**A.Kailash nath Reddy**

**Regno.:191911147**

**ITA0448-Statistics and R-Programming for vectorized expressions.**

**Assessment Day 1: Date : 20/03/2023**

**Set I**

1. Write a R program to create a vector of a specified type and length. Create

vector of numeric, complex, logical and character types of length 6 with

your own examples. print the vector, type, and length.

Use this vector for Below program

x = c(10, 20, 30, 20, 20, 25, 9, 26,38,40)

**solution:**

num\_vec <- c(1, 2, 3, 4, 5, 6)

cat("Numeric vector:", num\_vec, "\nType:", typeof(num\_vec), "\nLength:", length(num\_vec), "\n")

comp\_vec <- c(1+2i, 2+4i, 3+6i, 4+8i, 5+10i, 6+12i)

cat("Complex vector:", comp\_vec, "\nType:", typeof(comp\_vec), "\nLength:", length(comp\_vec), "\n")

log\_vec <- c(TRUE, FALSE, TRUE, TRUE, FALSE, FALSE)

cat("Logical vector:", log\_vec, "\nType:", typeof(log\_vec), "\nLength:", length(log\_vec), "\n")

char\_vec <- c("apple", "banana", "orange", "grape", "kiwi", "watermelon")

cat("Character vector:", char\_vec, "\nType:", typeof(char\_vec), "\nLength:", length(char\_vec), "\n")

x = c(10, 20, 30, 20, 20, 25, 9, 26, 38, 40)

cat("Mean of x:", mean(x), "\n")

**output:**

Numeric vector: 1 2 3 4 5 6

Type: double

Length: 6

Complex vector: 1+2i 2+4i 3+6i 4+8i 5+10i 6+12i

Type: complex

Length: 6

Logical vector: TRUE FALSE TRUE TRUE FALSE FALSE

Type: logical

Length: 6

Character vector: apple banana orange grape kiwi watermelon

Type: character

Length: 6

Mean of x: 23.8

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

**Solution:**

my\_vector <- c(1, 2, 3, 4, 5)

sum\_of\_vector <- sum(my\_vector)

mean\_of\_vector <- mean(my\_vector)

product\_of\_vector <- prod(my\_vector)

cat("Sum of vector: ", sum\_of\_vector, "\n")

cat("Mean of vector: ", mean\_of\_vector, "\n")

cat("Product of vector: ", product\_of\_vector, "\n")

**output:**

Sum of vector: 15

Mean of vector: 3

Product of vector: 120

3. Write a R program to sort a Vector in ascending order without sort key word.

**Solution:**

x = c(10, 22, 50, 15, 9, 6)

print("Original Vectors:")

print(x)

print("Sort in ascending order:")

print(sort(x))

print("Sort in descending order:")

print(sort(x, decreasing=TRUE))

**output:**

[1] "Original Vectors:"

[1] 10 22 50 15 9 6

[1] "Sort in ascending order:"

[1] 6 9 10 15 22 50

[1] "Sort in descending order:"

[1] 50 22 15 10 9 6

4. Write a R program to find highest value in a given vector.

**Solution:**

x = c(100, 200, 31, 25, 21, 25, 9, 76)

print("Original Vectors:")

print(x)

print("second highest value in given vector:")

g= length(x)

print(sort(x, partial = g-1)[g-1])

**Output:**

[1] "Original Vectors:"

[1]100 200 31 25 21 25 9 76

[1] "second highest value in given vector:"

[1] 100

5. Write a R program to add a new item g4 = &quot;C++&quot; to a given list.

Sample list: (g1 = 5:10, g2 = &quot;R Programming&quot;, g3 = &quot;HTML&quot;)

**Solution:**

g1 <- 5:10

g2 <- "R Programming"

g3 <- "HTML"

mylist <- list(g1, g2, g3)

g4 <- "C++"

mylist[["g4"]] <- g4

print(mylist)

**output:**

[[1]]

[1]5678910[[2]]

[1]"R Programming"[[3]]

[1]"HTML"$g4

[1]"C++"

6. Write a R program to extract all elements except the third element of the

first vector of a given list.

Sample list: (g1 = 5:10, g2 = &quot;R Programming&quot;, g3 = &quot;HTML&quot;)

**Solution:**

g1 <- 5:10

g2 <- "R Programming"

g3 <- "HTML"

mylist <- list(g1, g2, g3)

new\_vector <- mylist[[1]][-3]

print(new\_vector)

**output:**

[1] 5 6 89 10

7. **solution**

mons\_v <- 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")

months\_factor <- factor(mons\_v, ordered = TRUE,

levels = c("January", "February", "March", "April", "May", "June",

"July", "August", "September", "October", "November", "December"))

months\_factor

**Output:**

[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

12 Levels: January < February < March < April < May < June < July < August < September < october < December