

What is the difference between lapply and sapply in R?

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Lapply and sapply are two functions in the R programming language that are used for applying a function to a list or vector. The main difference between these two functions lies in their output. Lapply returns a list as its output, while sapply simplifies the output and returns a vector or matrix if possible. Additionally, lapply can be used with any type of input data structure, while sapply is specifically designed for vectors and matrices. Furthermore, sapply has the ability to automatically convert the output into a data frame if needed. In summary, lapply is more versatile and returns a list, while sapply is more simplified and returns a vector or matrix.

lapply vs. sapply in R: What's the Difference?

The lapply() function in R can be used to apply a function to each element of a list, vector, or data frame and obtain a list as a result.

The sapply() function can also be used to apply a function to each element of a list, vector, or data frame but it returns a vector as a result.

The following examples show how to use each of these functions in R.

Example: How to Use lapply() in R

The following code shows how to use the lapply() function to multiply each value in each column of a data frame by 2:

```
#create data frame
```

```
df <- data.frame(x=c(1, 2, 2, 3, 5),
```

```
y=c(4, 4, 6, 7, 8),  
z=c(7, 7, 9, 9, 9))
```

```
#view data frame  
df
```

```
x y z
```

```
1 1 4 7
```

```
2 2 4 7
```

```
3 2 6 9
```

```
4 3 7 9
```

```
5 5 8 9
```

```
#multiply each value in each column by 2  
lapply(df, function(df) df*2)
```

```
$x
```

```
2 4 4 6 10
```

```
$y
```

```
8 8 12 14 16
```

```
$z
```

```
14 14 18 18 18
```

Notice that the result is a list.

Example: How to Use sapply() in R

The following code shows how to use the sapply() function to multiply each value in each column of a data frame by 2:

```
#create data frame
```

```
df <- data.frame(x=c(1, 2, 2, 3, 5),
```

```
y=c(4, 4, 6, 7, 8),
```

```
z=c(7, 7, 9, 9, 9))
```

```
#view data frame
```

```
df
```

```
x y z
```

```
1 1 4 7
```

```
2 2 4 7
```

```
3 2 6 9
```

```
4 3 7 9
```

```
5 5 8 9
```

```
#multiply each value in each column by 2
```

```
sapply(df, function(df) df*2)
```

```
x y z
```

```
2 8 14
```

4 8 14

4 12 18

6 14 18

10 16 18

Notice that the result is a matrix of vectors.

Note that you can use `as.data.frame()` to return a data frame as a result instead of a matrix:

#multiply each value in each column by 2 and return a data frame

```
as.data.frame(sapply(df, function(df) df*2))
```

x y z

1 2 8 14

2 4 8 14

3 4 12 18

4 6 14 18

5 10 16 18

When to Use `lapply()` vs. `sapply()`

In 99% of cases, you'll use `sapply()` because it makes the most sense to return a vector or matrix as a result.

However, in some rare circumstances you may need to use `lapply()` instead if you need the result to be a list.

Note that `sapply()` and `lapply()` perform the same operations on a vector, matrix, or data frame. The only difference is the class of the object that is returned.

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