

Frictionless onboarding to data science with

The R logo icon, which is a white letter 'R' inside a blue circle.

Studio Cloud



@minebocek



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Mine Çetinkaya-Rundel
Duke University + RStudio

don't start like this

- Install R
 - Install RStudio
 - Install the following packages:
 - rmarkdown
 - tidyverse
 -
 -
 - Load these packages
 - Install git

start like this

- Go to [rstudio.cloud](#)
 - Log in

```
> hello R!
```

Widy

what are R and RStudio?



statistical
programming
language

R: Engine



integrated
development
environment for R

RStudio: Dashboard



what is RStudio Cloud?



makes it easy for professionals, hobbyists, trainers, teachers, and students to do, share, teach, and learn data science using R

RStudio

Project: (None)

Console Terminal x

R version 3.5.0 (2018-04-23) -- "Joy in Playing"
Copyright (C) 2018 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin15.6.0 (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 Plots Connections Packages Help Jobs Viewer

Import Dataset

Global Environment

Environment is empty

History Files

To Console To Source



Chrome File Edit View History Bookmarks People Window Help

R Studio Cloud

Secure | https://rstudio.cloud/project/38096

Your Workspace / Untitled Project Click to name your project

Mine Mine Çetinkaya-Rundel

File Edit Code View Plots Session Build Debug Profile Tools Help

Addins Go to file/function R 3.4.4

Console Terminal /cloud/project/

R version 3.4.4 (2018-03-15) -- "Someone to Lean On"
Copyright (C) 2018 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)

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>

Environment History Connections

Import Dataset Global Environment

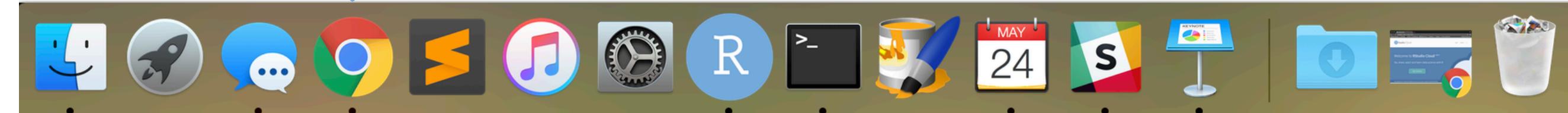
Environment is empty

Files Plots Packages Help Viewer

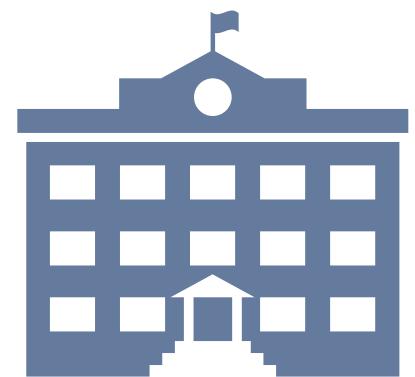
New Folder Upload Delete Rename More

/ cloud project

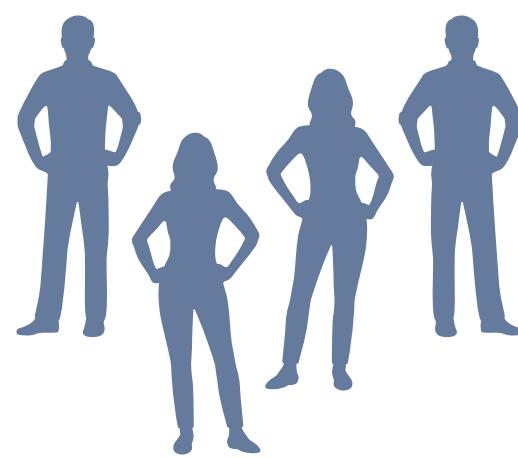
	Name	Size	Modified
	..		
	.Rhistory	0 B	May 24, 2018, 12:40 AM
	project.Rproj	205 B	May 24, 2018, 12:40 AM



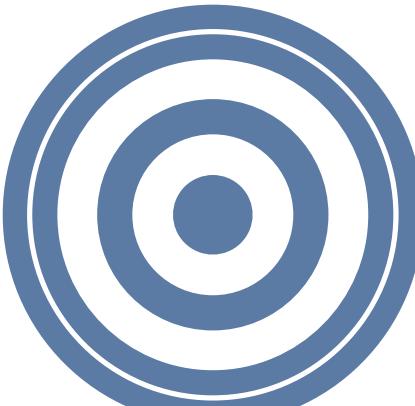
context



intro data science

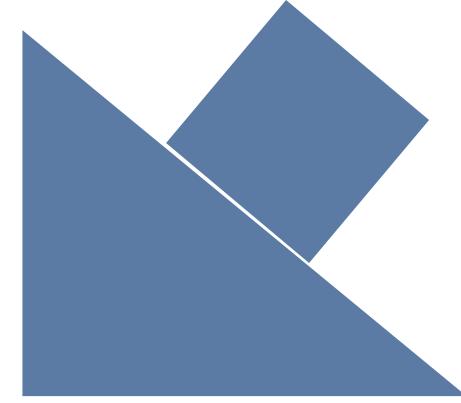


students with little to no background in stats,
data science, programming



R as a data science (not programming) language

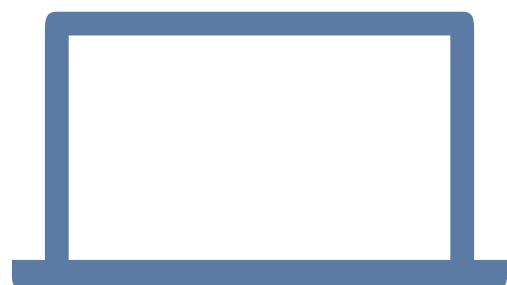
why RStudio in the cloud?



reduce friction at first exposure to R



avoid local installation



install R and RStudio on a server and provide
access to students:

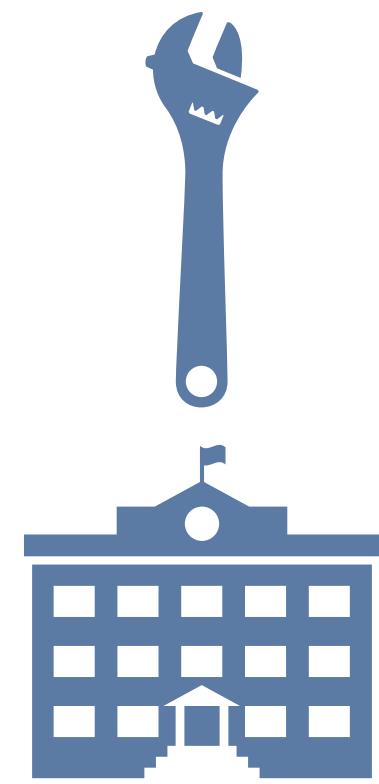
- Centralized RStudio server
- Dockerized RStudio server
- RStudio Cloud

Çetinkaya-Rundel, Mine, and Rundel, Colin. "Infrastructure and tools for teaching computing throughout the statistical curriculum." *The American Statistician* (2018). Part of the Practical Data Science for Stats collection.

this talk 😊



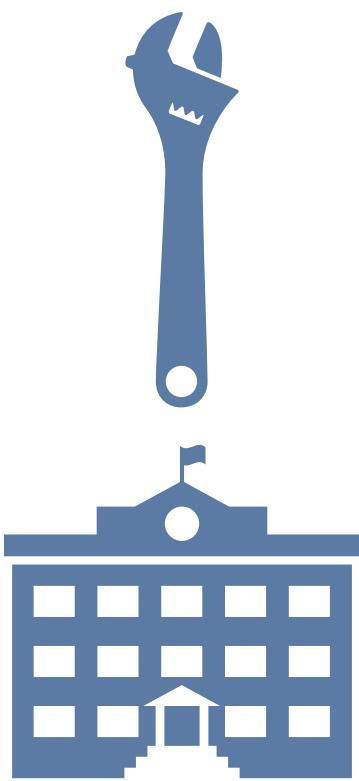
why RStudio Cloud?



does not require IT support

features designed for instructors:

why RStudio Cloud?



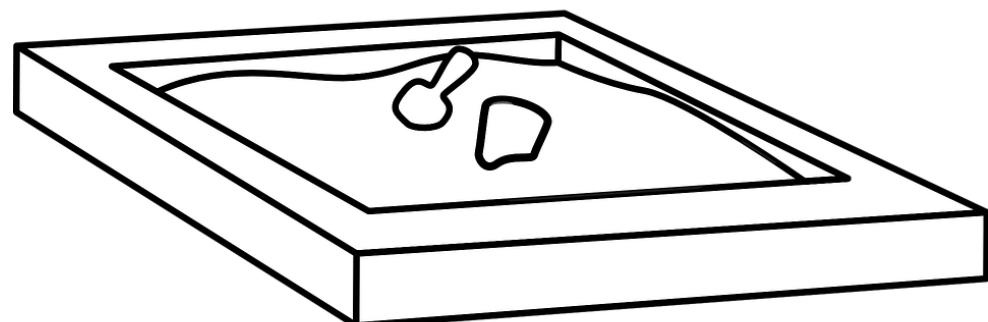
does not require IT support

features designed for instructors:

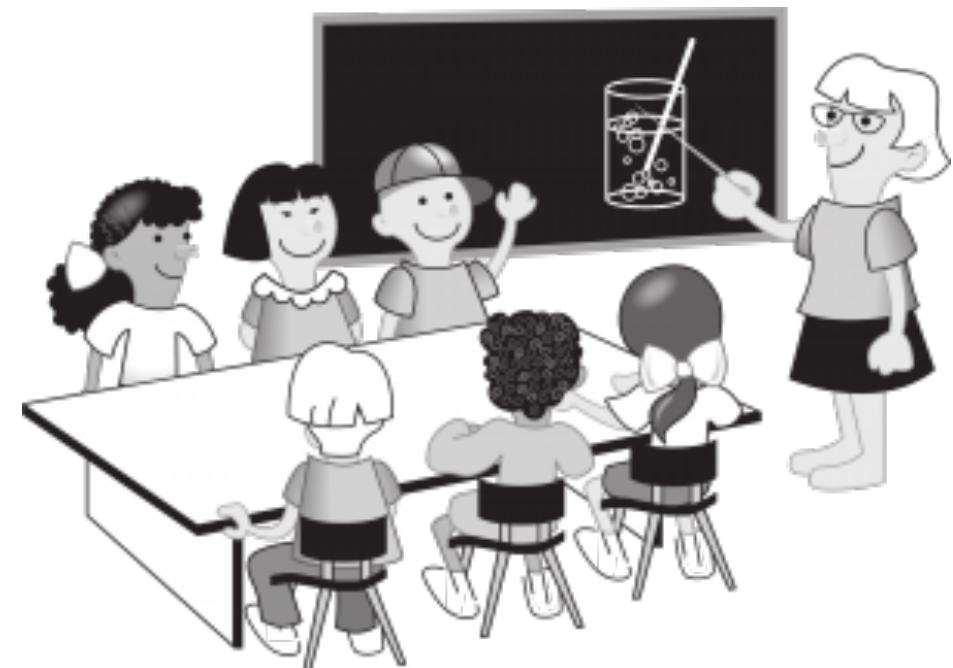
- classes can be organized in workspaces
- members can be assigned different roles: instructor, TA, student
- projects can be public or private
- students can make copies of projects created by instructor
- instructor can peek into student projects
- a base project template can ensure same packages in each new project created in the workspace
- git integration
- interactive learning with built-in **learnr** primers



workspaces



when you create an account on RStudio Cloud
you get a workspace of your own - projects you
create here are public



you can add a new workspace and control its
permissions - projects you create here can be
public or private

permissions

admin manage users, view, edit and manage all projects **instructor**

moderator view, edit and manage all projects **TA**

contributor create, edit and manage their own projects **student**

viewer view projects shared with everyone **auditor**

getting students into class workspace

Access

- Invitation required

Add specific members to the space by sending invitations.

- Shared

Anyone with the sharing link can access the space.

Initial Role

(i)

Contributor



Copy Sharing Link

after drop/add switch over to this access level, use invitations for visitors added mid-semester

make workspace shared for a short period of time, share link with students, enroll them as contributors

Permissions

- Contributors can see the Members list

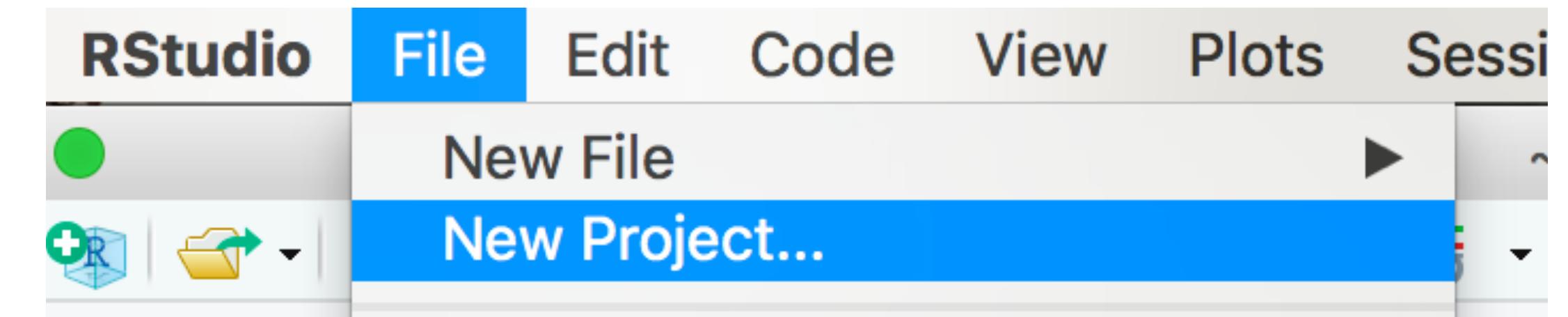
- Viewers can see the Members list

if you're ok with students seeing other students' names on the list but don't want your visitors seeing your roster

projects

a new project in RStudio Cloud

is a new project in RStudio



If you use RStudio, use projects! Trust me, you won't regret it.
Find out more at r4ds.had.co.nz/workflow-projects.html.

sharing projects

The screenshot shows the 'Access' tab selected in the top navigation bar. Below it, the 'Info' tab is visible. A dropdown menu titled 'Who can view this project' is open, showing 'You *' as the current selection. A note below the dropdown states: '* plus the Admins and Moderators of eCOTS 2018 - RStudio Cloud'. The background of the page is light gray.

This screenshot shows the same interface as the previous one, but the dropdown menu has been changed. It now displays 'Everyone in eCOTS 2018 - RStudio Cloud'. The rest of the page remains the same, with the 'Access' tab highlighted.

by default, projects in a workspace are visible to you (+ admins and moderators only)

+ students can't see each others' projects

change permissions to make your projects visible to students

copying a project

≡ ECOTS 2018 - RStudio Cloud / hello cloud

TEMPORARY



Save a Permanent Copy



Student Mine

when a student clicks on your shared project, they are notified that this is a temporary copy, and are given the option to make their own copy, including all starter documents and code + installed packages

make a second account for yourself and add as contributor (student) to see what your students see

viewing student projects

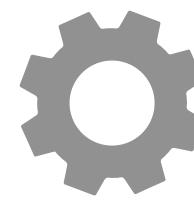
The screenshot shows the 'Student Mine' interface with the following elements:

- Access:** A blue button with a lock icon.
- Info:** A button with an 'i' icon.
- Who can view this project:** A dropdown menu currently set to "You *".
- Note:** A note below the dropdown states: "* plus the Admins and Moderators of **eCOTS 2018 - RStudio Cloud**".

soon students won't be able to make their projects visible to other students

instructor and TAs can view student projects

base project template



Space Settings

Name
eCOTS 2018 - RStudio Cloud

Base project template
none

[Save](#)

Set Base Project Template X

Select the project to use

none

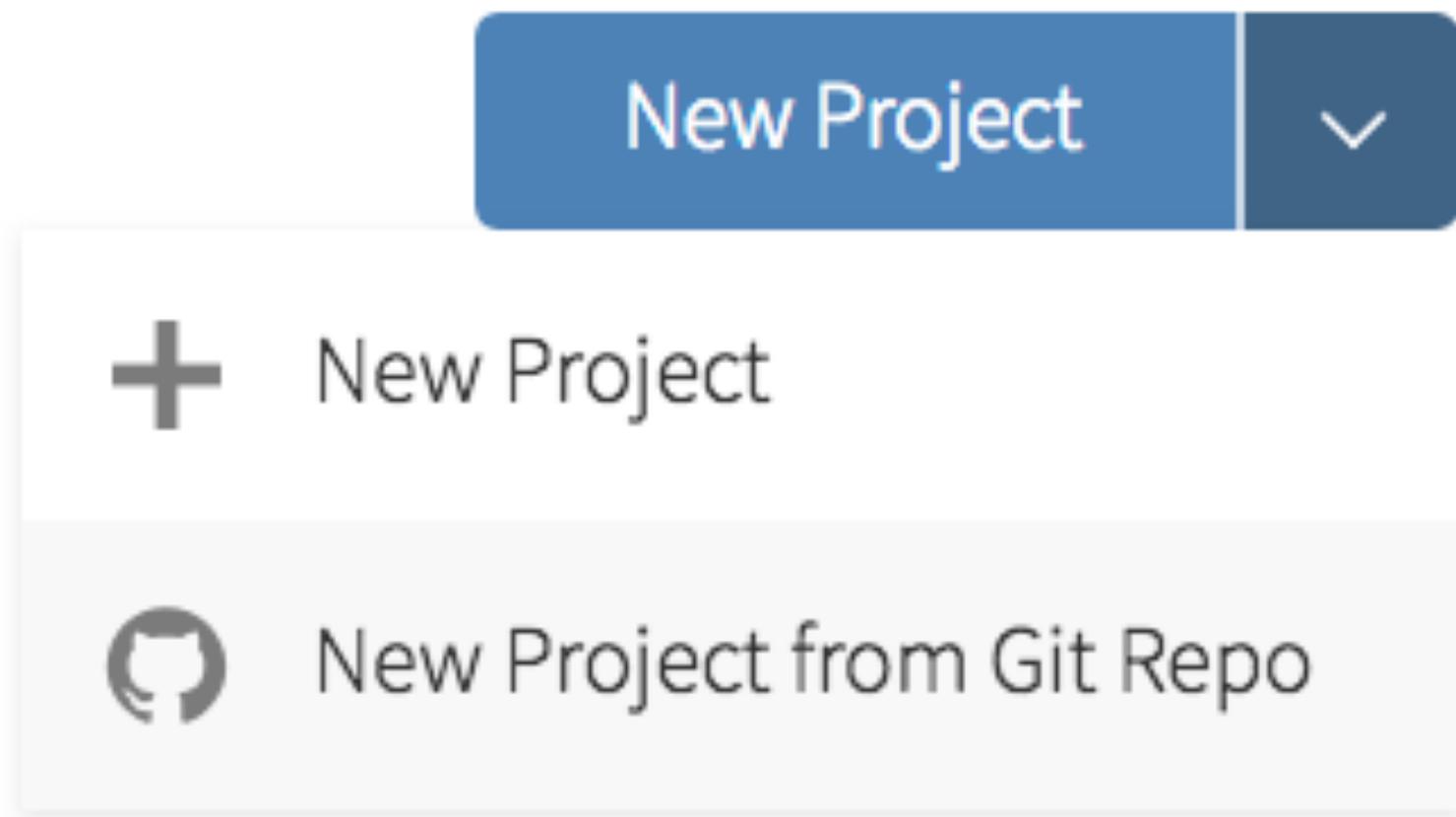
hello cloud

If you don't see the project you're looking for listed above, make sure that you have set its access to 'Everyone in eCOTS 2018 - RStudio Cloud'.

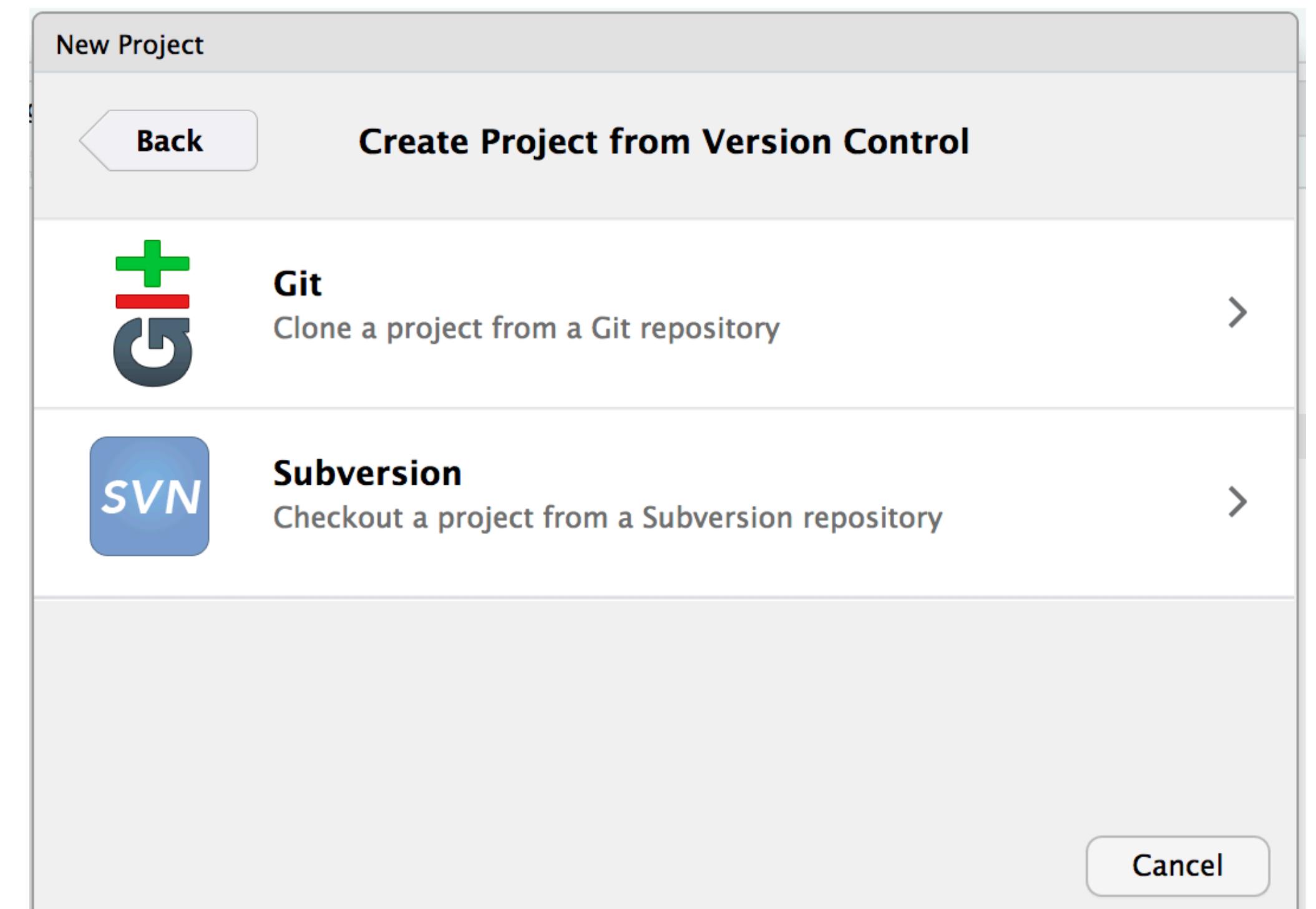
OK

git integration

a new project from Git Repo
in RStudio Cloud



- + base project template is used, so new project from git also has the right packages installed!



is creating (cloning) a project
from a Git repository RStudio

built-in learnr primers

Your Workspace Projects Info Learn

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R Studio Primers

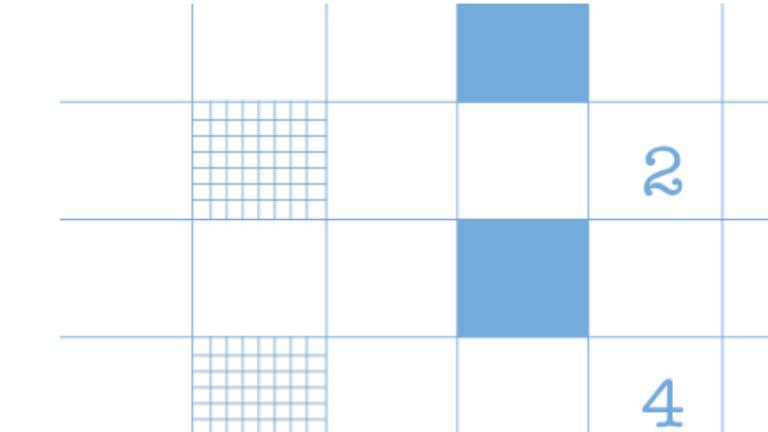
Learn data science basics with the interactive tutorials below.

The Basics



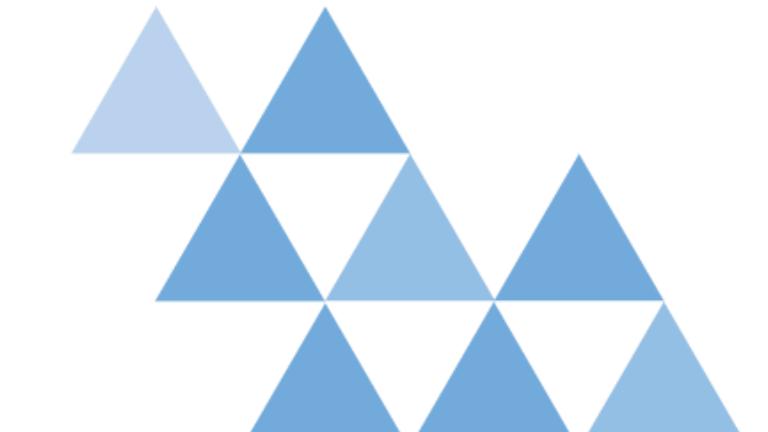
Start here to learn the skills that you will rely on in every analysis (and every primer that follows): how to inspect, visualize, subset, and transform your data, as well as how to run code.

Work with Data



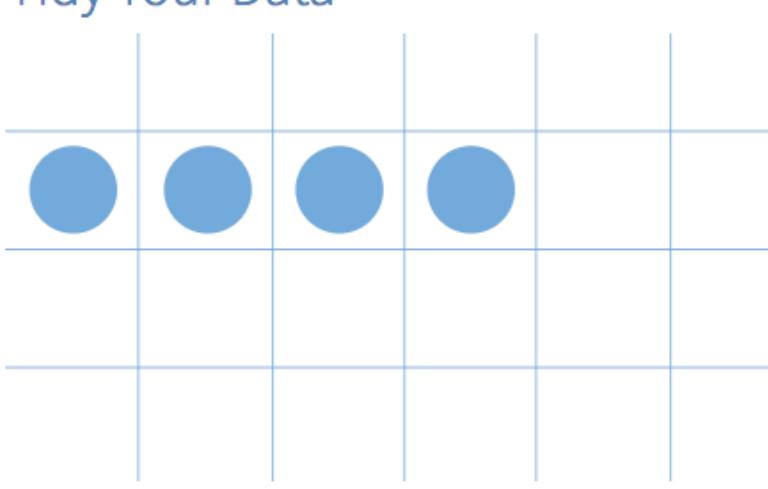
Learn the most important data handling skills in R: how to extract values from a table, subset tables, calculate summary statistics, and derive new variables.

Visualize Data



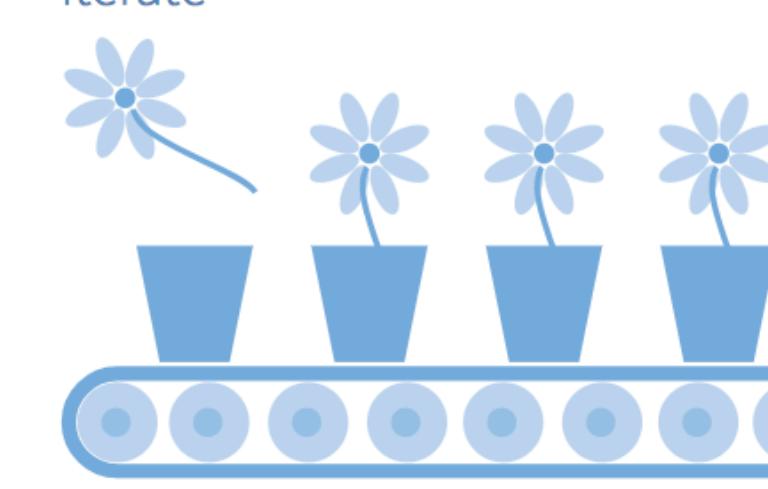
Learn how to use ggplot2 to make any type of plot with your data. Then learn the best ways to visualize patterns within values and relationships between variables.

Tidy Your Data



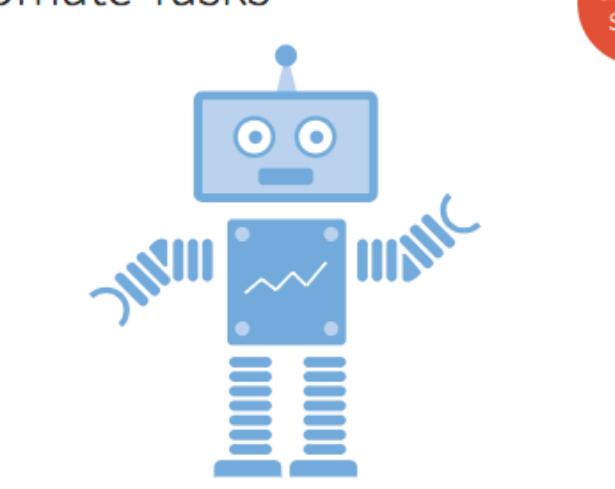
Unlock the tidyverse by learning how to make and use tidy data, the data format designed for R.

Iterate



Master a core programming paradigm with the purrr package: for each ___ do ___.

Automate Tasks



Functions are the key to programming in R. This primer will teach you how to write and use them.

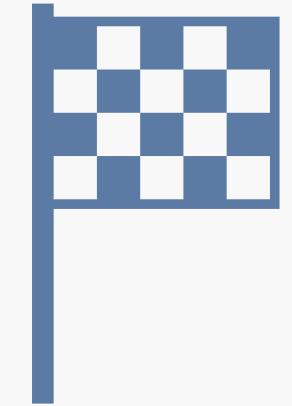
limits



each project is allocated 1GB of RAM



💡 test things out before assignments involving large datasets



each account is allocated one private space, with up to 3 members and 5 projects



💡 you can submit a request to the RStudio Cloud team for more capacity

parting remark



WORK IN PROGRESS

We're in alpha and still adding important features and improving performance, reliability and availability. Please reach out with any questions or feedback at
<https://community.rstudio.com/c/rstudio-cloud>.



Thank
you!



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