

# Week-5: Code-along

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## II. Code to edit and execute using the Code-along.Rmd file

### A. Writing a function

#### 1. Write a function to print a “Hello” message (Slide #14)

```
# Enter code here
say_hello_to <- function(name) {
  print(paste0("Hello ", name, "!"))
}
```

#### 2. Function call with different input names (Slide #15)

```
# Enter code here
say_hello_to('Kashif')
```

```
## [1] "Hello Kashif!"
```

```
say_hello_to('Zach')
```

```
## [1] "Hello Zach!"
```

```
say_hello_to('Deniz')
```

```
## [1] "Hello Deniz!"
```

#### 3. typeof primitive functions (Slide #16)

```
# Enter code here
typeof(`+`)
```

```
## [1] "builtin"
```

```
typeof(sum)
```

```
## [1] "builtin"
```

## 4. typeof user-defined functions (Slide #17)

```
# Enter code here  
typeof(say_hello_to)
```

```
## [1] "closure"
```

```
typeof(mean)
```

```
## [1] "closure"
```

## 5. Function to calculate mean of a sample (Slide #19)

```
# Enter code here  
calc_sample_mean <- function(sample_size) {  
  mean(rnorm(sample_size))  
}
```

## 6. Test your function (Slide #22)

```
# With one input  
calc_sample_mean(1000)
```

```
## [1] -0.01214757
```

```
# With vector input  
calc_sample_mean(c(100, 300, 3000))
```

```
## [1] -0.6849709
```

## 7. Customizing the function to suit input (Slide #23)

```
# Enter code here
library(tidyverse)
```

```
## — Attaching core tidyverse packages — tidyverse 2.0.0 —
## ✓ dplyr      1.1.2      ✓ readr      2.1.4
## ✓ forcats    1.0.0      ✓ stringr   1.5.0
## ✓ ggplot2    3.4.3      ✓ tibble    3.2.1
## ✓ lubridate  1.9.2      ✓ tidyr     1.3.0
## ✓ purrr      1.0.2
## — Conflicts — tidyverse_conflicts() —
## ✗ dplyr::filter() masks stats::filter()
## ✗ dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to be
come errors
```

```
sample_tibble <- tibble(sample_sizes =
  c(100, 300, 3000))
sample_tibble %>%
  group_by(sample_sizes) %>%
  mutate(sample_means=
    calc_sample_mean(sample_sizes))
```

```
## # A tibble: 3 × 2
## # Groups:   sample_sizes [3]
##   sample_sizes sample_means
##         <dbl>         <dbl>
## 1         100         0.0776
## 2         300         0.0310
## 3        3000        -0.0146
```

## 8. Setting defaults (Slide #25)

```
# First define the function
calc_sample_mean <- function(sample_size,
                              our_mean=0,
                              our_sd=1) {
  sample <- rnorm(sample_size,
                  mean = our_mean,
                  sd = our_sd)
  mean(sample)
}
# Call the function
calc_sample_mean(sample_size = 10)
```

```
## [1] 0.08316837
```

## 9. Different input combinations (Slide #26)

```
# Enter code here  
calc_sample_mean(10, our_sd = 2)
```

```
## [1] 0.0744739
```

```
calc_sample_mean(10, our_mean = 6)
```

```
## [1] 6.46238
```

```
calc_sample_mean(10, 6, 2)
```

```
## [1] 5.197178
```

## 10. Different input combinations (Slide #27)

```
# set error=TRUE to see the error message in the output  
# Enter code here  
calc_sample_mean(our_mean = 5)
```

```
## Error in calc_sample_mean(our_mean = 5): argument "sample_size" is missing, with no default
```

## 11. Some more examples (Slide #28)

```
# Enter code here  
add_two <- function(x) {  
  x+2  
}  
add_two(4)
```

```
## [1] 6
```

```
add_two(-34)
```

```
## [1] -32
```

```
add_two(5.784)
```

```
## [1] 7.784
```

## B. Scoping

### 12. Multiple assignment of z (Slide #36)

```
# Enter code here
z <- 1
sprintf("The value assigned to z outside the function is %d",z)
```

```
## [1] "The value assigned to z outside the function is 1"
```

```
foo <- function(z = 2) {
  z <- 3
  return(z+3)
}
foo()
```

```
## [1] 6
```

### 13. Multiple assignment of z (Slide #37)

```
# Enter code here
z <- 1
foo <- function(z = 2) {
  z <- 3
  return(z+3)
}
foo(z = 4)
```

```
## [1] 6
```

```
sprintf("The final value of z after reassigning it to a different value inside the function is %d",z)
```

```
## [1] "The final value of z after reassigning it to a different value inside the function is 1"
```