Setting up Rstudio Projects and Github

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August 5, 2016

1 Introduction

R is a powerful, open source program but combined with RStudio and Github the program becomes an archetype of a program that enables 1) collaboration, 2) transparency, and 3) accessibility.

However, becoming facile in using these program is like learning how to walk. We need to approach this process in descrete steps. Some will require weeks of mistakes to learn, others will quickly learn to run with the programs. How quickly you can feel comfortable with these programs will depend on many factors, but will be greatly improved by the time you invest!

1.1 Rational

Almost Universal Compatibility No downloading programs on personal computers.

Accessibility Accessible from any computer via webserver

Collaboration

Version Control

2 Rstudio

Although R by itself is an amazing example of crowd sourcing, where a wide range of staticians and programmers have created a free programming environments with a robust range of statistical packages, the RStudio interface provides a user with the tools to track and publish their analysis process in an effecient and transparent way.

2.1 Local Install versus Server

R and RStudio can be installed on a local machine from the CRAN download micro sites. However, you also have access to the RStudio Server that has been installed on the Pomona College mainframe, where you can access it via a web browser. Wow, this is conveient!

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3 Create Version Control for Rstudio as a Collaborator

The final component of R and RStudio is its capacity to create projects (RStudio's terminology) and repositories (Github's terminalogy) that can be shared among collaborators.

In particular, the collaboration allows for contributions to be tracked via version control tools. There are a number of ways that we can access these tools, but we'll try to limit the methods so keep the process relatively "simple".

Create Github Account Go to Github.com and create an account. I suggest you use your Claremont e-mail adddress because this can come in handy later, should you want to create private repositories, which are free for college students! Your email address can be used to prove your student status.

Accept Collaborator Invitation Click on the email link to accept the invitation from the collaborator. Once you have done this, you have access to all the files created in the repository.

Read the Readme file

Make SSH Key on Rstudio Sever As a collaborator, you need to create a SSH Key that is used to create secure connections between RStudio and Github. To obtain an SSH key, go to RStudio/Tools/Global Options and select "Create an SSH key..."

Profile

Add SSH Key to Github Copy and Paste...

Clone shared project and paste into New Project on R Studio Server

4 Creating a New Repository

4.1 Creating a New Project

5 Creating a Project as a Collaborator

6 Working on Projects

6.1 Rstudio Panels

File Structure and Rnw/Tex files

Console and Compile PDF windows

Git Panel

6.2   Best Practices

Pull When you open RStudio, the first thing you should do is "Pull" from the repository to ensure your files are up-to-date. When you "Pull", you will get one of three results:

> **Already up-to-date.** This means that your files have not been updated on the Github site since you last pulled the files. If you suspect someone has worked on the files, but are not getting those changes, it means that your collaborator has failed to "Push" these changes onto the repsository. If this is the case, you might need to go to the troubleshooting question to address this problem.

> **Successful Updates** If your files are successfully updated from the repository, you will see:
>
> summary of updates
> master 6038765 Started to explain set up procedures
> 5 files changed, 434 insertions(+), 8 deletions(-)
> create mode 100644 06_Rstudio_Github/Rstudio-and-Github-concordance.tex
> create mode 100644 06_Rstudio_Github/Rstudio-and-Github.log
> create mode 100644 06_Rstudio_Github/Rstudio-and-Github.pdf
> create mode 100644 06_Rstudio_Github/Rstudio-and-Github.tex

> **Unsuccesful "Pull"**

Commit

Push As you might guess, when you "Push" you can also have several outcomes:

> **Everything up-to-date** is certainly simple.

> **Successful "Push"** "To git@github.com:marclos/SOPs.git
> e2efe6f..0b18250 master -> master"

> **Unsuccessful "Push"**

7   Troubleshooting

7.1   "Pull" is rejected

Merging changes... how??

7.2   "Commit" problems

7.3   "Push" fails

Below are several potential remedies:

Deleting a Project in R Studio If you are willing to sacrifice the changes you made or have mailed them to a collaborator to deal with you can delete the entire project in Rstudio. To accomplish this delete all files in directory, clear workspace and console, don't save, then go to session tab: Terminate R, and hopefully that will do the trick. Then commence with starting a new project.