Lifesource R Training

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A Bit About Pritam

- ▶ I've worked in quantitative finanace for 10 years - trading and analysis roles. I gravitated towards data-centric work.
    - ▶ Cargill
    - ▶ Wolverine Trading
    - ▶ Allianz

- ▶ I currently do independent consulting in quantitative finance and data science.

- ▶ I am an instructor at the University of Minnesota
    - ▶ Master of Financial Mathematics Program
    - ▶ R and Python

- ▶ Feel free to stay in touch: dalal030@umn.edu

Delta-Neutral

www.historicaloptiondata.com

- ▶ All the option data from this course was donated by Delta-Neutral.

- ▶ Professional quality EOD equity option data.

- ▶ Over 4000 underlyings covered.

- ▶ http://www.deltaneutral.com/

- ▶ support@deltaneutral.com

A Bit About the Training

- ▶ An introduction to basic data wrangling in R.

- ▶ I am assuming no previous background in R or programming.

- ▶ We will be using a suite of packages called the **tidyverse** which has become the de facto standard in for data analysis in R.

- ▶ What is wrangling? Why wrangling?
  - ▶ manipulation of data: filtering, subsetting, performing aggregation calculations on subsets of data
  - ▶ the best place to start

Schedule and Format

- ► 9:00a-4:00p - details on handout

- ► Our time will be spent working through tutorials and eventually exploring some sample Lifesource data.
    - ► I will live-code all the examples
    - ► I **highly** encourage you to type along with me

- ► Lots of intermittent coding challenges.

- ► Please feel free to interject with questions.

Installing R (Windows)

1. Go to **www.r-project.org**. (Or just Google **"install R"** and the click on first webpage that is returned.)
2. Under the R logo, click link that says **CRAN**.
3. Choose the first link under **0-Cloud**.
4. Click the link for Windows.
5. Click the link that says **install R for first time**.
6. Click the link **Download R 3.6.1 for Windows**.
7. Run the .exe file you downloaded and follow the prompts.

Installing R Studio (Windows)

1. Google **"install RStudio"** and click on the first webpage that is returned.
2. Under **Products** click on **R Studio**.
3. Click on **Desktop**.
4. Click on **Download R Studio Desktop**.
5. Under **Installers for Supported Desktops** download:
   - **RStudio 1.2.1335 - Windows 7+ (64-bit)**
6. Run the .exe file you downloaded and follow the prompts.

Course Materials - GitHub

Let's take a moment and download the course materials...

1. https://github.com/pritamdalal/lifesource_201907
   - download zipfile by using the green button

2. Unzip the downloaded folder and move that to your desktop.

3. This folder contains:
   - this slide presentation
   - sample data for later
   - .R script file for later

Course Materials - Website

1. https://pritamdalal.github.io/rff_course/

2. Go to **Course Content** page

3. Under *Basic Wrangling* click the blue link: Download Course Material

4. Unzip and move that folder to your Desktop

Contents of `bw_material`

The folder you downloaded contains several subfolders:

- ▶ `bw_capstone` - the files for the capstone project (we won't be using this)

- ▶ `bw_slides` - slide presentations

- ▶ `bw_tutorial` - contains all the tutorials we will work through

To launch R Studio double click on the following file:

- bw_materials
    - bw_tutorial
        - **bw_tutorial.Rproj**

Double clicking on the .Rproj file will automatically launch R Studio.
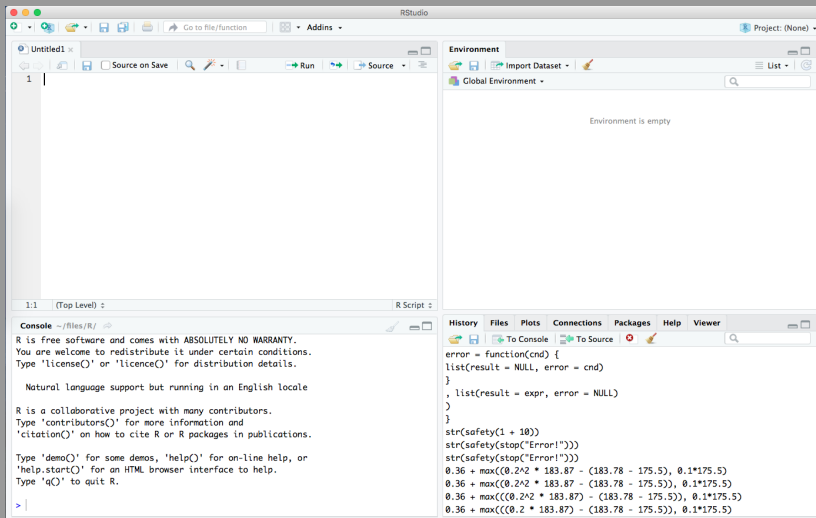
Figure 1:

I find that students often want the same dark theme as me. . .

1. In the menu bar, navigate as follows:
   - Tools > Global Options

2. In the resulting dialogue box:
   - click *Appearance* on left-hand side

3. Set *Editor theme: Cobalt*
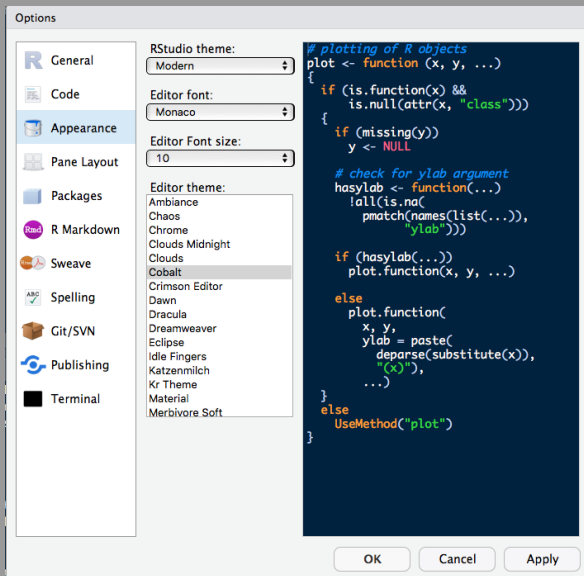
Figure 2:

1. In Rstudio, you will have a file open in source window called follow_tutorial_01.Rmd.
   - ▶ this is an Rmarkdown file
   - ▶ later we will use scripts

2. press **control + shift + 1**
   - ▶ this will change R Studio so you **only** see the source window

3. Reshape the R Studio window to only take up half of your screen.

4. In your file system, double click on:

- ▶ rff_materials
    - ▶ bw_tutorial
        - ▶ **01_intrduction.html**

5. The first tutorial will launch in your web browser.

6. Get your screen to look like mine:
    - ▶ left-half R Studio
    - ▶ right-half tutorial

Setting Up Tutorial 01 (3 of 3)

7. Finally, turn on: Chunk Output Inline

Figure 3:

1. File > Open > 11_script.R

2. Press **ctrl + shift + 0**
   ▶ your RStudio window now have four seaparte quandrants

3. Rearrange your window panes to look like mine.
   ▶ Tools > Global Options. . .
   ▶ Pane Layout

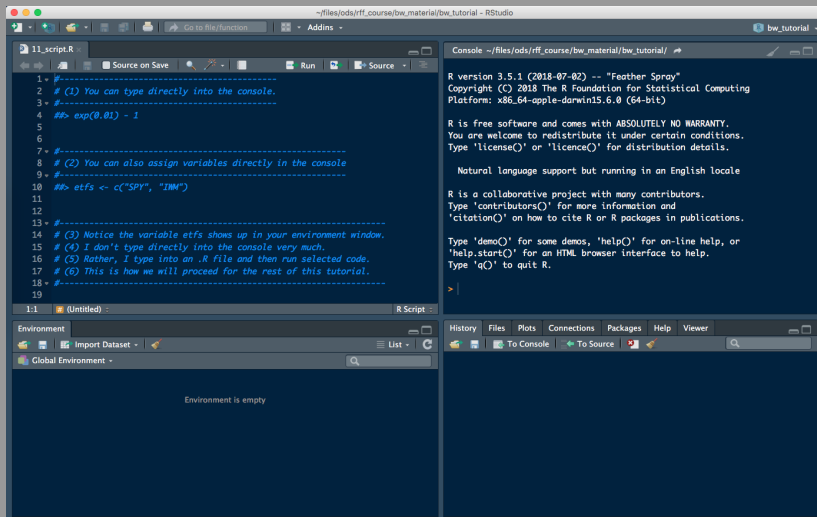4. I recommend minimizng the Enviroment and the Help quadrants

Figure 4:

Launching the Capstone Project

1. Quit out of RStudio

2. Lauch a new session of RStudio

3. `File > Open Project...`

- ► bw_materials
    - ► bw_capstone
        - ► **bw_capstone.Rproj**

Contents of **bw_capstone** Folder

I find that my analysis projects tend to have three components.
These are reflected in the subfolders that I have created in the
bw_capstone project folder.

- ▶ 01_wrangling - .R scripts that perform wrangling on data.

- ▶ 02_data_output - the wrangling produces intermediate data
  files.

- ▶ 03_analysis - once I have all the data files I need, I summarize
  my findings in on or more .Rmd documents.

Instructions for Capstone Project

1. You have the core tidyverse knowlege for this project, but it is also intended to push your comfort zone and teach you a few new functions/techniques along the way.

2. We will work through the project together, step-by-step.

3. In your file system, double click the the following file and it will open in your browser:

▶ bw_materials
  ▶ bw_capstone
    ▶ **bw_capstone_instructions.html**