Week-3: Code-along

Esther Kho Yining

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I. Code to edit and execute

To be submitted on canvas before attending the tutorial

Loading packages

```
# Load package tidyverse
```

Assigning values to variables

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

```
# Complete the code for Example b and execute it
x <- 'Apple'
```

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

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

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

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

Checking the type of variables

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

```
## [1] "character"
```

```r
# Complete the code for Example b and execute it
x <- 'Apple'
typeof(x)
```

```
## [1] "character"
```

```r
# Complete the code for Example c and execute it
x <- FALSE
typeof(x)
```

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

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

```
## [1] "integer"
```

```r
# Complete the code for Example e and execute it
x <- 5
typeof(x)
```

```
## [1] "double"
```

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

```
## [1] "complex"
```

Need for data types

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

```
## # A tibble: 60 x 3
##    name           number_of_cats handedness
##    <chr>          <chr>          <chr>
##  1 Bernice Warren 0              left
##  2 Woodrow Stone  0              left
##  3 Willie Bass    1              left
##  4 Tyrone Estrada 3              left
##  5 Alex Daniels   3              left
##  6 Jane Bates     2              left
##  7 Latoya Simpson 1              left
##  8 Darin Woods    1              left
##  9 Agnes Cobb     0              left
## 10 Tabitha Grant  0              left
## # i 50 more rows
```

```r
# Assign the variable to the dataset
cat_lovers <- read_csv("cat_lovers.csv")
```

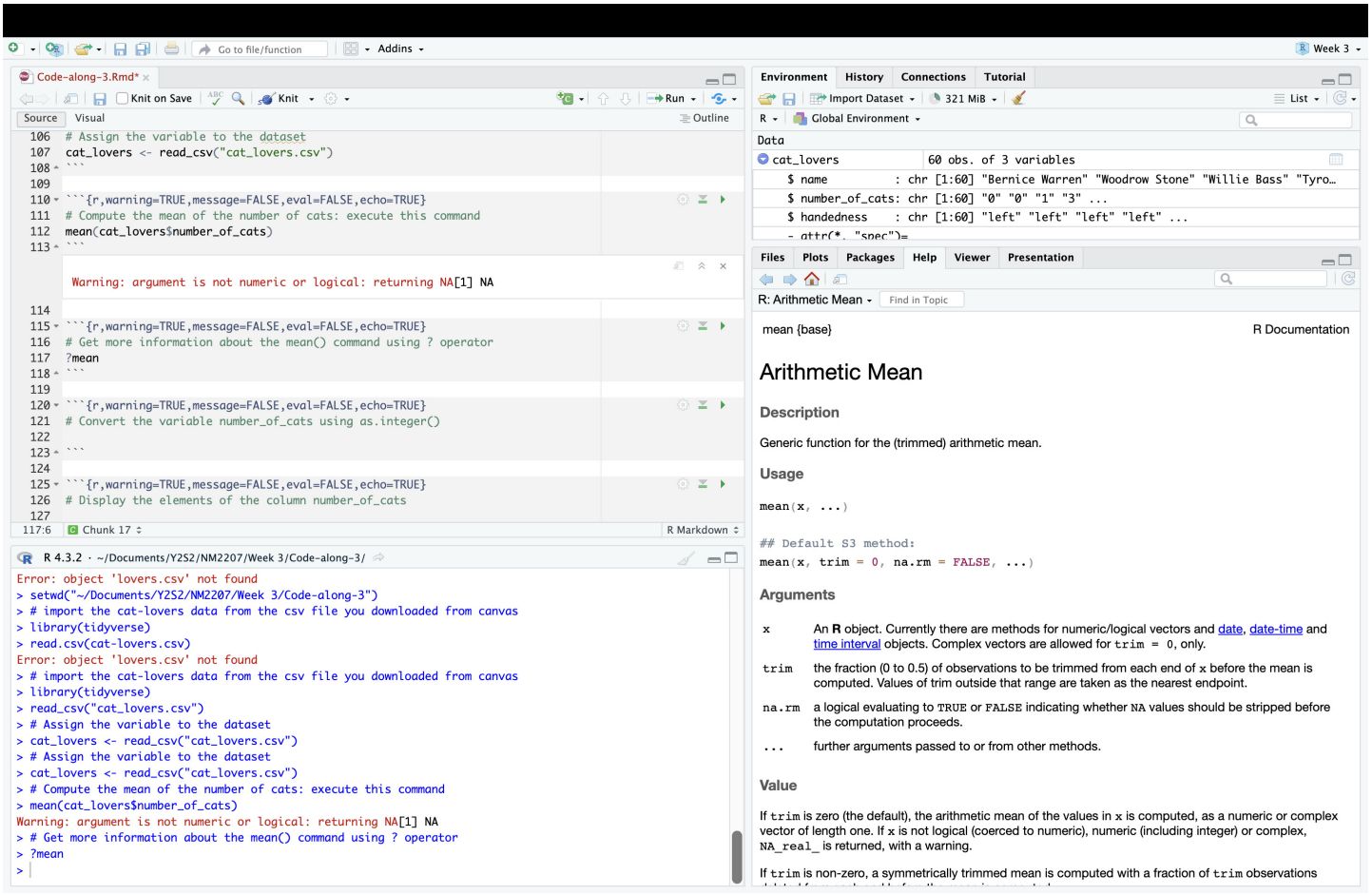
```r
# Compute the mean of the number of cats: execute this command
mean(cat_lovers$number_of_cats)
```

```
## Warning in mean.default(cat_lovers$number_of_cats): argument is not numeric or
## logical: returning NA
```

```
## [1] NA
```

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

```r
knitr::include_graphics("/Users/EstherKho/Documents/Y2S2/NM2207/Week 3/Code-along-3/mean.jpg")
```




```r
# Convert the variable number_of_cats using as.integer()
mean(as.integer(cat_lovers$number_of_cats))
```

```
## Warning in mean(as.integer(cat_lovers$number_of_cats)): NAs introduced by
## coercion
```

```
## [1] NA
```

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

```
## Warning: NAs introduced by coercion
```

```
##  [1]  0  0  1  3  3  2  1  1  0  0  0  0  1  3  3  2  1  1  0  0  1  1  0  0  4
## [26]  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  3  3  2  1 NA  0  0
## [51]  1  0  1 NA  1  1  1  0  0  2
```

Create an empty vector

```
# Empty vector
x <- vector()

# Type of the empty vector
typeof(x)
```

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

Create vectors of type logical

```
# Method 1
x<-vector("logical",length=5)
# Display the contents of x
print(x)
```

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

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

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

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

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

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

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

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

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

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

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

Create vectors of type character

```
# Method 1
x<-vector("character",length=5)
# Display the contents of x
print(x)
```

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

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

```
## [1] "character"
```

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

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

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

```
## [1] "character"
```

```r
# Method 3
x<-c('A','b','r','q')
# Display the contents of x
print(x)
```

```
## [1] "A" "b" "r" "q"
```

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

```
## [1] "character"
```

Create vectors of type integer

```r
# Method 1
x<-vector("integer",length=5)
# Display the contents of x
print(x)
```

```
## [1] 0 0 0 0 0
```

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

```
## [1] "integer"
```

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

```
## [1] 0 0 0 0 0
```

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

```
## [1] "integer"
```

```r
# Method 3
x<-c(1,2,3,4,5)
# Display the contents of x
print(x)
```

```
## [1] 1 2 3 4 5
```

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

```
## [1] "double"
```

```r
# Method 4
x<-seq(from=1,to=5,by=0.1)
# Display the contents of x
print(x)
```

```
##  [1] 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8
## [20] 2.9 3.0 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4.0 4.1 4.2 4.3 4.4 4.5 4.6 4.7
## [39] 4.8 4.9 5.0
```

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

```
## [1] "double"
```

```r
# Method 5
x<-1:5
# Display the contents of x
print(x)
```

```
## [1] 1 2 3 4 5
```

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

```
## [1] "integer"
```

Create vectors of type double

```r
# Method 1
x<-vector("double",length=5)
# Display the contents of x
print(x)
```

```
## [1] 0 0 0 0 0
```

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

```
## [1] "double"
```

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

```
## [1] 0 0 0 0 0
```

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

```
## [1] "double"
```

```r
# Method 3
x<-c(1.787,0.63573,2.3890)
# Display the contents of x
print(x)
```

```
## [1] 1.78700 0.63573 2.38900
```

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

```
## [1] "double"
```

Implicit coercion

```r

# Create a vector
x <- c(1.8)
# Check the type of x
typeof(x)
```

Example 1

```
## [1] "double"
```

```r
# Add a character to the vector
x <- c(x,'a')
# Check the type of x
typeof(x)
```

```
## [1] "character"
```

```
# Create a vector
x <- c(TRUE)
# Check the type of x
typeof(x)
```

Example 2

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

```
# Add a number to the vector
x <- c(x,2)
# Check the type of x
typeof(x)
```

```
## [1] "double"
```

```
# Create a vector
x <- c('a')
# Check the type of x
typeof(x)
```

Example 3

```
## [1] "character"
```

```
# Add a logical value to the vector
x <- c(x,TRUE)
# Check the type of x
typeof(x)
```

```
## [1] "character"
```

```
# Create a vector
x <- c(1L)
# Check the type of x
typeof(x)
```

Example 4

```
## [1] "integer"
```

```
# Add a number to the vector
x <- c(x,2)
# Check the type of x
typeof(x)
```

```
## [1] "double"
```

Explicit coercion

```
# Create a vector
x <- c(1L)
# Check the type of x
typeof(x)
```

Example 1

```
## [1] "integer"
```

```
# Convert the vector to type character
x <- as.character(x)
# Check the type of x
typeof(x)
```

```
## [1] "character"
```

```
# Create a vector
x <- c('A')
# Check the type of x
typeof(x)
```

Example 2

```
## [1] "character"
```

```
# Convert the vector to type double
x <- as.numeric(x)
```

```
## Warning: NAs introduced by coercion
```

```
# Check the type of x
typeof(x)
```

```
## [1] "double"
```

Accessing elements of the vector

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

```r
# Access one element with index 3
x[3]
```

```
## [1] 9
```

```r
# Access elements with consecutive indices, 2 to 4: 2,3,4
x[2:4]
```

```
## [1] 10  9  8
```

```r
# Access elements with non-consecutive indices, 1,3,5
x[c(1,3,5)]
```

```
## [1] 1 9 1
```

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

```
## [1] 1 8 5
```

```r
# Access elements using the conditional operator <
x[x<10]
```

```
## [1] 1 9 8 1 3 5
```

Examining vectors

```r
# Display the length of the vector
print(length(x))
```

```
## [1] 7
```

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

```
## [1] "double"
```

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

```
##  num [1:7] 1 10 9 8 1 3 5
## NULL
```

Lists

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

```
## $type
## [1] "key lime"
##
## $diameter
## [1] 7
##
## $is.vegetarian
## [1] TRUE
```

```r
# Print the names of the list
names(my_pie)
```

```
## [1] "type"          "diameter"      "is.vegetarian"
```

```r
# Retrieve the element named type
my_pie$type
```

```r
# Retrieve a truncated list
my_pie["type"]
```

```
## $type
## [1] "key lime"
```

```r
# Retrieve the element named type
my_pie[["type"]]
```

```
## [1] "key lime"
```

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

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

```r
# 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)
```

```r
# 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)
```

Exploring data-sets