

1. Write an R program to find the maximum and the minimum value of a given vector.

```
nums = c(10, 20, 30, 40, 50, 60)

print('Original vector:')

print(nums)

print(paste("Maximum value of the said vector:", max(nums)))

print(paste("Minimum value of the said vector:", min(nums)))
```

2. Write an R program to sort a Vector in ascending and descending order.

```
x = c(10, 20, 30, 25, 9, 26)

print("Original Vectors:")

print(x)

print("Sort in ascending order:")

print(sort(x))

print("Sort in descending order:")

print(sort(x, decreasing=TRUE))
```

3. Write an R program to compare two data frames to find the elements in first data frame that are not present in second data frame.

```
df_90 = data.frame(

  "item" = c("item1", "item2", "item3"),

  "Jan_sale" = c(12, 14, 12),

  "Feb_sale" = c(11, 12, 15),

  "Mar_sale" = c(12, 14, 15)

)

df_91 = data.frame(

  "item" = c("item1", "item2", "item3"),
```

```
"Jan_sale" = c(12, 14, 12),  
"Feb_sale" = c(11, 12, 15),  
"Mar_sale" = c(12, 15, 18)  
)  
print("Original Dataframes:")  
print(df_90)  
print(df_91)  
print("Row(s) in first data frame that are not present in second data frame:")  
print(setdiff(df_90,df_91))
```

4. Write an R program to extract first 10 English letter in lower case and last 10 letters in upper case and extract letters between 22nd to 24th letters in upper case.

```
print("First 10 letters in lower case:")  
t = head(letters, 10)  
print(t)  
print("Last 10 letters in upper case:")  
t = tail(LETTERS, 10)  
print(t)  
print("Letters between 22nd to 24th letters in upper case:")  
e = tail(LETTERS[22:24])  
print(e)
```

5. Write an R program to find Sum, Mean and Product of a Vector.

```
x = c(10, 20, 30)  
print("Sum:")  
print(sum(x))  
print("Mean:")
```

```
print(mean(x))  
print("Product:")  
print(prod(x))
```

6. Write an R program to create a simple bar plot of five subject's marks.

```
marks = c(70, 95, 80, 74)  
  
barplot(marks,  
main = "Comparing marks of 5 subjects",  
xlab = "Marks",  
ylab = "Subject",  
names.arg = c("English", "Science", "Math.", "Hist."),  
col = "darkred",  
horiz = FALSE)
```

7. Write an R program to create a Dataframes which contain details of 5 employees and display the details in ascending order.

```
Employees = data.frame(Name=c("Ramesh", "Umesh", "Ganesh", "Dinesh", "Ashwini"),  
                        Gender=c("M", "M", "M", "M", "F"),  
                        Age=c(25, 22, 25, 26, 22),  
                        Designation=c("CEO", " ASSISTANT ", "Executive", "Clerk", " Manager "),  
                        SSN=c("123-34-2346", "123-44-779", "556-24-433", "123-98-987", "679-77-576")  
                        )  
  
print("Details of the employees:")  
print(Employees)
```

8. Write an R program to create a data frame using two given vectors and display the duplicated elements and unique rows of the said data frame.

```
a = c(10, 20, 10, 10, 40, 50, 20, 30)
```

```
b = c(10,30,10,20,0,50,30,30)
print("Original data frame:")
ab = data.frame(a,b)
print(ab)
print("Duplicate elements of the said data frame:")
print(duplicated(ab))
print("Unique rows of the said data frame:")
print(unique(ab))
```

9. Write an R program to change the first level of a factor with another level of a given factor.

```
v = c("a", "b", "a", "c", "b")
print("Original vector:")
print(v)
f = factor(v)
print("Factor of the said vector:")
print(f)
levels(f)[1] = "e"
print(f)
```

10. Write a script in R to create a list of cities and perform the following

- 1) Give names to the elements in the list.**
- 2) Add an element at the end of the list.**
- 3) Remove the last element.**
- 4) Update the 3rd Element**

11. Write a script in R to create two vectors of different lengths and give these vectors as input to array and print addition and subtraction of those matrices.

```
print("Two vectors of different lengths:")
```

```
v1 = c(1,3,4,5)
v2 = c(10,11,12,13,14,15)
print(v1)
print(v2)
result = array(c(v1,v2),dim = c(3,3,2))
print("New array:")
print(result)
print("The second row of the second matrix of the array:")
print(result[2,,2])
print("The element in the 3rd row and 3rd column of the 1st matrix:")
print(result[3,3,1])
```

12. Write an R Program to calculate Multiplication Table

```
num = as.integer(readline(prompt = "Enter a number: "))
for(i in 1:10)
{
print(paste(num,'x', i, '=', num*i))
}
```

13. Consider the inbuilt iris dataset

- i) Create a variable “y” and attach to it the output attribute of the “iris” dataset.
- ii) Create a barplot to breakdown your output attribute.
- iii) Create a density plot matrix for each attribute by class value.

14. Write an R program to concatenate two given factor in a single factor and display in descending order.

```
f1 <- factor(sample(LETTERS, size=6, replace=TRUE))
```

```
f2 <- factor(sample(LETTERS, size=6, replace=TRUE))  
print("Original factors:")  
print(f1)  
print(f2)  
f = factor(c(levels(f1)[f1], levels(f2)[f2]))  
print("After concatenate factor becomes:")  
print(f)  
print(sort(f))  
print("Sort in descending order:")  
print(sort(f, decreasing=TRUE))
```

15. Write an R program to extract the five of the levels of factor created from a random sample from the LETTERS

```
L = sample(LETTERS,size=50,replace=TRUE)  
print("Original data:")  
print(L)  
f = factor(L)  
print("Original factors:")  
print(f)  
print("Only five of the levels")  
print(table(L[1:5]))
```

16. Write an R Program to calculate Decimal into binary of a given number.

```
convert_to_binary <- function(n) {  
  if(n > 1) {  
    convert_to_binary(as.integer(n/2))  
  }  
}
```

```
cat(n %% 2)

}
```

17. Write an 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.

```
a<-c(1,2,3)
b<-c(4,5,6)
c<-c(7,8,9)
m<-cbind(a,b,c)

print("Content of the said matrix:")

print(m)
```

18. Write an R program to draw an empty plot and an empty plot specify the axes limits of the graphic.

```
#print("Empty plot:")

plot.new()

#print("Empty plot specify the axes limits of the graphic:")

plot(1, type="n", xlab="", ylab="", xlim=c(0, 20), ylim=c(0, 20))
```

19. Consider Weather dataset

- i) Selecting using the column number
- ii) Selecting using the column name
- iii) Make a scatter plot to compare Wind speed and temperature

20. Write a script in R to create two vectors of different lengths and give these vectors as input to array and print second row of second matrix of the array.

```
print("Two vectors of different lengths:")  
v1 = c(1,3,4,5)  
v2 = c(10,11,12,13,14,15)  
print(v1)  
print(v2)  
result = array(c(v1,v2),dim = c(3,3,2))  
print("New array:")  
print(result)  
print("The second row of the second matrix of the array:")  
print(result[2,,2])  
print("The element in the 3rd row and 3rd column of the 1st matrix:")  
print(result[3,3,1])
```

21. Consider the plantGrowth inbuilt dataset

- i) Create a variable “y” and attach to it the output attribute of the “plantGrowth” dataset.**
- ii) Create a barplot to breakdown your output attribute.**
- iii) Create a density plot matrix for each attribute by class value.**

22 Write an R program to print the numbers from 1 to 100 and print "SY" for multiples of 3, print "BBA" for multiples of 5, and print "SYBBA" for multiples of both.


```
for (n in 1:100)
{
  if (n %% 3 == 0 & n %% 5 == 0)
  {
    print("SY")
  }
  else if (n %% 3 == 0)
  {
    print("BBA")
  }
  else if (n %% 5 == 0)
  {
    print("SYBBA")
  }
  else print(n)
}
```

23. Write a script in R to create two vectors of different lengths and give these vectors as input to array and print second row of second matrix of the array.

```
print("Two vectors of different lengths:")
v1 = c(1,3,4,5)
v2 = c(10,11,12,13,14,15)
print(v1)
print(v2)
result = array(c(v1,v2),dim = c(3,3,2))
print("New array:")
print(result)
```

```
print("The second row of the second matrix of the array:")  
  
print(result[2,,2])
```

24. Write a script in R to create two vectors of different lengths and give these vectors as input to array and print Multiplication of those matrices.

```
print("Two vectors of different lengths:")  
v1 = c(1,3,4,5)  
v2 = c(10,11,12,13,14,15)  
print(v1)  
print(v2)  
result = array(c(v1,v2),dim = c(3,3,2))  
print("New array:")  
print(result)  
print("The second row of the second matrix of the array:")  
print(result[2,,2])  
print("The element in the 3rd row and 3rd column of the 1st matrix:")  
print(result[3,3,1])  
  
# Creating 1st Matrix  
B = matrix(c(1, 2 + 3i, 5.4), nrow = 1, ncol = 3)  
  
# Creating 2nd Matrix  
C = matrix(c(2, 1i, 0.1), nrow = 1, ncol = 3)  
  
# Printing the resultant matrix  
print (B * C)
```

25. Write an R program to create a list of elements using vectors, matrices and a functions. Print the content of the list.

```
l = list(  
  c(1, 2, 2, 5, 7, 12),  
  month.abb,  
  matrix(c(3, -8, 1, -3), nrow = 2),  
  asin  
)  
  
print("Content of the list:")  
  
print(l)
```

26. Write a script in R to create an array, passing in a vector of values and a vector of dimensions. Also provide names for each dimension

```
a = array( 6:30,  
          dim = c(4, 3, 2),  
          dimnames = list( c("Col1", "Col2", "Col3", "Col4"),c("Row1", "Row2", "Row3"),  
                           c("Part1", "Part2"))  
          )  
print(a).
```

27. Write an R Program to calculate binary into Decimal of a given number.

```
num <- readline(prompt="Enter decimal number: ")  
binary <- function(num) {  
  if(num > 1) {  
    binary(as.integer(num/2))  
  }  
  cat(num %% 2)  
}
```

28. Write an R program to convert a given matrix to a list and print list in ascending order.

```
m = matrix(1:10,nrow=2, ncol=2)  
print("Original matrix:")  
print(m)  
l = split(m, rep(1:ncol(m), each = nrow(m)))  
print("list from the said matrix:")  
print(l)  
print(sort(m))
```