,84,85,86,88),
y = c(45,38,41,35,40,25,32,36,29,34,38,26,32,28,27)
)
cor(a$x,a$y)
plot(a$x,a$y)
```

Output:-




R Graphics: Device 2 (ACTIVE)
sub$glucose
sub$age
60
70
80
90
100
20
30
40
50
60
70
80
90


R Graphics: Device 2 (ACTIVE)
a$y
a$x
25
30
35
40
45
75
80
85