

# Test-Driven Development: What, Why, and How...

Wednesday, 22 November, 2017  
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# TDD: What...

## *Unit Testing:*

- Test first, code later.

## *Red:*

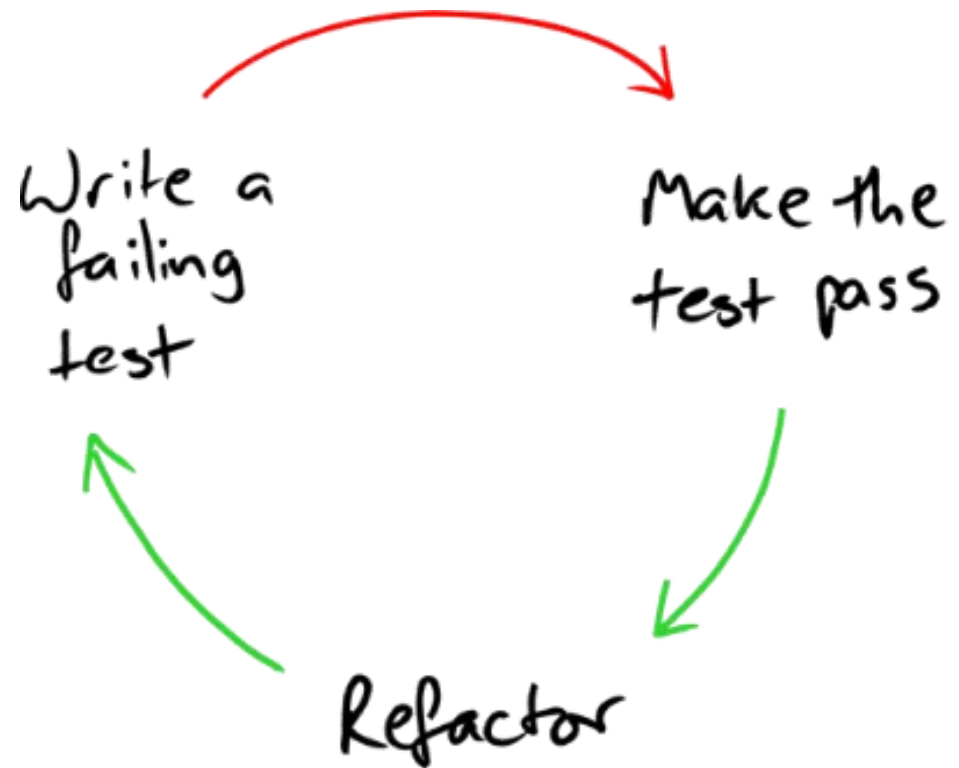
- Write a test.
- Test fails, 😡

## *Green:*

- Write some code.
- Test passes, 😬

## *Refactor:*

- “Clean code that works”, 😇



# TDD: Why...

## *Better Code:*

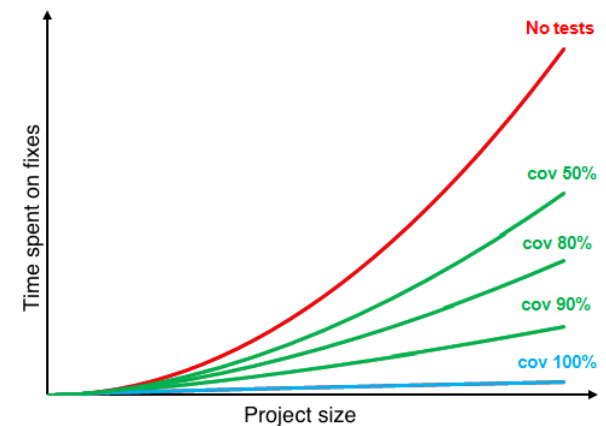
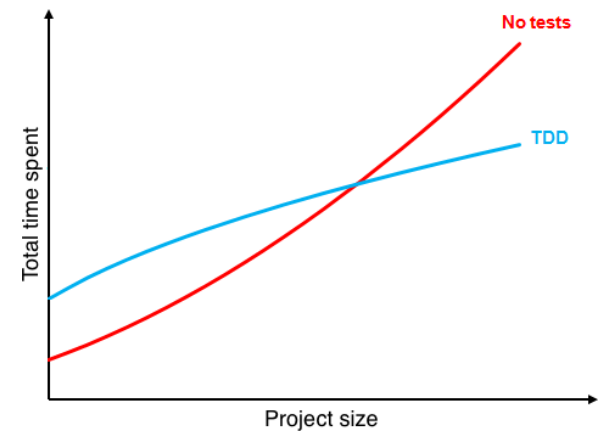
- Refactoring is part of the process.
- Interface design through tests.

## *Higher Productivity:*

- Faster feedback.
- Lower TCO.

## *Better Documentation:*

- Detailed regression test suite.



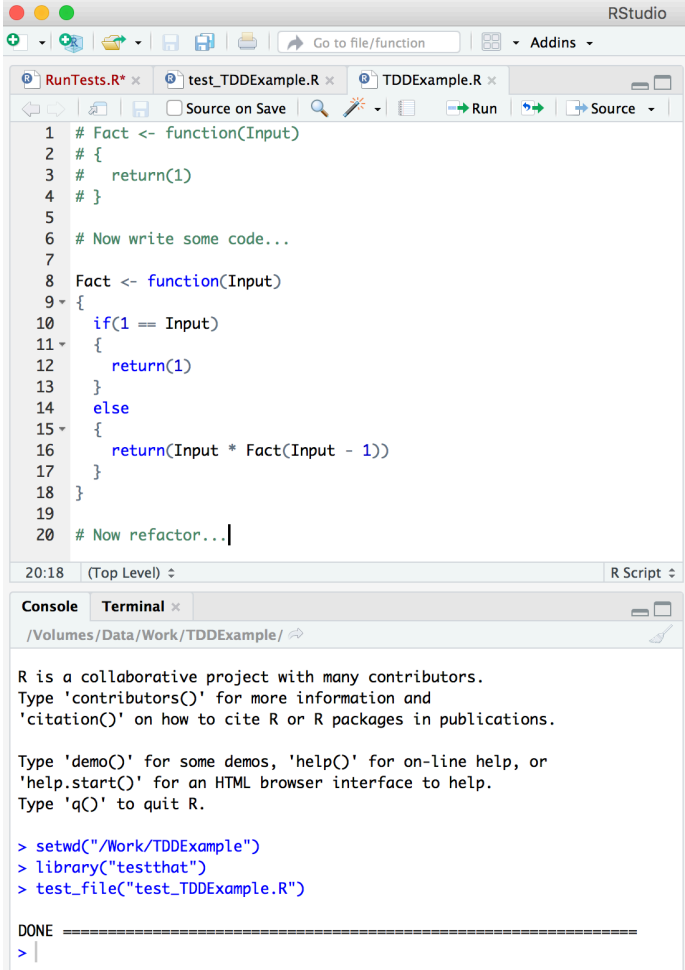
# TDD: How (A Toy Example in R)...

## Write The Test:

- In test\_TDDExample.R
  - source("TDDExample.R")
  - expect\_that(Fact(1), equals(1))
  - expect\_that(Fact(2), equals(2))
  - expect\_that(Fact(3), equals(6))
  - expect\_that(Fact(5), equals(120))

## Run The Test:

- In RunTests.R
  - library("testthat")
  - test\_file("test\_TDDExample.R")



```

RStudio

RunTests.R* test_TDDExample.R TDDExample.R
Source on Save Run Source
1 # Fact <- function(Input)
2 # {
3 #   return(1)
4 # }
5
6 # Now write some code...
7
8 Fact <- function(Input)
9 {
10   if(1 == Input)
11   {
12     return(1)
13   }
14   else
15   {
16     return(Input * Fact(Input - 1))
17   }
18 }
19
20 # Now refactor...

20:18 (Top Level) R Script

Console Terminal
/Volumes/Data/Work/TDDExample/

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> setwd("/Work/TDDExample")
> library("testthat")
> test_file("test_TDDExample.R")

DONE =====
>

```

# Questions?

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