R PROGRAMMING LAB

(R2022057)

II B.Tech II SEMESTER

Prepared by

Mr Nadella Sunil

Computer Lab – I

DEPARTMENT OF INFORMATION TECHNOLOGY

Aditya College of Engineering & Technology

Aditya Nagar, ADB Road, Surampalem - 533437

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

II Year – II Semester		L	T	P	C
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R PROGRAMMING LAB (R2022057)					

COURSE OBJECTIVES:

- To learn statistical programming, computation, graphics, and modeling,
- To learn Writing functions and use R in an efficient way,
- To learn about basic types of statistical models

COURSE OUTCOMES:

At the end of this course, students will be able to:

- Access online resources for R and import new function packages into the Rworkspace
- Import, review, manipulate and summarize data-sets in R
- Explore data-sets to create testable hypotheses and identify appropriate statistical tests
- Perform appropriate statistical tests using R
- Create and edit visualizations with R

1) Write a R program to take input from the user (name and age) and display the values. Also print the version of R installation.
2) Write a R program to get the details of the objects in memory.
3) Write a R program to create a sequence of numbers from 20 to 50 and find the mean of numbers from 20 to 60 and sum of numbers from 51 to 91.
4) Write a R program to create a simple bar plot of five subjects marks.
5) Write a R program to get the unique elements of a given string and unique numbers of vector.
6) Write a R program to create three vectors a,b,c with 3 integers. Combine the three vectors to become a 3×3 matrix where each column represents a vector. Print the content of the matrix.
7) Write a R program to create a 5 x 4 matrix , 3 x 3 matrix with labels and fill the matrix by rows and 2 × 2 matrix with labels and fill the matrix by columns.
8) Write a R program to combine three arrays so that the first row of the first array is followed by the first row of the second array and then first row of the third array.

9) Write a R program to create a two-dimensional 5x3 array of sequence of even integers greater than 50.
10) Write a R program to create an array using four given columns, three given rows, and two given tables and display the content of the array.
11) Write a R program to create an empty data frame.
12) Write a R program to create a data frame from four given vectors.
13) Write a R program to create a data frame using two given vectors and display the duplicated elements and unique rows of the said data frame.
14) Write a R program to save the information of a data frame in a file and display the information of the file.
15) Write a R program to create a matrix from a list of given vectors.
16) Write a R program to concatenate two given matrices of same column but different rows.
17) Write a R program to find row and column index of maximum and minimum value in agiven matrix.
18) Write a R program to append value to a given empty vector.
19) Write a R program to multiply two vectors of integers type and length 3.
20) Write a R program to find Sum, Mean and Product of a Vector, ignore element like NAor NaN.
21) Write a R program to list containing a vector, a matrix and a list and give names to theelements in the list.
22) Write a R program to create a list containing a vector, a matrix and a list and give namesto the elements in the list. Access the first and second element of the list.
23) Write a R program to create a list containing a vector, a matrix and a list and remove thesecond element.
24) Write a R program to select second element of a given nested list.
25) Write a R program to merge two given lists into one list.
26) Write a R program to create a list named s containing sequence of 15 capital letters,starting from ‘E’.
27) Write a R program to assign new names "a", "b" and "c" to the elements of a given list.
28) Write a R program to find the levels of factor of a given vector.
29) Write a R program to create an ordered factor from data consisting of the names of months.
30) Write a R program to concatenate two given factor in a single factor.

EXPERIMENT NO - 1	
Experiment	Write a R program to take input from the user (name and age) and display the values. Also print the version of R installation

Program	#reading data from user and printing
	name<-readline(prompt = "Enter your name :: ")
	age<-readline(prompt = "Enter your age ::")
	age<-as.integer(age)
	cat("\n\nyour name :: ",name)
	cat("\nyour age ::",age)
	#R version details
	cat("\n\n==========PRINTING DETAILS OF R VERION INSTALLED ==========")
	print(version)
	ver=version[['version.string']]
	cat("\n\n==========PRINTING ONLY R VERION INSTALLED ==========")
	cat("\n\nPresent version installed is ",ver)

Output	> Enter your name :: Chaitanya Enter your age ::19 your name :: Chaitanya your age :: 19 ==========PRINTING DETAILS OF R VERION INSTALLED ========== platform x86_64-w64-mingw32 arch x86_64 os mingw32 system x86_64, mingw32 status major 4 minor 1.2 year 2021 month 11 day 01 svn rev 81115 language R version.string R version 4.1.2 (2021-11-01) nickname Bird Hippie ==========PRINTING ONLY R VERION INSTALLED ========== Present version installed is R version 4.1.2 (2021-11-01)

EXPERIMENT NO - 2	
Experiment	Write a R program to get the details of the objects in memory

Program	#creating objects in R
	x<-"Sunil"
	y<-23
	z<-23.6
	lis<-list(c(1:3))
	#printing names of the objects
	print(ls())

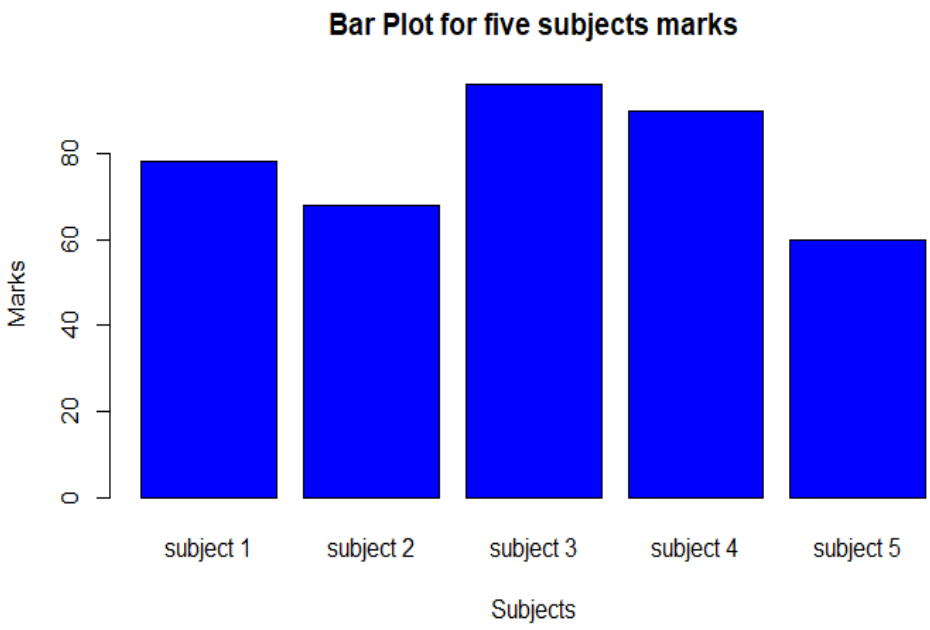
Output	> [1] "lis" "x" "y" "z"
EXPERIMENT NO – 3	
Experiment	Write a R program to create a sequence of numbers from 20 to 50 and find the mean of numbers from 20 to 60 and sum of numbers from 51 to 91

Program	#creating a sequence of numbers from 20 to 50
	cat("sequence of numbers from 20 to 50 :: \n",20:50)
	#creating a vector consists of sequence of numbers from 20 to 60
	v1<-c(20:60)
	#creating a vector consists of sequence of numbers from 51 to 91
	v2<-c(51:91)
	#finding sum of numbers from 51 to 91
	cat("\nsequence of numbers from 51 to 91 :: \n",v2)
	cat("\nsum of numbers from 51 to 91 is :: ",sum(v2))
	#finding mean of numbers from 20 to 60
	cat("\nsequence of numbers from 20 to 60 :: \n",v1)
	cat("\nsum of numbers from 20 to 60 is :: ",sum(v1))
	cat("\ntotal number of values are :: ",length(v1))
	m=sum(v1)/length(v1)
	cat("\nmean of numbers from 20 to 60 is :: ",m)

Output	> sequence of numbers from 20 to 50 :: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 sequence of numbers from 51 to 91 :: 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 sum of numbers from 51 to 91 is :: 2911 sequence of numbers from 20 to 60 :: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

	sum of numbers from 51 to 91 is :: 1640 total number of values are :: 41 mean of numbers from 51 to 91 is :: 40
EXPERIMENT NO – 4	
Experiment	Write a R program to create a simple bar plot of five subjects marks

Program	#plotting simple bar chart
	marks<-c(78,68,96,90,60)
	names(marks)<-c("subject 1","subject 2","subject 3","subject 4","subject 5")
	barplot(marks,xlab = "Subjects",ylab = "Marks",main = "Bar Plot for five subjects marks",col = "blue")

Output	

EXPERIMENT NO – 5	
Experiment	Write a R program to get the unique elements of a given string and unique numbers of vector

Program	#creating vector
	v<-c("sunil",23,12,12,34,"sunil","chaitanya","CSE","CSE",23,34,12,34,"sunil")
	cat("\nvector :: ",v)
	cat("\nunique values of the above vector are :: \n",unique(v))

Output	>

	vector :: sunil 23 12 12 34 sunil chaitanya CSE CSE 23 34 12 34 sunil unique values of the above vector are :: sunil 23 12 34 chaitanya CSE >

EXPERIMENT NO - 6	
Experiment	Write a R program to create three vectors a,b,c with 3 integers. Combine the three vectors to become a 3×3 matrix where each column represents a vector. Print the content of the matrix

Program	#creating vectors
	a<-c(12,23,34)
	b<-c(45,56,67)
	c<-c(78,89,90)
	#printing vectors
	cat("\nvector - 1 :: ",a)
	cat("\nvector - 2 :: ",b)
	cat("\nvector - 3 :: ",c)
	#creating matrix coloumns as vectors and printing
	cat("\n\n required matrix is :: \n")
	mat<-matrix(c(a,b,c),nrow=3,byrow = FALSE)
	print(mat)

Output	vector - 1 :: 12 23 34 vector - 2 :: 45 56 67 vector - 3 :: 78 89 90 required matrix is :: [,1] [,2] [,3] [1,] 12 45 78 [2,] 23 56 89 [3,] 34 67 90 >

EXPERIMENT NO - 7	
Experiment	Write a R program to create a 5 x 4 matrix , 3 x 3 matrix with labels and fill the matrix by rows and 2 × 2 matrix with labels and fill the matrix by columns

Program	#creating matrix of order 5x4 with row and column name
	m1<-matrix(c(1:20),nrow =5 ,byrow = TRUE)
	cat("\n\nMatrix with 5 Rows and 4 Columns without names:: \n")
	print(m1)
	rownames(m1)<-c("row1","row2","row3","row4","row5")
	colnames(m1)<-c("col1","col2","col3","col4")
	cat("\nMatrix with 5 Rows and 4 Columns with names:: \n")
	print(m1)
	#creating matrix of order 3x3 with row and column name
	m2<-matrix(c(1:9),nrow =3 ,byrow = TRUE)
	cat("\n\nMatrix with 3 Rows and 3 Columns without names :: \n")
	print(m2)
	rownames(m2)<-c("row1","row2","row3")
	colnames(m2)<-c("col1","col2","col3")
	cat("\nMatrix with 3 Rows and 3 Columns with names :: \n")
	print(m2)
	#creating matrix of order 2x2 with row and column name
	m3<-matrix(c(1:4),nrow =2 ,byrow = FALSE)
	cat("\n\nMatrix with 2 Rows and 2 Columns without names :: \n")
	print(m3)
	rownames(m3)<-c("row1","row2")
	colnames(m3)<-c("col1","col2")
	cat("\nMatrix with 2 Rows and 2 Columns with names :: \n")
	print(m3)

Output	Matrix with 3 Rows and 3 Columns with names :: col1 col2 col3 row1 1 2 3 row2 4 5 6 row3 7 8 9 Matrix with 2 Rows and 2 Columns without names :: [,1] [,2]

	[1,] 1 3 [2,] 2 4 Matrix with 2 Rows and 2 Columns with names :: col1 col2 row1 1 3 row2 2 4 >
EXPERIMENT NO - 8	
Experiment	Write a R program to combine three arrays so that the first row of the first array is followed by the first row of the second array and then first row of the third array
Program	num1 = rbind(rep("A",3), rep("B",3), rep("C",3)) print("num1") print(num1) num2 = rbind(rep("P",3), rep("Q",3), rep("R",3)) print("num2") print(num2) num3 = rbind(rep("X",3), rep("Y",3), rep("Z",3)) print("num3") print(num3) a = matrix(t(cbind(num1,num2,num3)),ncol=3, byrow=T) print("Combine three arrays, taking one row from each one by one:") print(a)
Output	> [1] "num1" [,1] [,2] [,3] [1,] "A" "A" "A" [2,] "B" "B" "B" [3,] "C" "C" "C" [1] "num2" [,1] [,2] [,3] [1,] "P" "P" "P" [2,] "Q" "Q" "Q" [3,] "R" "R" "R" [1] "num3" [,1] [,2] [,3] [1,] "X" "X" "X" [2,] "Y" "Y" "Y" [3,] "Z" "Z" "Z" [1] "Combine three arrays, taking one row from each one by one:" [,1] [,2] [,3] [1,] "A" "A" "A" [2,] "P" "P" "P"

	[3,] "X" "X" "X" [4,] "B" "B" "B" [5,] "Q" "Q" "Q" [6,] "Y" "Y" "Y" [7,] "C" "C" "C" [8,] "R" "R" "R" [9,] "Z" "Z" "Z" >
EXPERIMENT NO - 9	
Experiment	Write a R program to create a two-dimensional 5x3 array of sequence of even integers greater than 50
Program	a <- array(seq(from = 50, length.out = 15, by = 2), c(5, 3)) print("Content of the array:") print("5×3 array of sequence of even integers greater than 50:") print(a)
Output	> [1] "Content of the array:" [1] "5×3 array of sequence of even integers greater than 50:" [,1] [,2] [,3] [1,] 50 60 70 [2,] 52 62 72 [3,] 54 64 74 [4,] 56 66 76 [5,] 58 68 78 >

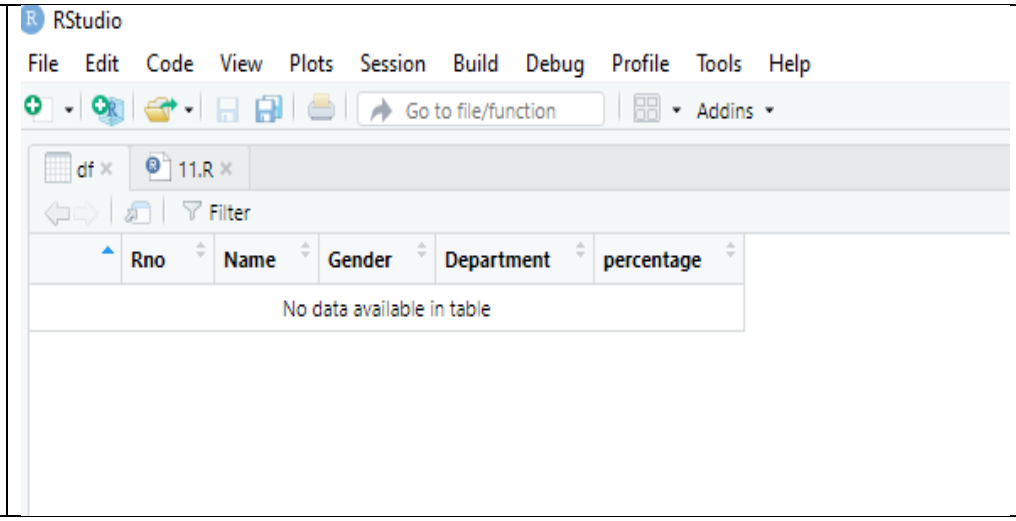
EXPERIMENT NO - 10	
Experiment	Write a R program to create an array using four given columns, three given rows, and two given tables and display the content of the array
Program	> array1 = array(1:30, dim=c(3,5,2)) print(array1) >
Output	> , , 1 [,1] [,2] [,3] [,4] [,5] [1,] 1 4 7 10 13 [2,] 2 5 8 11 14 [3,] 3 6 9 12 15

	, , 2 [,1] [,2] [,3] [,4] [,5] [1,] 16 19 22 25 28 [2,] 17 20 23 26 29 [3,] 18 21 24 27 30 >

EXPERIMENT NO - 11	
Experiment	Write a R program to create an empty data frame

Program	#creating empty data frame
	df = data.frame(Rno=integer(),
	Name=character(),
	Gender=factor(),
	Department=factor(),
	percentage=double()
	)
	print("Structure of the empty dataframe:")
	print(str(df))

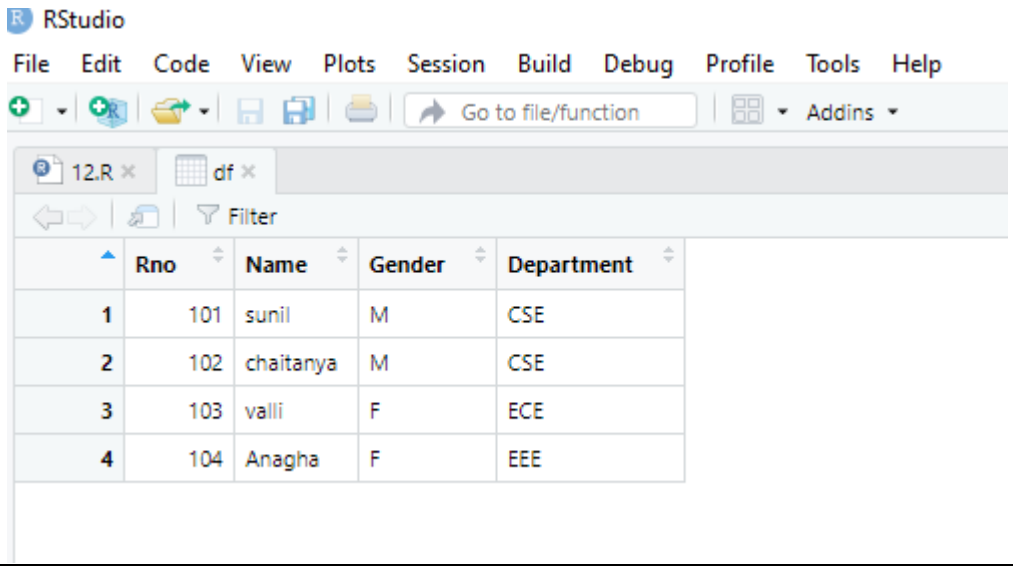
Output	> [1] "Structure of the empty dataframe:" 'data.frame': 0 obs. of 5 variables: $ Rno : int $ Name : chr $ Gender : Factor w/ 0 levels: $ Department: Factor w/ 0 levels: $ percentage: num NULL



EXPERIMENT NO - 12	
Experiment	Write a R program to create a data frame from four given vectors

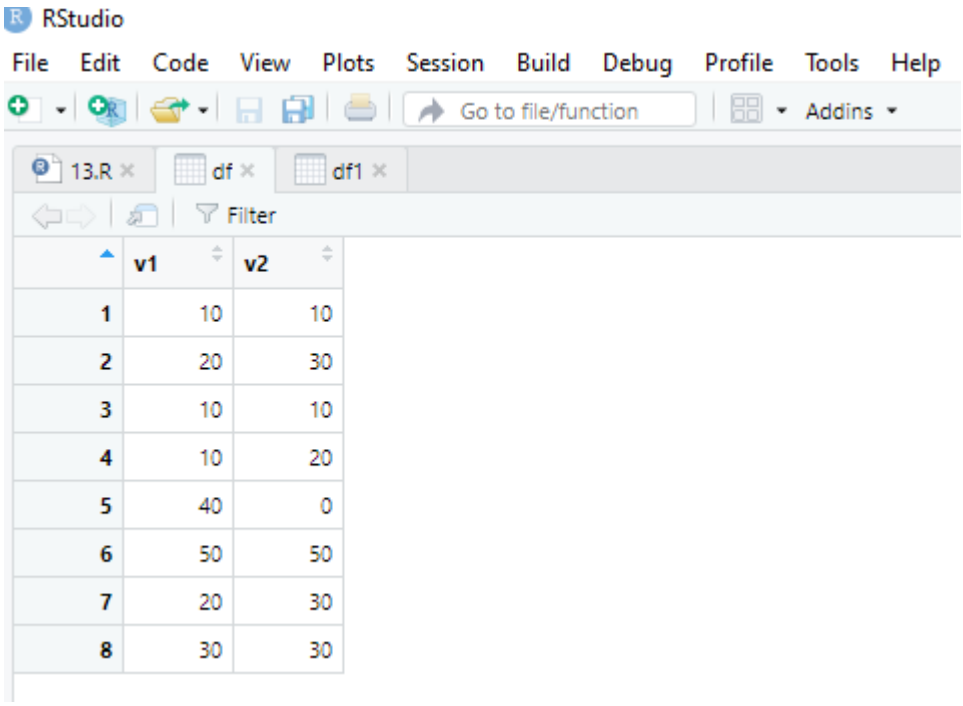
Program	#creating data frame with for vectors
	Rno<-c(101,102,103,104)
	Name<-c("sunil","chaitanya","valli","Anagha")
	Gender<-c("M","M","F","F")
	Department<-c("CSE","CSE","ECE","EEE")
	cat("\nVector -1:: ",Rno)
	cat("\nVector -2:: ",Name)
	cat("\nVector -3:: ",Gender)
	cat("\nVector -4:: ",Department)
	cat("\n\nDTA FRAME WITH ABOVE VECTORS")
	df<-data.frame(Rno,Name,Gender,Department)
	print(df)

Output	> Vector -1:: 101 102 103 104 Vector -2:: sunil chaitanya valli Anagha Vector -3:: M M F F Vector -4:: CSE CSE ECE EEE DTA FRAME WITH ABOVE VECTORS Rno Name Gender Department

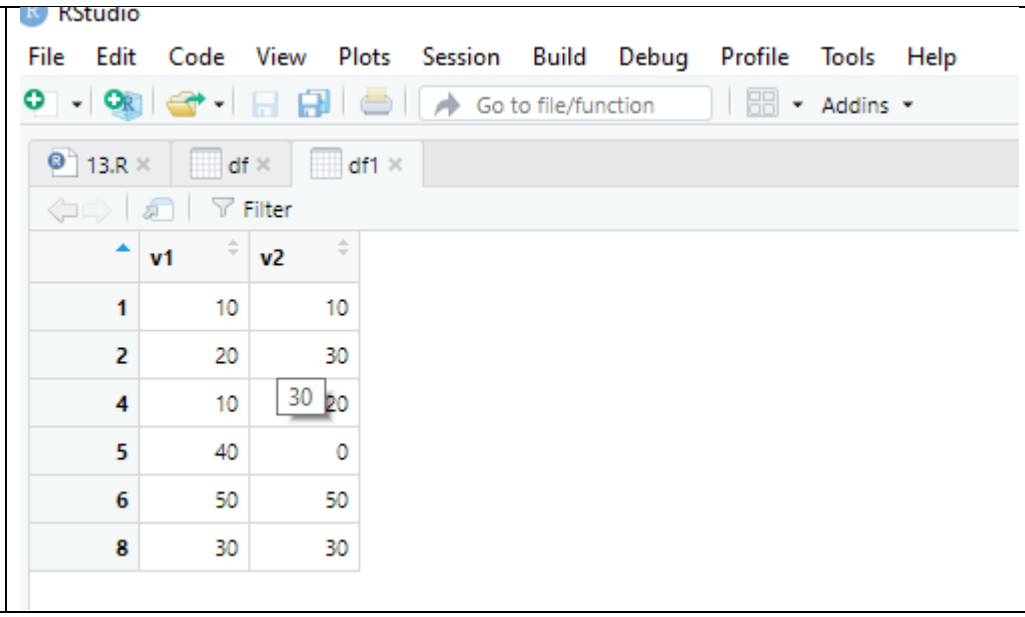
	1 101 sunil M CSE 2 102 chaitanya M CSE 3 103 valli F ECE 4 104 Anagha F EEE > 

EXPERIMENT NO - 13	
Experiment	Write a R program to create a data frame using two given vectors and display the duplicated elements and unique rows of the said data frame
Program	v1 = c(10,20,10,10,40,50,20,30) v2 = c(10,30,10,20,0,50,30,30) print("Original data frame:") df = data.frame(v1,v2) print(df) print("Duplicate elements of the said data frame:") print(duplicated(df)) print("Unique rows of the said data frame:") df1<-unique(df) print(df1)
Output	> [1] "Original data frame:" v1 v2 1 10 10 2 20 30 3 10 10

```
4 10 20
5 40  0
6 50 50
7 20 30
8 30 30
[1] "Duplicate elements of the said data frame:"
[1] FALSE FALSE  TRUE FALSE FALSE FALSE  TRUE FALSE
[1] "Unique rows of the said data frame:"
  v1 v2
1 10 10
2 20 30
4 10 20
5 40  0
6 50 50
8 30 30
>
```



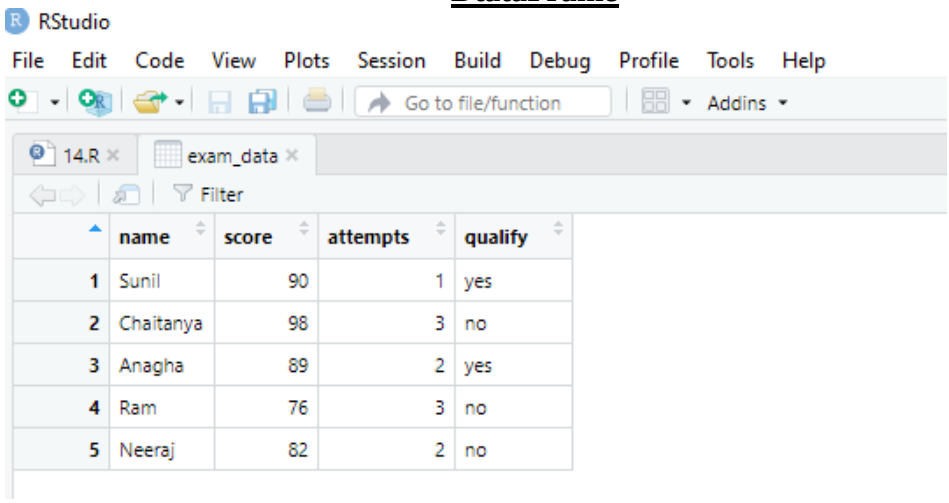
	v1	v2
1	10	10
2	20	30
3	10	10
4	10	20
5	40	0
6	50	50
7	20	30
8	30	30



EXPERIMENT NO - 14	
Experiment	Write a R program to save the information of a data frame in a file and display the information of the file
Program	exam_data = data.frame(name = c('Sunil', 'Chaitanya', 'Anagha', 'Ram', 'Neeraj'), score = c(90,98,89,76,82), attempts = c(1, 3, 2, 3, 2), qualify = c('yes', 'no', 'yes', 'no', 'no')) print("Original dataframe:") print(exam_data) save(exam_data,file="C:/Users/chaitanya/Desktop/R LAB MANUAL/R Lab programms/da.Rdata") write.csv2(exam_data,file="C:/Users/chaitanya/Desktop/R LAB MANUAL/R Lab programms/exam_data.csv") file.info("C:/Users/chaitanya/Desktop/R LAB MANUAL/R Lab programms/exam_data.csv")
Output	> source("C:/Users/chaitanya/Desktop/R LAB MANUAL/R Lab programms/14.R")

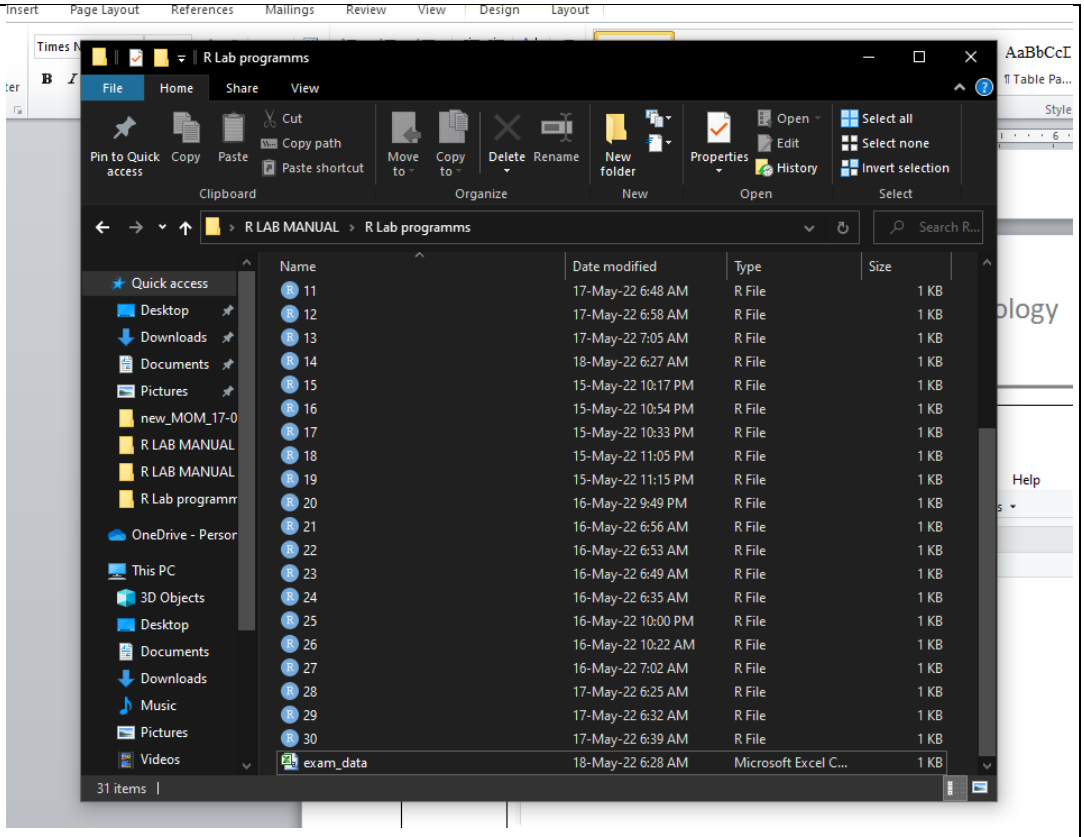
```
[1] "Original dataframe:"
      name score attempts qualify
1    Sunil    90        1     yes
2 Chaitanya   98        3      no
3   Anagha    89        2     yes
4      Ram    76        3      no
5   Neeraj    82        2      no
>
```

DtataFrame

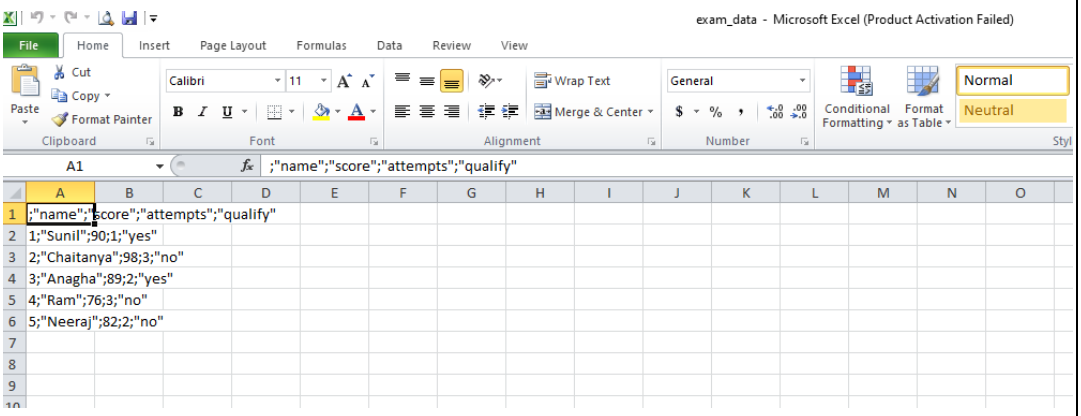


	name	score	attempts	qualify
1	Sunil	90	1	yes
2	Chaitanya	98	3	no
3	Anagha	89	2	yes
4	Ram	76	3	no
5	Neeraj	82	2	no

File created in Destination Folder



Contents of the file (CSV file opend through Excel)



EXPERIMENT NO - 15

Experiment	Write a R program to create a matrix from a list of given vectors

Program	#creating vectors
	a<-c(12,23,34)
	b<-c(45,56,67)
	c<-c(78,89,90)
	#printing vectors
	cat("\nvector - 1 :: ",a)
	cat("\nvector - 2 :: ",b)
	cat("\nvector - 3 :: ",c)
	lis<-list(a,b,c)
	cat("\n list of vectors is :: \n")
	print(lis)
	#creating matrix coloumns as vectors and printing
	cat("\n\n required matrix is :: \n")
	mat<-matrix(unlist(lis),nrow=3,byrow = FALSE)
	print(mat)

Output	> vector - 1 :: 12 23 34 vector - 2 :: 45 56 67 vector - 3 :: 78 89 90 list of vectors is :: [[1]] [1] 12 23 34 [[2]] [1] 45 56 67 [[3]] [1] 78 89 90 required matrix is :: [,1] [,2] [,3] [1,] 12 45 78 [2,] 23 56 89 [3,] 34 67 90 >

EXPERIMENT NO - 16

Experiment	Write a R program to concatenate two given matrices of same column but different rows

Program	#creating two matrices of same columns and different rows
	m1<-matrix(c(12,23,34,45,56,78,87,34,32,58,89,14,75,89,36),ncol = 3)
	m2<-matrix(c("A","B","C","S","U","N"),ncol=3)
	#printing matrices and their dimensions
	cat("\n\nMatrix - 1:: \n")
	print(m1)
	cat("\n\nMatrix - 2:: \n")
	print(m2)
	cat("\nDimension of matrix -1 (row,col) :: ",dim(m1))
	cat("\nDimension of matrix -2 (row,col) :: ",dim(m2))
	#combining matrices
	m<-rbind(m1,m2)
	#printing concatenated matrix and it's dimension
	cat("\n\n Resultant Matrix :: \n")
	print(m)
	cat("\nDimension (row,col) :: ",dim(m))

Output	>Matrix - 1:: [,1] [,2] [,3] [1,] 12 78 89 [2,] 23 87 14 [3,] 34 34 75 [4,] 45 32 89 [5,] 56 58 36 Matrix - 2:: [,1] [,2] [,3] [1,] "A" "C" "U" [2,] "B" "S" "N" Dimension of matrix -1 (row,col) :: 5 3 Dimension of matrix -2 (row,col) :: 2 3 Resultant Matrix :: [,1] [,2] [,3] [1,] "12" "78" "89" [2,] "23" "87" "14" [3,] "34" "34" "75" [4,] "45" "32" "89" [5,] "56" "58" "36" [6,] "A" "C" "U" [7,] "B" "S" "N" Dimension (row,col) :: 7 3 >

EXPERIMENT NO - 17	
Experiment	Write a R program to find row and column index of maximum and minimum value in agiven matrix

Program	#creating matrix
	cat("\n\n consider the matrix :: \n")
	m<-matrix(c(23,12,34,45,56,67,78,90,89),nrow=3,byrow = TRUE)
	print(m)
	#minimum value of the matrix
	mi<-min(m)
	#maximum value of the matrix
	ma<-max(m)
	cat("\n Minimum value of the matrix :: ",mi)
	cat("\n Maximum value of the matrix :: ",ma)
	mi_ind<-which(m==mi,arr.ind = TRUE)
	ma_ind<-which(m==ma,arr.ind = TRUE)
	cat("\nIndex of minimum value (row,col) :: ",mi_ind)
	cat("\nIndex of maximum value (row,col) :: ",ma_ind)

Output	> consider the matrix :: [,1] [,2] [,3] [1,] 23 12 34 [2,] 45 56 67 [3,] 78 90 89 Minimum value of the matrix :: 12 Maximum value of the matrix :: 90 Index of minimum value (row,col) :: 1 2 Index of maximum value (row,col) :: 3 2 >

EXPERIMENT NO - 18	
Experiment	Write a R program to append value to a given empty vector

Program	#creating empty vector
	v<-vector()
	cat("\nEmpty vector :: ",v)
	cat("\nlength of empty vector :: ",length(v))
	#ading element
	v[1]="sunil"
	cat("\n\nStatus of vector :: ",v)
	cat("\nlength of vector :: ",length(v))
	#appending elemet
	v<-append(v,"Chaitanya",after = length(v))
	cat("\n\nStatus of vector :: ",v)
	cat("\nlength of vector :: ",length(v))
	v<-append(v,c("CSE","B.Tech"),after = length(v))
	cat("\n\nStatus of vector :: ",v)
	cat("\nlength of vector :: ",length(v))

Output	> Empty vector :: length of empty vector :: 0 Status of vector :: sunil length of vector :: 1 Status of vector :: sunil Chaitanya length of vector :: 2 Status of vector :: sunil Chaitanya CSE B.Tech length of vector :: 4 >

EXPERIMENT NO - 19	
Experiment	Write a R program to multiply two vectors of integers type and length 3

Program	#creating vectors of length 3 with integers
	v1<-c(1,2,3)
	v2<-c(10,20,30)
	cat("\nVector-1 (v1):: ",v1)
	cat("\nVector-2 (v2):: ",v2)
	cat("\nmultiplication of v1 and v2 (v1 * v2):: ",v1*v2)

Output	> Vector-1 (v1):: 1 2 3 Vector-2 (v2):: 10 20 30 multiplication of v1 and v2 (v1 * v2):: 10 40 90

	>

EXPERIMENT NO - 20	
Experiment	Write a R program to find Sum, Mean and Product of elements of a Vector, ignore element like NAor NaN

Program	v<-c(10,23,34,NaN,NA,5,10)
	su=0
	pr=1
	count=1
	for(i in v){
	  if(is.na(i) | is.na(i)){
	  next
	
	  }else{
	
	  su=su+i
	  pr=pr*i
	  count=count+1
	  }
	}
	m=su/6
	print("Sum, Product, Mean of a vector after neglecting both NA and NaN")
	cat("\nVector :: ",v)
	cat("\nsum :: ",su)
	cat("\nProduct :: ",pr)
	cat("\nMean :: ",m)

Output	> [1] "Sum, Product, Mean of a vector after neglecting both NA and NaN" Vector :: 10 23 34 NaN NA 5 10 sum :: 82 Product :: 391000 Mean :: 13.66667 >

EXPERIMENT NO - 21	
Experiment	Write a R program to list containing a vector, a matrix and a list and give names to theelements in the list
Program	cat("\n List containing vector matrix and list :: \n") lis_final<-list(vect=c(1,2,3,4),matr=matrix(c(1:12),nrow = 4),lis=list(v)) print(lis_final) cat("\n Names of the list :: ",names(lis_final))
Output	>\ List containing vector matrix and list :: $vect [1] 1 2 3 4 $matr [,1] [,2] [,3] [1,] 1 5 9 [2,] 2 6 10 [3,] 3 7 11 [4,] 4 8 12 $lis $lis[[1]] [1] 1 2 3 4 Names of the list :: vect matr lis >

EXPERIMENT NO - 22	
Experiment	Write a R program to create a list containing a vector, a matrix and a list and give namesto the elements in the list. Access the first and second element of the list
Program	cat("\n List containing vector matrix and list :: \n") lis_final<-list(v=c(1,2,3,4),m=matrix(c(1:12),nrow = 4),lis=list(v)) print(lis_final) cat("\n First element of the list :: ") print(lis_final[1]) cat("\n Second element of the list :: ") print(lis_final[2])
Output	>\ List containing vector matrix and list :: $v [1] 1 2 3 4 $m [,1] [,2] [,3] [1,] 1 5 9 [2,] 2 6 10 [3,] 3 7 11 [4,] 4 8 12 $lis $lis[[1]] [1] 1 2 3 4 First element of the list :: $v [1] 1 2 3 4 Second element of the list :: $m [,1] [,2] [,3] [1,] 1 5 9 [2,] 2 6 10 [3,] 3 7 11 [4,] 4 8 12

	>

EXPERIMENT NO - 23	
Experiment	Write a R program to create a list containing a vector, a matrix and a list and remove thesecond element
Program	cat("\n List containing vector matrix and list :: \n") lis_final<-list(v=c(1,2,3,4),m=matrix(c(1:12),nrow = 4),lis=list(v)) print(lis_final) cat("\n Removing second element in nested list :: \n") lis2<-lis_final[-2] cat("\n List after removal of second element :: \n") print(lis2)
Output	> List containing vector matrix and list :: $v [1] 1 2 3 4 $m [,1] [,2] [,3] [1,] 1 5 9 [2,] 2 6 10 [3,] 3 7 11 [4,] 4 8 12 $lis $lis[[1]] [1] 1 2 3 4 Removing second element in nested list :: List after removal of second element :: $v [1] 1 2 3 4 $lis $lis[[1]] [1] 1 2 3 4

	>

EXPERIMENT NO - 24	
Experiment	Write a R program to select second element of a given nested list

Program	#creating lists
	lis1<-list(c("sunil","chaitanya"))
	lis2<-list(c("101","102"))
	lis3<-list(c("CSE","CSE"))
	#creating nested list
	lis=list(lis1,lis2,lis3)
	#displaying lists
	cat("\nList-1 :: \n")
	print(lis1)
	cat("\nList-2 :: \n")
	print(lis2)
	cat("\nList-3 :: \n")
	print(lis3)
	cat("\nNested List :: \n")
	print(lis) #printing second element of the nested list
	cat("\n Second element of Nested List :: \n")
	print(lis[2])

Output	source("C:/Users/chaitanya/Desktop/R Lab programms/24.R") List-1 :: [[1]] [1] "sunil" "chaitanya" List-2 :: [[1]] [1] "101" "102" List-3 :: [[1]] [1] "CSE" "CSE" Nested List :: [[1]] [[1]][[1]] [1] "sunil" "chaitanya" [[2]] [[2]][[1]]

	[1] "101" "102" [[3]] [[3]][[1]] [1] "CSE" "CSE" Second element of Nested List :: [[1]] [[1]][[1]] [1] "101" "102"
EXPERIMENT NO - 25	
Experiment	Write a R program to merge two given lists into one list

Program	#creating lists
	lis1<-list(c(1:5))
	lis2<-list(c("sunil","chaitamya"))
	#merging lists
	lis3<-c(lis1,lis2)
	lis4<-append(lis2,lis1)
	cat("\n List-1 :: \n")
	print(lis1)
	cat("\n List-2 :: \n")
	print(lis2)
	cat("\n Combining List-1 and List-2 :: \n")
	print(lis3)
	cat("\n Combining List-2 and List-4 :: \n")
	print(lis4)

Output	> List-1 :: [[1]] [1] 1 2 3 4 5 List-2 :: [[1]] [1] "sunil" "chaitamya" Combining List-1 and List-2 :: [[1]] [1] 1 2 3 4 5 [[2]] [1] "sunil" "chaitamya" Combining List-2 and List-4 :: [[1]]

	[1] "sunil" "chaitamya" [[2]] [1] 1 2 3 4 5 >

EXPERIMENT NO - 26	
Experiment	Write a R program to create a list named s containing sequence of 15 capital letters,starting from 'E'

Program	#printing sequence of Alphabets A to Z
	cat("Sequence of upper case alphaberts :: \n",LETTERS)
	print(LETTERS)
	s<-LETTERS[seq(5,19)]
	cat("\n List containing 15 sequence of Alphabers starts at E ::\n")
	print(s)
	cat("\n number of elements in above list are :: ",length(unlist(s)))

Output	> Sequence of upper case alphaberts :: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K" "L" "M" "N" "O" "P" "Q" "R" "S" "T" "U" [22] "V" "W" "X" "Y" "Z" List containing 15 sequence of Alphabers starts at E :: [1] "E" "F" "G" "H" "I" "J" "K" "L" "M" "N" "O" "P" "Q" "R" "S" number of elements in above list are :: 15 >

EXPERIMENT NO - 27	
Experiment	Write a R program to assign new names "a", "b" and "c" to the elements of a given list
Program	cat("\n List containing vector matrix and list :: \n") lis_final<-list(vect=c(1,2,3,4),matr=matrix(c(1:12),nrow = 4),lis=list(v)) print(lis_final) cat("\n Names of the list :: ",names(lis_final)) names(lis_final)<-c("a","b","c") print(lis_final) cat("\n New Names of the list :: ",names(lis_final))

| **Output** | >
List containing vector matrix and list ::
$vect
[1] 1 2 3 4

$matr
[,1] [,2] [,3]
[1,] 1 5 9
[2,] 2 6 10
[3,] 3 7 11
[4,] 4 8 12

$lis
$lis[[1]]
[1] 1 2 3 4

Names of the list :: vect matr lis$a
[1] 1 2 3 4

$b
[,1] [,2] [,3]
[1,] 1 5 9
[2,] 2 6 10
[3,] 3 7 11
[4,] 4 8 12

$c
$c[[1]]
[1] 1 2 3 4

New Names of the list :: a b c
> |
|---|---|

EXPERIMENT NO - 28	
Experiment	Write a R program to find the levels of factor of a given vector

Program	#creating a vector
	x<-c("CSE","sunil","IT","CSE","ACET","ACET","R","CSE")
	#converting it into factor
	f<-factor(x)
	cat("\n factor is :: ")
	print(f)

	cat("\n levels of the facor :: ") print(levels(f))
Output	> factor is :: [1] CSE sunil IT CSE ACET ACET R CSE Levels: ACET CSE IT R sunil levels of the facor :: [1] "ACET" "CSE" "IT" "R" "sunil" >

EXPERIMENT NO - 29	
Experiment	Write a R program to create an ordered factor from data consisting of the names of months
Program	month_vector = c("March","April","January","November","January", "September","October","September","November","August","February", "January","November","November","February","May","August","February", "July","December","August","August","September","November","September", "February","April") print("Original vector ::") print(month_vector) f = factor(month_vector) cat("\n\nOrdered factors of above vector ::\n") print(f) cat("\n\nLevels of the factor ::\n") print(levels(f)) cat("\n\ntable of Levels of the factor ::\n") print(table(f))
Output	> [1] "Original vector ::" [1] "March" "April" "January" "November" "January" "September" "October" "September" [9] "November" "August" "February" "January" "November" "November" "February" "May" [17] "August" "February" "July" "December" "August" "August" "September" "November" [25] "September" "February" "April" Ordered factors of above vector :: [1] March April January November January September October

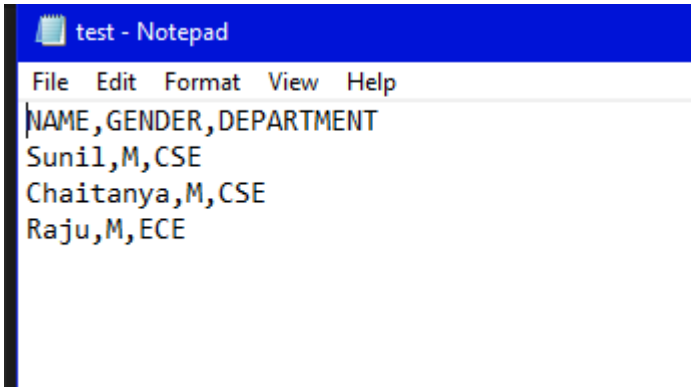
	September November [10] August February January November November February May August February [19] July December August August September November September February April Levels: April August December February January July March May November October September Levels of the factor :: [1] "April" "August" "December" "February" "January" "July" "March" "May" [9] "November" "October" "September" table of Levels of the factor :: f April August December February January July March May November October 2 4 1 4 3 1 1 1 5 1 September 4 >

EXPERIMENT NO - 30	
Experiment	Write a R program to concatenate two given factor in a single factor
Program	f1 <- factor(c("sunil","chaitanya","valli","CSE","ACET")) f2 <- factor(c("Python Programming","R Programming","Java Programming")) cat("\n\nOriginal factors::") cat("\n\nFactor -1 \n") print(f1) cat("\n\nFactor -2 \n") print(f2) f = factor(c(levels(f1)[f1], levels(f2)[f2])) cat("\n\nAfter concatenate factor resultant factor is :: \n") print(f)
Output	> Original factors:: Factor -1 [1] sunil chaitanya valli CSE ACET Levels: ACET chaitanya CSE sunil valli

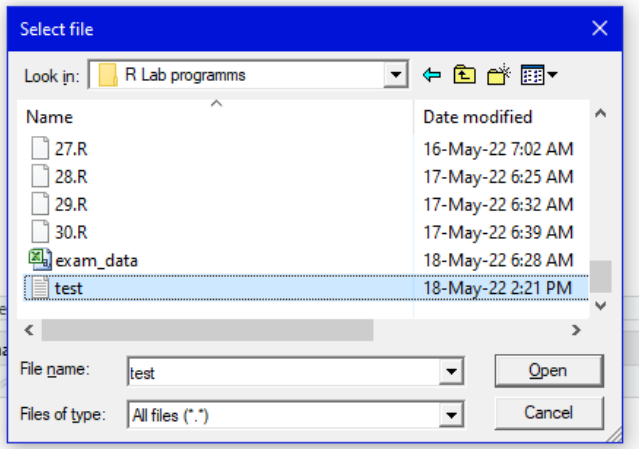
	Factor -2 [1] Python Programming R Programming Java Programming Levels: Java Programming Python Programming R Programming After concatenate factor resultant factor is :: [1] sunil chaitanya valli CSE ACET [6] Python Programming R Programming Java Programming Levels: ACET chaitanya CSE Java Programming Python Programming R Programming sunil valli >

EXPERIMENT NO - 31	
Experiment	Write a R program to read data from text file

Program	#reading data on text file
	data<-read.table(file.choose(),header=TRUE,sep = ",")
	print(data)

Output	Create a test.txt file  Select test.txt

```
1  #reading data on text file
2  data<-read.table(file.choose(),header=TRUE,sep = ",")
3  print(data)
```



OUTPUT

```
>
      NAME GENDER DEPARTMENT
1     Sunil      M        CSE
2 Chaitanya      M        CSE
3      Raju      M        ECE
>
```

31.R × data ×

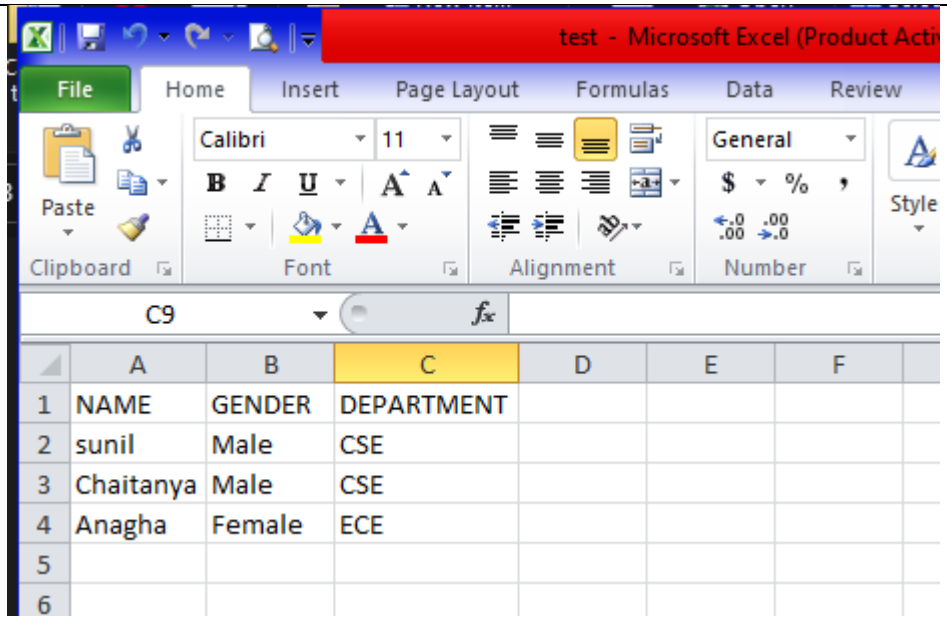
Filter

	NAME	GENDER	DEPARTMENT
1	Sunil	M	CSE
2	Chaitanya	M	CSE
3	Raju	M	ECE

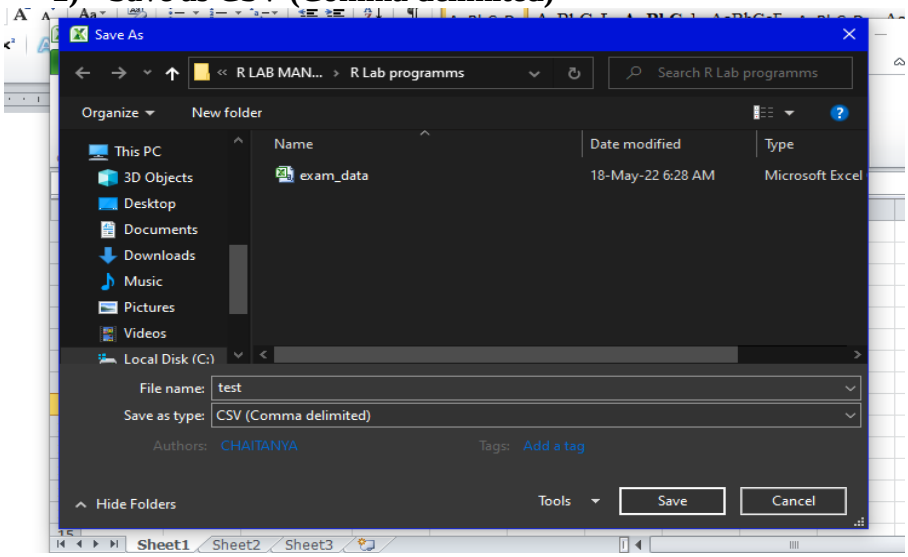
EXPERIMENT NO - 32	
Experiment	Write a R program to read data from CSV file

Program	#reading data on text file
	data<-read.csv2(file.choose(),header=TRUE,sep = ",")
	print(data)

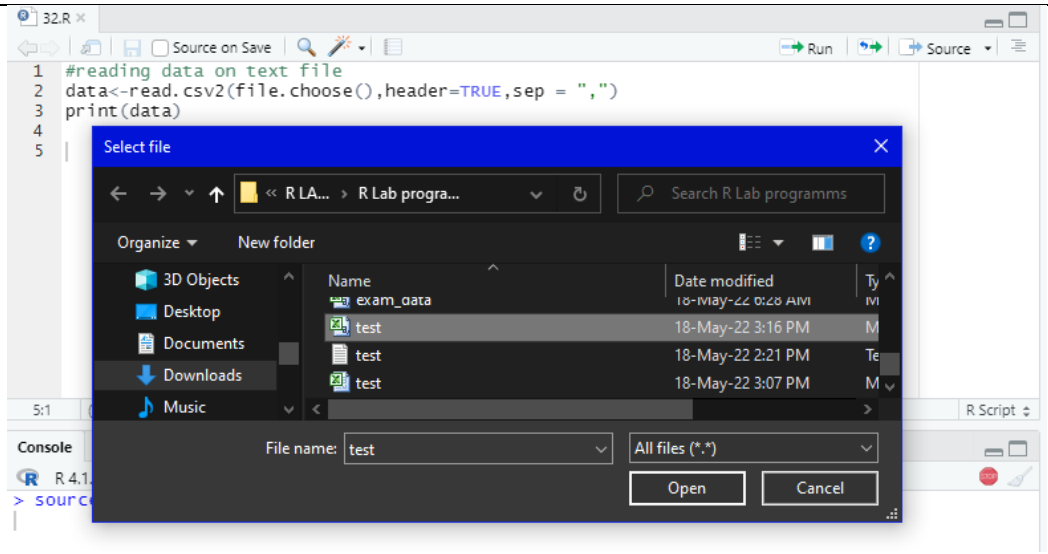
Output	**CREATING CSV FILE** **1) Open excel file enter data**



2) Save as CSV (Comma delimited)



3) Run the program and read above file



>

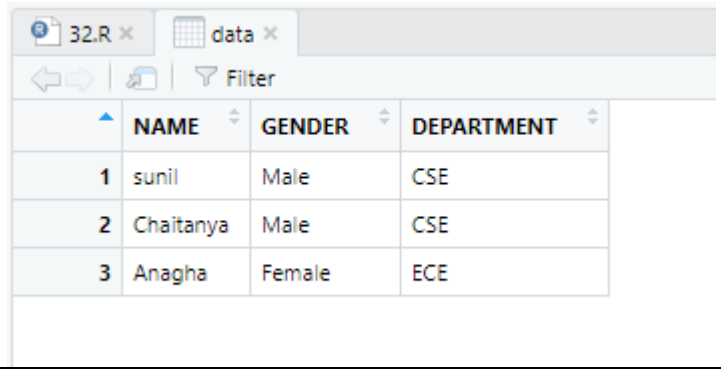
NAME GENDER DEPARTMENT

1 sunil Male CSE

2 Chaitanya Male CSE

3 Anagha Female ECE

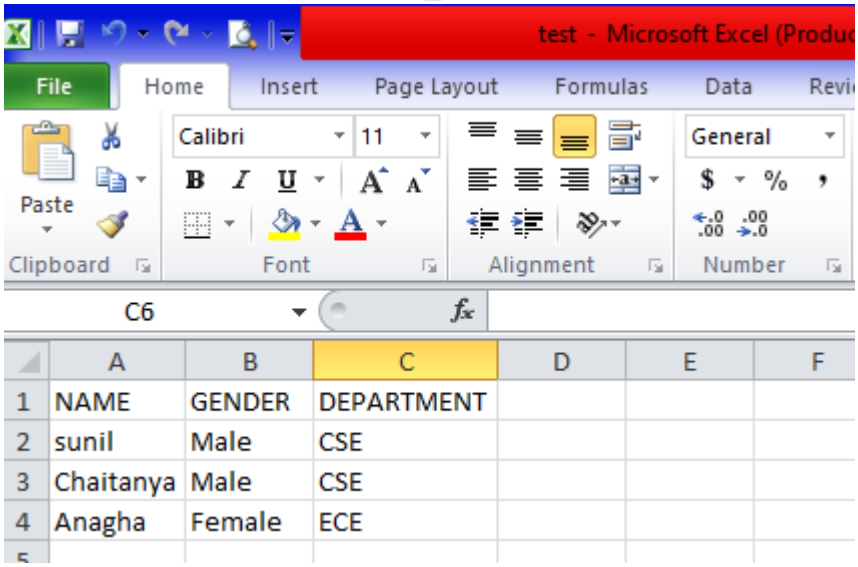
>

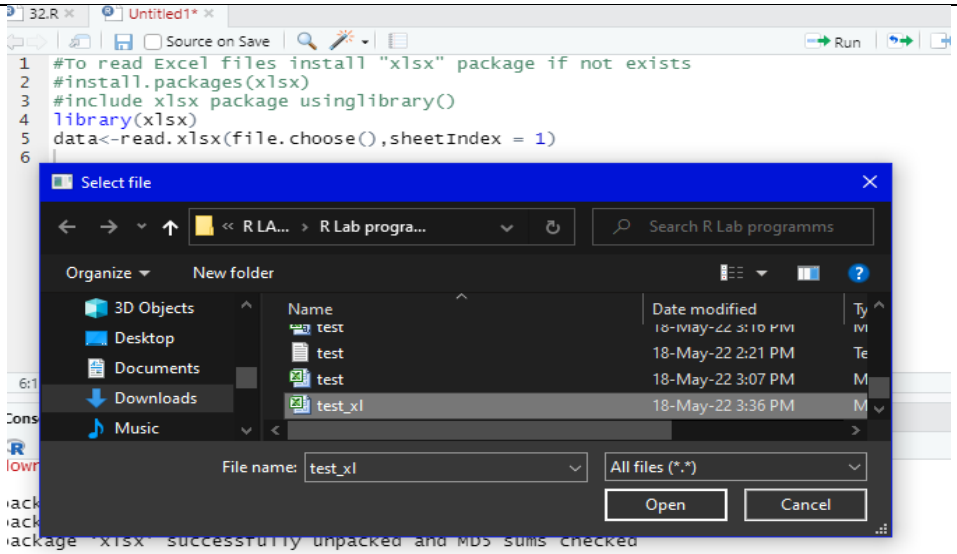


	NAME	GENDER	DEPARTMENT
1	sunil	Male	CSE
2	Chaitanya	Male	CSE
3	Anagha	Female	ECE

EXPERIMENT NO - 33	
Experiment	Write a R program to read data from Excel file

Program	#To read Excel files install "xlsx" package if not exists
	#install.packages(xlsx)
	#include xlsx package usinglibrary()
	library(xlsx)
	data<-read.xlsx(file.choose(),sheetIndex = 1)
	print(data)

Output	Create Excel file and save as test_xl.xlsx  Read file

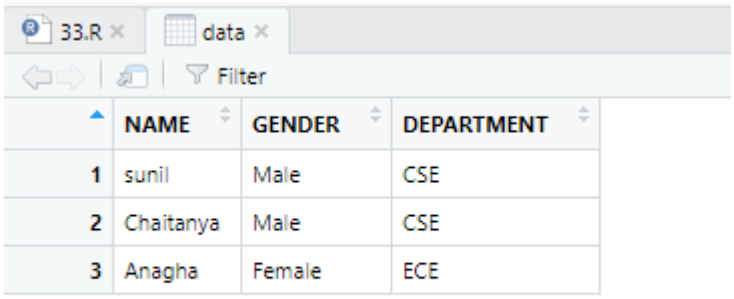


OUTPUT

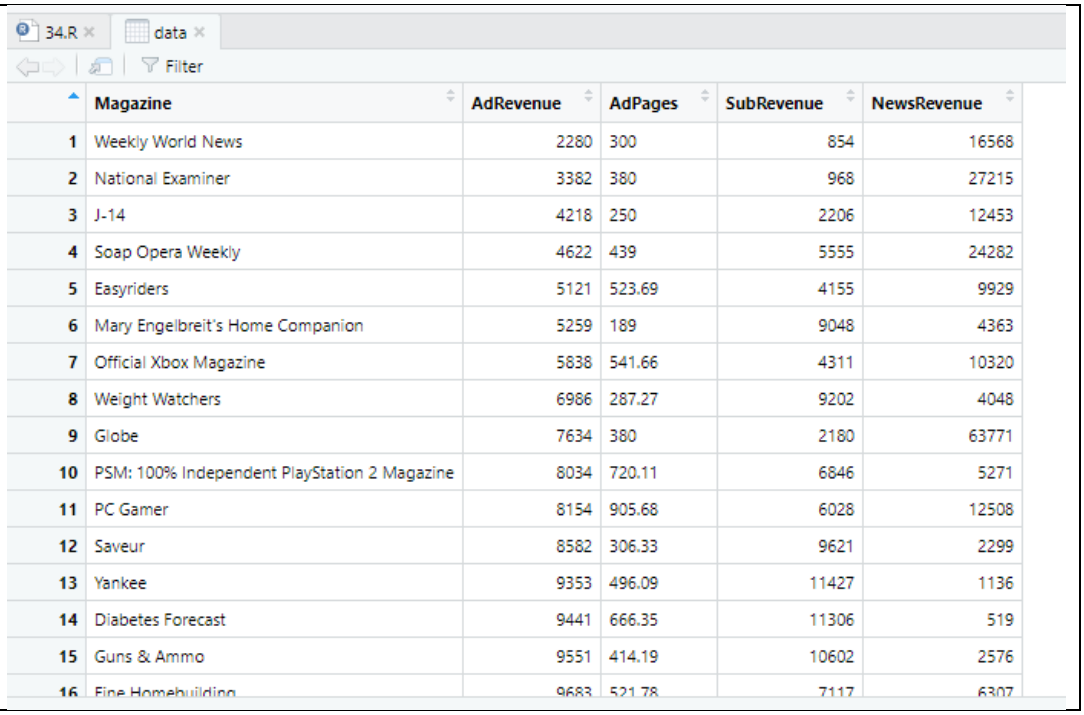
source("C:/Users/hi/Downloads/R LAB MANUAL/R LAB MANUAL/R Lab programms/33.R")

	NAME	GENDER	DEPARTMENT
1	sunil	Male	CSE
2	Chaitanya	Male	CSE
3	Anagha	Female	ECE

>



EXPERIMENT NO - 34	
Experiment	Write a R program to read data from URL
Program	#to read a csv file syntax is #dataframe<-read.csv2("url") data<- read.csv2("http://gattonweb.uky.edu/sheather/book/docs/datasets/magazines.csv", header = TRUE,sep = ",") print(head(data))
Output	**Data stored into data frame first 6 records** > > source("C:/Users/chaitanya/Desktop/R LAB MANUAL/R LAB MANUAL/R Lab programms/34.R") Magazine AdRevenue AdPages SubRevenue NewsRevenue 1 Weekly World News 2280 300 854 16568 2 National Examiner 3382 380 968 27215 3 J-14 4218 250 2206 12453 4 Soap Opera Weekly 4622 439 5555 24282 5 Easyriders 5121 523.69 4155 9929 6 Mary Engelbreit's Home Companion 5259 189 9048 4363 > **Data frame view**



34.R × data ×

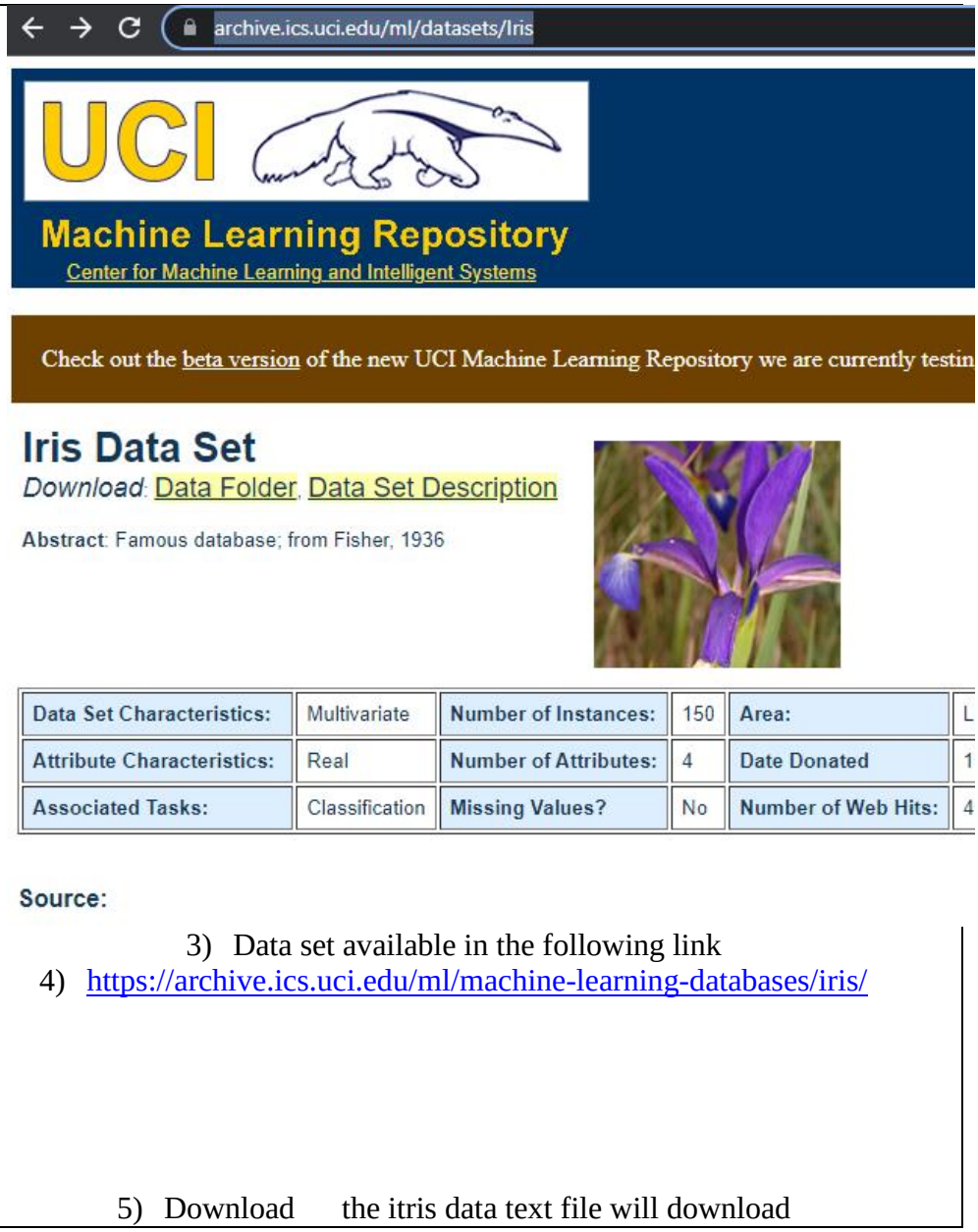
Filter

	Magazine	AdRevenue	AdPages	SubRevenue	NewsRevenue
1	Weekly World News	2280	300	854	16568
2	National Examiner	3382	380	968	27215
3	J-14	4218	250	2206	12453
4	Soap Opera Weekly	4622	439	5555	24282
5	Easyriders	5121	523.69	4155	9929
6	Mary Engelbreit's Home Companion	5259	189	9048	4363
7	Official Xbox Magazine	5838	541.66	4311	10320
8	Weight Watchers	6986	287.27	9202	4048
9	Globe	7634	380	2180	63771
10	PSM: 100% Independent PlayStation 2 Magazine	8034	720.11	6846	5271
11	PC Gamer	8154	905.68	6028	12508
12	Saveur	8582	306.33	9621	2299
13	Yankee	9353	496.09	11427	1136
14	Diabetes Forecast	9441	666.35	11306	519
15	Guns & Ammo	9551	414.19	10602	2576
16	Fine Homebuilding	9683	521.78	7117	6307

EXPERIMENT NO - 35	
Experiment	Write a R program to read Iris flower data set and give summary of the data set

Program	#reading data on text file
	data<-read.table(file.choose(),header=TRUE,sep = ",")
	print(data)

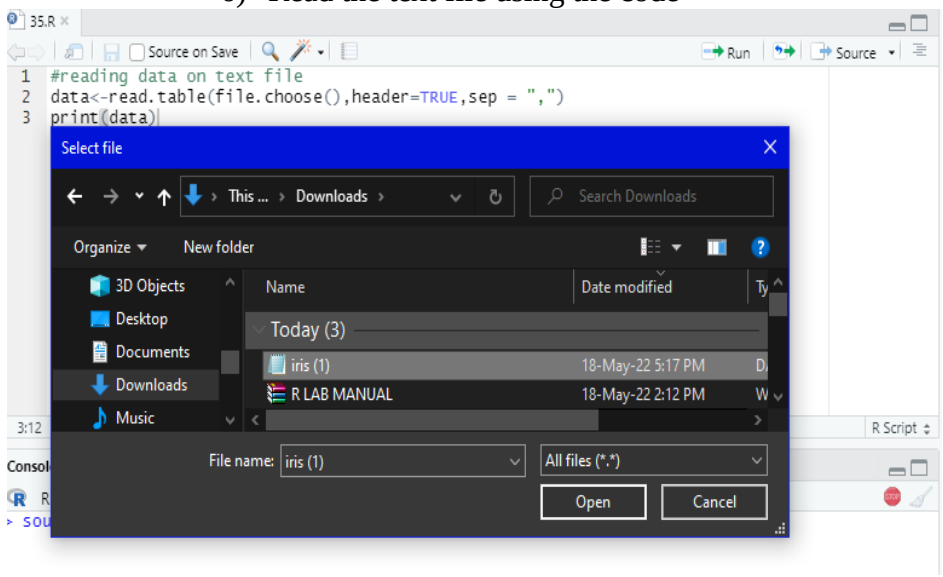
Output	Downloading Iris Data Set 1) Home page https://archive.ics.uci.edu/ml/index.php select Irish data 2) Select data folder in the link



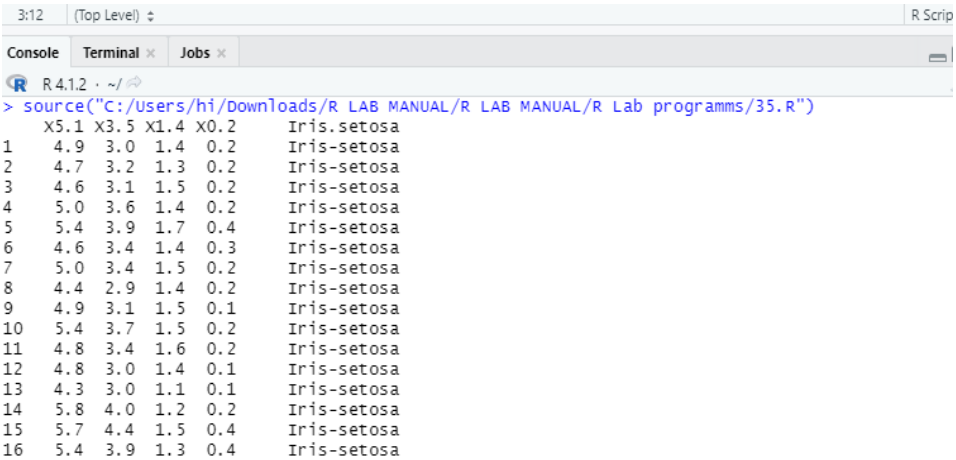
3) Data set available in the following link
4) https://archive.ics.uci.edu/ml/machine-learning-databases/iris/

5) Download the itris data text file will download

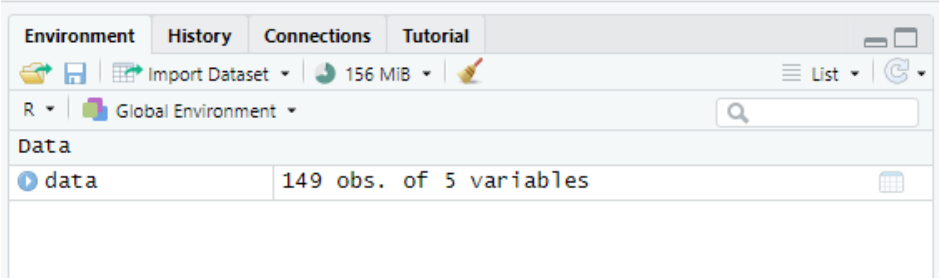
6) Read the text file using the code



OUTPUT



7) Data frame data created with the information



8) Data view

35.R × data ×

Filter

	X5.1	X3.5	X1.4	X0.2	Iris.setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.4	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa