JUnit & TDD

The Bad Old Way

- write lots of code
  - and some code to test the code
- run the program
  - wait 5 minutes for it to start
- test the program
  - type and click lots of times to get to just the right place in the code
- observe the resutls
  - Ahhhhh! It failed.
- repeat

Demo

Coding the Hard Way

Computers Laugh At Us

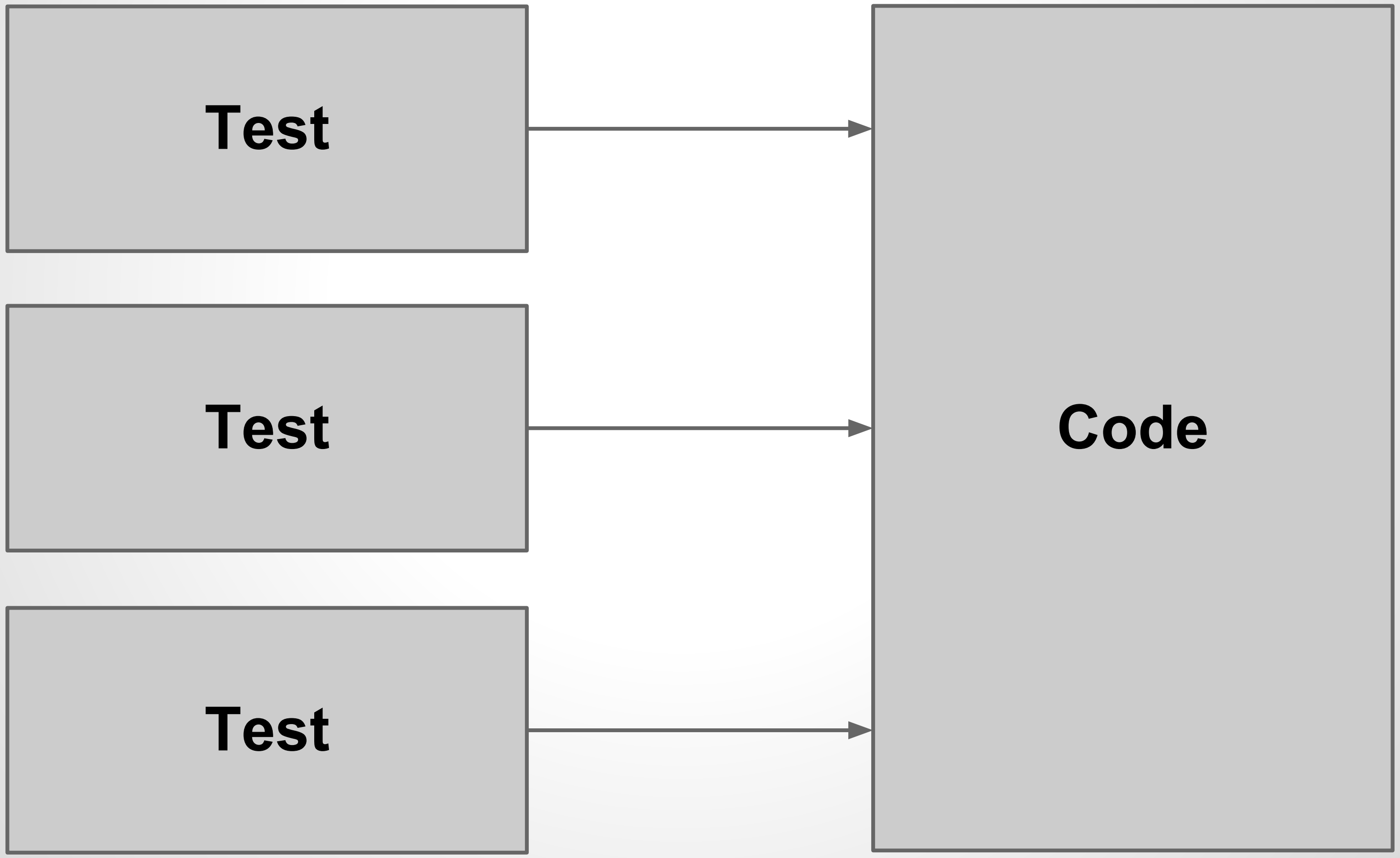
- we created them to...
  - ...automate repetitive and redundant things
  - ...make our lives easier
- we use them and...
  - ...we do the same thing over and over again
  - ...we are frustrated

If only there were a way...

Automated Unit Testing

It runs the test so you don't have to.

JUnit



Writing A Test

Test

```
public class EchoTest {

  @Test
  public void itEchosAString() {
    Echo echo = new Echo();
    assertEquals("echo", echo.echo("echo"));
  }

}
```

Code

```
public class Echo {

  public String echo(String s) {
    return s;
  }

}
```

Writing Another Test

Test

```
public class EchoTest {

  @Test
  public void itEchosAString() {
    Echo echo = new Echo();
    assertEquals("echo", echo.echo("echo"));
  }

  @Test
  public void itEchosAnotherString() {
    Echo echo = new Echo();
    assertEquals("hello", echo.echo("hello"));
  }

}
```

Code

```
public class Echo {

  public String echo(String s) {
    return s;
  }

}
```

Don't Repeat Yourself!

Test

```
public class EchoTest {

  private Echo echo;

  @Before
  void setup() {
    echo = new Echo();
  }

  @Test
  public void itEchosAString() {
    assertEquals("echo", echo.echo("echo"));
  }

  @Test
  public void itEchosAnotherString() {
    assertEquals("hello", echo.echo("hello"));
  }

}
```

Code

```
public class Echo {

  public String echo(String s) {
    return s;
  }

}
```

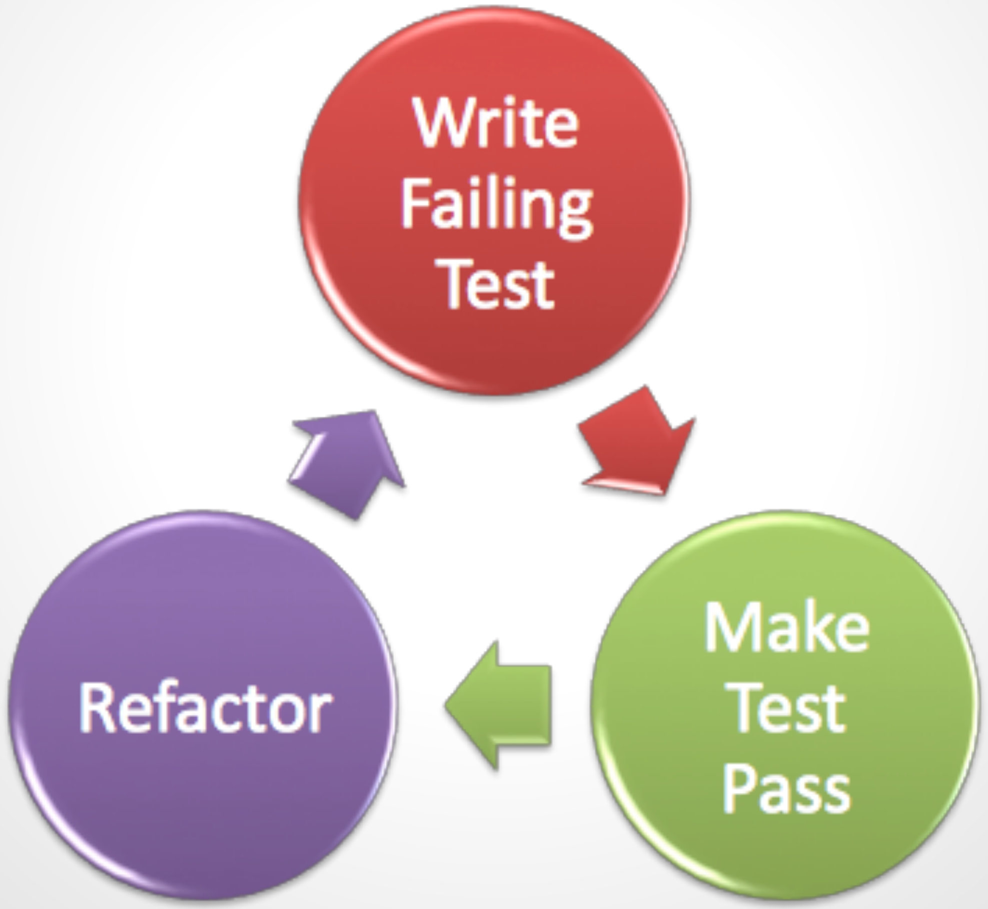
Demo

Automated Unit Testing

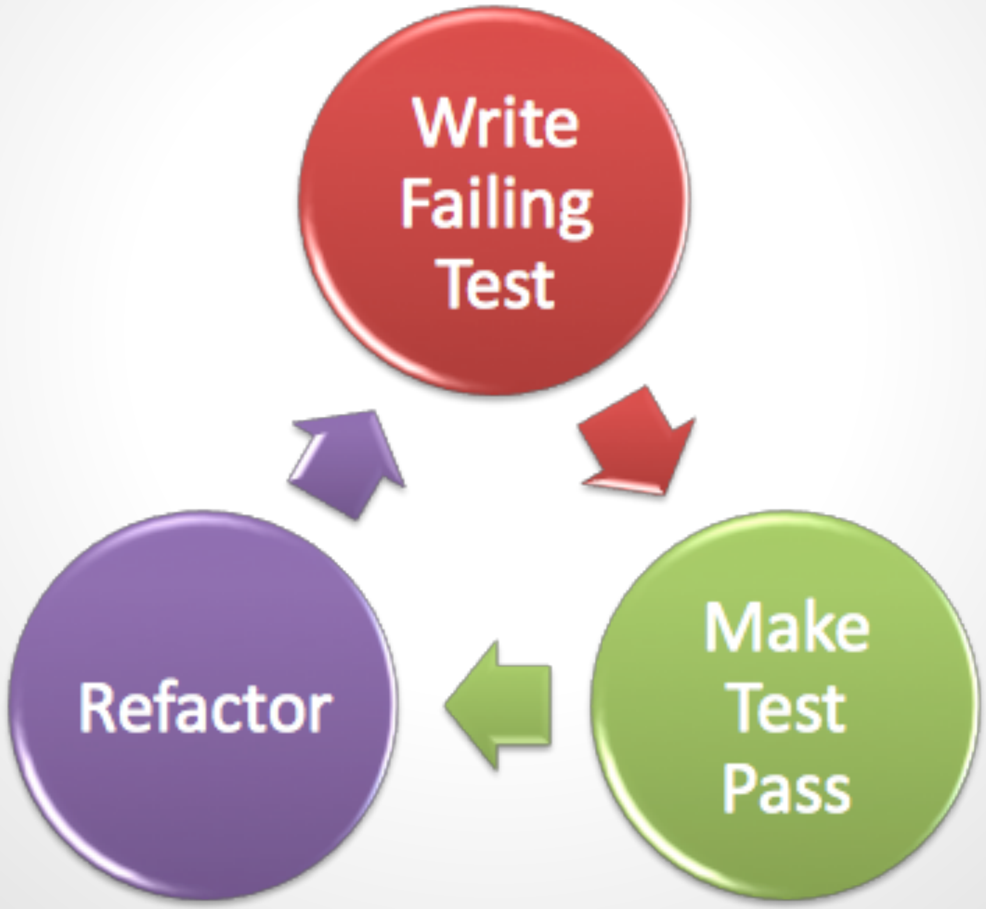
Test Driven Development

It's simple really. Write your test first.

The TDD Cycle



Ping Pong Pairing



Dos & Don'ts

Do...

…start with a failing test.

…write tests that become more and more specific.

…write code that becomes more and more generic.

…take turns writing tests, coding, and refactoring.

…kibitz while pairing.

…consider keeping a list of tests you need to write

Don't...

…write more than one test at a time.

…have more than one assertion in a test.

…write any more code than is needed to make the current test pass.

…code alone.

Demo

Test Driving TDD