INTRODUCTION TO R

R: The true basics

What is R?

- Language for Statistical Computing

- Ihaka & Gentleman

- Auckland, New Zealand

- Open-source implementation of S

- Statistical Techniques

- Visualization Capabilities

- Highly extensible

Advantages

- Open source! free!

- Master at graphics

- Command-line interface

- Reproducibility through R scripts

- R packages: extensions of R

- Vibrant community

Disadvantages

- Easy to learn, hard to master

- Command-line interface daunting at first

- Poorly written code hard to read/maintain

- Poorly written code is slow

RDocumentation.org
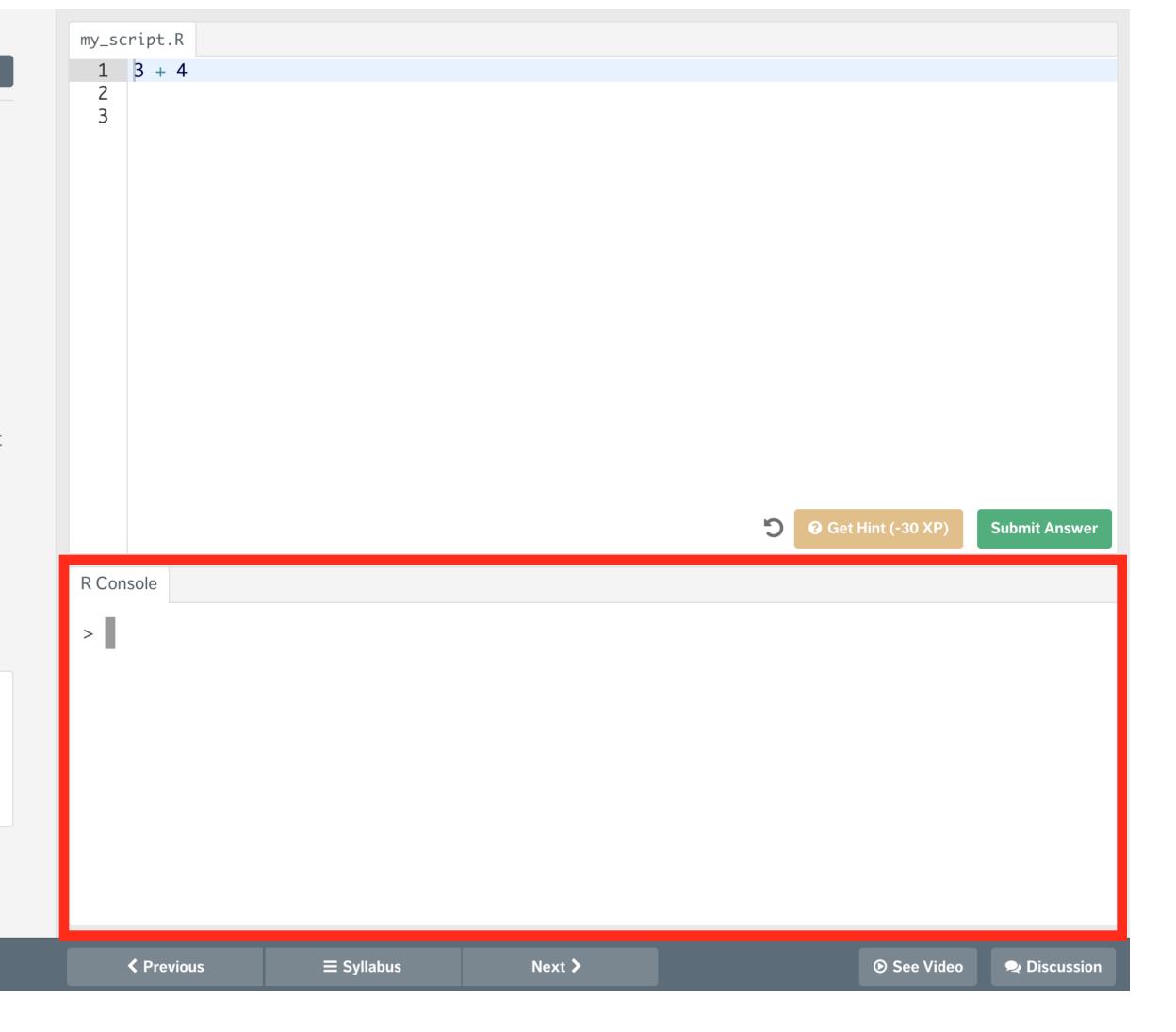
Console

How it works

100 XP

In the editor on the right you should type R code to solve the exercises. When you hit the 'Submit Answer' button, every line of code in the script is interpreted and 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 console in the lower right corner.

You can also execute R commands straight in the console. This is a good way to experiment with R code: When you type in the console, your submission will not be checked for correctness!

Instructions

Add another line of code to that calculates the sum of 6 and 12, and hit the 'Submit Answer' button.

```
my_script.R
1  3 + 4
2
3
```

↺ Get Hint (-30 XP) Submit Answer

R Console

> |

Console

```
> 1 + 2
[1] 3

> "Hi there, console!"
[1] "Hi there, console!"

> 2
[1] 2
```

Variables

- Store a variable to reuse later

- <-

```
> height <- 2

> height
[1] 2

> width <- 4

> width
[1] 4
```

Workspace

```
> ls()
[1] "height" "width"

> depth
Error: object 'depth' not found

> height * width
[1] 8

> area <- height * width
> area
[1] 8

> ls()
[1] "area"    "height" "width"
```

R script

- Text file with R commands

- Automate your work

📄 rectangle.R

```
height <- 2
width <- 4
area <- height * width
area
```

Submit Answer

R script

```
📄 rectangle.R
```

```
height <- 2
width <- 4
area <- height * width
area
```

```
> height <- 2

> width <- 4

> area <- height * width

> area
[1] 8
```

R script

```
📄 rectangle.R
```

```
height <- 3
width <- 6
area <- height * width
area
```

```
> height <- 3

> width <- 6

> area <- height * width

> area
[1] 18
```

Comments

```
rectangle.R

# Create variables height and width
height <- 3
width <- 6

# Calculate the area
area <- height * width

# Print the area
area

# x <- 3    not executed!
```

Workspace (2)

```
> ls()
[1] "area"   "height" "width"

> rm(area)

> ls()
[1] "height" "width"

> area
Error: object 'area' not found
```