STYLE – what ?

Programming style is a set of rules or guidelines used when writing ... code.

https://en.wikipedia.org/wiki/Programming_style

```
1  foo_foo %>%
2    hop(through = forest) %>%
3    scoop(up = field_mouse) %>%
4    bop(on = head)
```

```
1  foo_foo <- hop(foo_foo, through = forest)
2  foo_foo <- scoop(foo_foo, up = field_mice)
3  foo_foo <- bop(foo_foo, on = head)
```

Style concerns everything: files, functions, objects, arguments, names, spacing, indenting, assignment, quotes, comments, pipes, capitalization, punctuation, and so on...

STYLE – why?

THINKBIG
A TERADATA COMPANY

… following a particular programming style will help programmers read and understand source code conforming to the style, and help to avoid introducing errors.

https://en.wikipedia.org/wiki/Programming_style

STYLE – where?

There is no agreed upon style in the R environment. But choose one and stick to it.

Tidyverse Styleguide
http://style.tidyverse.org/

rOpenSci Packaging Guide
https://github.com/ropensci/onboarding/blob/master/packaging_guide.md

Google's Styleguide
https://google.github.io/styleguide/Rguide.xml

DOCUMENTATION – what ?

… documentation is written text … that accompanies … or is embedded in … code. It either explains how [the code] operates or how to use it …

https://en.wikipedia.org/wiki/Software_documentation

```
add <- function(x, y) {
  # Add x and y together and automatically
  # return the result
  x + y
}
```

```
#' Add together two numbers.
#'
#' @param x A number.
#' @param y A number.
#' @return The sum of \code{x} and \code{y}.
#' @examples
#' add(1, 1)
#' add(10, 1)
add <- function(x, y) {
  x + y
}
```

DOCUMENTATION – why?

THINKBIG
A TERADATA COMPANY

Code should be easy to understand

That means that it should be written to minimise the time it would take for someone else to understand it.

The purpose of commenting is to help the reader know as much as you did when you wrote the code and everything was fresh in your memory.

That reader could very well be future you. And we all know past you won't answer emails.

DOCUMENTATION – where?

THINKBIG
A TERADATA COMPANY

Tidyverse Styleguide
http://style.tidyverse.org/

rOpenSci Packaging Guide
https://github.com/ropensci/onboarding/blob/master/packaging_guide.md

R packages
http://r-pkgs.had.co.nz/

The Art of Readable Code
https://www.amazon.com/Art-Readable-Code-Practical-Techniques/dp/0596802293

GIT – what ?

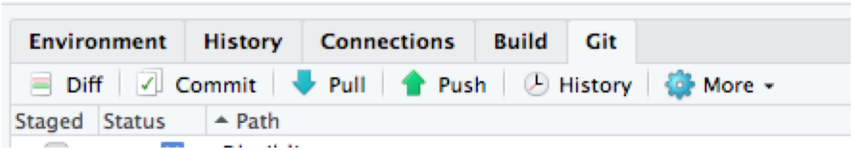
Git is a version control system for tracking changes in computer files and coordinating work on those files among multiple people. It is primarily used for source code management in software development…

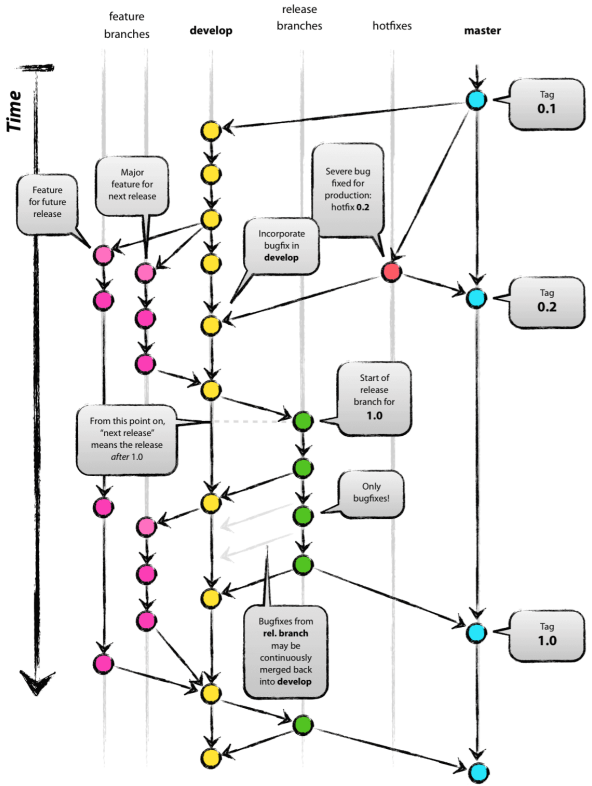
https://en.wikipedia.org/wiki/Git

GIT – why?

Data science **IS** software development

...and you need to use git every time.





GIT – where?

Git and GitHub
http://r-pkgs.had.co.nz/git.html

Version Control with Git and SVN
https://support.rstudio.com/hc/en-us/articles/200532077-Version-Control-with-Git-and-SVN

A successful Git branching model
http://nvie.com/posts/a-successful-git-branching-model/

TEST – what ?

THINKBIG
A TERADATA COMPANY

In computer programming, unit testing is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures, are tested to determine whether they are fit for use.

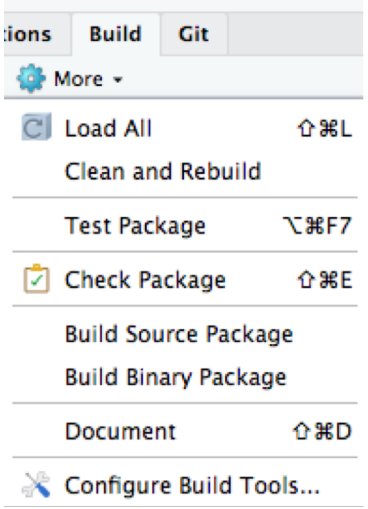
https://en.wikipedia.org/wiki/Unit_testing

TEST – why?

Testing makes sure that your code works – and that it works the way you want it to.

Testing gives you fewer bugs, a better code structure, easier restarts and more robust code.

CRAN checks also greatly improve your package.



TEST – where?

Chapter: Testing
http://r-pkgs.had.co.nz/tests.html

testthat package
https://github.com/r-lib/testthat

devtools package
https://www.rstudio.com/products/rpackages/devtools/

DOCKER – what ?

THINKBIG
A TERADATA COMPANY

Docker is a computer program that performs operating-system-level virtualization also known as containerization.

Docker uses resource isolation to allow independent "containers" to run within a single OS, avoiding the overhead of starting and maintaining virtual machines (VMs).

DOCKER – why?

THINKBIG
A TERADATA COMPANY

Docker can create the exact environment that you need for your analysis.

Once build you can use this image every time you need to run the given analysis.

The processes will be totally isolated and software you run or update will have no effect outside of the given container.

And you can chain them together in powerful docker-recipes using docker compose.

DOCKER – where?

Rocker
https://github.com/rocker-org/rocker

Docker tutorial
https://docs.docker.com/get-started/

Dockerhub
https://hub.docker.com/explore/