

Assignment 01 (R - Programming)

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[1]: *# 1. Write a R program to add, multiply and divide two vectors of integer type. ↵*
↪ (Vector length should be minimum 4)

```
v1 <- c(45, 56, 78, 90)
v2 <- c(50, 60, 80, 100)

cat("Addition :", v1 + v2, "\n")
cat("Multiplication :", v1 * v2, "\n")
cat("Division :", v1 / v2, "\n")
```

```
Addition : 95 116 158 190
Multiplication : 2250 3360 6240 9000
Division : 0.9 0.9333333 0.975 0.9
```

[2]: *# 2. Write an R program to calculate the multiplication table using a function*

```
multi_tab <- function(n) {
  cat("Multiplication Table for", n, "\n")
  for(i in 1:10) {
    cat(n, "x", i, "=", n * i, "\n")
  }
}

num <- as.integer(readline("Enter a number for multiplication table: "))
multi_tab(num)
```

```
Enter a number for multiplication table: 6
Multiplication Table for 6
6 x 1 = 6
6 x 2 = 12
6 x 3 = 18
6 x 4 = 24
6 x 5 = 30
6 x 6 = 36
6 x 7 = 42
6 x 8 = 48
6 x 9 = 54
6 x 10 = 60
```

[3]: *# 3. Write a R program to reverse a number and also calculate the sum of digits of that number.*

```
num <- as.integer(readline("Enter a number: "))

org_num <- num
rev_num <- 0
total <- 0

while(num > 0) {
  digit <- num %% 10
  rev_num <- rev_num * 10 + digit
  total <- total + digit
  num <- num %/% 10
}

cat("Reversed Number:", rev_num, "\n")
cat("Sum of Digits:", total, "\n")
```

Enter a number: 24352
Reversed Number: 25342
Sum of Digits: 16

[4]: *# 4. Write a R program to calculate the sum of two matrices of given size.*

```
m1 <- matrix(c(1, 2, 3, 4, 5, 6), nrow = 2, ncol = 3, byrow = TRUE)
m2 <- matrix(c(6, 5, 4, 3, 2, 1), nrow = 2, ncol = 3, byrow = TRUE)

cat("\nFirst Matrix:\n")
print(m1)
cat("\nSecond Matrix:\n")
print(m2)
cat("\nSum of Matrices:\n")
print(m1 + m2)
```

First Matrix:

	[,1]	[,2]	[,3]
[1,]	1	2	3
[2,]	4	5	6

Second Matrix:

	[,1]	[,2]	[,3]
[1,]	6	5	4
[2,]	3	2	1

Sum of Matrices:

```

      [,1] [,2] [,3]
[1,]    7    7    7
[2,]    7    7    7

```

[5]: # 5. Write a R program to concatenate two given factors

```

f1 <- factor(c("Pune", "Mumbai", "Delhi"))
f2 <- factor(c("Chennai", "Kolkata"))

cat("Concatenated Factor:", c(as.character(f1), as.character(f2)), "\n")

```

Concatenated Factor: Pune Mumbai Delhi Chennai Kolkata

[6]: # 6. Write a R program to create a data frame using two given vectors and
↳ display the duplicate elements.

```

names <- c("Sanchet", "Gaurav", "Ajinkya", "Gaurav", "Sanchet")
ages <- c(21, 23, 22, 23, 21)

df <- data.frame(Name = names, Age = ages)

cat("Data Frame:\n")
print(df)

cat("\nDuplicate Rows:\n")
print(df[duplicated(df), ])

```

Data Frame:

	Name	Age
1	Sanchet	21
2	Gaurav	23
3	Ajinkya	22
4	Gaurav	23
5	Sanchet	21

Duplicate Rows:

	Name	Age
4	Gaurav	23
5	Sanchet	21

[7]: # 7. 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.

```

cat("Sequence 20-50:", 20:50, "\n")
cat("Mean of 20-60:", mean(20:60), "\n")
cat("Sum of 51-91:", sum(51:91), "\n")

```

Sequence 20-50: 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
Mean of 20-60: 40
Sum of 51-91: 2911

```

[8]: # 8. Write a R program to get the first 10 Fibonacci numbers.

```

n <- as.integer(readline("Enter the range : "))

fib <- numeric(n)
fib[1] <- 0
fib[2] <- 1
for(i in 3:n) {
  fib[i] <- fib[i-1] + fib[i-2]
}

cat("First", n, "Fibonacci Numbers:", fib, "\n")

```

```

Enter the range : 10
First 10 Fibonacci Numbers: 0 1 1 2 3 5 8 13 21 34

```

[9]: # 9. Write an R program to create a Data frames which contain details of 5 employees and display summary of the data

```

emp <- data.frame(
  EmpNo = 1:5,
  Name = c("Sanchet", "Gaurav", "Ajinkya", "Rahil", "Pranav"),
  Age = c(21, 23, 22, 24, 25),
  Salary = c(50000, 55000, 52000, 58000, 60000)
)
cat("\nEmployee Data:\n")
print(emp)
cat("\n\nSummary of Employee Data:\n")
print(summary(emp))

```

Employee Data:

	EmpNo	Name	Age	Salary
1	1	Sanchet	21	50000
2	2	Gaurav	23	55000
3	3	Ajinkya	22	52000
4	4	Rahil	24	58000
5	5	Pranav	25	60000

Summary of Employee Data:

	EmpNo	Name	Age	Salary
Min.	:1	Length:5	Min. :21	Min. :50000
1st Qu.:	2	Class :character	1st Qu.:22	1st Qu.:52000

Median :3	Mode :character	Median :23	Median :55000
Mean :3		Mean :23	Mean :55000
3rd Qu.:4		3rd Qu.:24	3rd Qu.:58000
Max. :5		Max. :25	Max. :60000

```
[10]: # 10. Write a R program to find the maximum and the minimum value of a given
      ↪vector
v <- c(45, 12, 67, 89, 23, 56)
cat("Max Value:", max(v), "\n")
cat("Min Value:", min(v), "\n")
```

```
Max Value: 89
Min Value: 12
```

```
[11]: # 11. Write a R program to find all elements of a given list that are not in
      ↪another given list.
      #= list("x", "y", "z")
      #= list("X", "Y", "Z", "x", "y", "z")

l1 <- c("x", "y", "z", "w")
l2 <- c("X", "Y", "Z", "x", "y", "z")
cat("Elements in l1 but not in l2:", setdiff(l1, l2), "\n")
```

```
Elements in l1 but not in l2: w
```

```
[12]: # 12. Write a R program to create a Dataframes which contain details of 5
      ↪employees and display the details.Employee contain
      ↪(empno,empname,gender,age,designation)

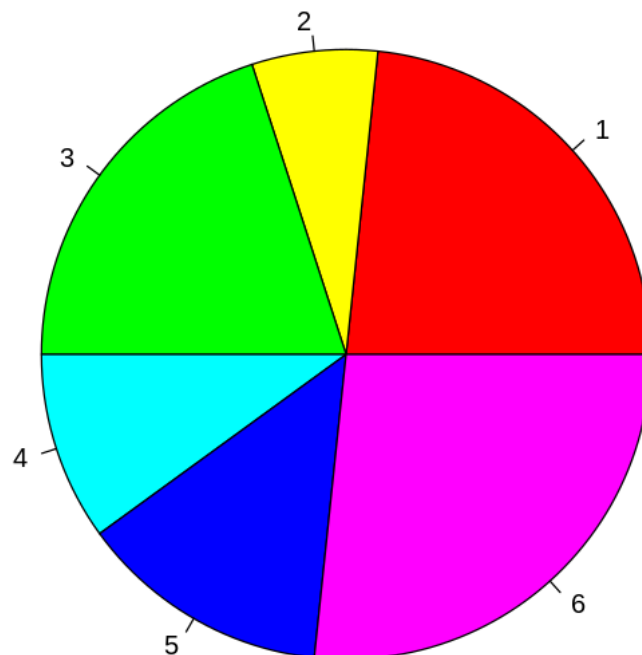
emp <- data.frame(
  EmpNo = 1:5,
  EmpName = c("Sanchet", "Gaurav", "Ajinkya", "Rahil", "Pranav"),
  Gender = c("M", "M", "M", "M", "M"),
  Age = c(22, 22, 20, 21, 21),
  Designation = c("Developer", "Manager", "Tester", "Analyst", "Designer")
)
cat("Employee Details:\n")
print(emp)
```

```
Employee Details:
```

	EmpNo	EmpName	Gender	Age	Designation
1	1	Sanchet	M	22	Developer
2	2	Gaurav	M	22	Manager
3	3	Ajinkya	M	20	Tester
4	4	Rahil	M	21	Analyst
5	5	Pranav	M	21	Designer

```
[13]: # 14. Draw a pie chart using R programming for the following data distribution:
      # Digits on Dice    1 2 3 4 5 6
      # Frequency of getting each number 7 2 6 3 4 8

digits <- c(1, 2, 3, 4, 5, 6)
freq <- c(7, 2, 6, 3, 4, 8)
pie(freq, labels = digits, main = "Dice Roll Frequency", col =
  ↪rainbow(length(freq)))
```



```
[14]: # 15. Write a script in R to create a list of employees (name) and perform the
      ↪following:
      # a. Display names of employees in the list.
      # b. Add an employee at the end of the list
```

```

# c. Remove the third element of the list.

employees <- list("Sanchet", "Gaurav", "Ajinkya", "Rahil", "Pranav")
cat("\nEmployees:", unlist(employees), "\n")

employees <- append(employees, "Harsh")
cat("\nAfter Adding Harsh:", unlist(employees), "\n")

employees <- employees[-3]
cat("\nAfter Removing 3rd Employee:", unlist(employees), "\n")

```

Employees: Sanchet Gaurav Ajinkya Rahil Pranav

After Adding Harsh: Sanchet Gaurav Ajinkya Rahil Pranav Harsh

After Removing 3rd Employee: Sanchet Gaurav Rahil Pranav Harsh

```

[15]: # 16 Write a R program to add, multiply and divide two vectors of integer type.
      ↪ (vector length should be minimum 4)

v1 <- c(10, 20, 30, 40)
v2 <- c(2, 4, 6, 8)

cat("Addition:", v1 + v2, "\n")
cat("Multiplication:", v1 * v2, "\n")
cat("Division:", v1 / v2, "\n")

```

Addition: 12 24 36 48

Multiplication: 20 80 180 320

Division: 5 5 5 5

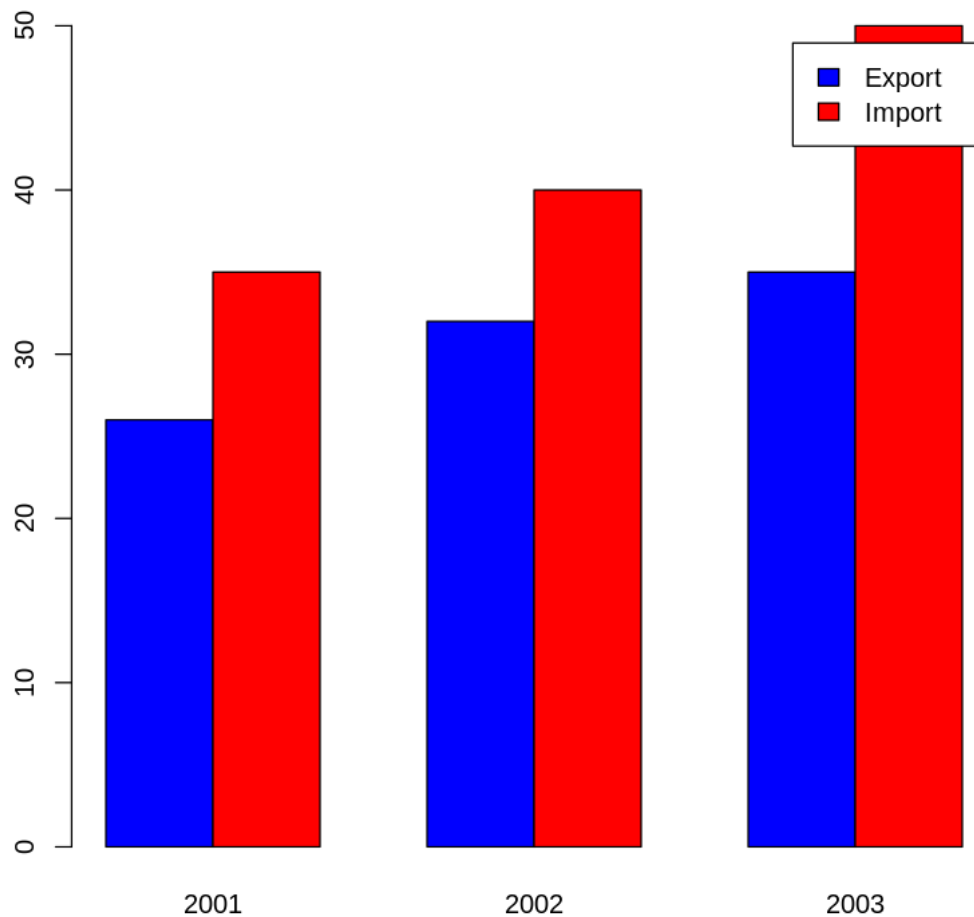
```

[16]: # 17 Write a R program to create a simple bar plot of given data
      # Year Export Import
      # 2001 26 35
      # 2002 32 40
      # 2003 35 50

year <- c(2001, 2002, 2003)
export <- c(26, 32, 35)
import <- c(35, 40, 50)

barplot(rbind(export, import), beside = TRUE, names.arg = year, col = c("blue",
      ↪ "red"), legend = c("Export", "Import"))

```



[17]: *# 18 Write a R program to get the first 20 Fibonacci numbers.*

```
n <- as.integer(readline("Enter the range : "))

fib <- numeric(n)
fib[1] <- 0
fib[2] <- 1
for(i in 3:n) {
  fib[i] <- fib[i-1] + fib[i-2]
}

cat("First", n, "Fibonacci Numbers:", fib, "\n")
```


Enter the range : 20

First 20 Fibonacci Numbers: 0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987
1597 2584 4181

[18]: # 19 Write a R program to find the maximum and the minimum value of a given
↪vector

```
v <- c(15, 78, 34, 92, 56)
cat("Max:", max(v), "\n")
cat("Min:", min(v), "\n")
```

Max: 92

Min: 15

[19]: # 20 Write a R program to create a Dataframes which contain details of 5
↪Students and display the details.Students contain
↪(Rollno,Studname,Address,Marks)

```
students <- data.frame(
  Rollno = 101:105,
  Studname = c("Sanchet", "Gaurav", "Ajinkya", "Rahil", "Pranav"),
  Address = c("Pune", "West Bengal", "Ranjangaon", "Chakan", "Jalgaon"),
  Marks = c(85, 90, 78, 88, 92)
)
cat("Students Data:\n")
print(students)
```

Students Data:

	Rollno	Studname	Address	Marks
1	101	Sanchet	Pune	85
2	102	Gaurav	West Bengal	90
3	103	Ajinkya	Ranjangaon	78
4	104	Rahil	Chakan	88
5	105	Pranav	Jalgaon	92

[20]: # 21 Write a R program to create a data frame from four given vectors.

```
v1 <- c(11, 22, 33, 44)
v2 <- c("A", "B", "C", "D")
v3 <- c(TRUE, FALSE, TRUE, FALSE)
v4 <- c(2.5, 3.6, 4.7, 5.8)

df <- data.frame(v1, v2, v3, v4)
cat("Data Frame from Four Vectors:\n\n")
print(df)
```

Data Frame from Four Vectors:

	v1	v2		v3	v4
1	11	A	TRUE	2.5	
2	22	B	FALSE	3.6	
3	33	C	TRUE	4.7	
4	44	D	FALSE	5.8	