

## Basic R Package Assignment

- a. Create a folder called “forloop”, set the working directory to this folder.

```
jkimb@LAPTOP-SLSU0A0T MINGW64 ~  
$ cd /c/Users/jkimb/OneDrive/Desktop  
  
jkimb@LAPTOP-SLSU0A0T MINGW64 ~/OneDrive/Desktop  
$ ls  
AFolder4Practice/      Personal/  
'Anaconda Navigator.lnk'*  School/  
DBeaver.lnk*           'Visual Paradigm 17.1.lnk'*  
'GitHub Desktop.lnk'*     desktop.ini  
Learning/              git/  
'MySQL Workbench 8.0 CE.lnk'*  
  
jkimb@LAPTOP-SLSU0A0T MINGW64 ~/OneDrive/Desktop  
$ mkdir forloop  
  
jkimb@LAPTOP-SLSU0A0T MINGW64 ~/OneDrive/Desktop  
$ ls  
AFolder4Practice/      Personal/  
'Anaconda Navigator.lnk'*  School/  
DBeaver.lnk*           'Visual Paradigm 17.1.lnk'*  
'GitHub Desktop.lnk'*     desktop.ini  
Learning/              forloop/  
'MySQL Workbench 8.0 CE.lnk'*  git/
```

b. In the R sub-directory create a R script called practice.

```
> setwd("C:/Users/jkimb/OneDrive/Desktop/forloop")
> getwd()
[1] "C:/Users/jkimb/OneDrive/Desktop/forloop"
> list.files()
character(0)
> usethis::create_package(path = ".", rstudio = FALSE, open = FALSE)
✓ Setting active project to
  "C:/Users/jkimb/OneDrive/Desktop/forloop".
✓ Creating R/..
✓ Writing DESCRIPTION.
Package: forloop
Title: What the Package Does (One Line, Title Case)
Version: 0.0.0.9000
Authors@R (parsed):
  * First Last <first.last@example.com> [aut, cre] (YOUR-ORCID-ID)
Description: What the package does (one paragraph).
License: `use_mit_license()`, `use_gpl3_license()` or friends to
  pick a license
Encoding: UTF-8
Roxygen: list(markdown = TRUE)
RoxygenNote: 7.3.2
✓ Writing NAMESPACE.
✓ Setting active project to "<no active project>".
> list.files()
[1] "DESCRIPTION" "NAMESPACE"   "R"
> usethis::use_r("practice")
✓ Setting active project to
  "C:/Users/jkimb/OneDrive/Desktop/forloop".
□ Modify R/practice.R.
```

- c. Build a function inside of R script practice called `col_means()` that will take as input a data frame and return a vector of column means. We will not use the `colMeans()` function from `{base}` package.

```
13 ▾ col_means<- function(df){  
14   means <- numeric(ncol(df))  
15  
16 ▾   for(i in 1:ncol(df)){  
17     means[i] <- mean(df[, i], na.rm = TRUE)  
18 ▴   }  
19   return(means)  
20 ▴ }  
  
> col_means<- function(df){  
+   means <- numeric(ncol(df))  
+  
+   for(i in 1:ncol(df)){  
+     means[i] <- mean(df[, i], na.rm = TRUE)  
+   }  
+   return(means)  
+ }  
> df <- data.frame(  
+   a = c(1, 2, 3),  
+   b = c(4, 5, 6),  
+   c = c(7, 8, NA)  
+ )  
>  
> col_means(df)  
[1] 2.0 5.0 7.5
```

- d. Build a function inside of R script practice called `count_na()` that will use a for-loop to count how many NA's there are in a vector.

```
35 ▾ count_na <- function(vec){  
36   na_count <- 0  
37  
38 ▾   for(i in 1:length(vec)){  
39 ▾     if(is.na(vec[i])){  
40       na_count <- na_count + 1  
41 ▾     }  
42 ▾   }  
43   return(na_count)  
44 ▾ }  
  
> count_na <- function(vec){  
+   na_count <- 0  
+  
+   for(i in 1:length(vec)){  
+     if(is.na(vec[i])){  
+       na_count <- na_count + 1  
+     }  
+   }  
+   return(na_count)  
+ }  
  
> vec <- c(1, NA, 3, NA, 5)  
> print(count_na(vec))  
[1] 2
```

- e. Create documentation for each functions that you have in your R script. Then load the package and type `?col_means` and then ?count_na`.`

```
1  #' Calculate Column Means
2  #'
3  #' This function takes a data frame and returns a vector of column means.
4  #'
5  #' @param df A data frame containing numeric columns.
6  #'
7  #' @return A numeric vector of column means.
8  #' @examples
9  #' df <- data.frame(col1 = c(1, 2, 3), col2 = c(4, 5, 6), col3 = c(7, 8, NA))
10 #' col_means(df)
11 #'
12 #' @export
13 col_means <- function(df){
14   means <- numeric(ncol(df))
15
16   for(i in 1:ncol(df)){
17     means[i] <- mean(df[, i], na.rm = TRUE)
18   }
19   return(means)
20 }
21
22
23 #' Count NA Values
24 #'
25 #' This function counts the number of NA values in a given vector.
26 #'
27 #' @param vec A numeric vector.
28 #'
29 #' @return An integer count of NA values in the vector.
30 #' @examples
31 #' vec <- c(1, NA, 3, NA, 5)
32 #' count_na(vec)
33 #'
34 #' @export
35 count_na <- function(vec){
36   na_count <- 0
37
38   for(i in 1:length(vec)){
39     if(is.na(vec[i])){
40       na_count <- na_count + 1
41     }
42   }
43   return(na_count)
44 }
```

```
> devtools::document()
i Updating forloop documentation
i Loading forloop
Writing NAMESPACE
Writing col_means.Rd
Writing count_na.Rd
> ?col_means
i Rendering development documentation for "col_means"
> ?count_na
i Rendering development documentation for "count_na"
> |
```

col\_means.Rd ▾ Find in Topic

col\_means {forloop}

(preview) R Documentation

## Calculate Column Means

### Description

This function takes a data frame and returns a vector of column means.

### Usage

```
col_means(df)
```

### Arguments

`df` A data frame containing numeric columns.

### Value

A numeric vector of column means.

### Examples

[Run examples](#)

```
df <- data.frame(col1 = c(1, 2, 3), col2 = c(4, 5, 6), col3 = c(7, 8, NA))
col_means(df)
```

# Count NA Values

## Description

This function counts the number of NA values in a given vector.

## Usage

```
count_na(vec)
```

## Arguments

`vec` A numeric vector.

## Value

An integer count of NA values in the vector.

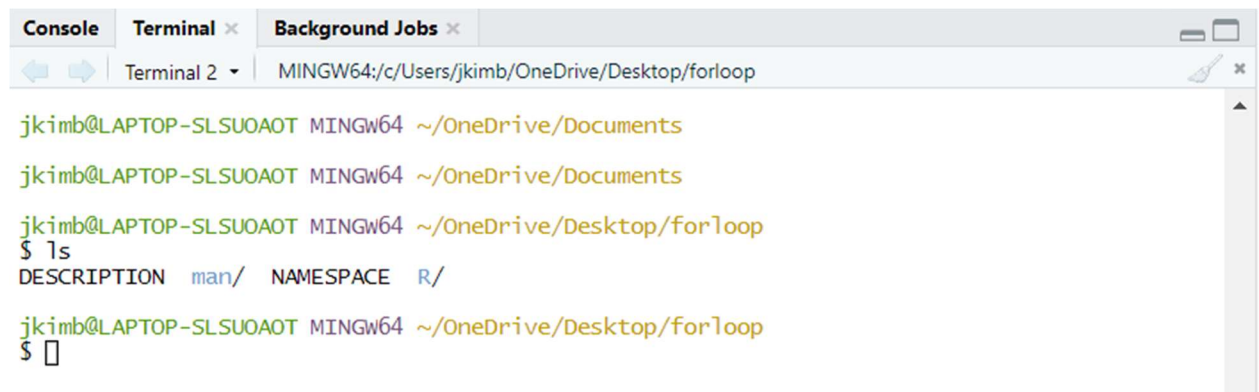
## Examples

[Run examples](#)

```
vec <- c(1, NA, 3, NA, 5)
count_na(vec)
```

---

- f. In your R studio move to Terminal and type `ls`, it will show the list of all files and folders that you have in your working directory ``forloops``.



The screenshot shows the R Studio interface with three tabs: Console, Terminal, and Background Jobs. The Terminal tab is active, showing a terminal window titled 'Terminal 2' with the path 'MINGW64:/c:/Users/jkimb/OneDrive/Desktop/forloop'. The terminal output shows the user 'jkimb@LAPTOP-SLSUOAOT' in a 'MINGW64' environment. The prompt is '~/.OneDrive/Documents'. The user enters 'ls' and the output shows 'DESCRIPTION', 'man/', and 'NAMESPACE'. The user then enters 'R/' and the output shows 'R/'. The prompt is '\$'.

```
jkimb@LAPTOP-SLSUOAOT MINGW64 ~/.OneDrive/Documents
jkimb@LAPTOP-SLSUOAOT MINGW64 ~/.OneDrive/Documents
jkimb@LAPTOP-SLSUOAOT MINGW64 ~/.OneDrive/Desktop/forloop
$ ls
DESCRIPTION  man/  NAMESPACE
jkimb@LAPTOP-SLSUOAOT MINGW64 ~/.OneDrive/Desktop/forloop
$ R/
```