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
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v forcats   1.0.0     v readr     2.1.4
## v ggplot2   3.4.3     v stringr   1.5.0
## v lubridate 1.9.2     v tibble    3.2.1
## v purrr     1.0.2     v tidyr     1.3.0

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
print("Hello World")
```

```
## [1] "Hello World"
```

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

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

say_hello_to('Javier')
```

```
## [1] "HelloJavier!"
```

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))
}
#OR
calc_sample_mean <- function(sample_size) {
 random_sample <- rnorm(sample_size)
 sample_mean <- mean(random_sample)
 return(sample_mean)
}
```

6. Test your function (Slide #22)

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

```
## [1] 0.07448294
```

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

```
## [1] 0.5231001
```

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

```
# Enter code here
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 x 2
## # Groups:   sample_sizes [3]
##   sample_sizes sample_means
##          <dbl>        <dbl>
## 1          100      0.0366
## 2          300     -0.0805
## 3         3000     -0.00649
```

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] -0.4898684
```

9. Different input combinations (Slide #26)

```
# Enter code here
# we can change one or two defaults.
# You can refer by name, or use position
calc_sample_mean(10, our_sd = 2)
```

```
## [1] -0.02863202
```

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

```
## [1] 5.747222
```

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

```
## [1] 7.548248
```

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 rnorm(sample_size, mean = our_mean, sd = our_sd): argument "sample_size" is missing, with n
```

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)

```r
# 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"
```

```r
# declare a function, notice how we pass a value of 2 for z
foo <- function(z = 2) {
 # reassigning z
 z <- 3
 return(z+3)
}
foo()
```

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

13. Multiple assignment of z (Slide #37)

```r
# Enter code here
# Initialize z
z <- 1
# declare a function, notice how we pass a value of 2 for z
foo <- function(z = 2) {
 # reassigning z
 z <- 3
 return(z+3)
}
# another reassignment of z
foo(z = 4)
```

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

```r
# Accessing z outside the function
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"
```