Week-3: Code-along

Wong Wei Qi

2023-08-30

I. Code to edit and execute

To be submitted on canvas before attending the tutorial

Loading packages

```
# Load package tidyverse
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_conflict
s() ──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force al
l conflicts to become errors
```

Assigning values to variables

```
# Example a.: execute this example
x <- 'A'
x
```

```
## [1] "A"
```

```
# Complete the code for Example b and execute it
y <- "apple"
y
```

```
## [1] "apple"
```

```
# Complete the code for Example c and execute it
c <- FALSE
c
```

```
## [1] FALSE
```

```r
# Complete the code for Example d and execute it
d <- 5L
d
```

```
## [1] 5
```

```r
# Complete the code for Example e and execute it
e <- "5"
e
```

```
## [1] "5"
```

```r
# Complete the code for Example f and execute it
f <- 1i
f
```

Checking the type of variables

```r
# Example a.: execute this example
x <- 'A'
typeof(x)

# Complete the code for Example b and execute it
typeof(y)

# Complete the code for Example c and execute it
typeof(c)

# Complete the code for Example d and execute it
typeof(d)

# Complete the code for Example e and execute it
typeof(e)
e

# Complete the code for Example f and execute it
typeof(f)
```

Need for data types

```r
# import the cat-lovers data from the csv file you downloaded from canvas
cat_lovers <- read.csv("cat-lovers.csv")
cat_lovers
```

```
##                   name                                        number_of_cats
## 1       Bernice Warren                                                    0
## 2        Woodrow Stone                                                    0
## 3          Willie Bass                                                    1
## 4       Tyrone Estrada                                                    3
## 5         Alex Daniels                                                    3
## 6           Jane Bates                                                    2
## 7       Latoya Simpson                                                    1
## 8          Darin Woods                                                    1
## 9           Agnes Cobb                                                    0
```

```
## 10       Tabitha Grant                                                    0
## 11         Perry Cross                                                    0
## 12         Wanda Silva                                                    0
## 13         Alicia Sims                                                    1
## 14         Emily Logan                                                    3
## 15     Woodrow Elliott                                                    3
## 16      Brent Copeland                                                    2
## 17       Pedro Carlson                                                    1
## 18          Patsy Luna                                                    1
## 19       Brett Robbins                                                    0
## 20       Oliver George                                                    0
## 21        Calvin Perry                                                    1
## 22      Lora Gutierrez                                                    1
## 23    Charlotte Sparks                                                    0
## 24           Earl Mack                                                    0
## 25         Leslie Wade                                                    4
## 26     Santiago Barker                                                    0
## 27           Jose Bell                                                    0
## 28         Lynda Smith                                                    0
## 29   Bradford Marshall                                                    0
## 30       Irving Miller                                                    0
## 31    Caroline Simpson                                                    0
## 32       Frances Welch                                                    0
## 33       Melba Jenkins                                                    0
## 34    Veronica Morales                                                    0
## 35  Juanita Cunningham                                                    0
## 36      Maurice Howard                                                    0
## 37         Teri Pierce                                                    0
## 38       Phil Franklin                                                    0
## 39       Jan Zimmerman                                                    0
## 40        Leslie Price                                                    0
## 41    Bessie Patterson                                                    0
## 42         Ethel Wolfe                                                    0
## 43        Naomi Wright                                                    1
## 44         Sadie Frank                                                    3
## 45       Lonnie Cannon                                                    3
## 46         Tony Garcia                                                    2
## 47        Darla Newton                                                    1
## 48        Ginger Clark 1.5 - honestly I think one of my cats is half human
## 49     Lionel Campbell                                                    0
## 50      Florence Klein                                                    0
## 51     Harriet Leonard                                                    1
## 52 Terrence Harrington                                                    0
## 53       Travis Garner                                                    1
## 54           Doug Bass                                                three
## 55          Pat Norris                                                    1
## 56          Dawn Young                                                    1
## 57       Shari Alvarez                                                    1
## 58     Tamara Robinson                                                    0
## 59        Megan Morgan                                                    0
```

```
## 60         Kara Obrien                                                  2
##      handedness
## 1          left
## 2          left
## 3          left
## 4          left
## 5          left
## 6          left
## 7          left
## 8          left
## 9          left
## 10         left
## 11         left
## 12         left
## 13         left
## 14        right
## 15        right
## 16        right
## 17        right
## 18        right
## 19        right
## 20        right
## 21        right
## 22        right
## 23        right
## 24        right
## 25        right
## 26        right
## 27        right
## 28        right
## 29        right
## 30        right
## 31        right
## 32        right
## 33        right
## 34        right
## 35        right
## 36        right
## 37        right
## 38        right
## 39        right
## 40        right
## 41        right
## 42        right
## 43        right
## 44        right
## 45        right
## 46        right
## 47        right
## 48        right
```

```
## 49        right
## 50        right
## 51        right
## 52        right
## 53        right
## 54        right
## 55        right
## 56 ambidextrous
## 57 ambidextrous
## 58 ambidextrous
## 59 ambidextrous
## 60 ambidextrous
```

```
# Compute the mean of the number of cats: execute this command
mean_age <- mean(cat_lovers$Age)

# Get more information about the mean() command using ? operator

?mean()

# Convert the variable number_of_cats using as.integer()

 cat_lovers$number_of_cats
```

```
##  [1] "0"
##  [2] "0"
##  [3] "1"
##  [4] "3"
##  [5] "3"
##  [6] "2"
##  [7] "1"
##  [8] "1"
##  [9] "0"
## [10] "0"
## [11] "0"
## [12] "0"
## [13] "1"
## [14] "3"
## [15] "3"
## [16] "2"
## [17] "1"
## [18] "1"
## [19] "0"
## [20] "0"
## [21] "1"
## [22] "1"
## [23] "0"
## [24] "0"
## [25] "4"
## [26] "0"
## [27] "0"
```

```
## [28] "0"
## [29] "0"
## [30] "0"
## [31] "0"
## [32] "0"
## [33] "0"
## [34] "0"
## [35] "0"
## [36] "0"
## [37] "0"
## [38] "0"
## [39] "0"
## [40] "0"
## [41] "0"
## [42] "0"
## [43] "1"
## [44] "3"
## [45] "3"
## [46] "2"
## [47] "1"
## [48] "1.5 - honestly I think one of my cats is half human"
## [49] "0"
## [50] "0"
## [51] "1"
## [52] "0"
## [53] "1"
## [54] "three"
## [55] "1"
## [56] "1"
## [57] "1"
## [58] "0"
## [59] "0"
## [60] "2"
```

```
# Display the elements of the column number_of_cats
as.integer(cat_lovers$number_of_cats)

# Display the elements of the column number_of_cats after converting it using
as.numeric()
as.numeric(cat_lovers$number_of_cats)
```

Create an empty vector

```
# Empty vector
library(tidyverse)
# Type of the empty vector
typeof(x)
```

Create vectors of type logical

```
# Method 1
x<-vector("logical",length=5)
```

```r
# Display the contents of x
print(x)
# Display the type of x
print(typeof(x))

# Method 2
x<-logical(5)
# Display the contents of x
print(x)
```

```
## [1] FALSE FALSE FALSE FALSE FALSE
```

```r
# Display the type of x
print(typeof(x))
```

```
## [1] "logical"
```

```r
# Method 3
x<-c(TRUE,FALSE,TRUE,FALSE,TRUE)
# Display the contents of x
print(x)
# Display the type of x
print(typeof(x))
```

Create vectors of type character

```r
# Method 1

# Display the contents of x
print(x)
# Display the type of x
print(typeof(x))

# Method 2

# Display the contents of x
print(x)
# Display the type of x

# Method 3

# Display the contents of x

# Display the type of x
```

Create vectors of type integer

```r
# Method 1

# Display the contents of x

# Display the type of x
print(typeof(x))
```

```
# Method 2

# Display the contents of x
print(x)
# Display the type of x

# Method 3

# Display the contents of x

# Display the type of x

# Method 4

# Display the contents of x

# Display the type of x

# Method 5

# Display the contents of x

# Display the type of x
```

Create vectors of type double

```
# Method 1

# Display the contents of x

# Display the type of x

# Method 2

# Display the contents of x

# Display the type of x

# Method 3

# Display the contents of x

# Display the type of x
```

Implicit coercion

Example 1

```
# Create a vector

# Check the type of x
```

```
# Add a character to the vector

# Check the type of x
```

Example 2

```
# Create a vector

# Check the type of x

# Add a number to the vector

# Check the type of x
```

Example 3

```
# Create a vector

# Check the type of x

# Add a logical value to the vector

# Check the type of x
```

Example 4

```
# Create a vector

# Check the type of x

# Add a number to the vector

# Check the type of x
```

Explicit coercion

Example 1

```
# Create a vector

# Check the type of x

# Convert the vector to type character

# Check the type of x
```

Example 2

```
# Create a vector

# Check the type of x

# Convert the vector to type double

# Check the type of x
```

Accessing elements of the vector

```r
# Create a vector
x <- c(1,10,9,8,1,3,5)

# Access one element with index 3

# Access elements with consecutive indices, 2 to 4: 2,3,4

# Access elements with non-consecutive indices, 1,3,5

# Access elements using logical vector
x[c(TRUE,FALSE,FALSE,TRUE,FALSE,FALSE,TRUE)]

# Access elements using the conditional operator <
```

Examining vectors

```r
# Display the length of the vector
print(length(x))
# Display the type of the vector
print(typeof(x))
# Display the structure of the vector
print(str(x))
```

Lists

```r
# Initialise a named list
my_pie = list(type="key lime", diameter=7, is.vegetarian=TRUE)
# display the list
my_pie

# Print the names of the list

# Retrieve the element named type

# Retrieve a truncated list

# Retrieve the element named type
```

Exploring data-sets

```r
# Install package
install.packages("openintro")
# Load the package
library(openintro)
# Load package
library(tidyverse)

# Catch a glimpse of the data-set: see how the rows are stacked one below ano
ther
glimpse(loans_full_schema)

# Selecting numeric variables
loans <- loans_full_schema %>% # <-- pipe operator
  select(paid_total, term, interest_rate,
```

```
         annual_income,paid_late_fees,debt_to_income)
# View the columns stacked one below another
glimpse(loans)

# Selecting categoric variables
loans <- loans_full_schema %>%
  select( ) # type the chosen columns as in the lecture slide
# View the columns stacked one below another
glimpse(loans)
```