

Data Analysis with R

Follow along at: <http://bit.ly/data-analysis-r>

See the code at: <http://bit.ly/data-analysis-r-code>

Open your browser to:

http://student___.datapolitan.com

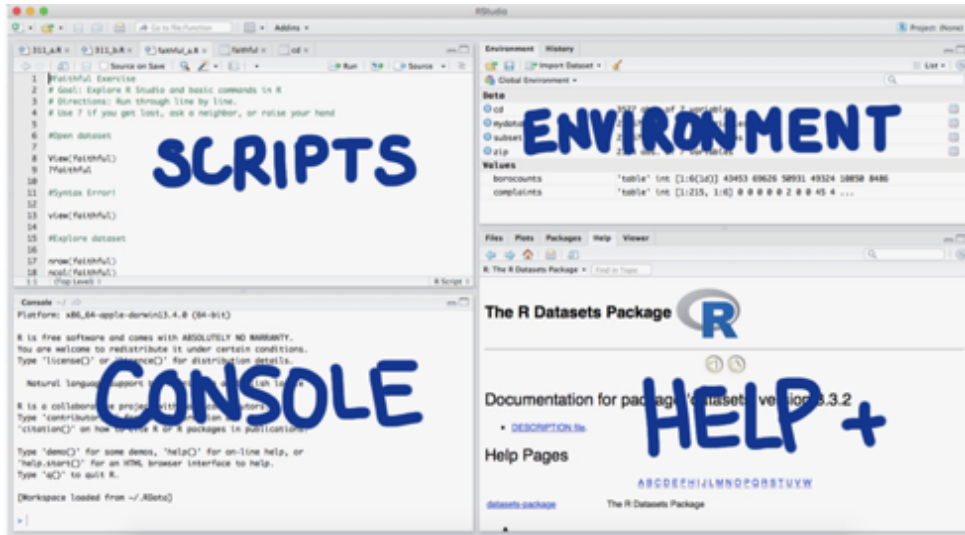
Username: rstudio

Password: rstudio

Key Questions for the Morning

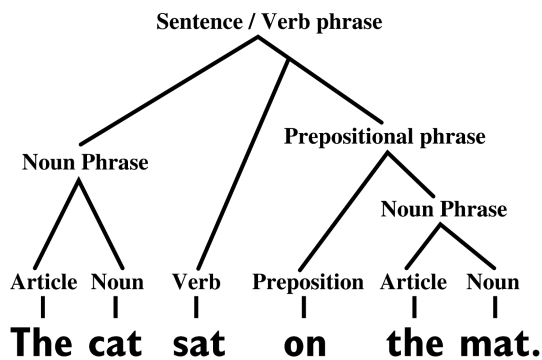
What is R?

How is R useful in analysis?



What is Syntax?

Basic constituent structure analysis of a sentence:



R Syntax

```

# basic command
command(dataset)
View(faithful)

# select a column
command(dataset$column)
mean(faithful$waiting)

# get help
?help
?faithful
  
```

Exploring Data

```

View()
# show dataset as spreadsheet in Viewer

str()
# identify data type and structure

nrow()
# identify the number of rows

ncol()
# identify the number of columns

colnames()
# list the name of every column
  
```

Visualizing Data

```

hist()
# make a chart with numeric data

plot()
# plot two numeric variables along an x-y axis

abline()
# add a trendline to a plot

table()
# make a table with factor data

prop.table()
# make a table with percentages

barplot()
# make a chart with factor data
  
```

Manipulate Data

```
sort()  
# sort the values in a column
```

```
data.frame()  
# structure data into a matrix
```

```
subset()  
# extract data from a dataframe
```

Calculating Summary statistics

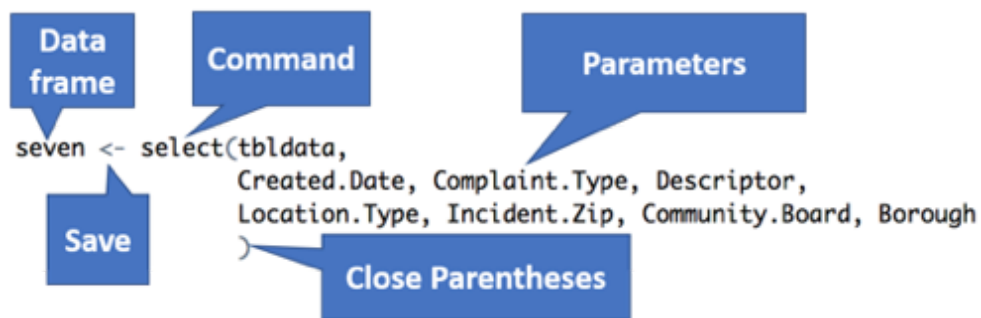
```
min()  
# identify minimum value
```

```
max()  
# identify maximum value
```

```
median()  
# calculate median value
```

```
mean()  
# calculate mean value
```

Important Parts of R Commands We're Using



```
date <- mdy_hms(as.character(cbpkg$Created.Date))
```

Nested Functions



Key Questions for the Afternoon

- What is an Algorithm?

Exercise

A key question I'd like to explore today is...

The reason I find this interesting is...

I expect to find....

Debugging

What is Debugging?	
Some of the errors I had today include...	I fixed the errors by...

Wrap-Up

How is R/RStudio helpful for me?	What key tasks do I need to learn/practice to best use R/RStudio?
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Links

- Download R: <https://cloud.r-project.org/>
- Download RStudio: <https://www.rstudio.com/products/rstudio/download/>
- Download exercise files from this class: <http://bit.ly/data-analysis-r-code>

Learning More

- **Stat Methods** (<http://statmethods.net>) - Great documentation for doing data analysis in R
- **UCLA Stats** (<http://www.ats.ucla.edu/stat/>) - Many examples of statistical analysis with comparisons between R, Stata, SPSS, etc.
- **Swirl** (<http://swirlstats.com>) - install.packages("swirl")
- **R Programming Coursera Course** (<https://www.coursera.org/learn/r-programming>) - free course in R that runs regularly
- **R for Data Science** (<https://r4ds.had.co.nz/>) - Free online book covering many basic topics in data science
- **R Cookbook** (<http://www.cookbook-r.com>) - Free online walkthrough of the basics

Other Resources

- **NYC Open Statistical Programming Meetup** (<https://www.meetup.com/nyhacker>) - Monthly talks about R (also sponsor the NYC R Conference)
- **UCLA Stats Data Analysis Examples** (<https://stats.idre.ucla.edu/other/dae>) - Examples of statistical analysis in different platforms (R, Stata, SPSS, etc.)
- **Tidyverse** (<https://www.tidyverse.org>) - R packages for Data Science
- **Stack Overflow** (<http://stackoverflow.com/>) - One of the best Q&A sites for various technical questions
- **Datapolitan training classes** <http://training.datapolitan.com/>

Contact Us



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<http://www.datapolitan.com>

About Datapolitan

For over 5 years, Datapolitan has worked to empower public sector clients with the skills, techniques, concepts, and mindsets necessary to make data meaningful and actionable to effectively manage their resources and realize operational value from the information they collect. We do this through a range of consulting and training services for local government agencies and nonprofit organizations, customized to their strategic vision and operational needs.

Your Notes