**R LAB – 03**

**Task – 01 :**

**Aim :** Apply different operations on Vectors.

1. Write R code to create a vector of a specified type and length. Create vector of numeric, complex, logical and character types of length 6.

**Program :**

numbers = c(1,2,3,4,5,6)

numbers

class(numbers)

alpha = c('A','B','C','D','E','F')

alpha

class(alpha)

comp = c(1+2i,3+4i,5+6i,7+8i,9+3i,5+3i)

comp

class(comp)

logar = c(TRUE,FALSE,TRUE,FALSE,TRUE,FALSE)

logar

class(logar)

**Output :**

> numbers = c(1,2,3,4,5,6)

> numbers

[1] 1 2 3 4 5 6

> class(numbers)

[1] "numeric"

> alpha = c('A','B','C','D','E','F')

> alpha

[1] "A" "B" "C" "D" "E" "F"

> class(alpha)

[1] "character"

> comp = c(1+2i,3+4i,5+6i,7+8i,9+3i,5+3i)

> comp

[1] 1+2i 3+4i 5+6i 7+8i 9+3i 5+3i

> class(comp)

[1] "complex"

> logar = c(TRUE,FALSE,TRUE,FALSE,TRUE,FALSE)

> logar

[1] TRUE FALSE TRUE FALSE TRUE FALSE

> class(logar)

[1] "logical"

2. Write R code to add two vectors of integer’s type and length 3

**Program :**

vect1 = c(1,2,3)

vect1

vect2 = c(4,5,6)

vect2

sum = vect1 + vect2

sum

**Output :**

> vect1 = c(1,2,3)

> vect1

[1] 1 2 3

> vect2 = c(4,5,6)

> vect2

[1] 4 5 6

> sum = vect1 + vect2

> sum

[1] 5 7 9

3. Write R code to append value to a given empty vector

**Program :**

x = c()

k = append(x,1:5)

k

**Output :**

> x = c()

> k = append(x,1:5)

> k

[1] 1 2 3 4 5

4. Write R code to multiply two vectors of integer’s type and length 3.

**Program :**

mul1 = c(1,2,3)

mul2 = c(6,7,8)

mul3 = mul1\*mul2

mul3

**Output :**

> mul1 = c(1,2,3)

> mul2 = c(6,7,8)

> mul3 = mul1\*mul2

> mul3

[1] 6 14 24

5. Write R code to divide two vectors of integer’s type and length 3.

**Program :**

div1 = c(4,6,8)

div2 = c(2,2,2)

div3 = div1 /div2

div3

**Output :**

> div1 = c(4,6,8)

> div2 = c(2,2,2)

> div3 = div1 /div2

> div3

[1] 2 3 4

6. Write R code to find Sum, Mean and Product of a Vector

**Program :**

vect = c(1,2,3,4,5)

vect

addv = sum(vect)

addv

avg = mean(vect)

avg

mul = prod(vect)

mul

**Output :**

> vect = c(1,2,3,4,5)

> vect

[1] 1 2 3 4 5

> addv = sum(vect)

> addv

[1] 15

> avg = mean(vect)

> avg

[1] 3

> mul = prod(vect)

> mul

[1] 120

7. Write R code to find Sum, Mean and Product of a Vector, ignore element like NA or NaN.

**Prorgam :**

temp = c(1,NA,5,NA,2,3)

vadd = sum(temp,na.rm = TRUE)

vmean = mean(temp,na.rm = TRUE)

vmul = prod(temp,na.rm = TRUE)

vadd

vmean

vmul

**Output :**

> temp = c(1,NA,5,NA,2,3)

> vadd = sum(temp,na.rm = TRUE)

> vmean = mean(temp,na.rm = TRUE)

> vmul = prod(temp,na.rm = TRUE)

> vadd

[1] 11

> vmean

[1] 2.75

> vmul

[1] 30

8. Write R code to find the minimum and the maximum of a Vector.

**Program :**

large = c(2,4,64,56,43,1)

small = min(large)

big = max(large)

small

big

**Output :**

> large = c(2,4,64,56,43,1)

> small = min(large)

> big = max(large)

> small

[1] 1

> big

[1] 64

9. Write R code to sort a Vector in ascending and descending order.

**Program :**

unsort = c(45,1,67,23,98,43,66)

ascen = sort(unsort,decreasing = FALSE)

desen = sort(unsort, decreasing = TRUE)

ascen

desen

**Output :**

> unsort = c(45,1,67,23,98,43,66)

> ascen = sort(unsort,decreasing = FALSE)

> desen = sort(unsort, decreasing = TRUE)

> ascen

[1] 1 23 43 45 66 67 98

> desen

[1] 98 67 66 45 43 23 1

10. Write R code to test whether a given vector contains a specified element.

**Program :**

lins = c(2,4,5,6,7)

res = match(4,lins)

res

**Output :**

> lins = c(2,4,5,6,7)

> res = match(4,lins)

> res

[1] 2

11.Write R code to count the specific value in a given vector..

**Program :**

rep = c(1,2,2,2,3,4,1)

result = sum(rep == 2)

result

**Output :**

> rep = c(1,2,2,2,3,4,1)

> result = sum(rep == 2)

> result

[1] 3

12.Write R code to access the last value in a given vector.

**Program :**

org = c(1,2,3,4,5)

orgres = tail(org,n = 1)

orgres

**Output :**

> org = c(1,2,3,4,5)

> orgres = tail(org,n = 1)

> orgres

[1] 5

1. Write R code to find second highest value in a given vector.

**Program :**

sh = c(15,3,10,1,7,9)

sh

sh2 = sort(sh,decreasing = TRUE)

sh3 = sh2[2]

sh3

**Output :**

> sh = c(15,3,10,1,7,9)

> sh

[1] 15 3 10 1 7 9

> sh2 = sort(sh,decreasing = TRUE)

> sh3 = sh2[2]

> sh3

[1] 10

2. Write R code to find nth highest value in a given vector.

**Program :**

n1 = c(15,3,10,1,7,9)

n2 = readline()

n3 = sort(n1,decreasing = TRUE)

n4 = n3[n2]

n4

**Output :**

> n1 = c(15,3,10,1,7,9)

> n2 = readline()

80

n3 = sort(n1,decreasing = TRUE)

> n4 = n3[n2]

> n4

[1] NA

3. Write R code to find common elements from multiple vector.

**Program :**

cv = c(2,1,3,4,5)

cv2 = c(2,6,7,1,9)

cv3 = c(3,7,8,2,10)

cv4 = intersect(intersect(cv,cv2),cv3)

cv4

**Output :**

> cv = c(2,1,3,4,5)

> cv2 = c(2,6,7,1,9)

> cv3 = c(3,7,8,2,10)

> cv4 = intersect(intersect(cv,cv2),cv3)

> cv4

[1] 2

4. Write R code to convert given dataframe column(s) to a vector.

**Program :**

df1 = c(1,2,3,4,5)

df2 = c(6,7,8,9,10)

df3 = c(11,12,13,14,15)

df4 = c(16,17,18,19,20)

df <- data.frame(df1 = 1:5, df2 = 6:10, df3 = 11:15, df4 = 16:20)

df

**Output :**

> df1 = c(1,2,3,4,5)

> df2 = c(6,7,8,9,10)

> df3 = c(11,12,13,14,15)

> df4 = c(16,17,18,19,20)

> df <- data.frame(df1 = 1:5, df2 = 6:10, df3 = 11:15, df4 = 16:20)

> df

df1 df2 df3 df4

1 1 6 11 16

2 2 7 12 17

3 3 8 13 18

4 4 9 14 19

5 5 10 15 20

5. Write R code to extract every nth element of a given vector.

**Program :**

gv = 1:30

gv1 = gv[seq(1, length(gv), 5)]

gv1

**Output :**

> gv = 1:30

> gv1 = gv[seq(1, length(gv), 5)]

> gv1

[1] 1 6 11 16 21 26

6. Write R code to list the distinct values in a vector from a given vector.

**Program :**

repv <- c(10,10,10,20,20,30,40,50,89,89)

repv1 <- unique(repv)

repv1

**Output :**

> repv <- c(10,10,10,20,20,30,40,50,89,89)

> repv1 <- unique(repv)

> repv1

[1] 10 20 30 40 50 89

7. Write R code to find the elements of a given vector that are not in another given vector.

**Program :**

de = c(1,2,3,3,3,4)

de1 = c(5,6,6,6,8)

de2 = setdiff(de,de1)

de2

**Output :**

> de = c(1,2,3,3,3,4)

> de1 = c(5,6,6,6,8)

> de2 = setdiff(de,de1)

> de2

[1] 1 2 3 4

8. Write R code to reverse the order of given vector.

**Program :**

v1 = c(1,2,3,4,5)

v2 = rev(v1)

v2

**Output :**

> v1 = c(1,2,3,4,5)

> v2 = rev(v1)

> v2

[1] 5 4 3 2 1

9. Write R code to concatenate a vector.

**Program :**

vcon1 = c(1,2,3)

vcon2 = c(4,5,6)

vcon3 = c(vcon1,vcon2)

vcon3

**Output :**

> vcon1 = c(1,2,3)

> vcon2 = c(4,5,6)

> vcon3 = c(vcon1,vcon2)

> vcon3

[1] 1 2 3 4 5 6

10.Write R code to count number of values in a range in a given vector.

**Program :**

r1 = c(0,1,2,3,4,5,6,7,8,9,10)

r2 = sum(r1 > 2 & r1 < 9)

r2

**Output :**

> r1 = c(0,1,2,3,4,5,6,7,8,9,10)

> r2 = sum(r1 > 2 & r1 < 9)

> r2

[1] 6

11.Write R code to convert two columns of a data frame to a named

vector.

**Program :**

plang = c(' c language ',' python ',' c++ ',' HTMl ',' java ')

ide = c('Turboc++', 'pycharm', 'online', 'notepad', 'netbeans')

tab = data.frame(languages = plang, IDE = ide)

tab

setNames(as.character(tab$languages), as.character(tab$IDE))

**Output :**

> plang = c(' c language ',' python ',' c++ ',' HTMl ',' java ')

> ide = c('Turboc++', 'pycharm', 'online', 'notepad', 'netbeans')

> tab = data.frame(languages = plang, IDE = ide)

> tab

languages IDE

1 c language Turboc++

2 python pycharm

3 c++ online

4 HTMl notepad

5 java netbeans

> setNames(as.character(tab$languages), as.character(tab$IDE))

Turboc++ pycharm online notepad netbeans

" c language " " python " " c++ " " HTMl " " java "

12.Write R code to create a vector and find the length and the dimension of the vector.

**Program :**

real = c(1,2,3,4,5,6)

length(real)

dim(real)

**Output :**

> real = c(1,2,3,4,5,6)

> length(real)

[1] 6

> dim(real)

NULL

13. Write R code to test whether the value of the element of a given vector greater than 10 or not. Return TRUE or FALSE.

**Program :**

whole = c(0,1,2,3,25,15,99,100)

whole > 10

**Output :**

> whole = c(0,1,2,3,25,15,99,100)

> whole > 10

[1] FALSE FALSE FALSE FALSE TRUE TRUE TRUE TRUE

14.Write R code to add 3 to each element in a given vector. Print the original and new vector.

**Program :**

ov = c(1,2,3,4)

nv = ov + 3

ov

nv

**Output :**

> ov = c(1,2,3,4)

> nv = ov + 3

> ov

[1] 1 2 3 4

> nv

[1] 4 5 6 7

15.Write a R code to create a vector using: operator and seq() function.

**Program :**

sap = seq(from = 1, to = 30)

sap

**Output :**

> sap = seq(from = 1, to = 30)

> sap

[1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

**Result :** Successfully completed the Vectors task.