Introduction to R

Communication Research Methods

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Announcements

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- Sections:

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- Sections:
  - Thursday 4:30-5:20 pm Bldg 240 Rm 101

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  - Thursday 4:30-5:20 pm Bldg 240 Rm 101
  - Friday 1:30-2:20 pm Bldg 120 Rm 314

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  - Monday 2:30-3:20 pm Bldg 160 Rm 319

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  - Thursday 4:30-5:20 pm Bldg 240 Rm 101
  - Friday 1:30-2:20 pm Bldg 120 Rm 314
  - Monday 2:30-3:20 pm Bldg 160 Rm 319
- Pset 1: on Canvas, due Wed 1/20 before class (email before 3pm to stanfordcommresearchmethods@gmail.com)

Revised schedule

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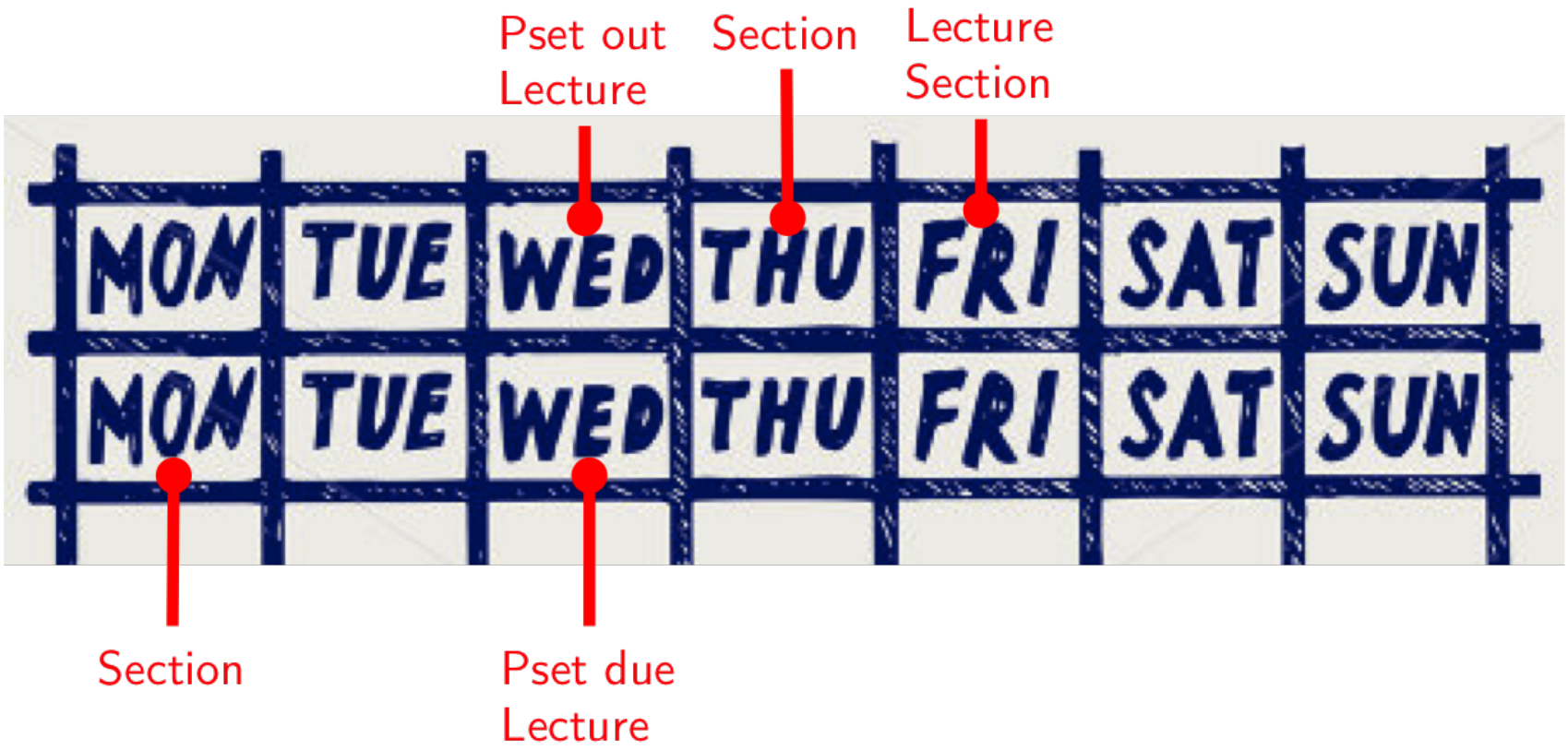

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- Create / manipulate objects in R

Install R

- cran.r-project.org
- google "cran r"
- The Comprehensive R Archive Network

Install RStudio

- www.rstudio.com
- RStudio Desktop
- Open Source Edition (Free)
- Windows: RStudio 0.99.491 - Windows Vista/7/8/10
- Mac: RStudio 0.99.491 - Mac OS X 10.6+ (64-bit)

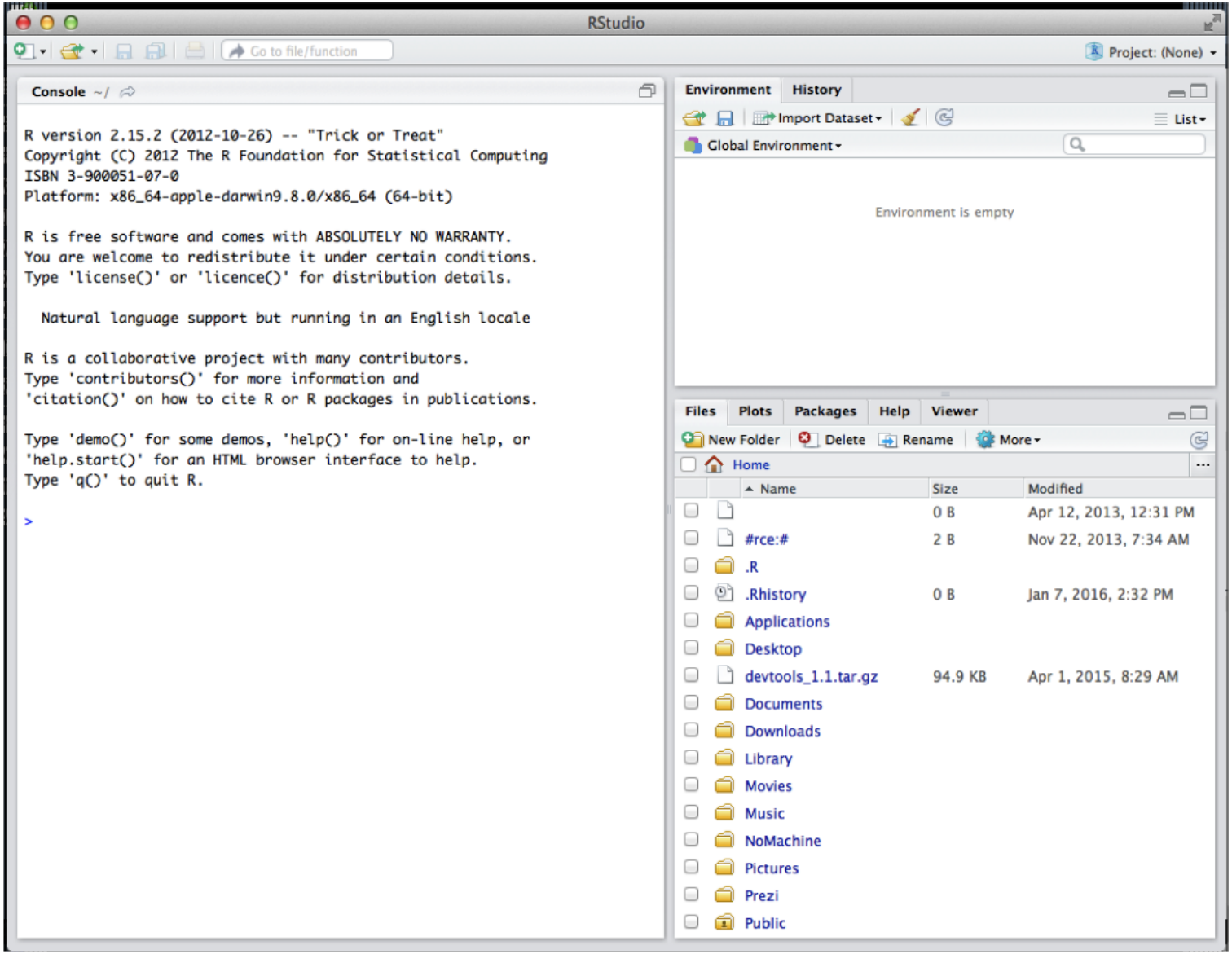
Intro to R

- use R as a calculator
- save your work in a R Script
- create and manipulate objects in R
- load dataset into R

Open RStudio

- Windows: Start Menu
- Mac: Applications

RStudio


RStudio
Go to file/function
Project: (None)
Console ~/
R version 2.15.2 (2012-10-26) -- "Trick or Treat"
Copyright (C) 2012 The R Foundation for Statistical Computing
ISBN 3-900051-07-0
Platform: x86_64-apple-darwin9.8.0/x86_64 (64-bit)
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
Natural language support but running in an English locale
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
>
Environment
History
Import Dataset
List
Global Environment
Environment is empty
Files
Plots
Packages
Help
Viewer
New Folder
Delete
Rename
More
Home
Name
Size
Modified
0 B
Apr 12, 2013, 12:31 PM
#rce:#
2 B
Nov 22, 2013, 7:34 AM
.R
.Rhistory
0 B
Jan 7, 2016, 2:32 PM
Applications
Desktop
devtools_1.1.tar.gz
94.9 KB
Apr 1, 2015, 8:29 AM
Documents
Downloads
Library
Movies
Music
NoMachine
Pictures
Prezi
Public

R as calculator

- Spacing doesn't matter
- Order of operations applies

R Script

- Do not save the R Console output
- Save work as a R Script (File $\rightarrow$ New File $\rightarrow$ R Script)
- # tells R to ignore everything that comes after in that line
- Put code and comments in R Script
- Send comments from R Script to R Console:
  - Click "Run"
  - Keyboard shortcut: Ctrl+Enter (Windows)
  - Keyboard shortcut: Command+Enter (Mac)
- Save the R Script

Objects

- Shortcuts to some pice of information or data
- Save work as a R Script (File $\rightarrow$ New File $\rightarrow$ R Script)
- Create objects with assignment operator: <-
- Use intuitive and informative names:
  - Cannot begin with a number, but can contain numbers
  - Cannot contain spaces
  - Avoid special characters like #, %, $
  - Names are case sensitive
- Once you have created an object, see in Environment window on the top right (RStudio), see all objects with `ls()`

Classes

- R recognizes different types of objects by assigning each object to a class
- Allows R to perform appropriate operations on an object depending on its class
  - Number is stored as a numeric object
  - Character string is recognized as a character object
- RStudio: Environment will show you the class of objects
- Use `class()` to see the class of objects

Vectors

- Simplest (not very efficient) way of entering data into R
- One-dimensional array representing a collection of information stored in a specific order
- Use `c()` to enter a data separated by commas
- Indexing: use square brackets `[]` to access specific elements of a vector
- Arithmetic operations can be done using multiple vectors

Functions

- We have seen several functions: sqrt(), class(), c()
- Format: `funcname(input)`
  - `funcname`: function name
  - `(input)`: input object (also called arguments)
- Useful functions
  - `length()`: length of a vector or equivalently the number of its elements
  - `min()`: min value
  - `max()`: max value
  - `range()`: range of data
  - `mean()`: mean
  - `sum()`: sum all values in vector
  - `names()`: access and assign names to elements of a vector
- To avoid confusion and problems stemming from the order, specify name of argument

Your own functions

- Use `function()` function to create a new function
- Spacing does not matter in R