Week-5: Code-along

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```
knitr::opts_chunk$set(echo = TRUE)
```

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)

```
# Define a function to print a "Hello" message to a person
say_hello_to <- function(name) {
  print(paste0("Hello ", name, "!"))
}
```

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

```
# Call the function and pass a name
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)

```
typeof(`+`)
```

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

```
typeof(sum)
```

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

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

```
typeof(say_hello_to)
```

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

```
typeof(mean)
```

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

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

```
calc_sample_mean <- function(sample_size) {
mean(rnorm(sample_size))
}
```

6. Test your function (Slide #22)

```
calc_sample_mean(1000)
```

```
## [1] -0.08105265
```

```
values <- c(100, 300, 3000)
sample_mean <- mean(values)
print(sample_mean)
```

```
## [1] 1133.333
```

#Another method Calculate_sample_mean <- mean(sample_sizes =c(100, 300, 3000))

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

```r
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
become errors
```

```
#creating a vector to test our function
sample_tibble <- tibble(sample_sizes =
c(100, 300, 3000))
#using rowwise groups the data by row,
# allowing calc_sample_mean
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      -0.138
## 2          300       0.131
## 3         3000       0.0174
```

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] -0.2567203
```

9. Different input combinations (Slide #26)

```
calc_sample_mean(10, our_sd = 2)
```

```
## [1] -0.3380256
```

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

```
## [1] 5.999051
```

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

```
## [1] 6.428711
```

10. Different input combinations (Slide #27)

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

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

11. Some more examples (Slide #28)

```
add_two <- function(x) {
x+2
}
#Example 1
add_two(4)
```

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

```
#Example 2
add_two(-34)
```

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

```
#Example 3
add_two(5.784)
```

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

```
#There are no errors in this code, and it demonstrates that the add_two function can handl
e different data types (integers and floating-point numbers) without issues.
```

B. Scoping

12. Multiple assignment of z (Slide #36)

```
# Initialize z
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"
```

```
## [1] "The value assigned to z outside the function is 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)
}
foo()
```

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

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

13. Multiple assignment of z (Slide #37)

```
# 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
```

```
# Accessing z outside the function
```