

# Welcome to Introduction to R for Finance!

INTRODUCTION TO R FOR FINANCE



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# A Hands-On Course

The screenshot shows a DataCamp exercise interface. On the left, the 'Exercise' section contains R code for creating vectors: `apple_stock <- c(189.49, 109.90, 189.11, 109.98, 111.03, 113.33)` and `credit_rating <- c("AAA", "AA", "BBB", "BB", "B")`. Below this, the 'Instructions' section (worth 100 XP) lists three tasks: 1) Create a numeric vector for IBM stock prices. 2) Create a character vector of finance-related words: "stocks", "bonds", and "investments". 3) Create a logical vector of TRUE, FALSE, TRUE. A 'Take Hint (-30 XP)' button is visible. The main area is a code editor with the following R code: 

```
1 # Another numeric vector
2 ibm_stock <- c(139.82, 140.82, 150.84)
3
4 # Another character vector
5 finance <- c("stocks", "bonds", )
6
7 # A logical vector
8 logic <-
```

 At the bottom of the editor are 'Run Code' and 'Submit Answer' buttons. Below the editor is an empty 'R Console' window.

# What will you learn?

- Basics of R
- Data structures
- Finance examples

# Console

- Execute R commands

The screenshot shows the DataCamp interface for an R exercise. On the left, the 'Exercise' panel is titled 'Your first R script' and contains instructions. The main editor area shows a script named 'script.R' with the following code:

```
1 # Addition!  
2 3 + 5  
3  
4 # Subtraction!  
5
```

Below the script are three buttons: a refresh icon, 'Run Code', and 'Submit Answer'. At the bottom, the 'R Console' is visible, showing a prompt character '>' and a blank input line.

**Exercise**

### Your first R script

Welcome! In the script to the right you will type R code to solve the exercises. When you hit the *Submit Answer* button, every line of code in the script is executed by R and you get a message that indicates whether or not your code was correct. The output of your submission is shown in the R console.

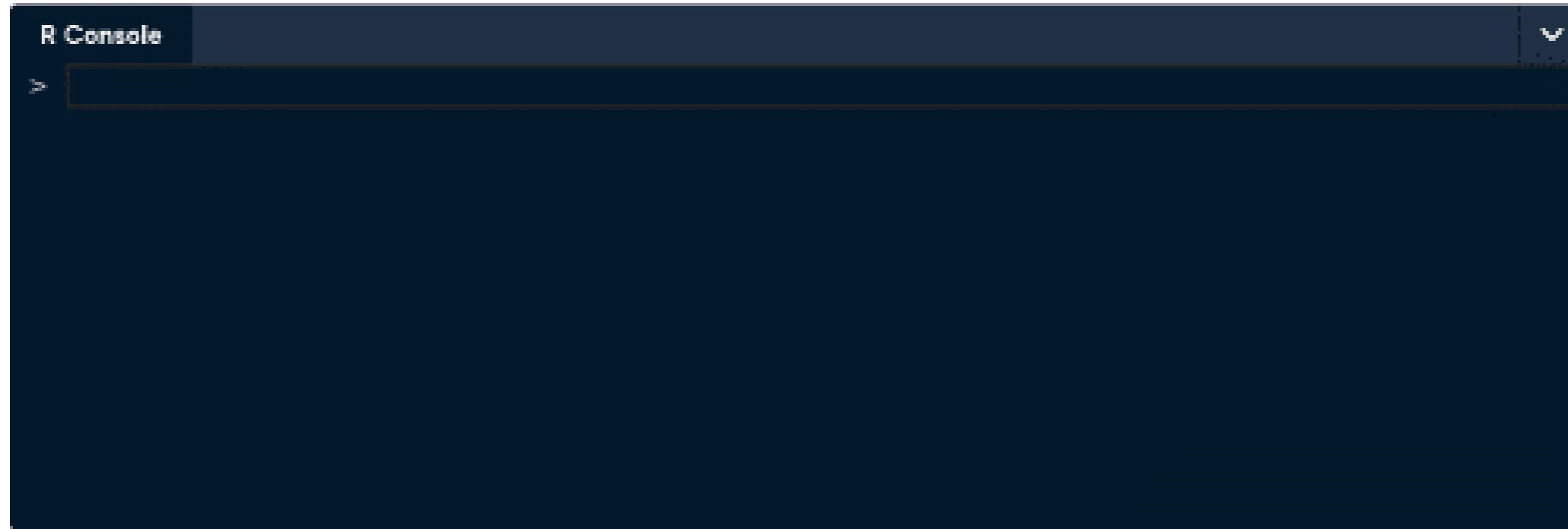
You can also execute code directly in the R Console. When you type in the console, your submission will not be checked for correctness! Try, for example, to type in `3 + 4` and hit Enter. R should return `[1] 7`.

**Instructions** 100 XP

- An addition example has already been created for you.
- Add another line of code in the script to calculate the difference of 6 and 4.
- Note: Check out the `#` symbol in the script! This denotes a *comment* in your code. Comments are a great way to document your code, and are not run when you submit your answer.

[Take Hint \(-30 XP\)](#)

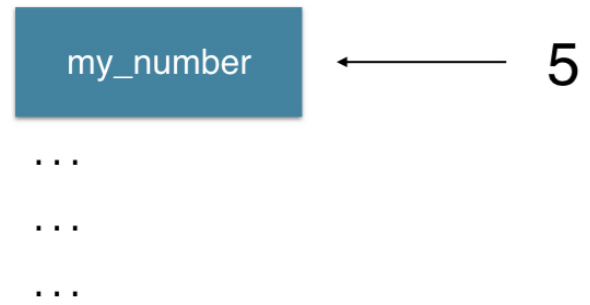
# Console



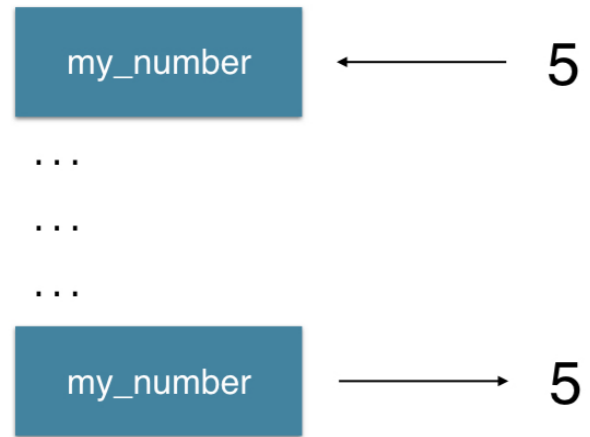
# Variables or objects



# Variables or objects



# Variables or objects



```
my_number <- 5
```

```
my_number
```

```
5
```



# Arithmetic in R

```
dan <- 100  
rob <- 50  
dan + rob
```

150

```
total <- dan + rob  
total
```

150

# R Scripts

- `script.R`

```
dan <- 100
rob <- 50
total <- dan + rob
total
```

```
dan <- 100
rob <- 50
total <- dan + rob
total
```

150

# Let's practice!

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# Financial returns

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# Stock returns

- \$50 worth of Apple stock
- 10% return in January
- How much money do you have at the end of the month?

$$5 = 10\% \text{ of } 50$$

$$55 = 50 + 5$$

# Stock returns

$$110\% = 100\% + 10\%$$

# Stock returns

$$110\% = 100\% + 10\%$$

$$1.10 = 1 + .10$$

# Stock returns

$$110\% = 100\% + 10\%$$

$$1.10 = 1 + .10$$

Return Multiplier



# Stock returns

$$110\% = 100\% + 10\%$$

$$1.10 = 1 + .10$$

Return Multiplier

$$55 = 50 * 1.10$$

```
# Return Multiplier
mult <- 1 + interest_rate / 100
# New Amount
new_cash <- starting_cash * mult
```

# Stock returns - multiple periods

- \$50 worth of Apple stock
- 10% return in January
- 5% return in February

$$57.75 = 55 * 1.05$$

$$57.75 = 50 * 1.10 * 1.05$$

```
new_cash <- starting_cash * jan_mult * feb_mult
```

# Let's practice!

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# Basic data types

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# Numeric

42.5

42.5

5

5

5L

5

# Character

```
"Hello world"
```

```
"Hello world"
```

```
"forty"
```

```
"forty"
```

```
"5"
```

```
"5"
```

# Logical

TRUE

NA

TRUE

NA

FALSE

FALSE

true

Error: object 'true' not found

# Variables and data types

```
my_answer <- TRUE  
my_answer
```

```
TRUE
```

```
food <- "carrots"  
food
```

```
"carrots"
```



# class()

```
my_answer <- TRUE  
class(my_answer)
```

```
"logical"
```

```
class(5)
```

```
"numeric"
```

```
class(5L)
```

```
"integer"
```

# Let's practice!

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