

Rcpp Function

Requirement:

- Write an **Rcpp Function**.
- Function Arguments:
 - Integer ➡ **n**
 - RFunction ➡ **Callback**
- The **Rcpp Function** should do the following:
 - Draw **n** Samples from the Normal Distribution.
 - Execute the **Callback** function on each sample that is **Greater Than Zero**.

1) Steps to write an **Rcpp Function**:

- Load the **Rcpp** library using the following command line:
To provides R functions as well as C++ classes which offer a seamless integration of R and C++

R Console

```
> library(Rcpp)
```

- In the **Script**, Write the C++ function inside the function **cppFunction()**:

R Script

```
cppFunction('
    void Samples_Norm(int n, Function callback)
    {
        NumericVector Norm_Dist_Values = rnorm(n);

        for (int i = 0; i < n; i++)
        {
            if (Norm_Dist_Values[i] > 0)
            {
                callback(Norm_Dist_Values[i]);
            }
        }
    }
')
```

C++ Code Explanation:

- **NumericVector** ➡ Datatype to define a Vector [Norm_Dist_Values] of Numeric Values.
- **rnorm(n)** ➡ To generate **n** different Normal Distribution Values.

- Run the `cppFunction()` in the Console:

R Console

```
> cppFunction('
+     void Samples_Norm(int n, Function callback)
+     {
+         NumericVector Norm_Dist_Values = rnorm(n);
+
+         for (int i = 0; i < n; i++)
+         {
+             if (Norm_Dist_Values[i] > 0)
+             {
+                 callback(Norm_Dist_Values[i]);
+             }
+         }
+     }
+')
```

- Call the `Rcpp` function the Console:

R Console

```
> Samples_Norm(50, print)
```

2) Output in the Console:

R Console

```
[1] 2.432729
[1] 0.5920912
[1] 0.4066282
[1] 0.4409
[1] 2.235376
[1] 0.5993602
[1] 1.274233
[1] 0.08148341
[1] 0.3378953
[1] 0.5661375
[1] 1.72677
[1] 1.588315
[1] 0.3695074
[1] 0.4386581
[1] 0.7609176
[1] 0.06428198
[1] 2.298479
[1] 1.488323
```