R_kernel_test

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1 How to install and use the Jupyter notebook with R functionalities

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This notebook walks you through how to install R, R Studio and the Jupyter notebook to your local machine. It will also provide a brief introduction on how to launch and use the notebook utilizing the open-source R programming language.

1.1.1 Step 1: Install R/R studio

- To download R on your local machine for the first time, visit: https://cran.rstudio.com/
- Choose the download R link depending on what operating system you have

Download R for Windows: - Click the *install R for the first time* link - *Download R for Windows* - Follow installation prompts

Download R for (Mac) OS X: - Click the *R-3.2.2.pkg* link - Follow installation prompts

Download R Studio for Mac OS X or Windows: - R studio website: https://www.rstudio.com/products/rstudio/#Desktop - Choose installer - Follow installation prompts

1.1.2 Step 2: Install ipython/jupyter

- Download Anaconda, choosing your installer via the operating system images.
- follow the installation prompts
- open the Anaconda launcher and update the *ipython-notebook* and *ipython-qtconsole*
- If you have a Mac, open a new **Terminal** shell. If you have a PC, open the **Anaconda Command Prompt**.
- Type the following command on your command line to install jupyter:

```
pip install jupyter
```

1.1.3 Step 3: Install the R kernel for the Jupyter notebook

The following steps will walk you through how to install the *R kernel* needed to use R language in a Jupyter notebook. The process is different depending on which operating system your using.

If you have a PC, you'll need to open:

- R Studio
- Anaconda command prompt window

If you have a Mac, you'll need to open:

- R Studio
- Terminal window

Download R kernel on a PC:

If you installed R studio to your machine **for the first time**, do the following steps before preceeding: - click the *Packages* tab on the lower right-hand-side of your R studio window - allow R studio to install packages

Now, run the following code in your R studio console line-by-line to install necessary libraries:

```
In [ ]: install.packages(c('repr','rzmq','IRkernel','IRdisplay'),
                        repos = c('http://irkernel.github.io/', getOption('repos')))
        library(repr)
        library(IRkernel)
        library(IRdisplay)
        library(rzmq)

        IRkernel::installspec()
```

Download R kernel on a Mac:

- In the R studio console, run the following commands line-by-line to install necessary libraries:

```
In [ ]: install.packages(c('repr','IRkernel','IRdisplay'),
                        repos = c('http://irkernel.github.io/', getOption('repos')))
        install.packages('rzmq')
        library(repr)
        library(IRkernel)
        library(IRdisplay)
        library(rzmq)
```

- R releases updates frequently, so **check what version of R** you have installed on your machine by typing the following command in your terminal:

```
ls /Library/Frameworks/R.framework/Versions/
```

- Change the '3.2' in the following command to whichever version you have, and run the following in the terminal:

```
ipython kernelspec install --replace --name ir --user /Library/Frameworks/R.framework/Versions/3.2/
```

Lastly, in R studio again, we need to rerun the following library commands and use the installspec() function:

```
In [ ]: library(IRkernel)
        library(IRdisplay)

        IRkernel::installspec()
```

1.1.4 Open a notebook

We can now go back to the terminal (Mac) or the Anaconda command prompt (PC) and launch the Jupyter web-based notebook by typing the following on the command line:

```
jupyter notebook
```

When it launches, you'll see the following page appear. We can create a new notebook utilizing R code by clicking the 'New' tab and navigating to the 'R' notebook option as shown

1.1.5 Running some R code

Finally, we can test out the notebook. The [+] button will add a new 'cell', which can be changed from code to Markdown easily with the first drop down menu. Text like you see here is using R markdown language and is presented in a Markdown cell, and the code below is run in a 'code' cell. We can run a cell by either using *control+enter* or the [>|] button to the left of the stop button. Try playing around with the different buttons and cells to get comfortable with the notebook. The following code is an example of using R lanugage to generate some data for a simple histogram.

```
In [2]: samp <- rnorm(1000,mean=2,sd=.25)
        hist(samp)
```