

Automation, Continuous Integration

Based on Simon Urli and Sébastien Mosser courses

12/12/2016

Cécile Camillieri/Clément Duffau



Previously...

Compiling during lab sessions

```
azrael:labs mosser$ ls  
Exercice.java Main.java
```

```
azrael:labs mosser$ javac *.java
```

```
azrael:labs mosser$ java Main  
42
```

Legendary, isn't it?

Sébastien Mosser

Maven

```
<project>
  <!-- model version is always 4.0.0 for Maven 2.x POMs -->
  <modelVersion>4.0.0</modelVersion>

  <!-- project coordinates, i.e. a group of values which
       uniquely identify this project -->

  <groupId>com.mycompany.app</groupId>
  <artifactId>my-app</artifactId>
  <version>1.0</version>

  <!-- library dependencies -->

  <dependencies>
    <dependency>

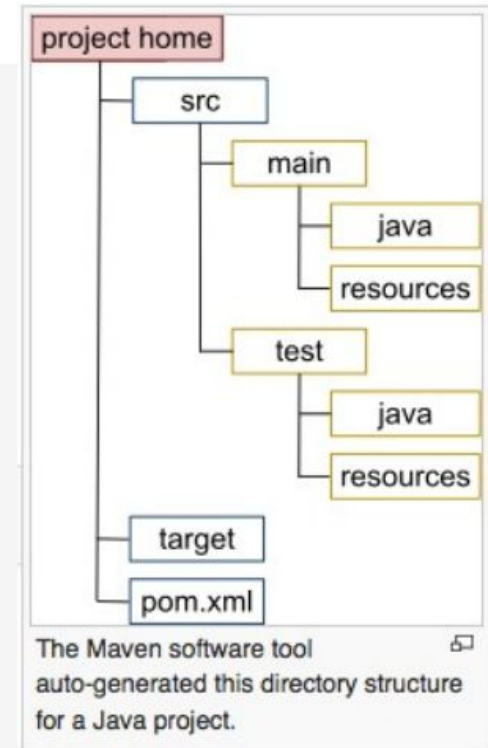
      <!-- coordinates of the required library -->

      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>3.8.1</version>

      <!-- this dependency is only used for running and compiling tests -->

      <scope>test</scope>

    </dependency>
  </dependencies>
</project>
```



What's maven?

- Objectives
 - => Handle dependencies
 - => Automate tasks (compile, test, ...)
- Configuration with a `pom.xml` file
- Commands to build, test, deploy
 - => `mvn compile`
 - => `mvn test`
 - => ...

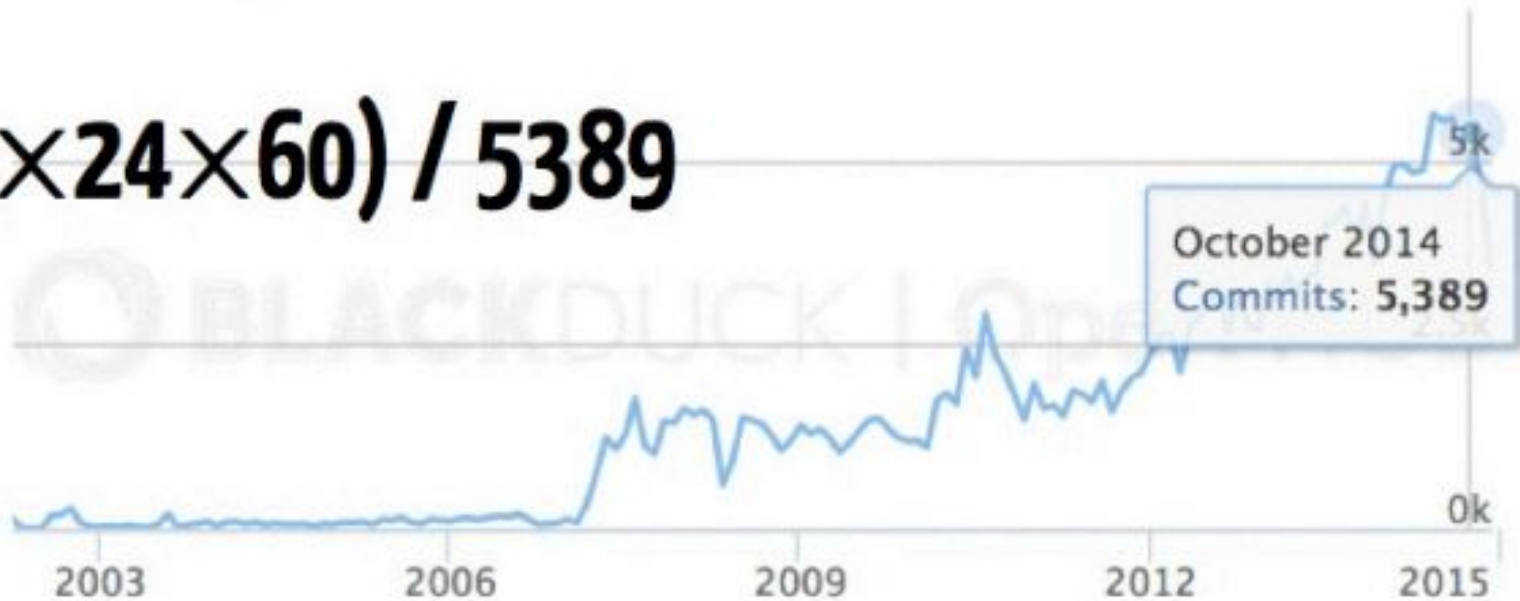
Is it enough ?

4403 Commits Last Month!



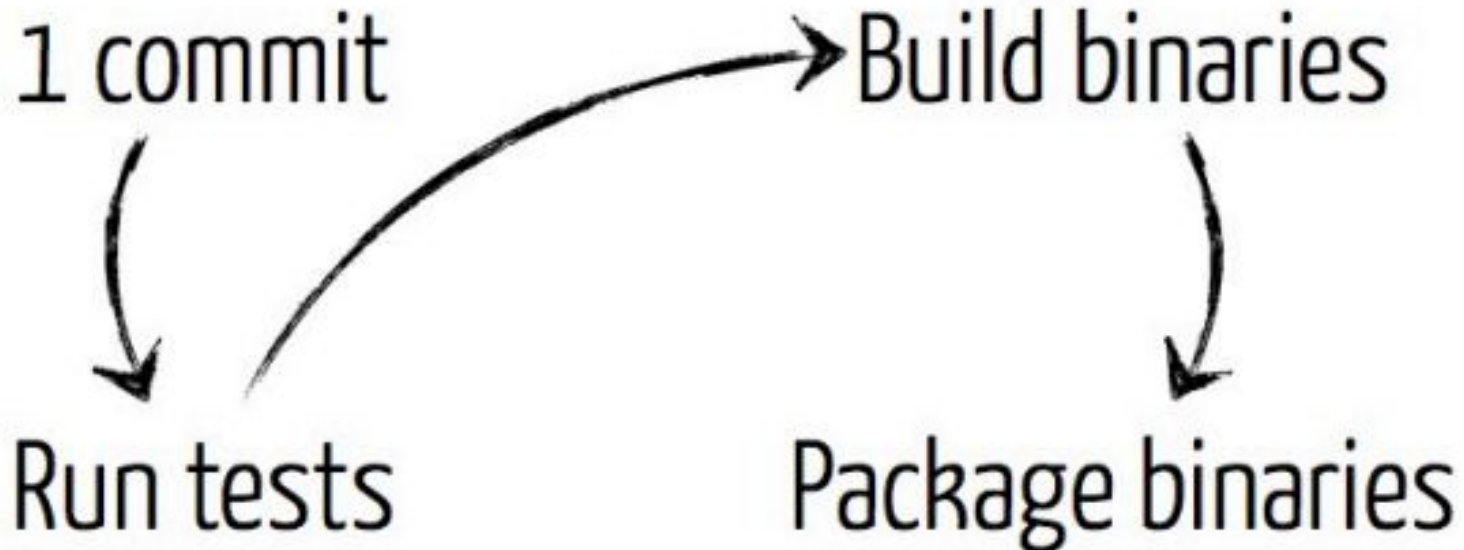
Commits per Month

$(31 \times 24 \times 60) / 5389$



~1commit each 8 minutes

Ok, That's Impressive... So What?



137 hours! (08.2012)

Towards automation

Automate = no human intervention

=> Speed

=> Avoid mistakes

=> Concentrate on the code

« Lorsque vous écrivez une commande plus de trois fois, pensez à l'automatiser. »

- Raphaël Marvie



What to automate?

- Creation of a new project: structure, configuration, ...
- Creation of a new element: class, resource file, ...
- Tests execution
- Publication of tests results
- Packaging: creation of .jar, .zip, ...
- Deployment of software
- Documentation creation
- Documentation deployment
- ...

What to automate?

- **Creation of a new project: structure, configuration, ...**
- Creation of a new element: class, resource file, ...
- **Tests execution**
- Publication of tests results
- **Packaging: creation of .jar, .zip, ...**
- **Deployment of software**
- Documentation creation
- Documentation deployment
- ...

Continuous Integration

Continuous Integration (CI)

Continuous:

“ Forming an unbroken whole; without interruption. ”

Integration:

“ The process of combining two or more things into one, to assemble in order to create an organic whole. ”



Continuous Integration:

The process to assemble without interruption

Continuous Integration

- Automate building of your product
- Have an overview of your system
- Trace the results of these activities

“Building”?

- Source code compilation
- Tests execution
- Software deployment

When to build?

- Clock: scheduled jobs
- Code change: job execution on commit
- Dependencies: after the build of another project

What context for building?

- Different OS: Windows, Mac OS, Linux, ...
- Different architectures: 32/64 bits
- Called nodes

Example scenario

Bob commits and pushes code

Pull the repository

Checkout on master

Compile the source code

Execute tests

Summarize the results

Bob knows if something failed

Example scenario

Bob commits and pushes code

Pull the repository

Checkout on master

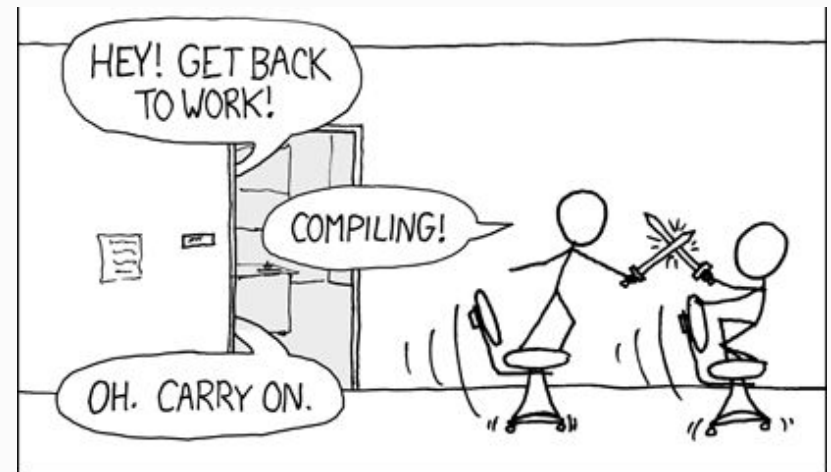
Compile the source code

Execute tests

Summarize the results

Bob knows if something failed

Bob can do something else
(hopefully) productive



<http://xkcd.com>

Tools for CI



Versioning

Build automation

maven



gradle



SoapUI Testing

JUnit



Assembly of these tasks: CI

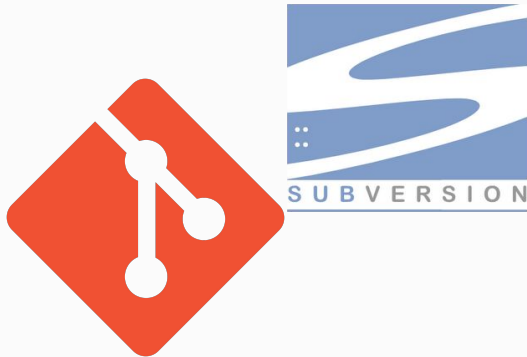
Jenkins

drone.io



Travis CI

Tools for CI



Versioning
For us: **git**

Build automation
For us: **maven**

maven



SoapUI Testing
For us: **JUnit**

JUnit

Assembly of these tasks: CI
For us: **Jenkins**



Jenkins

drone.io
Travis CI



Maven/Gradle to...

Build...

Test...

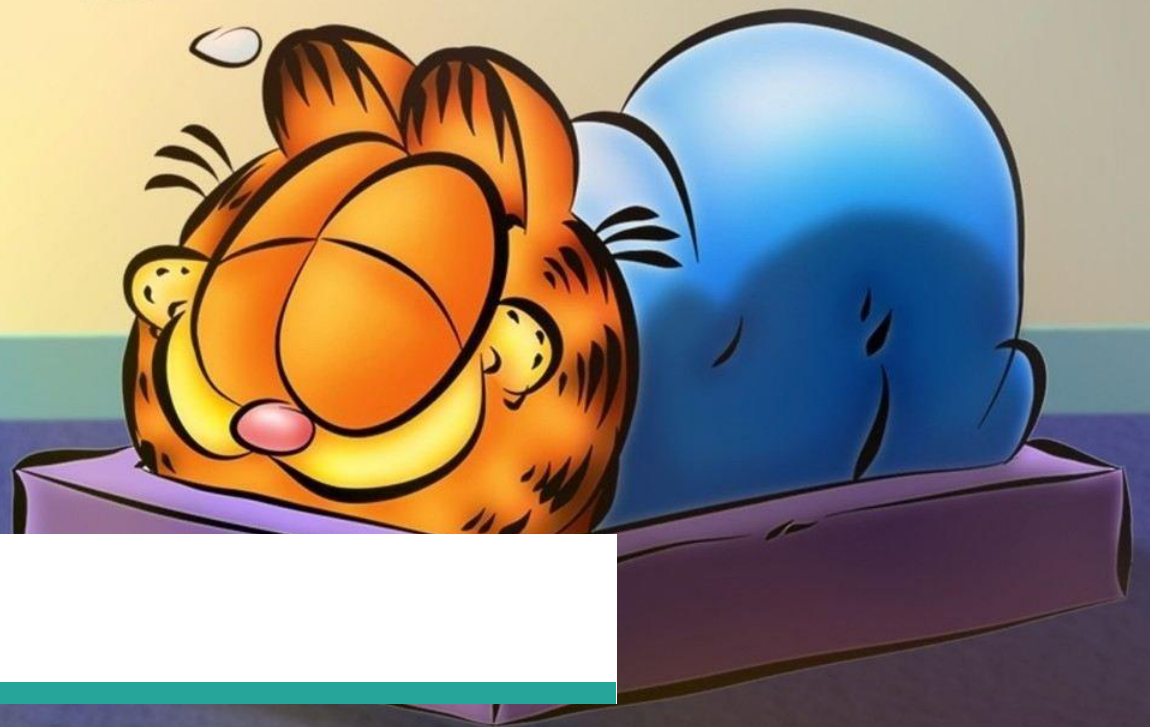
Deploy...

CI to...

Automate...

Trace...

...



...Sleep at night

Jenkins Setup

- <http://iut-outils-gl.i3s.unice.fr/jenkins/job/LP%20DAM%2016-17/job/LP%20DAM%202016-2017/>
- Plug-and-play solution with maven or gradle goals
- Need a “Jenkinsfile” file at git repository root

The default Jenkinsfile

The server node where it will be executed.
This is not the git branch. Do not change.

```
node ('master') {
```

```
  checkout scm
```

Keep an eye on multi-branch

```
  sh 'mvn clean package'
```

The maven goal to apply

```
}
```

The default Jenkinsfile

The server node where it will be executed.
This is not the git branch. Do not change.

```
node ('master') {
```

```
  checkout scm
```

Keep an eye on multi-branch

```
  sh 'mvn -f myFolder clean package'
```

The maven goal to apply
-f to reference the folder
containing the pom.xml file

```
}
```

