Probability and Statistics: A Primer for Beginners and Pre-Beginners

Coding

Prologue: Obtaining R

Primary reference: Casella-Berger 2nd Edition

What is R?

It's a programming language. A *free* one!

And it's open-source! That means anyone can read the code that was used to build it.

And **that** means lots of people have added lots of stuff to it, so it can do just about anything (in statistics) you want!

Why do we need a programming language for this stuff?

Because, coins and dice are only gonna get us so far! (mostly me, I can't draw that well)

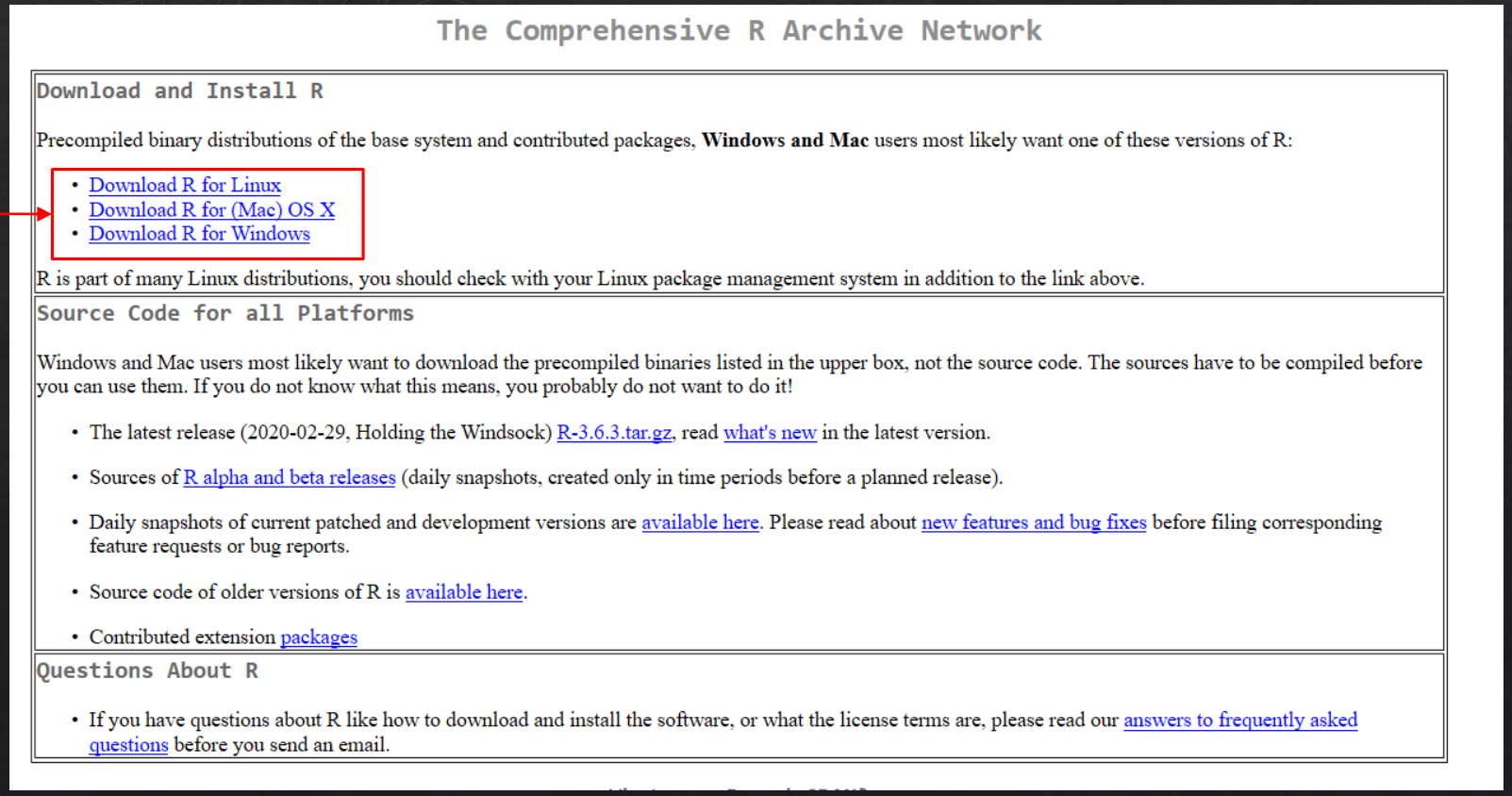
It's gonna let us make graphs, and do simulations, and other things that are gonna make this stuff clearer, especially for people who haven't taken a lot of math and might not get it any other way.

Plus I already added a "Coding" page to the website so it's too late to turn back now!

Where do I get R?

Go here: https://cran.mtu.edu/

Choose one.
Install it.



The Comprehensive R Archive Network

Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- Download R for Linux
- Download R for (Mac) OS X
- Download R for Windows

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

Source Code for all Platforms

Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

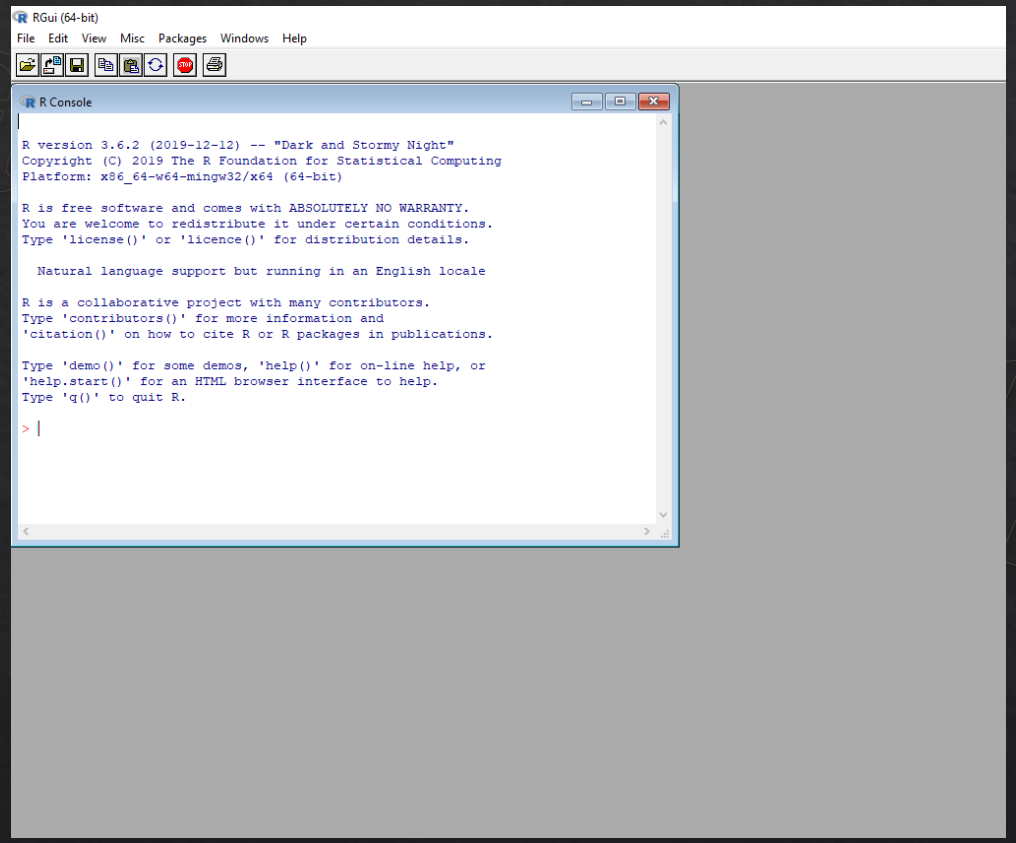
- The latest release (2020-02-29, Holding the Windsock) R-3.6.3.tar.gz, read what's new in the latest version.
- Sources of R alpha and beta releases (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are available here. Please read about new features and bug fixes before filing corresponding feature requests or bug reports.
- Source code of older versions of R is available here.
- Contributed extension packages

Questions About R

- If you have questions about R like how to download and install the software, or what the license terms are, please read our answers to frequently asked questions before you send an email.

Got it. What's next?

Open it:



Now close it, and never open it again.

What? Why?

You saw that thing. It's hideous, like something out of 1997.

We're gonna get something better: A really good IDE (integrated development environment).

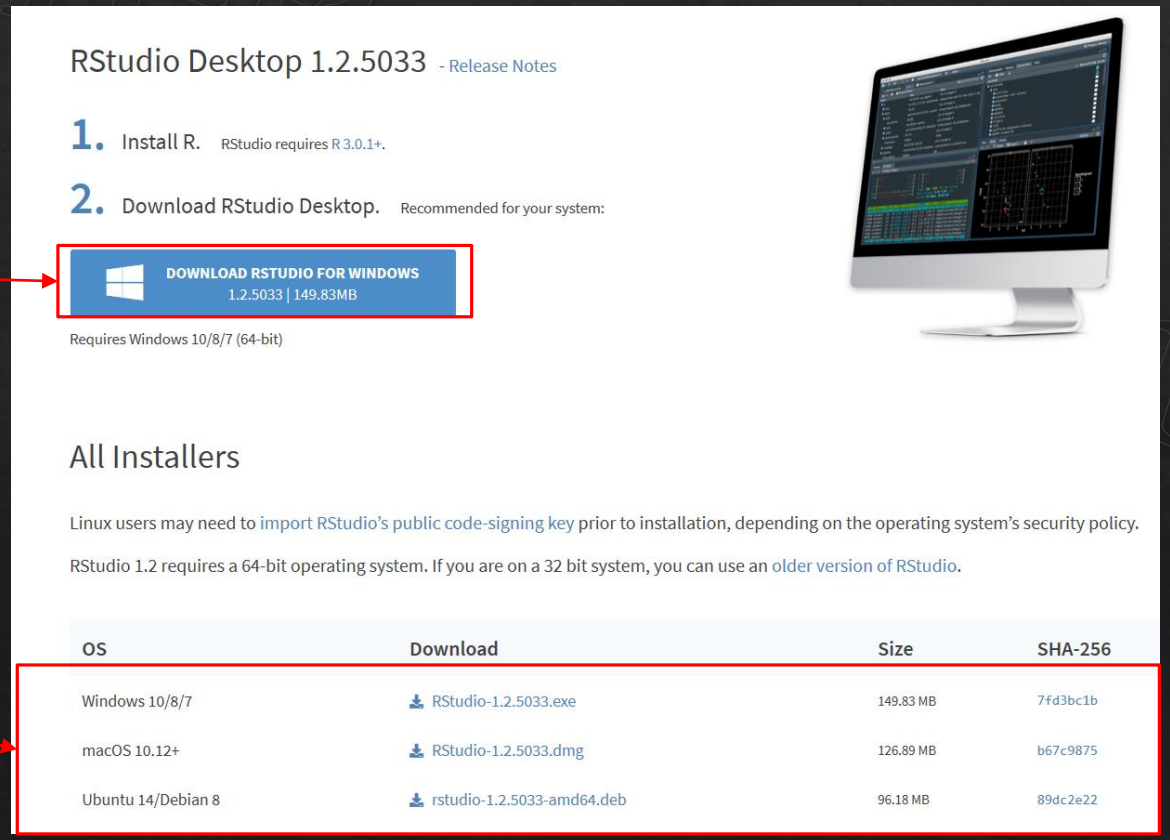
We're going line-by-line through a lot of this early stuff, so we're gonna get a program that'll let us see everything changing step-by-step. And it's *also* free!

What is it? Where do I get it?

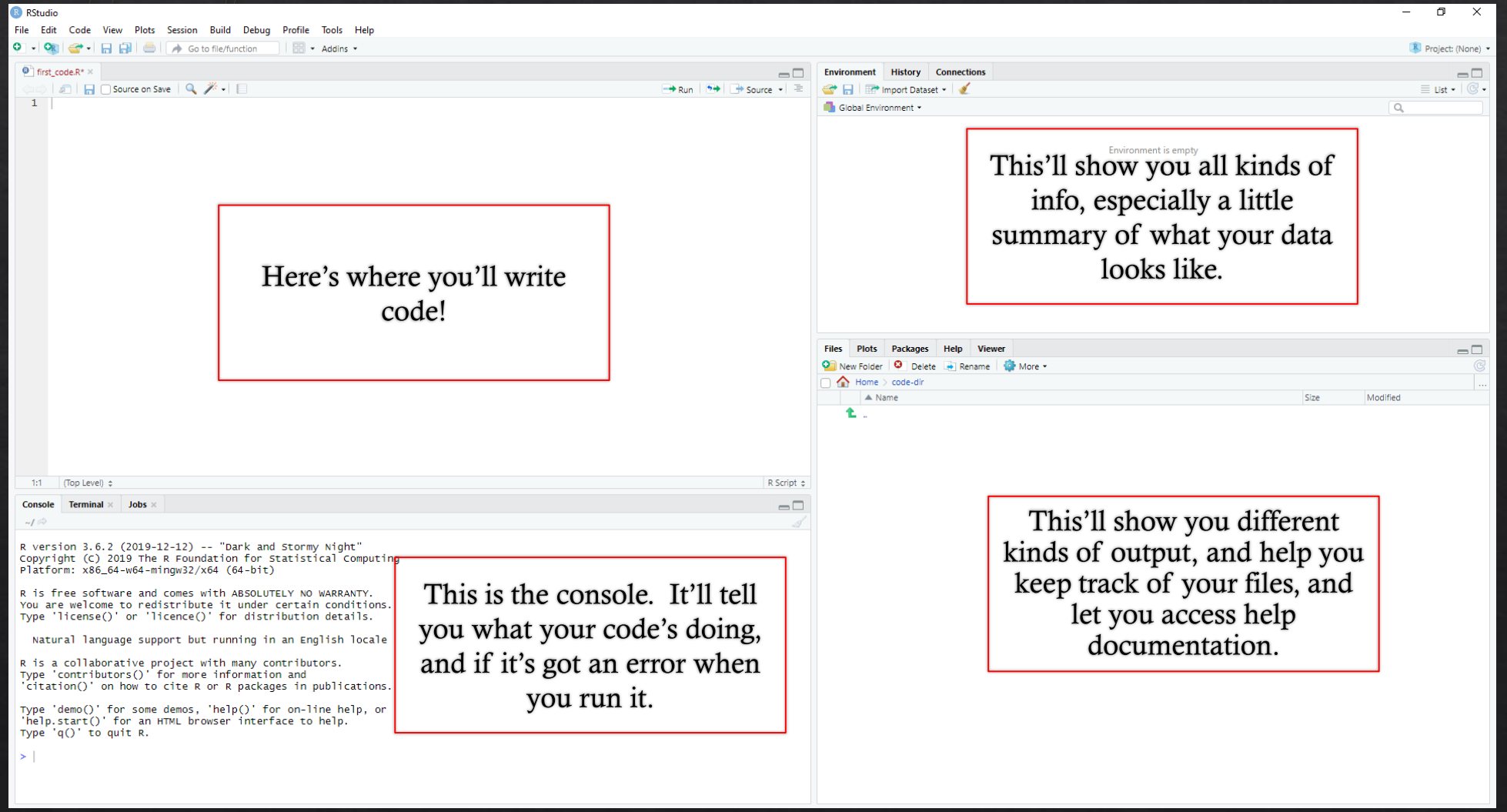
It's called RStudio. Go here:
https://rstudio.com/products/rstudio/download/#download

Install here.

Or down here if you need to.



What's all this?



Neat, can I write some code now?

Sure, just let me find a cool font to type the code in…

```
#All right here we go!  I'll type the code in this font.
#You can copy this whole code block into that upper left window if you want.
#<-This # symbol tells R you're writing a comment.
#R ignores comments.  They're intended for people to read to understand your code.
#So remember to write them!
```

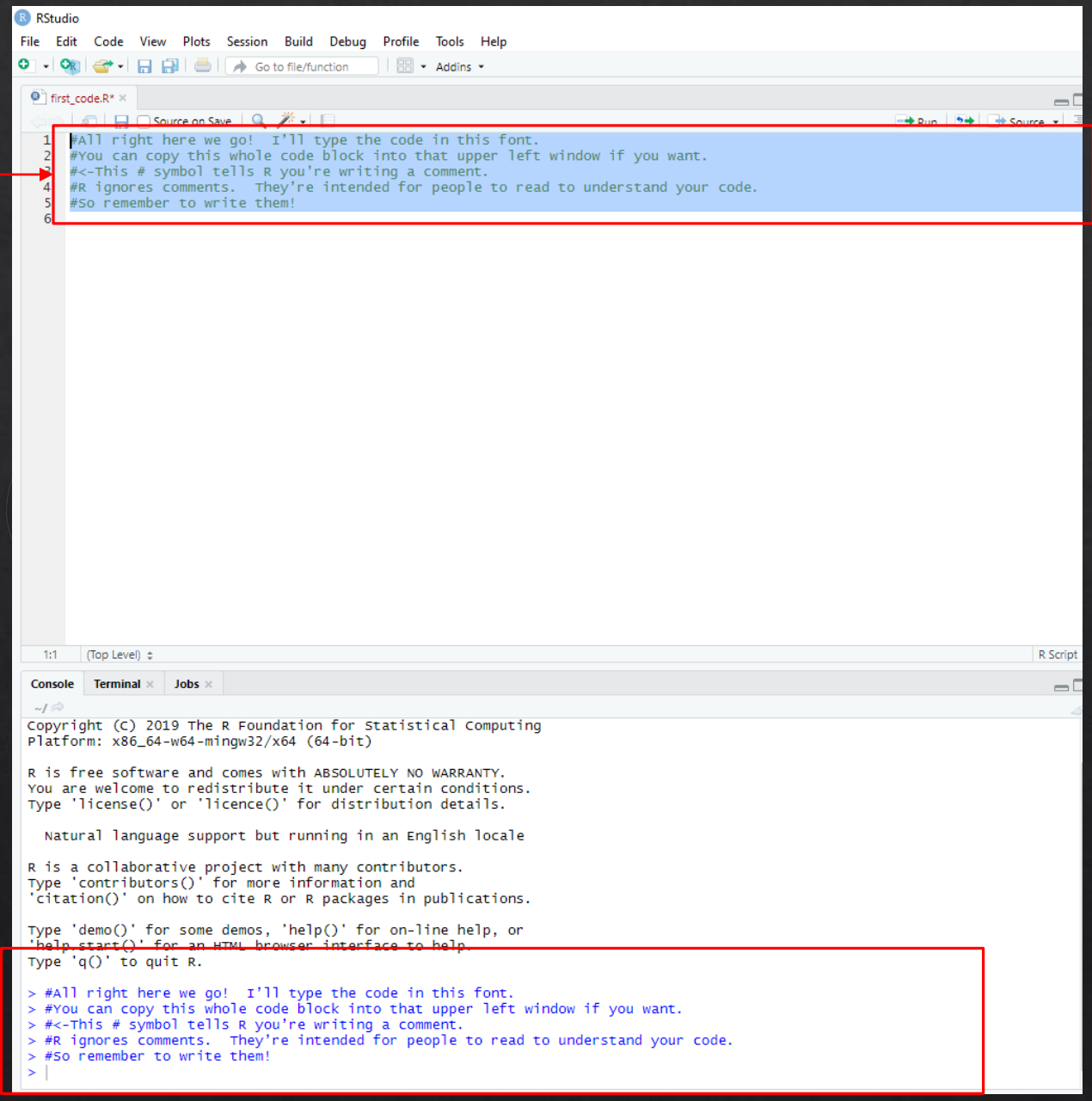
When the code's in, just press **Ctrl+A** to highlight it all and press **Ctrl+Enter** to run your code!

When you're done, it'll look something like this:

Also, you can press **Ctrl+S** to save the code you wrote! I saved mine as first_code.R. ☺

You copied. You highlighted. You executed.

Hey, it printed your comments to the console!



Hey, that just copied those comments. I want to write some real code!

All right, fine. Meet me back in the code block.

```
#We're gonna use the print() function.  Think of functions as instructions.
#They look simple to us, but there's more going on behind the scenes.
#They let us do complex things quickly and simply. So let's try one:
print("Hello World!")
```

When the code's pasted in, highlight the lines you just wrote and press **Ctrl+Enter** to run your code.

Now you're a *real* programmer!

Now you're just running *part* of your code.

How's that for coding?