

# Write Clean Code in R

This lesson reviews best practices associated with clean coding.

## Learning Objectives

At the end of this activity, you will be able to:

- write code using Hadley Wickham's style guide

## What you need

You need **R** and **RStudio** to complete this tutorial. Also we recommend have you have an **earth-analytics** directory setup on your computer with a **/data** directory with it.

- How to Setup R / R Studio
  - Setup your working directory
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## Resources

- Hadley Wickham's style guide

Clean code means that your code is organized in a way that is easy for you and for someone else to follow / read. Certain conventions are suggested to make code easier to read. For example, many guides suggest the use of a space after a comment. Like so:

```
#poorly formatted  comments are missing the space after the pound sign.  
# good comments have a space after the pound sign
```

While these types of guidelines may seem unimportant when you first begin to code, after a while you're realize that consistently formatted code is much easier for your eye to scan and quickly understand.

## Consistent, Clean Code

Take some time to review Hadley Wickham's style guide. From here on in, we will follow this guide for all of the assignments in this class.

## Object Naming Best Practices

1. **Keep object names short:** this makes them easier to read when scanning through code.
2. **Use meaningful names:** For example: **precip** is a more useful name that tells us something about the object compared to **x**
3. **Don't start names with numbers!** Objects that start with a number are NOT VALID in R.
4. **Avoid names that are existing functions in R:** e.g., **if**, **else**, **for**, see here

A few other notes about object names in R:

- R is case sensitive (e.g., **weight\_kg** is different from **Weight\_kg**).
- Avoid other function names (e.g., **c**, **T**, **mean**, **data**, **df**, **weights**).
- Use nouns for variable names, and verbs for function names.

- Avoid using dots in object names - e.g. `my.dataset` - dots have a special meaning in R (for methods) and other programming languages. Instead use underscores `my_dataset`.

## Challenge

Take a look at the code below.

- Create a list of all of the things that could be improved to make the code easier to read / work with.
- Add to that list things that don't fit the Hadley Wickham style guide standards.
- Try to run the code in R. Any issues?

```
#my code

#load stuff
library(ggplot2)

#turn off factors
options(stringsAsFactors = FALSE)

1variable <- 3 * 6
meanVariable <- 1variable

#calculate something important
mean-variable <- meanvariable * 5

thefinalthingthatineedtocalculate <- mean-variable + 5

#get things that are important
download.file(url = "https://ndownloader.figshare.com/files/7010681",
              destfile = "data/boulder-precip.csv")

my.data <- read.csv(file="data/boulder-precip.csv")
head(my_data)

str(my.data)

qplot(x=my.data$DATE,
      y=my.data$PRECIP)
```