R-Programming

Assignment

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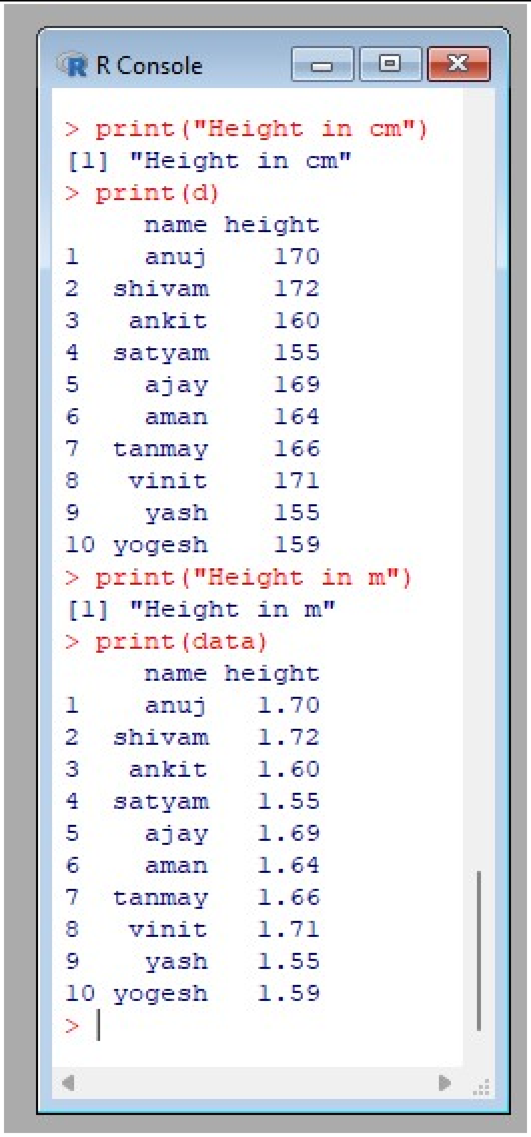
1.Write an R Function to initialize a data frame for 10 people with columns as name and height (in cm). Use for loop to convert the height into the meter.

```
f<-function(name,height)
{
        data<-data.frame(name,height)
        return (data)
}
name<-scan(what="char")
height<-scan()
data<-f(name,height)
d<-data
newh<-c()
for(i in 1:10)
{
  newh=c(newh,data[i,2]/100)
}
data<-data.frame(name,height=newh)
print("Height in cm")
print(d)
print("Height in m")
print(data)
```

OUTPUT :



```
> print("Height in cm")
[1] "Height in cm"
> print(d)
     name height
1    anuj    170
2  shivam    172
3   ankit    160
4  satyam    155
5    ajay    169
6    aman    164
7  tanmay    166
8   vinit    171
9    yash    155
10 yogesh    159
> print("Height in m")
[1] "Height in m"
> print(data)
     name height
1    anuj   1.70
2  shivam   1.72
3   ankit   1.60
4  satyam   1.55
5    ajay   1.69
6    aman   1.64
7  tanmay   1.66
8   vinit   1.71
9    yash   1.55
10 yogesh   1.59
> 
```

2.The numbers given below are the first 10 days of rainfall amounts in 2000.

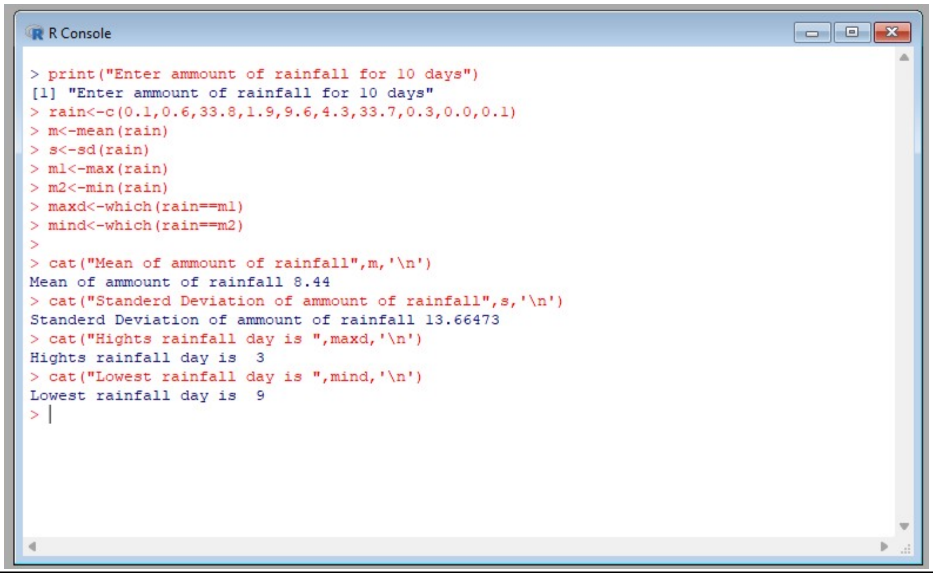
0.1, 0.6, 33.8, 1.9, 9.6, 4.3, 33.7, 0.3, 0.0, 0.1 Read them into a vector and

a) Calculate the mean and standard deviation

b) Which days saw the highest and lowest rainfall?

```
print("Enter ammount of rainfall for 10 days")
rain<-c(0.1,0.6,33.8,1.9,9.6,4.3,33.7,0.3,0.0,0.1)
m<-mean(rain)
s<-sd(rain)
m1<-max(rain)
m2<-min(rain)
maxd<-which(rain==m1)
mind<-which(rain==m2)

cat("Mean of ammount of rainfall",m,'\n')
cat("Standerd Deviation of ammount of rainfall",s,'\n')
cat("Hights rainfall day is ",maxd,'\n')
cat("Lowest rainfall day is ",mind,'\n')
```

OUTPUT :



```
> print("Enter ammount of rainfall for 10 days")
[1] "Enter ammount of rainfall for 10 days"
> rain<-c(0.1,0.6,33.8,1.9,9.6,4.3,33.7,0.3,0.0,0.1)
> m<-mean(rain)
> s<-sd(rain)
> m1<-max(rain)
> m2<-min(rain)
> maxd<-which(rain==m1)
> mind<-which(rain==m2)
>
> cat("Mean of ammount of rainfall",m,'\n')
Mean of ammount of rainfall 8.44
> cat("Standerd Deviation of ammount of rainfall",s,'\n')
Standerd Deviation of ammount of rainfall 13.66473
> cat("Hights rainfall day is ",maxd,'\n')
Hights rainfall day is  3
> cat("Lowest rainfall day is ",mind,'\n')
Lowest rainfall day is  9
> |
```

3.Construct a matrix with 10 rows and 10 columns all filled with

random numbers between 0 and 1

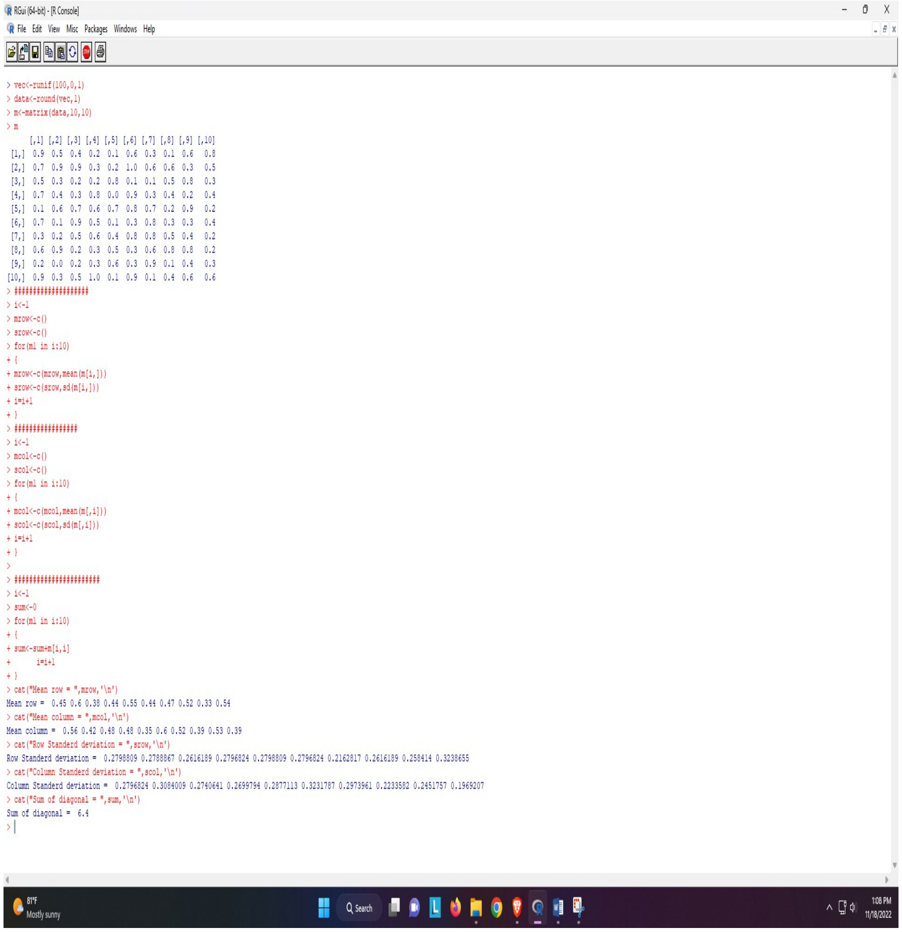
a) Calculate row means and column means.

b) Sum of all diagonal values. c) Calculate the standard deviation across both.

```
vec<-runif(100,0,1)
data<-round(vec,1)
m<-matrix(data,10,10)
m
####################
i<-1
mrow<-c()
srow<-c()
for(m1 in i:10)
{
        mrow<-c(mrow,mean(m[i,]))
        srow<-c(srow,sd(m[i,]))
        i=i+1
}
#################
i<-1
mcol<-c()
scol<-c()
for(m1 in i:10)
{
        mcol<-c(mcol,mean(m[,i]))
        scol<-c(scol,sd(m[,i]))
        i=i+1
}
```

```
########################

i<-1

sum<-0

for(m1 in i:10)

{

        sum<-sum+m[i,i]

   i=i+1

}

cat("Mean row = ",mrow,'\n')

cat("Mean column = ",mcol,'\n')

cat("Row Standerd deviation = ",srow,'\n')

cat("Column Standerd deviation = ",scol,'\n')

cat("Sum of diagonal = ",sum,'\n')
```

OUTPUT:



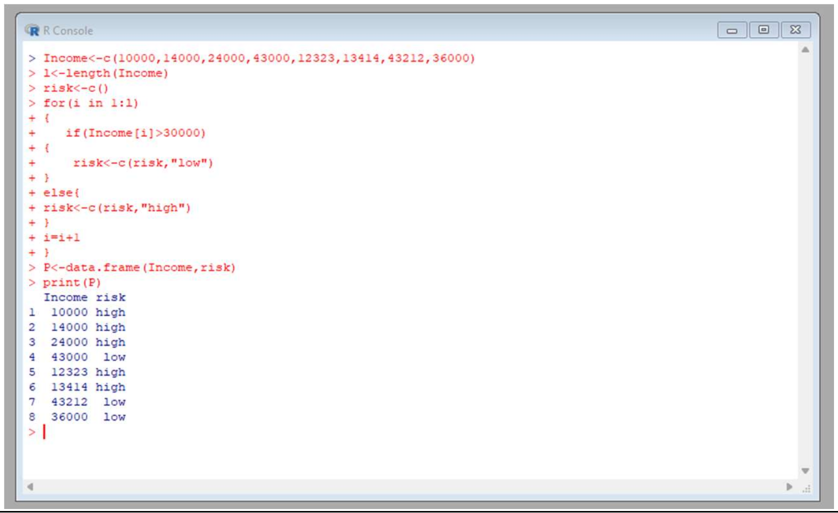
RGui (64-bit) - [R Console]
File Edit View Misc Packages Windows Help
81°F
Mostly sunny
Search
1:08 PM
11/18/2022

```
> vec<-runif(100,0,1)
> data<-round(vec,1)
> m<-matrix(data,10,10)
> m
      [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10]
 [1,]  0.9  0.5  0.4  0.2  0.1  0.6  0.3  0.1  0.6   0.8
 [2,]  0.7  0.9  0.9  0.3  0.2  1.0  0.6  0.6  0.3   0.5
 [3,]  0.5  0.3  0.2  0.2  0.8  0.1  0.1  0.5  0.8   0.3
 [4,]  0.7  0.4  0.3  0.8  0.0  0.9  0.3  0.4  0.2   0.4
 [5,]  0.1  0.6  0.7  0.6  0.7  0.8  0.7  0.2  0.9   0.2
 [6,]  0.7  0.1  0.9  0.5  0.1  0.3  0.8  0.3  0.3   0.4
 [7,]  0.3  0.2  0.5  0.6  0.4  0.8  0.8  0.5  0.4   0.2
 [8,]  0.6  0.9  0.2  0.3  0.5  0.3  0.6  0.8  0.8   0.2
 [9,]  0.2  0.0  0.2  0.3  0.6  0.3  0.9  0.1  0.4   0.3
[10,]  0.9  0.3  0.5  1.0  0.1  0.9  0.1  0.4  0.6   0.6
> ###################
> i<-1
> mrow<-c()
> srow<-c()
> for(ml in i:10)
+ {
+ mrow<-c(mrow,mean(m[i,]))
+ srow<-c(srow,sd(m[i,]))
+ i=i+1
+ }
> ################
> i<-1
> mcol<-c()
> scol<-c()
> for(ml in i:10)
+ {
+ mcol<-c(mcol,mean(m[,i]))
+ scol<-c(scol,sd(m[,i]))
+ i=i+1
+ }
>
> ######################
> i<-1
> sum<-0
> for(ml in i:10)
+ {
+ sum<-sum+m[i,i]
+       i=i+1
+ }
> cat("Mean row = ",mrow,'\n')
Mean row =  0.45 0.6 0.38 0.44 0.55 0.44 0.47 0.52 0.33 0.54
> cat("Mean column = ",mcol,'\n')
Mean column =  0.56 0.42 0.48 0.48 0.35 0.6 0.52 0.39 0.53 0.39
> cat("Row Standerd deviation = ",srow,'\n')
Row Standerd deviation =  0.2798809 0.2788867 0.2616189 0.2796824 0.2798809 0.2796824 0.2162817 0.2616189 0.258414 0.3238655
> cat("Column Standerd deviation = ",scol,'\n')
Column Standerd deviation =  0.2796824 0.3084009 0.2740641 0.2699794 0.2877113 0.3231787 0.2973961 0.2233582 0.2451757 0.1969207
> cat("Sum of diagonal = ",sum,'\n')
Sum of diagonal =  6.4
> |
```

4.Consider a problem where a user needs to group a set of people P who wants to apply for a loan at a bank. The main criterion for applying is the income of the person. Given I = (10000,14000,24000, 43000, 12323, 13414,43212,36000) which corresponds to the respective incomes of people in P. Group the people into a low-risk customer or highrisk customer based on whether the customer's Income is above 30000 (low risk) or not (High risk)

```
Income<-c(10000,14000,24000,43000,12323,13414,43212,36000)
l<-length(Income)
risk<-c()
for(i in 1:l){
  if(Income[i]>30000)
         {
            risk<-c(risk,"low")
         }
         else{
                  risk<-c(risk,"high")
         }
         i=i+1
}
P<-data.frame(Income,risk)
print(P)
```

OUTPUT :



```
> Income<-c(10000,14000,24000,43000,12323,13414,43212,36000)
> l<-length(Income)
> risk<-c()
> for(i in 1:l)
+ {
+    if(Income[i]>30000)
+ {
+     risk<-c(risk,"low")
+ }
+ else{
+ risk<-c(risk,"high")
+ }
+ i=i+1
+ }
> P<-data.frame(Income,risk)
> print(P)
  Income risk
1  10000 high
2  14000 high
3  24000 high
4  43000  low
5  12323 high
6  13414 high
7  43212  low
8  36000  low
> 
```

5.Assign values ‘TRUE’,’ FALSE’,’ FALSE’, ‘TRUE’ to logical vector ‘X’ and

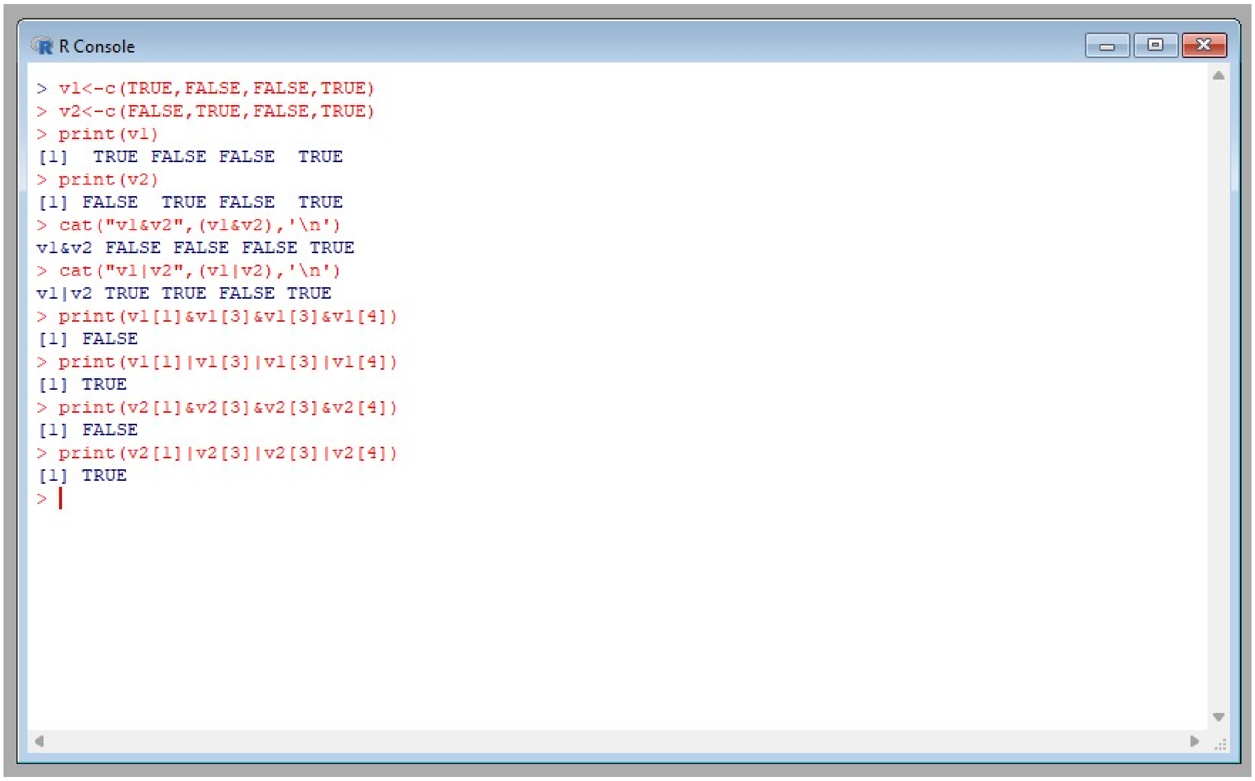
’FALSE’,‘TRUE’,’ FALSE’,‘TRUE’ to logical vector ‘Y’

a) Perform element-wise logical AND and logical OR on X and Y

b) Find logical AND and logical OR of X and Y

```
v1<-c(TRUE,FALSE,FALSE,TRUE)

v2<-c(FALSE,TRUE,FALSE,TRUE)

print(v1)

print(v2)

cat("v1&v2",(v1&v2),'\n')

cat("v1|v2",(v1|v2),'\n')

print(v1[1]&v1[3]&v1[3]&v1[4])

print(v1[1]|v1[3]|v1[3]|v1[4])

print(v2[1]&v2[3]&v2[3]&v2[4])

print(v2[1]|v2[3]|v2[3]|v2[4])
```

OUTPUT :



```
> v1<-c(TRUE,FALSE,FALSE,TRUE)
> v2<-c(FALSE,TRUE,FALSE,TRUE)
> print(v1)
[1]  TRUE FALSE FALSE  TRUE
> print(v2)
[1] FALSE  TRUE FALSE  TRUE
> cat("v1&v2",(v1&v2),'\n')
v1&v2 FALSE FALSE FALSE TRUE
> cat("v1|v2",(v1|v2),'\n')
v1|v2 TRUE TRUE FALSE TRUE
> print(v1[1]&v1[3]&v1[3]&v1[4])
[1] FALSE
> print(v1[1]|v1[3]|v1[3]|v1[4])
[1] TRUE
> print(v2[1]&v2[3]&v2[3]&v2[4])
[1] FALSE
> print(v2[1]|v2[3]|v2[3]|v2[4])
[1] TRUE
> 
```

6.Use the inbuilt dataset ‘IRIS’ and write r code for the followinga) To display the first few rows

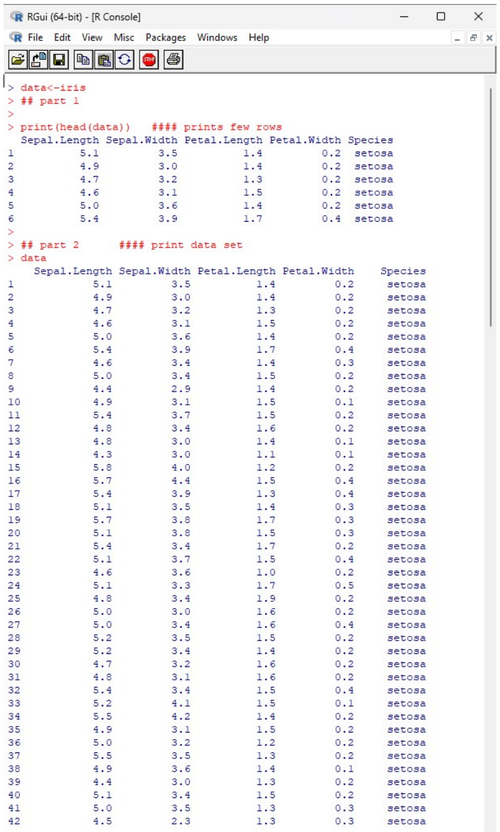
b) To display the structure of the IRIS dataset.

c) To display the value that lies at the intersection of row 3 and column 4.

d) To return values at the intersection of row 3 and columns from 1 to 4.

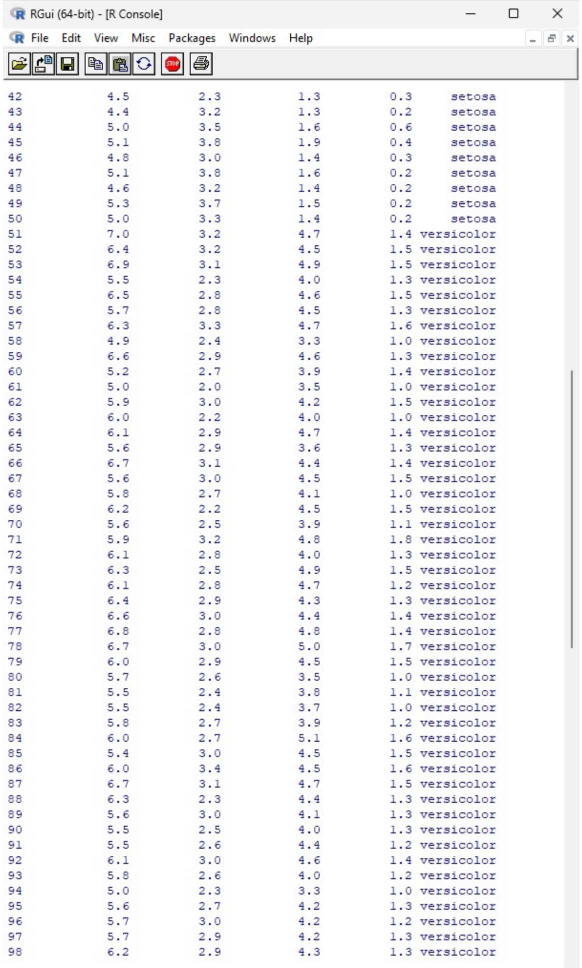
```
data<-iris

## part 1


print(head(data))   #### prints few rows


## part 2      #### print data set

data


## part 3              #### intersection of third raw 3 and column 4

data[3,4]


## part 4              ###  intersection of third raw 3 and column 1 to 4

data[3,1:4]
```

OUTPUT :

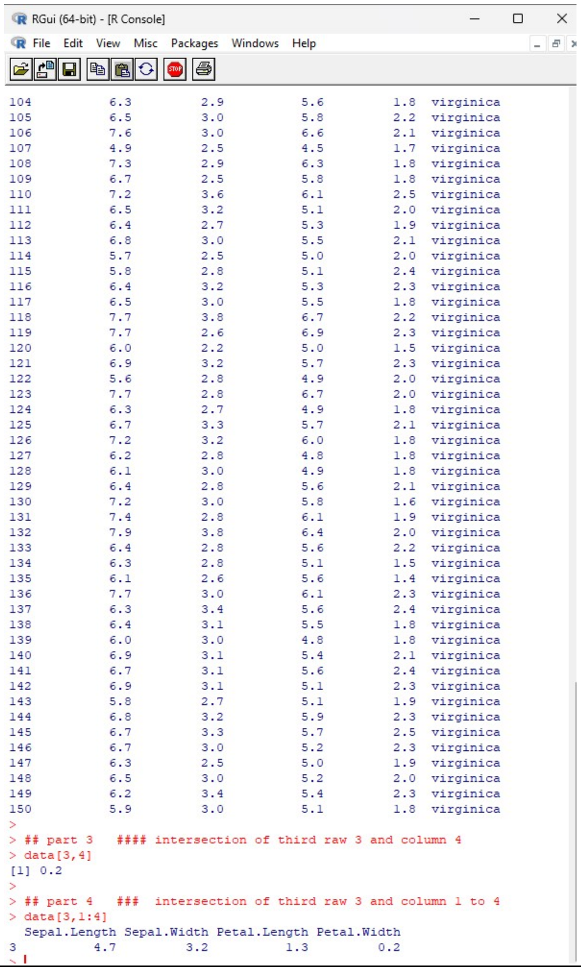


RGui (64-bit) - [R Console]
File Edit View Misc Packages Windows Help

```
> data<-iris
> ## part 1
>
> print(head(data))   #### prints few rows
  Sepal.Length Sepal.Width Petal.Length Petal.Width Species
1          5.1         3.5          1.4         0.2  setosa
2          4.9         3.0          1.4         0.2  setosa
3          4.7         3.2          1.3         0.2  setosa
4          4.6         3.1          1.5         0.2  setosa
5          5.0         3.6          1.4         0.2  setosa
6          5.4         3.9          1.7         0.4  setosa
>
> ## part 2      #### print data set
> data
    Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
1            5.1         3.5          1.4         0.2     setosa
2            4.9         3.0          1.4         0.2     setosa
3            4.7         3.2          1.3         0.2     setosa
4            4.6         3.1          1.5         0.2     setosa
5            5.0         3.6          1.4         0.2     setosa
6            5.4         3.9          1.7         0.4     setosa
7            4.6         3.4          1.4         0.3     setosa
8            5.0         3.4          1.5         0.2     setosa
9            4.4         2.9          1.4         0.2     setosa
10           4.9         3.1          1.5         0.1     setosa
11           5.4         3.7          1.5         0.2     setosa
12           4.8         3.4          1.6         0.2     setosa
13           4.8         3.0          1.4         0.1     setosa
14           4.3         3.0          1.1         0.1     setosa
15           5.8         4.0          1.2         0.2     setosa
16           5.7         4.4          1.5         0.4     setosa
17           5.4         3.9          1.3         0.4     setosa
18           5.1         3.5          1.4         0.3     setosa
19           5.7         3.8          1.7         0.3     setosa
20           5.1         3.8          1.5         0.3     setosa
21           5.4         3.4          1.7         0.2     setosa
22           5.1         3.7          1.5         0.4     setosa
23           4.6         3.6          1.0         0.2     setosa
24           5.1         3.3          1.7         0.5     setosa
25           4.8         3.4          1.9         0.2     setosa
26           5.0         3.0          1.6         0.2     setosa
27           5.0         3.4          1.6         0.4     setosa
28           5.2         3.5          1.5         0.2     setosa
29           5.2         3.4          1.4         0.2     setosa
30           4.7         3.2          1.6         0.2     setosa
31           4.8         3.1          1.6         0.2     setosa
32           5.4         3.4          1.5         0.4     setosa
33           5.2         4.1          1.5         0.1     setosa
34           5.5         4.2          1.4         0.2     setosa
35           4.9         3.1          1.5         0.2     setosa
36           5.0         3.2          1.2         0.2     setosa
37           5.5         3.5          1.3         0.2     setosa
38           4.9         3.6          1.4         0.1     setosa
39           4.4         3.0          1.3         0.2     setosa
40           5.1         3.4          1.5         0.2     setosa
41           5.0         3.5          1.3         0.3     setosa
42           4.5         2.3          1.3         0.3     setosa
```



```
42          4.5          2.3          1.3         0.3     setosa
43          4.4          3.2          1.3         0.2     setosa
44          5.0          3.5          1.6         0.6     setosa
45          5.1          3.8          1.9         0.4     setosa
46          4.8          3.0          1.4         0.3     setosa
47          5.1          3.8          1.6         0.2     setosa
48          4.6          3.2          1.4         0.2     setosa
49          5.3          3.7          1.5         0.2     setosa
50          5.0          3.3          1.4         0.2     setosa
51          7.0          3.2          4.7         1.4 versicolor
52          6.4          3.2          4.5         1.5 versicolor
53          6.9          3.1          4.9         1.5 versicolor
54          5.5          2.3          4.0         1.3 versicolor
55          6.5          2.8          4.6         1.5 versicolor
56          5.7          2.8          4.5         1.3 versicolor
57          6.3          3.3          4.7         1.6 versicolor
58          4.9          2.4          3.3         1.0 versicolor
59          6.6          2.9          4.6         1.3 versicolor
60          5.2          2.7          3.9         1.4 versicolor
61          5.0          2.0          3.5         1.0 versicolor
62          5.9          3.0          4.2         1.5 versicolor
63          6.0          2.2          4.0         1.0 versicolor
64          6.1          2.9          4.7         1.4 versicolor
65          5.6          2.9          3.6         1.3 versicolor
66          6.7          3.1          4.4         1.4 versicolor
67          5.6          3.0          4.5         1.5 versicolor
68          5.8          2.7          4.1         1.0 versicolor
69          6.2          2.2          4.5         1.5 versicolor
70          5.6          2.5          3.9         1.1 versicolor
71          5.9          3.2          4.8         1.8 versicolor
72          6.1          2.8          4.0         1.3 versicolor
73          6.3          2.5          4.9         1.5 versicolor
74          6.1          2.8          4.7         1.2 versicolor
75          6.4          2.9          4.3         1.3 versicolor
76          6.6          3.0          4.4         1.4 versicolor
77          6.8          2.8          4.8         1.4 versicolor
78          6.7          3.0          5.0         1.7 versicolor
79          6.0          2.9          4.5         1.5 versicolor
80          5.7          2.6          3.5         1.0 versicolor
81          5.5          2.4          3.8         1.1 versicolor
82          5.5          2.4          3.7         1.0 versicolor
83          5.8          2.7          3.9         1.2 versicolor
84          6.0          2.7          5.1         1.6 versicolor
85          5.4          3.0          4.5         1.5 versicolor
86          6.0          3.4          4.5         1.6 versicolor
87          6.7          3.1          4.7         1.5 versicolor
88          6.3          2.3          4.4         1.3 versicolor
89          5.6          3.0          4.1         1.3 versicolor
90          5.5          2.5          4.0         1.3 versicolor
91          5.5          2.6          4.4         1.2 versicolor
92          6.1          3.0          4.6         1.4 versicolor
93          5.8          2.6          4.0         1.2 versicolor
94          5.0          2.3          3.3         1.0 versicolor
95          5.6          2.7          4.2         1.3 versicolor
96          5.7          3.0          4.2         1.2 versicolor
97          5.7          2.9          4.2         1.3 versicolor
98          6.2          2.9          4.3         1.3 versicolor
```

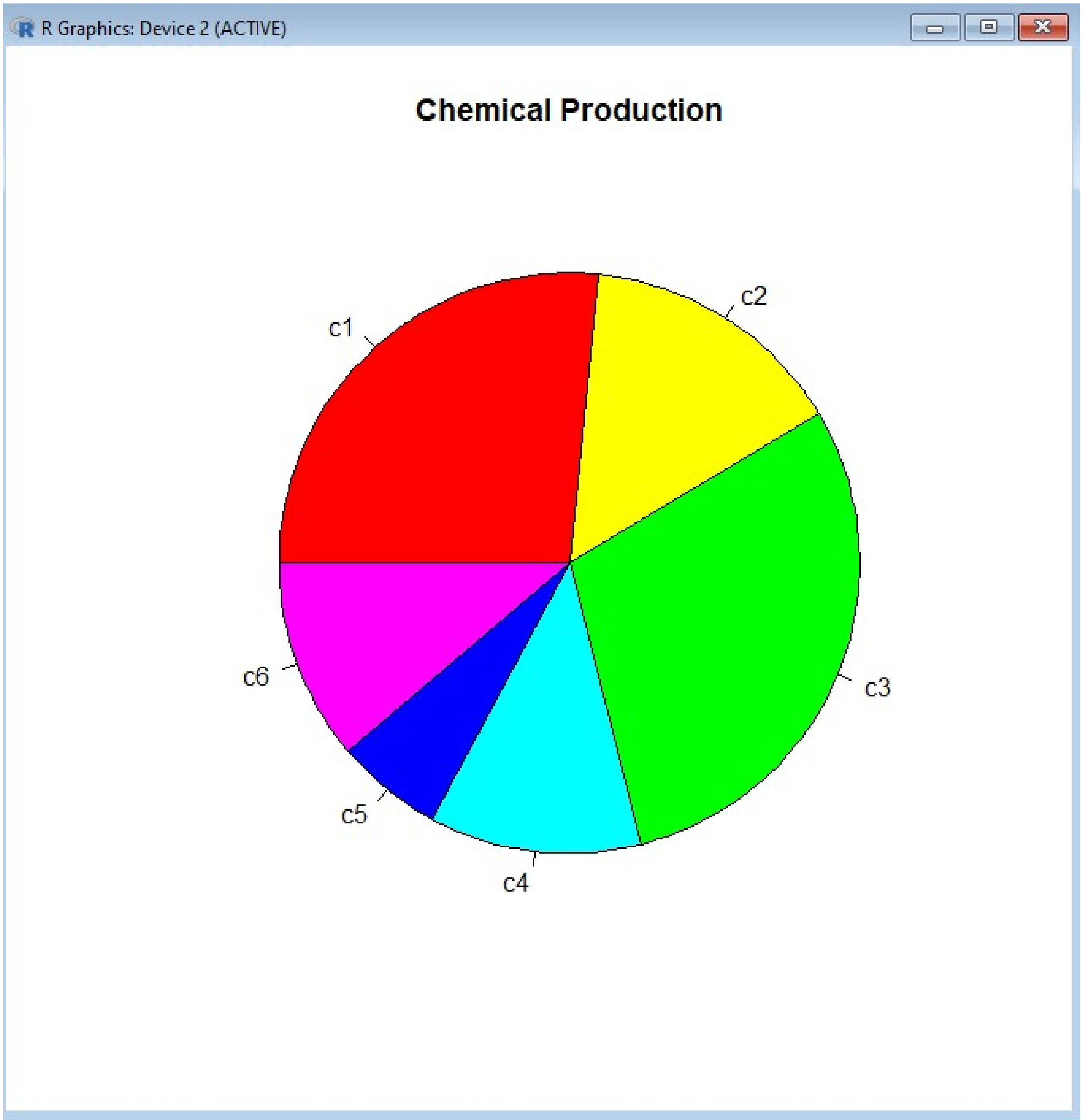


```
104          6.3          2.9          5.6          1.8  virginica
105          6.5          3.0          5.8          2.2  virginica
106          7.6          3.0          6.6          2.1  virginica
107          4.9          2.5          4.5          1.7  virginica
108          7.3          2.9          6.3          1.8  virginica
109          6.7          2.5          5.8          1.8  virginica
110          7.2          3.6          6.1          2.5  virginica
111          6.5          3.2          5.1          2.0  virginica
112          6.4          2.7          5.3          1.9  virginica
113          6.8          3.0          5.5          2.1  virginica
114          5.7          2.5          5.0          2.0  virginica
115          5.8          2.8          5.1          2.4  virginica
116          6.4          3.2          5.3          2.3  virginica
117          6.5          3.0          5.5          1.8  virginica
118          7.7          3.8          6.7          2.2  virginica
119          7.7          2.6          6.9          2.3  virginica
120          6.0          2.2          5.0          1.5  virginica
121          6.9          3.2          5.7          2.3  virginica
122          5.6          2.8          4.9          2.0  virginica
123          7.7          2.8          6.7          2.0  virginica
124          6.3          2.7          4.9          1.8  virginica
125          6.7          3.3          5.7          2.1  virginica
126          7.2          3.2          6.0          1.8  virginica
127          6.2          2.8          4.8          1.8  virginica
128          6.1          3.0          4.9          1.8  virginica
129          6.4          2.8          5.6          2.1  virginica
130          7.2          3.0          5.8          1.6  virginica
131          7.4          2.8          6.1          1.9  virginica
132          7.9          3.8          6.4          2.0  virginica
133          6.4          2.8          5.6          2.2  virginica
134          6.3          2.8          5.1          1.5  virginica
135          6.1          2.6          5.6          1.4  virginica
136          7.7          3.0          6.1          2.3  virginica
137          6.3          3.4          5.6          2.4  virginica
138          6.4          3.1          5.5          1.8  virginica
139          6.0          3.0          4.8          1.8  virginica
140          6.9          3.1          5.4          2.1  virginica
141          6.7          3.1          5.6          2.4  virginica
142          6.9          3.1          5.1          2.3  virginica
143          5.8          2.7          5.1          1.9  virginica
144          6.8          3.2          5.9          2.3  virginica
145          6.7          3.3          5.7          2.5  virginica
146          6.7          3.0          5.2          2.3  virginica
147          6.3          2.5          5.0          1.9  virginica
148          6.5          3.0          5.2          2.0  virginica
149          6.2          3.4          5.4          2.3  virginica
150          5.9          3.0          5.1          1.8  virginica
>
> ## part 3   #### intersection of third raw 3 and column 4
> data[3,4]
[1] 0.2
>
> ## part 4   ###  intersection of third raw 3 and column 1 to 4
> data[3,1:4]
  Sepal.Length Sepal.Width Petal.Length Petal.Width
3          4.7         3.2          1.3         0.2
>
```

7.Given Name of chemical = (c1, c2, c3, c4, c5), Amount produced = (90, 50, 100, 40, 20, 38). Plot a pie chart with the initial angle at 180° and the Color of your choice.

```
chemical<-c("c1","c2","c3","c4","c5","c6")

amm<-c(90,50,100,40,20,38)

pie(amm,label=chemical,col=rainbow(length(chemical)),clockwise=TRUE,init.angle=180,main="Chemical
Production")
```

OUTPUT:



8. Write an R code using a loop that prints() following sentences.

#a) #> " Four is greater than three"

#> " Four is greater than three”

#> " Four is greater than three"

#> "Next"

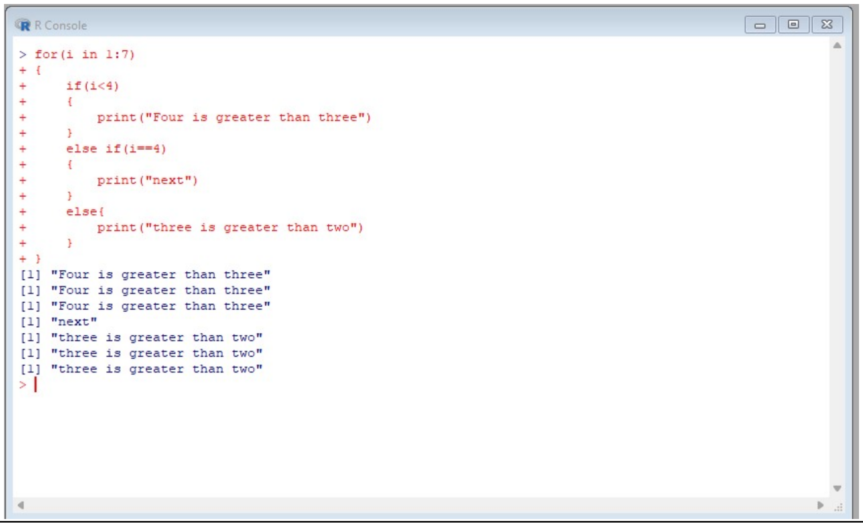
#> “Three is greater than two”

#> "Three is greater than two"

#> "Three is greater than two”

```
for(i in 1:7){
   if(i<4)
   {
      print("Four is greater than three")
   }
   else if(i==4)
   {
      print("next")
   }
   else{
      print("three is greater than two")
   }
}
```

OUTPUT:

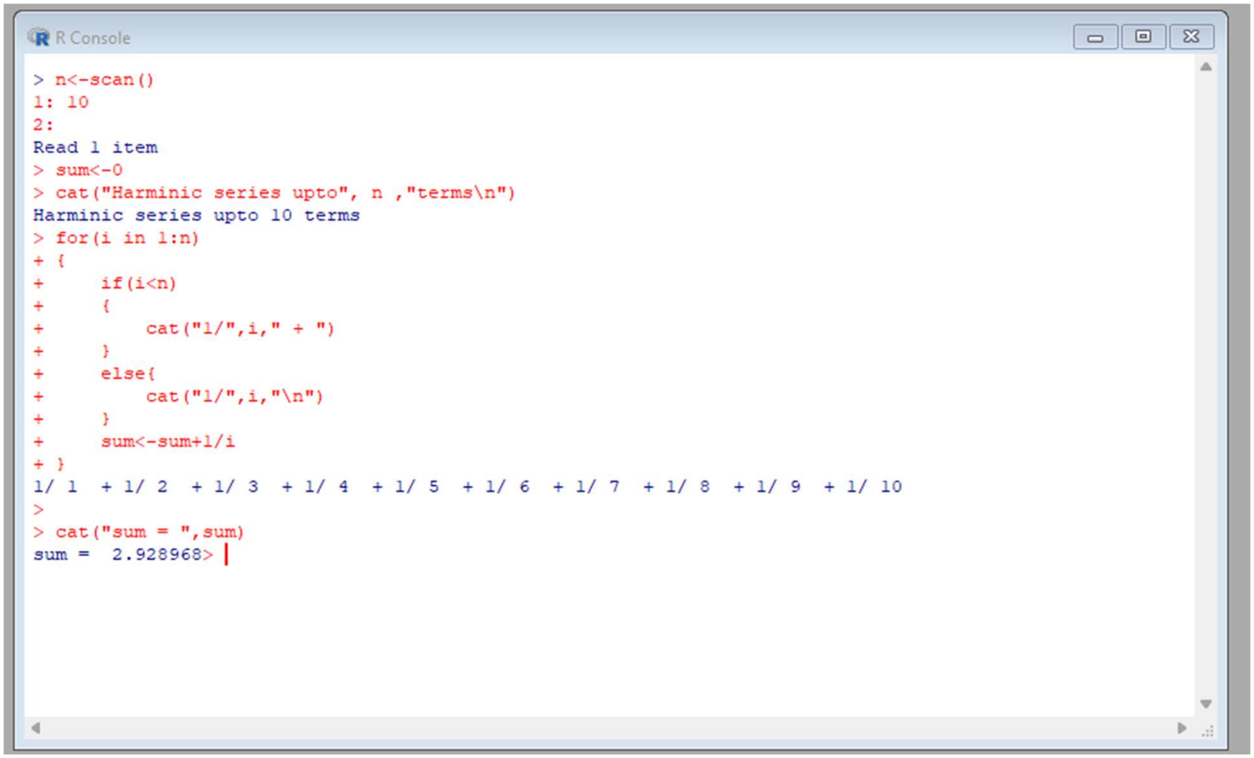


```
> for(i in 1:7)
+ {
+     if(i<4)
+     {
+         print("Four is greater than three")
+     }
+     else if(i==4)
+     {
+         print("next")
+     }
+     else{
+         print("three is greater than two")
+     }
+ }
[1] "Four is greater than three"
[1] "Four is greater than three"
[1] "Four is greater than three"
[1] "next"
[1] "three is greater than two"
[1] "three is greater than two"
[1] "three is greater than two"
> 
```

9.Write a program in R to display the terms of harmonic series and their sum

```
n<-scan()

sum<-0

cat("Harminic series upto", n ,"terms\n")

for(i in 1:n)

{

   if(i<n)

   {

      cat("1/",i," + ")

   }

   else{

      cat("1/",i,"\n")

   }

   sum<-sum+1/i

}

cat("sum = ",sum)
```

OUTPUT:

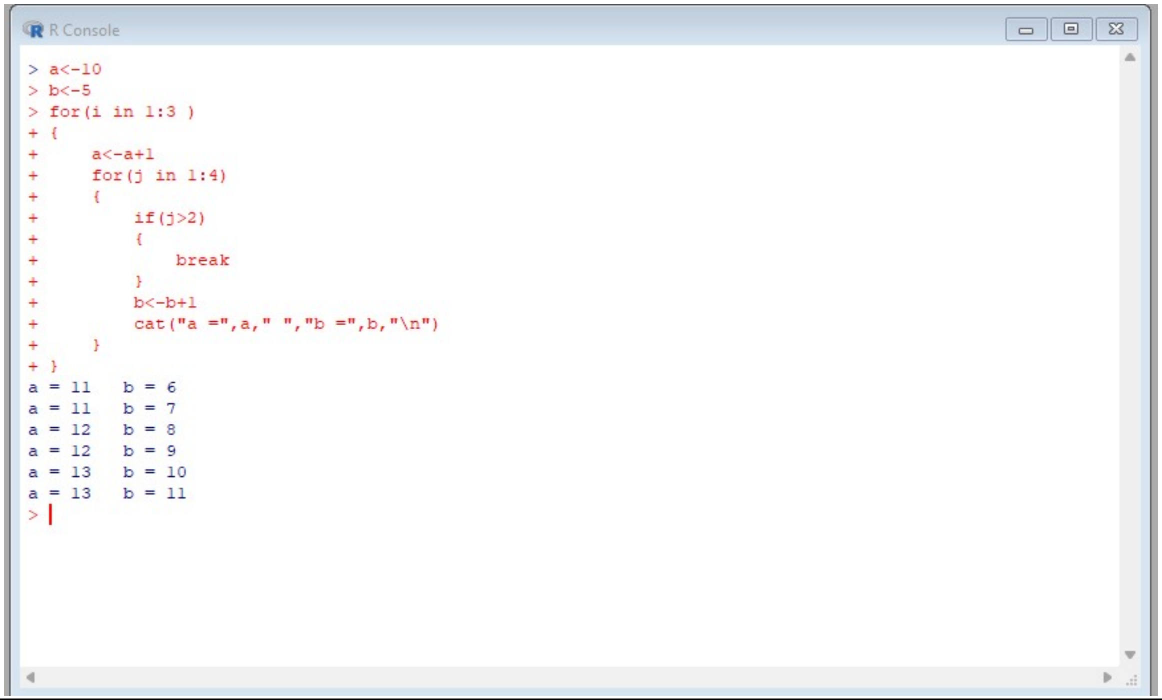


```
> n<-scan()
1: 10
2:
Read 1 item
> sum<-0
> cat("Harminic series upto", n ,"terms\n")
Harminic series upto 10 terms
> for(i in 1:n)
+ {
+     if(i<n)
+     {
+         cat("1/",i," + ")
+     }
+     else{
+         cat("1/",i,"\n")
+     }
+     sum<-sum+1/i
+ }
1/ 1  + 1/ 2  + 1/ 3  + 1/ 4  + 1/ 5  + 1/ 6  + 1/ 7  + 1/ 8  + 1/ 9  + 1/ 10
>
> cat("sum = ",sum)
sum =  2.928968>
```

10.Write a nested loop, where the outer for() loop increments “a” 3 times and the inner for() loop increments “b” 4 times. The break statement exits the inner for() loop after 2 increments. The nested loop prints the values of variables a and b.

```
a<-10
b<-5
for(i in 1:3 ){
   a<-a+1
   for(j in 1:4)
   {
      if(j>2)
      {
         break
      }
      b<-b+1
      cat("a =",a," ","b =",b,"\n")
   }
}
```

OUTPUT:



```
> a<-10
> b<-5
> for(i in 1:3 )
+ {
+     a<-a+1
+     for(j in 1:4)
+     {
+         if(j>2)
+         {
+             break
+         }
+         b<-b+1
+         cat("a =",a," ","b =",b,"\n")
+     }
+ }
a = 11   b = 6
a = 11   b = 7
a = 12   b = 8
a = 12   b = 9
a = 13   b = 10
a = 13   b = 11
>
```

11.Write an R program to create four vectors namely student Id, age, pointer, and department

a) Merge the vectors into a data frame studentData and print values using for loop.

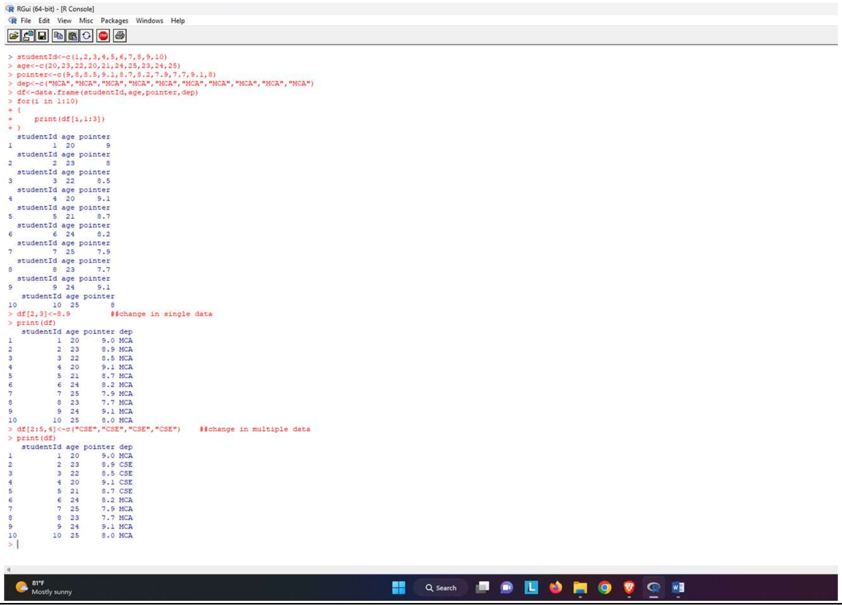
b) Replace a value across the entire Data frame.

c) Replace multiple values in a Data frame.

for b) and c) you can take other data frame having at least 2 columns whose values lies in the same range.

```
studentId<-c(1,2,3,4,5,6,7,8,9,10)

age<-c(20,23,22,20,21,24,25,23,24,25)

pointer<-c(9,8,8.5,9.1,8.7,8.2,7.9,7.7,9.1,8)

dep<-c("MCA","MCA","MCA","MCA","MCA","MCA","MCA","MCA","MCA","MCA")

df<-data.frame(studentId,age,pointer,dep)

for(i in 1:10)

{

   print(df[i,1:3])

}

df[2,3]<-8.9        ##change in single data

print(df)

df[2:5,4]<-c("CSE","CSE","CSE","CSE")    ##change in multiple data

print(df)
```

OUTPUT:


RGui (64-bit) - [R Console]
File Edit View Misc Packages Windows Help
81°F
Mostly sunny
Search

```
> studentId<-c(1,2,3,4,5,6,7,8,9,10)
> age<-c(20,23,22,20,21,24,25,23,24,25)
> pointer<-c(9,8,8.5,9.1,8.7,8.2,7.9,7.7,9.1,8)
> dep<-c("MCA","MCA","MCA","MCA","MCA","MCA","MCA","MCA","MCA","MCA")
> df<-data.frame(studentId,age,pointer,dep)
> for(i in 1:10)
+ {
+     print(df[i,1:3])
+ }
  studentId age pointer
1         1  20       9
  studentId age pointer
2         2  23       8
  studentId age pointer
3         3  22     8.5
  studentId age pointer
4         4  20     9.1
  studentId age pointer
5         5  21     8.7
  studentId age pointer
6         6  24     8.2
  studentId age pointer
7         7  25     7.9
  studentId age pointer
8         8  23     7.7
  studentId age pointer
9         9  24     9.1
   studentId age pointer
10        10  25       8
> df[2,3]<-8.9        ##change in single data
> print(df)
   studentId age pointer dep
1          1  20     9.0 MCA
2          2  23     8.9 MCA
3          3  22     8.5 MCA
4          4  20     9.1 MCA
5          5  21     8.7 MCA
6          6  24     8.2 MCA
7          7  25     7.9 MCA
8          8  23     7.7 MCA
9          9  24     9.1 MCA
10        10  25     8.0 MCA
> df[2:5,4]<-c("CSE","CSE","CSE","CSE")    ##change in multiple data
> print(df)
   studentId age pointer dep
1          1  20     9.0 MCA
2          2  23     8.9 CSE
3          3  22     8.5 CSE
4          4  20     9.1 CSE
5          5  21     8.7 CSE
6          6  24     8.2 MCA
7          7  25     7.9 MCA
8          8  23     7.7 MCA
9          9  24     9.1 MCA
10        10  25     8.0 MCA
> |
```

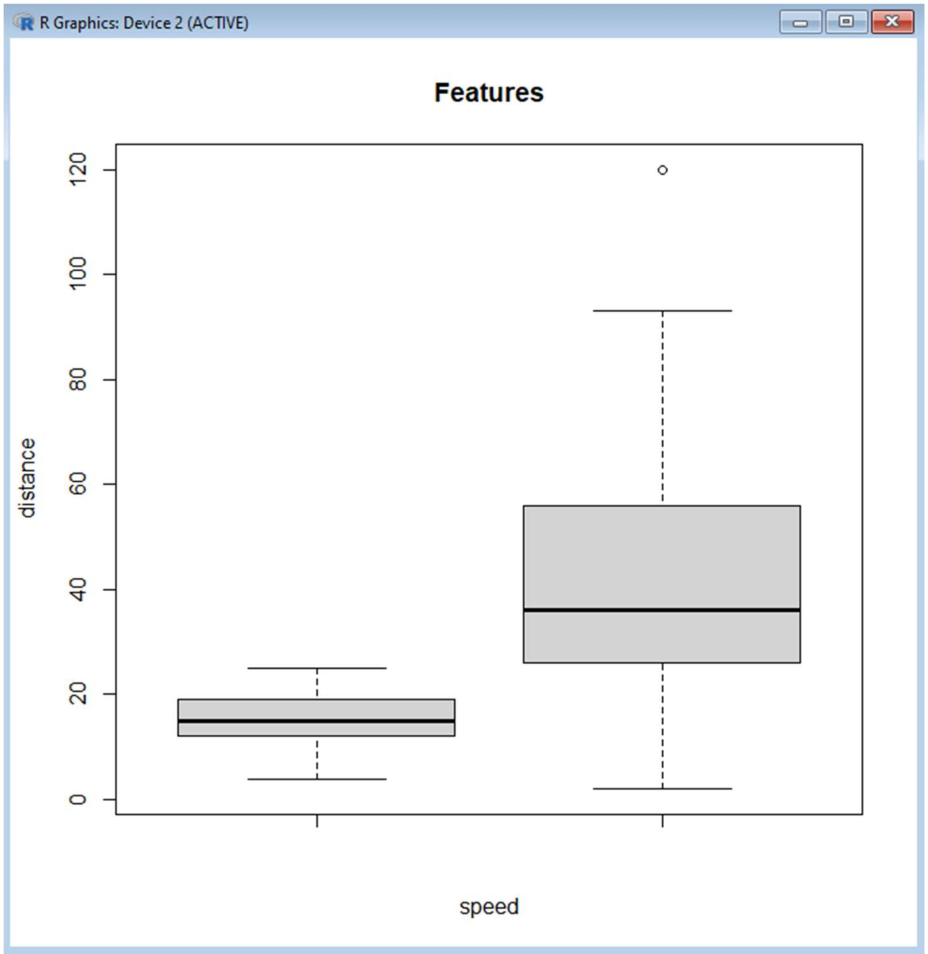
12.Use the inbuilt dataset in R called the Cars dataset.

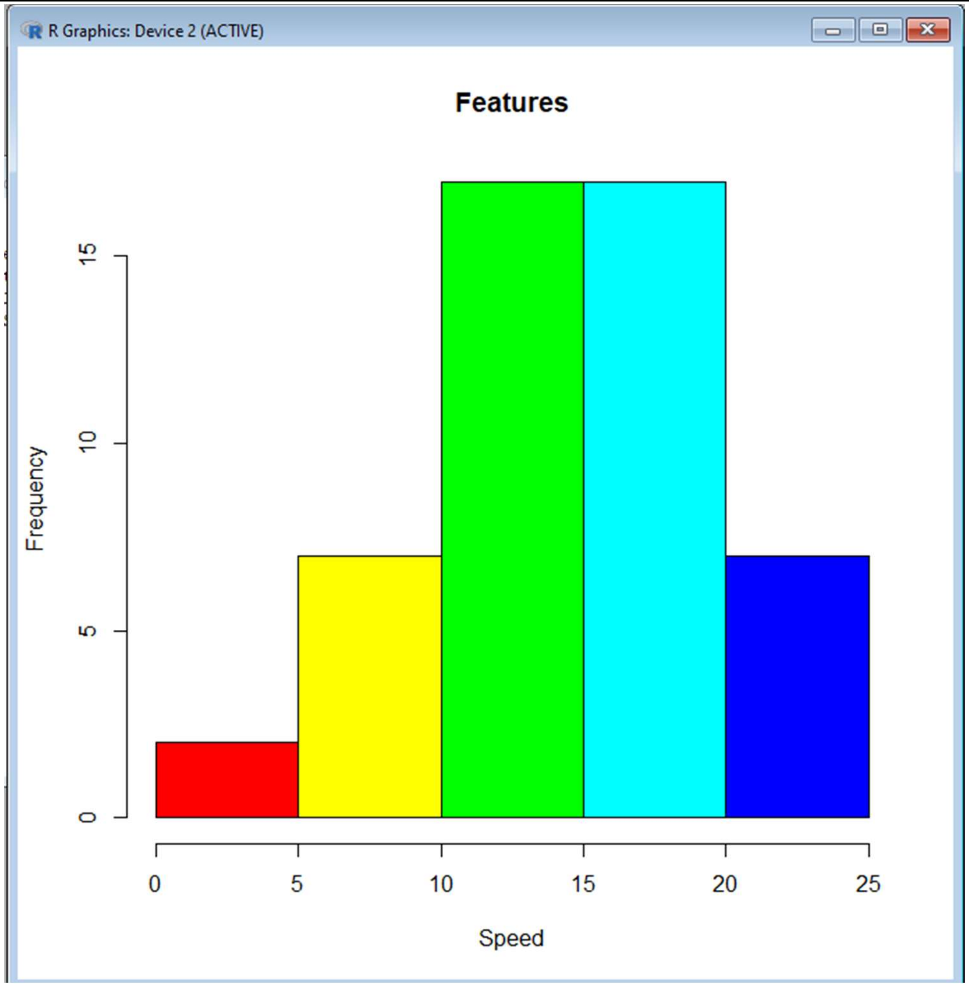
a) Using box plots demonstrates the Relation between the car's speed and the distancetaken to stop.

b) Demonstrate the above question using a histogram

```
Cars<-cars

Cars

s<-c(Cars$speed)

d<-c(Cars$dist)

boxplot(s,d,xlab="speed",ylab="distance",main="Features")

hist(s,xlab="Speed",col=rainbow(6),main="Features",border="black")
```

OUTPUT:




R Graphics: Device 2 (ACTIVE)
Features
Frequency
0
5
10
15
0
5
10
15
20
25
Speed