Lesson 1

Professor Lorraine Gaudio

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BOISE STATE UNIVERSITY

Contents

1. ☒ Welcome to Lesson 1

1. Open your course project for RStudio (or create a new project if you don't have one yet).
2. Create a new R script file (File > New File > R Script).
3. Type in the code provide in this document and as you follow along with the video. Pause the video at anytime to answer assignment questions, dig deeper or add memo notes.

1.1 Lesson Overview

In the next few minutes you will learn how to:

- □ Run code from a script or the console.
- □ Do simple arithmetic in R.
- □ Create and inspect objects with the assignment operator (<-).
- □ Combine words with the paste() function.
- □ Save your workspace so nothing is lost.
- □ Follow R's object-naming rules.

2. Running Code

 Try running the next line in your console. Notice that R immediately prints the answer.

3 + 4

```
# Type this line in your console and click Run or press Ctrl + Enter
3 + 4
```

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

 Nice! You just ran your first R command. The simplest usage of R is performing basic calculations. You can do addition (+), subtraction (-), multiplication (*), and division (/).

```
# Create a memo note in you R script.

## 1. Explain what you did, what your observations are, and what you expect
# to happen.

## 2. Demonstrate learning skill(s) in your memo

## Example:

# I ran the command 3 + 4 in the console. I expect to see the result 7 printed
# in the console. I wondered what happens if there are no spaces between
# the numbers and the plus sign. I tested it and it still works. I learned that
# R ignores spaces in the code.
```

The value 7 isn't saved anywhere yet; it's just printed as a result in the console. Next we'll capture results as objects so we can reuse them.

3. Objects & Assignment

In R, *everything* is an object. Use "<-" to assign a value to a name. Type the following into your R script. Then run each line and watch the Environment pane for new entries.

```
result <- 3 + 4      # store the arithmetic output

number <- 42         # store a simple number

ratio  <- number / result   # reuse objects to calculate 42 / 7
```

Find the Environment pane (top-right) and see the new objects.

☐ Type the name of one of the objects in the Console and press Enter. What happened?

```
# Create a memo note in you R script.
## 1. Explain what you did, what your observations are, and what you expect
# to happen.

## 2. Demonstrate learning skill(s) in your memo

# Example:

# I created three objects: result, number, and ratio. I assigned the value of
# 3 + 4 to result, 42 to number, and calculated the ratio of number to result.
# When I typed the name of one object in the console, it printed the value of
# that object.

# I decided to click around in the Environment pane and found a down carrot
# next to list. I switched it to Grid and then back again. I then decided to
# learn more about this by typing this into a internet search engine. "Explain
# the drop down carrot next to List in R Studio. What is the difference between
# Grid and List?" I learned that "Grid" is used to visualize data in a
# structured format where "List" is a simple way of organizing objects.
```

Reminder: Now would be a great time to click save (or press Ctrl + S) to save your script.

- Note: Check your working directory.

getwd() # This shows your current working directory.

If you have the course project open, it should show the correct folder. Additionally, you can set it with setwd() if needed.

 Does RStudio have an autosave feature? What happens if you close RStudio without saving? How often should you save your work?

 Part I ASSIGNMENT INSTRUCTIONS

Now it's your turn to practice creating and using objects. Follow the tasks below to complete the assignment.

1. Work through each task in order. Replace the ___ with your code.
2. Run each completed line to be sure no errors appear and objects show in the Environment.

3.1 Task 1

Store the quantity 62 in an object called items_sold

items_sold <- ___

3.2 Task 2

Store the unit price 100 in an object called unit_price

unit_price <- ___

3.3 Task 3

Calculate total_revenue by multiplying items_sold and unit_price

total_revenue <- ___ * ___ # edit only the blanks

4. Character Strings

Computers don't just crunch numbers—they handle text too! Strings live inside quotation marks. paste() joins them with spaces by default. Type the following into your R script and run each line:

```
greeting  <- "Welcome to R."
statement <- "Productive code is clear and reproducible."
message   <- paste(greeting, statement)  # combine the two sentences
message   # Run to print the full message
```

[1] "Welcome to R. Productive code is clear and reproducible."

 Create your own *statement* with something you'd like to tell future you, then run it the message lines again.

```
# Create a memo note in you R script.
## 1. Explain what you did, what your observations are, and what you expect
# to happen.

## 2. Demonstrate learning skill(s) in your memo
```

 Part II ASSIGNMENT INSTRUCTIONS

1. Work through each task in order. Replace the ___ with your code.
2. Run each completed line to be sure no errors appear and objects show in the Environment.

4.1 Task 4: Character objects

Store "yellow" in an object first_word

first_word <- ___

4.2 Task 5

Store "banana" in an object second_word

second_word <- ___

4.3 Task 6

Paste first_word and second_word with a space; call the result sentence

sentence <- paste(,)

4.4 Task 7: Inspect & save

View object types

class(total_revenue)

□ What prints?

class(sentence)

□ What prints?

□ Part III ASSIGNMENT INSTRUCTIONS

1. Work through each task in order. Replace the ___ with your code.
2. Run each completed line to be sure no errors appear and objects show in the Environment.

4.5 Task 8

Create-your-own (challenge)

It's play time! Create new object(s) that combines skills above.

Name it my_object and write a comment describing what it does.

my_object <- ___

```
# Create a memo note in your R script.

## 1. Explain what you did, what your observations are, and what you expect
# to happen.

## 2. Demonstrate learning skill(s) in your memo

# Example:

# I tried to create an object called my_object that combines the sentence and
# total_revenue but I forgot that the quotation mark needed to be before the
# comma, not after. I had an error and it took me a few minutes to figure it
# out. I review the earlier script to compare and then I finally saw it.
```

5. Save workspace

You will be submitting both the R script and the workspace file. The workspace file saves all the objects in your environment that you created in this lesson. You can save the workspace by running the following command in your R script:

save.image("Assignment1_Workspace.RData")

Or you can click the "Save Workspace" button in the Environment pane.

Always save the R script before closing. If you don't, you will lose your work.