

Data Science Practical

Name: **Toseef Ali Khan**

University Roll Number: **18020570033**

College Roll Number: **1436**

Submitted to: **Mr. Vipin Rathi**

Code Repository: <https://github.com/toseefkhan403/DataSciencePractical.git>

Q1) Write a function that computes the running total of list.

Ans. `total <- function(list) cumsum(list)`
`total(c(12,21,3,41,43,59))`

```
total <- function(list) cumsum(list)
total(c(12,21,3,41,43,59))
```

`12 · 33 · 36 · 77 · 120 · 179`

Q2) Implement matrices addition, subtraction and Multiplication

Ans. `print("FIRST MATRIX")`

`n = readline("Enter number of rows : ")`

`n = as.integer(n)`

`m = readline("Enter number of cols : ")`

`m = as.integer(m)`

`print("Enter limits of the matrix : ")`

`f = matrix(as.integer(readline()):as.integer(readline()),n,m,TRUE)`

`print("SECOND MATRIX")`

`p = readline("Enter number of rows : ")`

`p = as.integer(p)`

`q = readline("Enter number of cols : ")`

`q = as.integer(q)`

`print("Enter limits of the matrix : ")`

`s = matrix(as.integer(readline()):as.integer(readline()),p,q,TRUE)`

`print("First Matrix")`

```
print(f)
print("Second Matrix")
print(s)
```

```
if(n==p && m==q){
    print("Sum of Matrices")
    print(f+s)
    print("Difference of Matrices")
    print(f-s)
} else {
    print("Invalid Dimensions for Sum and Difference of Matrix")
}
```

```
if(m==p) {
    print("Product of Matrices")
    print(f %*% s)
} else {1
    print("Invalid Dimensions for Product of Matrix")
}
```

```

if(m==p) {
    print("Product of Matrices")
    print(f "%*% s")
} else {1
    print("Invalid Dimensions for Product of Matrix")
}

```

```

[1] "FIRST MATRIX"
Enter number of rows : 3
Enter number of cols : 3
[1] "Enter limits of the matrix : "
1
9
[1] "SECOND MATRIX"
Enter number of rows : 3
Enter number of cols : 3
[1] "Enter limits of the matrix : "
10
18
[1] "First Matrix"
      [,1] [,2] [,3]
[1,]    1    2    3
[2,]    4    5    6
[3,]    7    8    9
[1] "Second Matrix"
      [,1] [,2] [,3]
[1,]   10   11   12
[2,]   13   14   15
[3,]   16   17   18
[1] "Sum of Matrices"

```

```

      [,1] [,2] [,3]
[1,]   11   13   15
[2,]   17   19   21
[3,]   23   25   27
[1] "Difference of Matrices"
      [,1] [,2] [,3]
[1,]   -9   -9   -9
[2,]   -9   -9   -9
[3,]   -9   -9   -9
[1] "Product of Matrices"
      [,1] [,2] [,3]
[1,]    84    90    96
[2,]   201   216   231
[3,]   318   342   366

```

Q3) Implement linear search

Ans. linSearch <- function(list, element)

```
{  
  pos = 1;  
  flag = FALSE;  
  for (l in list)  
  {  
    if (l==element)  
    {  
      flag = TRUE;  
      break;  
    }  
    pos = pos+1;  
  }  
  if(flag)  
  {  
    print(paste("Element found at",pos),quote = FALSE);  
  }  
  else  
  {  
    print("Element not found",quote=FALSE);  
  }  
}
```

linSearch(c(43,10,19,3,53,92),19)

```

linSearch <- function(list, element)
{
  pos = 1;
  flag = FALSE;
  for (l in list)
  {
    if (l==element)
    {
      flag = TRUE;
      break;
    }
    pos = pos+1;
  }
  if(flag)
  {
    print(paste("Element found at",pos),quote = FALSE);
  }
  else
  {
    print("Element not found",quote=FALSE);
  }
}

linSearch(c(43,10,19,3,53,92),19)

```

[1] Element found at 3