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# Apache Maven

ОСНОВЫ

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# Maven

Apache Maven — фреймворк для автоматизации сборки проектов на основе описания их структуры в файлах на языке POM (англ. Project Object Model), являющемся подмножеством XML<sup>[5]</sup>.

Проект Maven издаётся сообществом Apache Software Foundation, где формально является частью Jakarta Project.

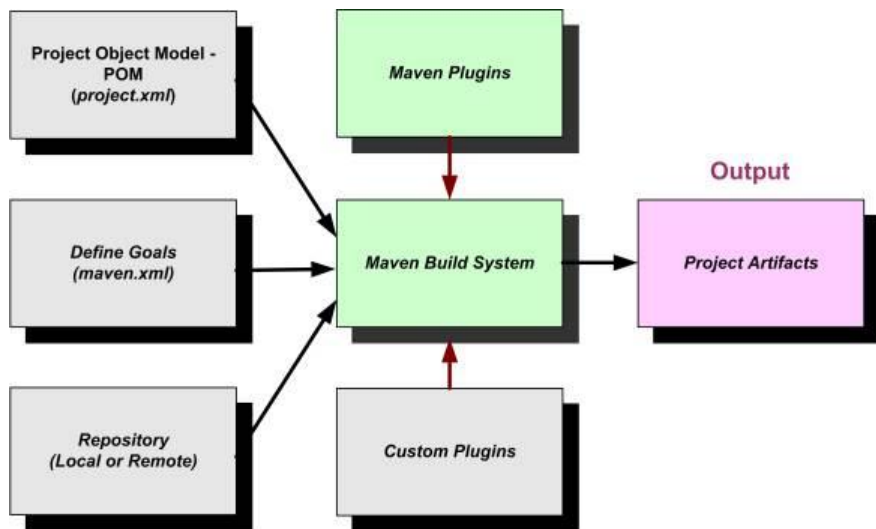
<https://maven.apache.org/download.cgi>

# Основы Apache Maven



# Настройка Apache Maven для Windows

Упрощает и стандартизирует процесс сборки



→ Main

Welcome

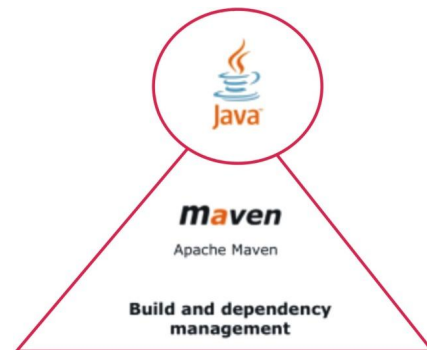
→ Get Maven

Download  
Release Notes (3.0.4)  
Release Notes (2.2.1)  
Release Notes (2.0.11)  
License

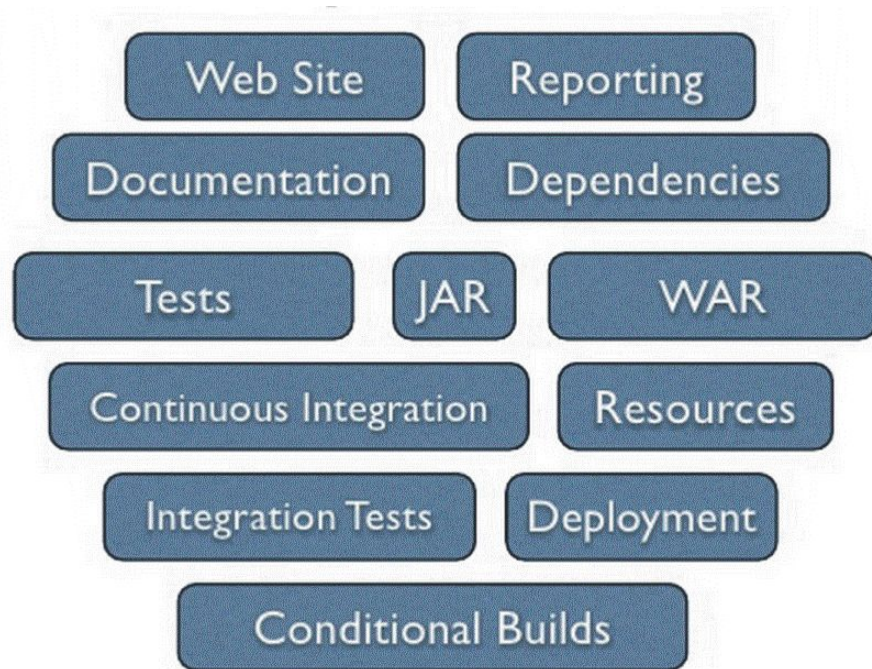
## Welcome to Apache Maven

Apache Maven is a software project management and comprehension tool, and documentation from a central piece of information.

If you think that Maven could help your project, you can find out more information about what Maven is, a list of some of its main features, and a set of frequently asked questions.

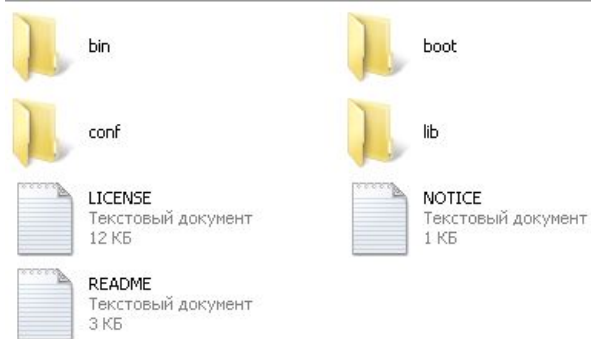


# Почему же Maven?

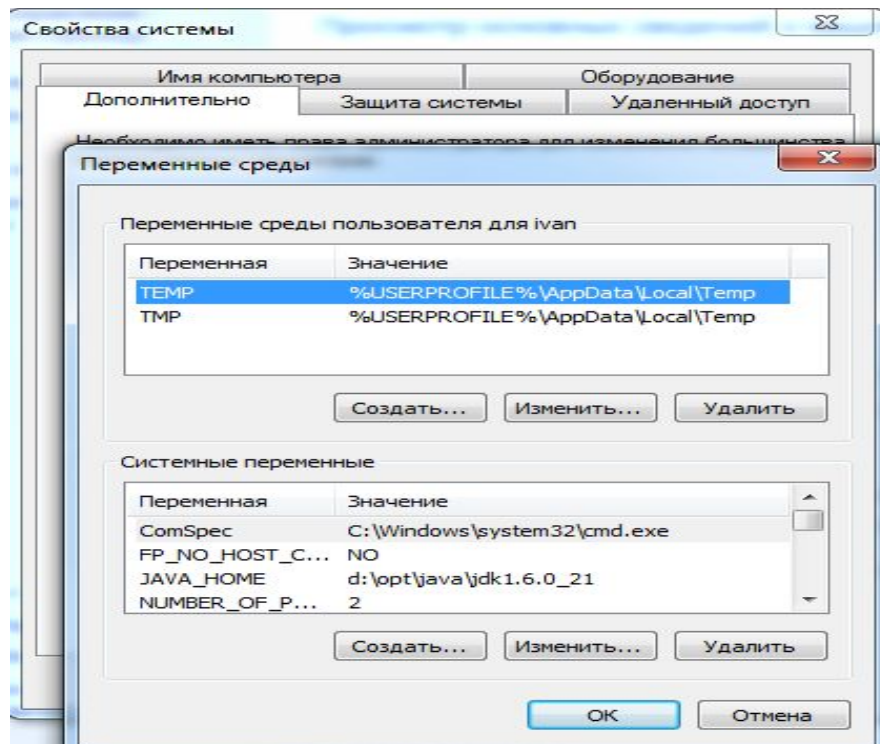


# Установка Maven

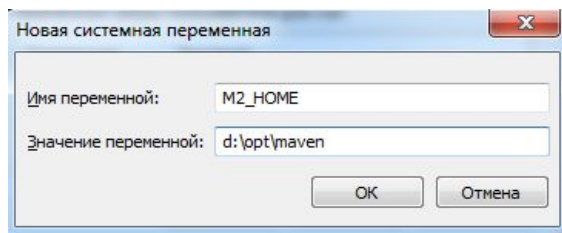
apache-maven-3.6.3-bin.zip



- Пуск ☐ Панель Управления
- ☐ Система ☐ Дополнительно ☐
- ☐ Переменные Среды



# Установка Maven

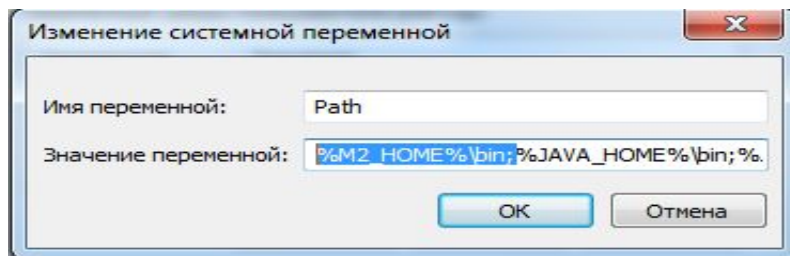


```
C:\Administrator: C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Ivan_Spresov@epam.com>mvn -version
Preparing to Execute Maven in Debug Mode
Apache Maven 3.0.3 (r1075438; 2011-02-28 13:01:09-0430)
Maven home: d:\opt\apache-maven-3.0.3
Java version: 1.6.0_21, vendor: Sun Microsystems Inc.
Java home: d:\opt\java\jdk1.6.0_21\jre
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 7", version: "6.1", arch: "x86", family: "windows"

C:\Users\Ivan_Spresov@epam.com>
```

**mvn -version**



# Установка Maven

d:\maven-3.6.3\conf\settings.xml



```
<settings xmlns="http://maven.apache.org/POM/4.0.0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
    http://maven.apache.org/xsd/settings-1.0.0.xsd">

  <localRepository>h:\opt\globoforce\repository</localRepository>
  <profiles>
    <profile>
      <id>default</id>
      <repositories>
        <repository>
          <id>java.net</id>
          <url>http://download.java.net/maven/2</url>
        </repository>
        <repository>
          <id>JBoss repository</id>
          <url>http://repository.jboss.com/maven2</url>
        </repository>
        <repository>
          <id>JBoss repository1</id>
          <url>http://repository.jboss.org/nexus/content/groups/public</url>
        </repository>
        <repository>
          <id>Repo2</id>
          <url>http://repo2.maven.org/maven2</url>
        </repository>
        <repository>
          <id>apache.snapshots</id>
          <url>http://repository.apache.org/content/groups/snapshots-group</url>
          <releases>
            <enabled>false</enabled>
          </releases>
          <snapshots>
            <enabled>true</enabled>
          </snapshots>
        </repository>
      </repositories>
    </profile>
  </profiles>
  <servers>
    <server>
      <id>myserver</id>
      <username>managerGui</username>
      <password>abc123</password>
    </server>
  </servers>
  <activeProfiles>
    <activeProfile>default</activeProfile>
  </activeProfiles>
</settings>
```



# Вопросы?



**Настройка Apache  
Maven для  
Windows**



**Создание нового  
проекта**



**Описание  
Объектной  
модели проекта**



**Описание  
жизненного цикла  
сборки (POM)**

# Создание нового проекта

- Запустите консоль (cmd в windows).
- Запустите следующую команду:  
`mvn archetype:generate`
- Если это первый раз, когда вы запускаете эту команду, вы увидите статус скачивания в командной строке.
- Затем вы увидите большой список архетипов, у каждого есть номер, имя, и краткое описание, описывающие, что каждый из них представляет. Выберем архетип по умолчанию. Мы предполагаем, что это архетип номер **817**, с именем `maven-archetype-quickstart`.

*Choose archetype:*

*1: remote -> br.com.ingenieux:elasticbeanstalk-service-webapp-archetype (A Maven Archetype Encompassing RestAssured, Jet*

*ty, Jackson, Guice and Jersey for Publishing JAX-RS-based Services on AWS' Elastic Beanstalk Service)*

*2: remote -> br.com.otavio.vraptor.archetypes:vraptor-archetype-blank (A simple project to start with VRaptor 4)*

*...  
1634: remote -> us.fatehi:schemacrawler-archetype-plugin-dbconnector (-)*

*1635: remote -> us.fatehi:schemacrawler-archetype-plugin-lint (-)*

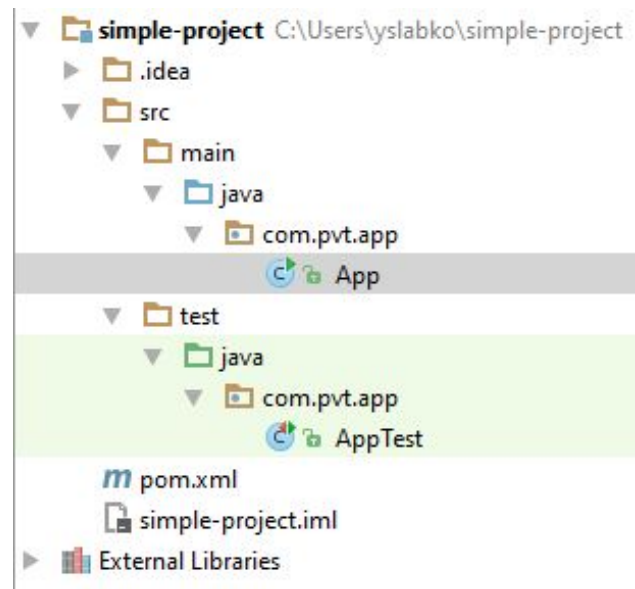
# Создание нового проекта

```
-quickstart-1.0.pom (703 B at 1.1 KB/sec)
Define value for property 'groupId': : com.pvt.app
Define value for property 'artifactId': : simple-project
Define value for property 'version': 1.0-SNAPSHOT:: : 1.0
Define value for property 'package': com.pvt.app: :
Confirm properties configuration:
groupId: com.pvt.app
artifactId: simple-project
version: 1.0
package: com.pvt.app
Y: : y
[INFO] -----
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-quickstart:1.0
[INFO] -----
[INFO] Parameter: basedir, Value: C:\Users\yslabko
[INFO] Parameter: package, Value: com.pvt.app
[INFO] Parameter: groupId, Value: com.pvt.app
[INFO] Parameter: artifactId, Value: simple-project
[INFO] Parameter: packageName, Value: com.pvt.app
[INFO] Parameter: version, Value: 1.0
[INFO] project created from Old (1.x) Archetype in dir: C:\Users\yslabko\simple-project
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
```

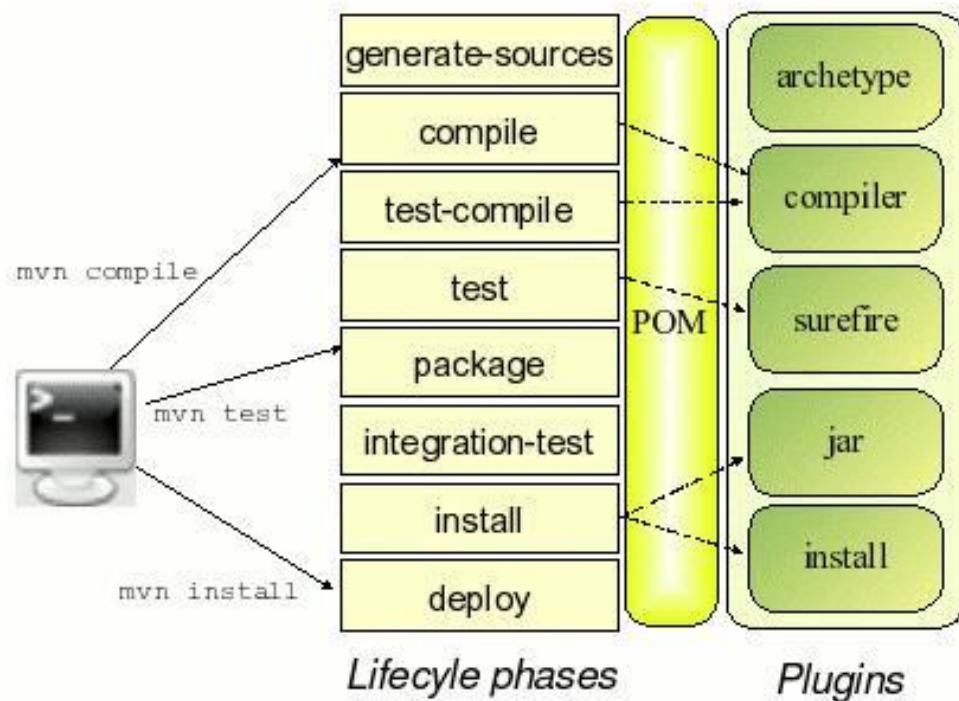
**mvn archetype:generate**

# Создание нового проекта

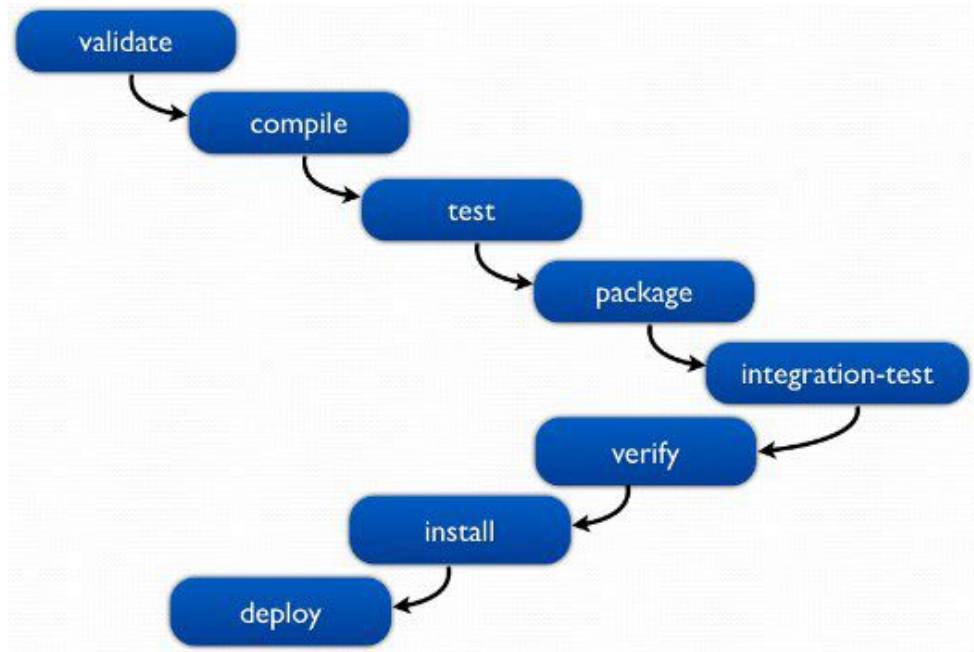
- ✓ GroupId - иерархического расположения проекта в Maven репозитории
- ✓ ArtifactId - идентифицирует ваш проект
- ✓ Version - указывает версию проекта



# Компилирование и тестирование проекта



# Компилирование и тестирование проекта



# Компилирование и тестирование проекта

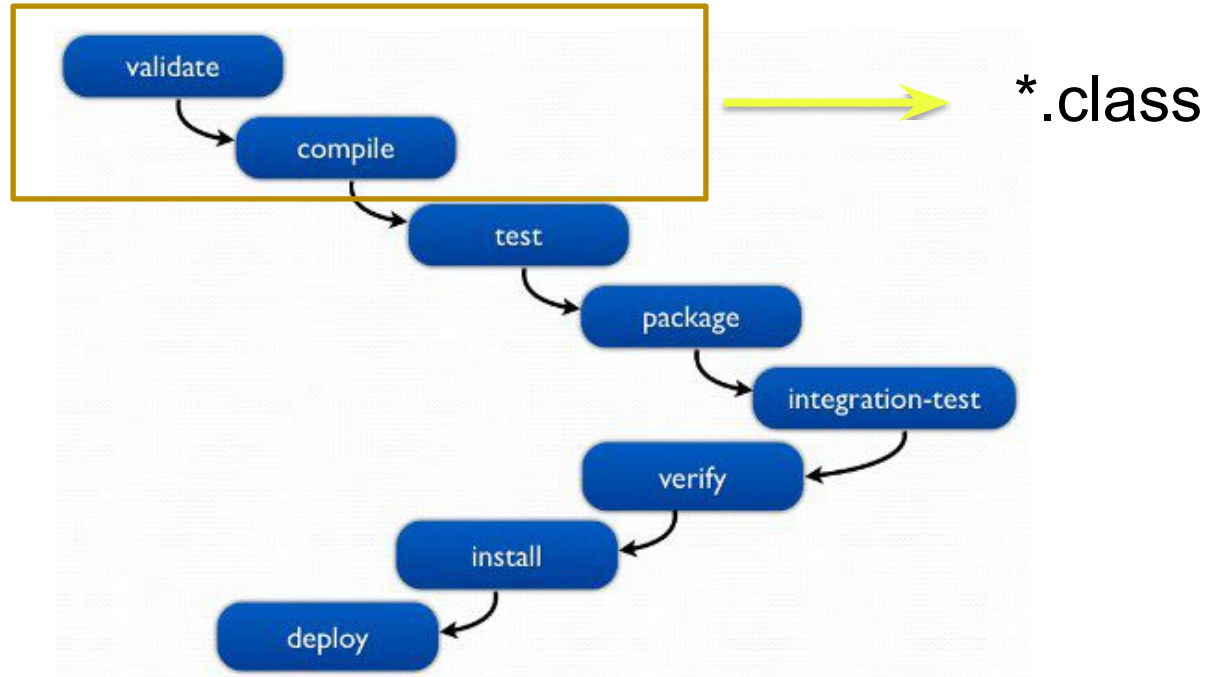
mvn compile

Cmd Command Prompt

```
C:\Users\yslabko\simple-project>mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----
[INFO] Building simple-project 1.0
[INFO] -----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ simple-project ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\yslabko\simple-project\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ simple-project ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 0.655 s
[INFO] Finished at: 2016-07-28T17:00:43+03:00
[INFO] Final Memory: 11M/309M
[INFO] -----
C:\Users\yslabko\simple-project>
```



# Компилирование и тестирование проекта



# Компилирование и тестирование проекта

Command Prompt

```
[INFO] -----
[INFO] Building simple-project 1.0
[INFO] -----
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ simple-project ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\yslabko\simple-project\src\main\resources
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ simple-project ---
[INFO] Nothing to compile - all classes are up to date
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ simple-project ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\yslabko\simple-project\src\test\resources
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ simple-project ---
[INFO] Nothing to compile - all classes are up to date
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ simple-project ---
[INFO] Surefire report directory: C:\Users\yslabko\simple-project\target\surefire-reports

-----
T E S T S
-----
Running com.pvt.app.AppTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.006 sec

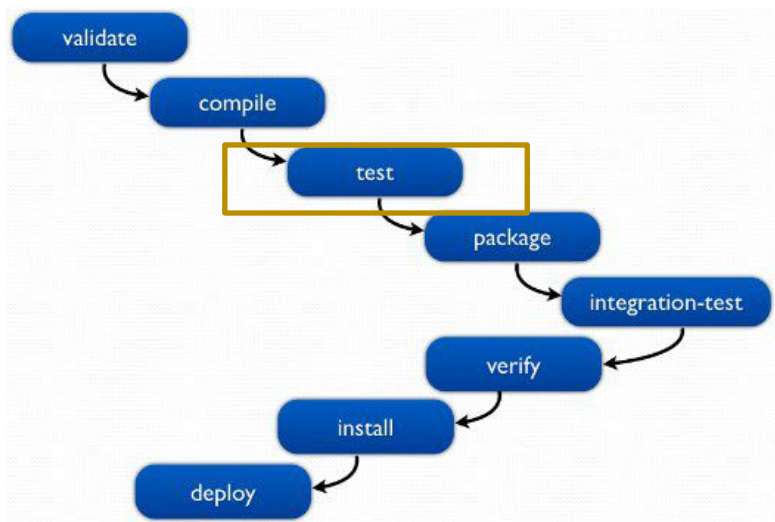
Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1.291 s
[INFO] Finished at: 2016-07-28T17:02:08+03:00
[INFO] Final Memory: 10M/309M
[INFO] -----
```

mvn test

# Компилирование и тестирование проекта



```
package by.academy;

import ...

/**
 * Unit test for simple App.
 */
public class AppTest
    extends TestCase
{
    /**
     * Create the test case
     *
     * @param testName name of the test case
     */
    public AppTest( String testName )
    {
        super( testName );
    }

    /**
     * @return the suite of tests being tested
     */
    public static Test suite()
    {
        return new TestSuite( AppTest.class );
    }

    /**
     * Rigorous Test :-)
     */
    public void testApp()
    {
        assertTrue( true );
    }
}
```

# Упаковка проекта

mvn package

```
C:\Users\yslabko\simple-project>mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----
[INFO] Building simple-project 1.0
[INFO] -----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ simple-project ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\yslabko\simple-project\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ simple-project ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ simple-project ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\yslabko\simple-project\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ simple-project ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ simple-project ---
[INFO] Surefire report directory: C:\Users\yslabko\simple-project\target\surefire-reports

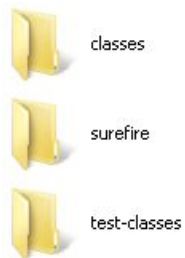
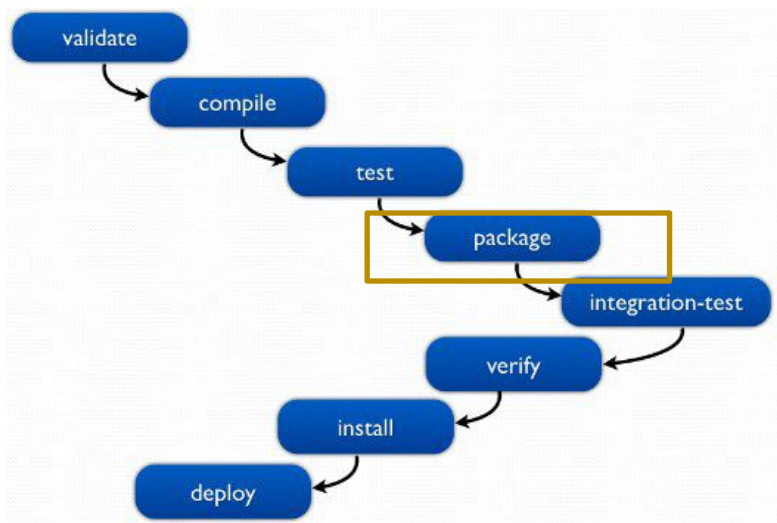
-----
T E S T S
-----
Running com.pvt.app.AppTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.005 sec

Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ simple-project ---
[INFO] Building jar: C:\Users\yslabko\simple-project\target\simple-project-1.0.jar
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1.462 s
[INFO] Finished at: 2016-07-28T17:03:24+03:00
[INFO] Final Memory: 10M/245M
[INFO] -----
```

# Упаковка проекта



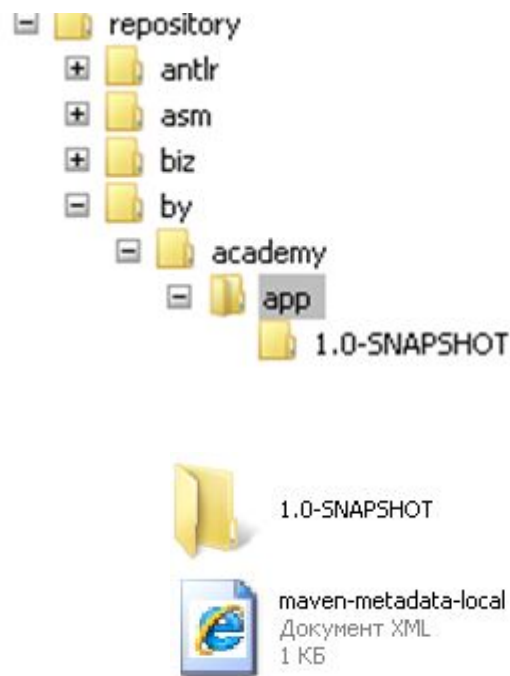
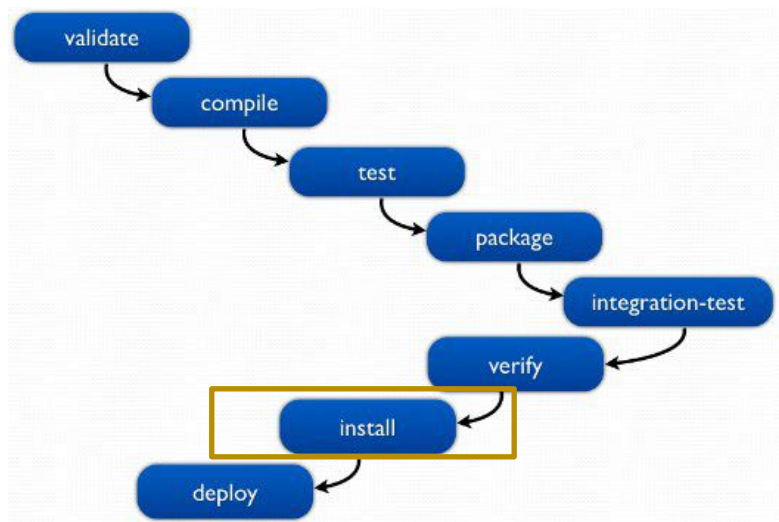
# Упаковка и размещение в репозитории проекта

mvn install

```
-----
T E S T S
-----
Running com.pvt.app.AppTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.005 sec
Results :
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ simple-project ---
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ simple-project ---
[INFO] Installing C:\Users\yslabko\simple-project\target\simple-project-1.0.jar to C:\Users\yslabko\.m2\repository\com\pvt\app\simple-project\1.0\simple-project-1.0.jar
[INFO] Installing C:\Users\yslabko\simple-project\pom.xml to C:\Users\yslabko\.m2\repository\com\pvt\app\simple-project\1.0\simple-project-1.0.pom
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1.460 s
[INFO] Finished at: 2016-07-28T17:05:04+03:00
[INFO] Final Memory: 12M/309M
[INFO] -----
```

# Упаковка и размещение в репозитории проекта



# Вопросы?





# Инженерные техники Apache Maven




# Описание Объектной модели проекта (POM)



*Overall pom.xml structure*

Объектная модель проекта – это XML представление проекта, которая включает все метаданные, относящиеся к проекту.

# pom.xml

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0"
3     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4     xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
5     <modelVersion>4.0.0</modelVersion>
6
7     <groupId>org.example</groupId>
8     <artifactId>stream-example</artifactId>
9     <version>1.0-SNAPSHOT</version>
10    <packaging>jar</packaging>
11
12    <name>application</name>
13    <url>https://maven.apache.org/</url>
14
15    <properties>
16        <maven.compiler.source>17</maven.compiler.source>
17        <maven.compiler.target>17</maven.compiler.target>
18        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
19    </properties>
20
21    >  <dependencies...>
50    |
51 </project>
```

# Описание жизненного цикла сборки

Typical Project Object Model (POM) Build Life Cycle							
validate	compile	test	package	integration test	verify	install	deploy
validate all necessary information for the project	compile the source code	test the compiled source code	package up compiled source and other resources	deploy package for integration testing	verify package against criteria	install the package into the local repository	deploy the package to a remote repository

Figure 1

# Жизненный цикл очистки



# Жизненный цикл очистки

```
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building aproject
[INFO]   task-segment: [clean]
[INFO] -----
[INFO] [antrun:run {execution: id.pre-clean}]
[INFO] Executing tasks
[INFO]   [echo] in pre-clean phase
[INFO] Executed tasks
[INFO] [clean:clean]
[INFO] Deleting directory C:\dev\workspace\aproject\target
[INFO] [antrun:run {execution: id.clean}]
[INFO] Executing tasks
[INFO]   [echo] in clean phase
[INFO] Executed tasks
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 1 second
[INFO] Finished at: Wed Feb 13 14:44:26 PST 2008
[INFO] Final Memory: 3M/7M
[INFO] -----
```

```
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building aproject
[INFO]   task-segment: [post-clean]
[INFO] -----
[INFO] [antrun:run {execution: id.pre-clean}]
[INFO] Executing tasks
[INFO]   [echo] in pre-clean phase
[INFO] Executed tasks
[INFO] [clean:clean]
[INFO] Deleting directory C:\dev\workspace\aproject\target
[INFO] [antrun:run {execution: id.clean}]
[INFO] Executing tasks
[INFO]   [echo] in clean phase
[INFO] Executed tasks
[INFO] [antrun:run {execution: id.post-clean}]
[INFO] Executing tasks
[INFO]   [echo] in post-clean phase
[INFO] Executed tasks
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 1 second
[INFO] Finished at: Wed Feb 13 14:44:55 PST 2008
[INFO] Final Memory: 3M/6M
[INFO] -----
```

```
<build>
  <plugins>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-antrun-plugin</artifactId>
      <version>1.1</version>
      <executions>
        <execution>
          <id>id.pre-clean</id>
          <phase>pre-clean</phase>
          <goals>
            <goal>run</goal>
          </goals>
          <configuration>
            <tasks>
              <echo>in pre-clean phase</echo>
            </tasks>
          </configuration>
        </execution>
      </executions>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-antrun-plugin</artifactId>
      <version>1.1</version>
      <executions>
        <execution>
          <id>id.clean</id>
          <phase>clean</phase>
          <goals>
            <goal>run</goal>
          </goals>
          <configuration>
            <tasks>
              <echo>in clean phase</echo>
            </tasks>
          </configuration>
        </execution>
      </executions>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-antrun-plugin</artifactId>
      <version>1.1</version>
      <executions>
        <execution>
          <id>id.post-clean</id>
          <phase>post-clean</phase>
          <goals>
            <goal>run</goal>
          </goals>
          <configuration>
            <tasks>
              <echo>in post-clean phase</echo>
            </tasks>
          </configuration>
        </execution>
      </executions>
    </plugin>
  </plugins>
</build>
```

## Default Lifecycle

initialize	initialize build state, e.g. set properties or create directories.
generate-sources	generate any source code for inclusion in compilation.
process-sources	process the source code, for example to filter any values.
generate-resources	generate resources for inclusion in the package.
process-resources	copy and process the resources into the destination directory, ready for packaging.
compile	compile the source code of the project.
process-classes	post-process the generated files from compilation, for example to do bytecode enhancement on Java classes.
generate-test-sources	generate any test source code for inclusion in compilation.
process-test-sources	process the test source code, for example to filter any values.
generate-test-resources	create resources for testing.
process-test-resources	copy and process the resources into the test destination directory.

test-compile	compile the test source code into the test destination directory
process-test-classes	post-process the generated files from test compilation, for example to do bytecode enhancement on Java classes. For Maven 2.0.5 and above.
test	run tests using a suitable unit testing framework. These tests should not require the code be packaged or deployed.
prepare-package	perform any operations necessary to prepare a package before the actual packaging. This often results in an unpacked, processed version of the package. (Maven 2.1 and above)
package	take the compiled code and package it in its distributable format, such as a JAR.
pre-integration-test	perform actions required before integration tests are executed. This may involve things such as setting up the required environment.
integration-test	process and deploy the package if necessary into an environment where integration tests can be run.
post-integration-test	perform actions required after integration tests have been executed. This may including cleaning up the environment.
verify	run any checks to verify the package is valid and meets quality criteria.
install	install the package into the local repository, for use as a dependency in other projects locally.
deploy	done in an integration or release environment, copies the final package to the remote repository for sharing with other developers and projects.



# Вопросы?



**Настройка Apache  
Maven для  
Windows**



**Создание нового  
проекта**



**Описание  
Объектной  
модели проекта**

**Описание  
жизненного цикла  
сборки (POM)**



**Описание  
профайлов  
сборки**



# Описание профайлов сборки

Профайл сборки – это настройки, описанные в `rom.xml`, которые могут быть запущены когда необходимо.

**Запуск профайла через командную строку**

**Запуск профайла в зависимости от настроек**

**Запуск профайла в зависимости от среды**

## Запуск профайла через командную строку

```
<profile>
  <id>test</id>
  <build>
    <plugins>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-antrun-plugin</artifactId>
        <version>1.1</version>
        <executions>
          <execution>
            <phase>test</phase>
            <goals>
              <goal>run</goal>
            </goals>
            <configuration>
              <tasks>
                <echo>test profile</echo>
              </tasks>
            </configuration>
          </execution>
        </executions>
      </plugin>
    </plugins>
  </build>
</profile>
```

# Запуск профайла через командную строку

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Версия 5.1.2600]
(C) Корпорация Майкрософт, 1985-2001.

H:\Work\maven\app\app>mvn test -Ptest

H:\Work\maven\app\app>set MAVEN_OPTS=-Xmx256M
[INFO] Scanning for projects...
[INFO]
[INFO] -----
[INFO] Building app 1.0-SNAPSHOT
[INFO] -----
[INFO] --- maven-resources-plugin:2.5:resources (default-resources) @ app ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory H:\Work\maven\app\app\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:2.3.2:compile (default-compile) @ app ---
[INFO] Compiling 1 source file to H:\Work\maven\app\app\target\classes
[INFO]
[INFO] --- maven-resources-plugin:2.5:testResources (default-testResources) @ app ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory H:\Work\maven\app\app\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:2.3.2:testCompile (default-testCompile) @ app ---
[INFO] Compiling 1 source file to H:\Work\maven\app\app\target\test-classes
[INFO]
[INFO] --- maven-surefire-plugin:2.10:test (default-test) @ app ---
[INFO] Surefire report directory: H:\Work\maven\app\app\target\surefire-reports

T E S T S

Running by academy.AppTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.015 sec

Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO] --- maven-antrun-plugin:1.1:run (default) @ app ---
[INFO] Executing tasks
[debug] test profile
[INFO] Executed tasks
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 7.218s
[INFO] Finished at: Thu Nov 15 01:50:53 GMT+03:00 2012
[INFO] Final Memory: 11M/27M
[INFO]
H:\Work\maven\app\app>
```

mvn test -Ptest

# Запуск профайла в зависимости от настроек maven

```
<settings>
```

```
...
```

```
<activeProfiles>
```

```
  <activeProfile>test</activeProfile>
```

```
</activeProfiles>
```

```
...
```

```
</settings>
```

# Запуск профайла в зависимости от настроек maven

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Версия 5.1.2600]
(C) Корпорация Майкрософт, 1985-2001.

H:\Work\maven\app\app>mvn test

H:\Work\maven\app\app>set MAVEN_OPTS=-Xmx256M
[INFO] Scanning for projects...
[INFO]
[INFO]
[INFO] Building app 1.0-SNAPSHOT
[INFO]
[INFO]
[INFO] --- maven-resources-plugin:2.5:resources (default-resources) @ app ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory H:\Work\maven\app\app\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:2.3.2:compile (default-compile) @ app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:2.5:testResources (default-testResources) @ app ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory H:\Work\maven\app\app\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:2.3.2:testCompile (default-testCompile) @ app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.10:test (default-test) @ app ---
[INFO] Surefire report directory: H:\Work\maven\app\app\target\surefire-reports

T E S T S
-----
Running hy.academy.AppTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.015 sec

Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-antrun-plugin:1.1:run (default) @ app ---
[INFO] Executing tasks
[INFO]   test profile
[INFO] Executed tasks
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO]
[INFO] Total time: 6.531s
[INFO] Finished at: Thu Nov 15 01:58:20 GMT+03:00 2012
[INFO] Final Memory: 6M/15M
[INFO]
-----
```

mvn test

# Запуск профиля в зависимости от переменной среды окружения

```
<profile>
  <id>test</id>
  <activation>
    <property>
      <name>deployLocal</name>
    </property>
  </activation>
  <build>
    <plugins>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-antrun-plugin</artifactId>
        <version>1.1</version>
        <executions>
          <execution>
            <phase>test</phase>
            <goals>
              <goal>run</goal>
            </goals>
            <configuration>
              <tasks>
                <echo>test profile</echo>
              </tasks>
            </configuration>
          </execution>
        </executions>
      </plugin>
    </plugins>
  </build>
</profile>
```



# Запуск профиля в зависимости от переменной среды окружения

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Версия 5.1.2600]
(C) Корпорация Майкрософт, 1985-2001.

H:\Work\maven\app\app>mvn test -DdeployLocal

H:\Work\maven\app\app>set MAVEN_OPTS=-Xmx256M
[INFO] Scanning for projects...
[INFO]
[INFO] -----
[INFO] Building app 1.0-SNAPSHOT
[INFO] -----
[INFO] --- maven-resources-plugin:2.5:resources (default-resources) @ app ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory H:\Work\maven\app\app\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:2.3.2:compile (default-compile) @ app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:2.5:testResources (default-testResources) @ app ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory H:\Work\maven\app\app\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:2.3.2:testCompile (default-testCompile) @ app ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.10:test (default-test) @ app ---
[INFO] Surefire report directory: H:\Work\maven\app\app\target\surefire-reports

T E S T S
-----
Running by.academy.AppTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.046 sec
Results :
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

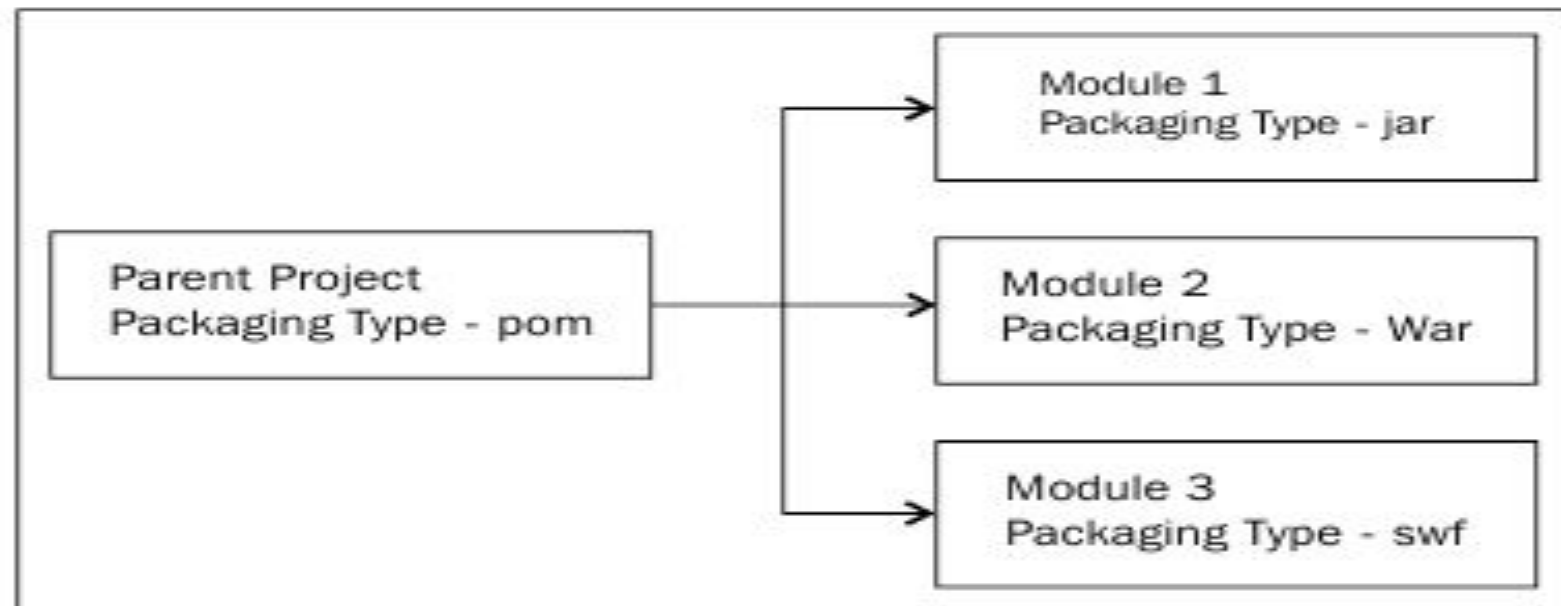
[INFO]
[INFO] --- maven-antrun-plugin:1.1:run (default) @ app ---
[INFO] Executing tasks
[echo] test profile
[INFO] Executed tasks
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 7.734s
[INFO] Finished at: Thu Nov 15 02:04:05 GMT+03:00 2012
[INFO] Final Memory: 6M/15M
[INFO]
H:\Work\maven\app\app>
```

mvn test -DdeployLocal

# Вопросы?

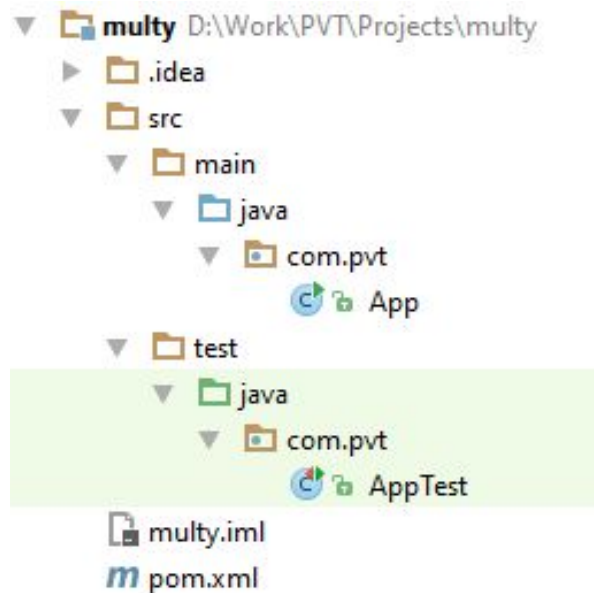


## Модульность проекта



# Модульность проекта

```
mvn archetype:generate -DgroupId=com.pvt -DartifactId=multy
```



# Модульность проекта

## базовый родительский pom-файл

```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4_0_0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.pvt</groupId>
  <artifactId>multy</artifactId>
  <packaging>pom</packaging>
  <version>1.0</version>
  <name>multy</name>
  <url>http://maven.apache.org</url>
</dependencies>
<dependency>
  <groupId>junit</groupId>
  <artifactId>junit</artifactId>
  <version>3.8.1</version>
  <scope>test</scope>
</dependency>
</dependencies>
</project>
```

# Модульность проекта



```
mvn archetype:generate -DgroupId=com.pvt -DartifactId=jarModule
```

```
[INFO] Parameter: basedir, Value: d:\Work\PVT\Projects\multy
```

```
[INFO] Parameter: package, Value: com.pvt
```

```
[INFO] Parameter: groupId, Value: com.pvt
```

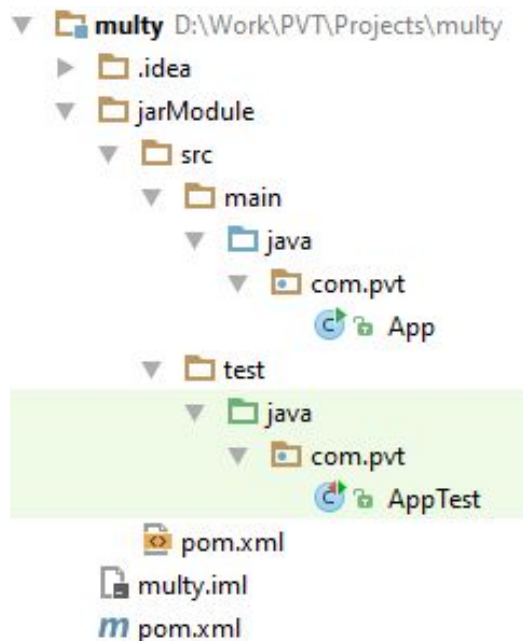
```
[INFO] Parameter: artifactId, Value: jarModule
```

```
[INFO] Parameter: packageName, Value: com.pvt
```

```
[INFO] Parameter: version, Value: 1.0
```

```
[INFO] project created from Old (1.x) Archetype in dir: d:\Work\PVT\Projects\multy\jarModule
```

# Модульность проекта



```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/xsi:schemaLocation="http://maven.apache.org/xsd/maven-4.0.0"
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.pvt</groupId>
  <artifactId>multy</artifactId>
  <packaging>pom</packaging>
  <version>1.0</version>
  <name>multy</name>
  <url>http://maven.apache.org</url>
  <dependencies>
    <dependency...>
  </dependencies>
  <modules>
    <module>jarModule</module>
  </modules>
</project>
```

дочерний pom

родительский pom

```
<parent>
  <groupId>com.pvt</groupId>
  <artifactId>multy</artifactId>
  <version>1.0</version>
</parent>
<groupId>com.pvt</groupId>
<artifactId>jarModule</artifactId>
<version>1.0</version>
<name>jarModule</name>
<url>http://maven.apache.org</url>
<dependencies...>
```

# Модульность проекта



src



pom



web.iml

```
mvn archetype:generate -DarchetypeArtifactId=maven-archetype-webapp
```

```
Define value for property 'groupId': : com.pvt
```

```
Define value for property 'artifactId': : web
```

```
Define value for property 'version': 1.0-SNAPSHOT: : 1.0
```

```
Define value for property 'package': com.pvt: :
```

```
Confirm properties configuration:
```

```
groupId: com.pvt
```

```
artifactId: web
```

```
version: 1.0
```

```
package: com.pvt
```

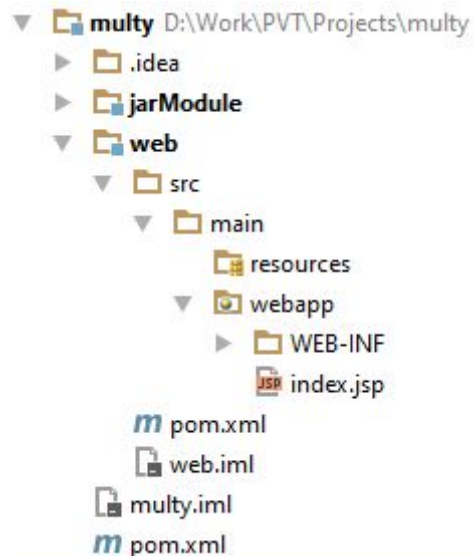
```
Archetype: maven-archetype-webapp:1.0
```

```
[INFO] -----
```

```
[INFO] Parameter: basedir, Value: d:\Work\PVT\Projects\multy
```



# Модульность проекта



родительский pom

```
<modules>  
  <module>jarModule</module>  
  <module>web</module>  
</modules>
```

дочерний pom

```
<parent>  
  <groupId>com.pvt</groupId>  
  <artifactId>multy</artifactId>  
  <version>1.0</version>  
</parent>
```

# Модульность проекта. Сборка проекта

```
d:\Work\PUT\Projects\multy>mvn install
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] multy
[INFO] jarModule
[INFO] web Maven Webapp
[INFO]
[INFO] -----
[INFO] Building multy 1.0
[INFO] -----
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ multy ---
[INFO] Installing d:\Work\PUT\Projects\multy\pom.xml to C:\Users\yslabko\.m2\repo
[INFO]
[INFO] -----
[INFO] Building jarModule 1.0
[INFO] -----
```

```
[INFO] Installing D:\Work\PUT\Projects\multy\web\pom.xml to C:\Users\yslabko\.m2\
[INFO] -----
[INFO] Reactor Summary:
[INFO]
[INFO] multy ..... SUCCESS [ 0.286 s]
[INFO] jarModule ..... SUCCESS [ 1.877 s]
[INFO] web Maven Webapp ..... SUCCESS [ 3.093 s]
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
```

# Модульность проекта. Сборка проекта

This PC > work (D:) > Work > PVT > Projects > multy > jarModule > target



classes



maven-archiver



maven-status



surefire-reports



test-classes



jarModule-1.0

This PC > work (D:) > Work > PVT > Projects > multy > web > target



classes



maven-archiver



web

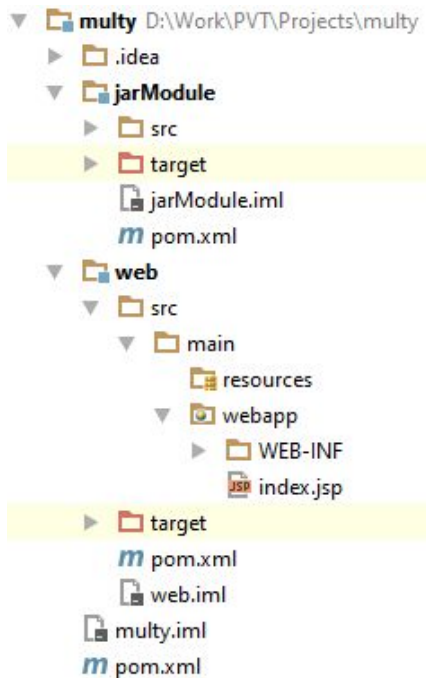


web.war

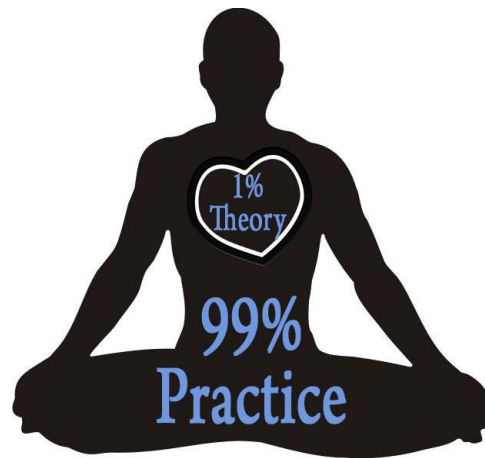
# Вопросы?



# Практика



Создайте многомодульный проект. Один модуль - jar, другой модуль – war. Создайте parent модуль. Проверьте процесс сборки и опишите ваши вопросы.



# Управление зависимостями

```
<dependency>
  <groupId>junit</groupId>
  <artifactId>junit</artifactId>
  <version>3.8.1</version>
  <scope>test</scope>
</dependency>
```

```
<dependency>
  <groupId>javax</groupId>
  <artifactId>javaee-api</artifactId>
  <version>6.0</version>
  <type>jar</type>
  <scope>*/</scope>
</dependency>
<dependency>
  <groupId>
  <artifactId>web-api</artifactId>
  <version>
  <scope>
</dependency>
```

- ☐ compile
- ☐ test
- ☐ runtime
- ☒ provided
- ☐ system

# Управление зависимостями

Classpath

## Scope for Dependencies

CTR	compile	default scope, compile scoped dependencies will be in classpath
CT	provided	similar to the <u>compile</u> , artefact should be provided by JDK / container @ runtime
TR	runtime	not needed for compilation but need @ runtime
T	test	dependency only needed for test compilation & execution
CT	system	same as <u>provided</u> , but artefact should be provided explicitly with <systemPath />
---	import	with maven 2.0.9...dependency to be replaced with the dependencies in that POM's <dependencyManagement> section.

## Dependency scope

Result Scope	Compile classpath	Runtime classpath	Test classpath	Lookup repository
compile	+	+	+	+
provided	+	-	+	+
runtime	-	+	+	+
test	-	-	+	+
system	+	-	+	-
import	Maven 2.0.9 or later, replaces POM with <dependencyManagement>			

# Управление зависимостями. Пример

Родительский pom.xml

```
<dependencies>
</dependencies>
<modules>
  <module>jarModule</module>
  <module>web</module>
</modules>
<dependencyManagement>
  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>4.12</version>
      <scope>test</scope>
    </dependency>
  </dependencies>
</dependencyManagement>
```

Дочерний pom.xml

```
<dependencies>
  <dependency>
    <groupId>junit</groupId>
    <artifactId>junit</artifactId>
  </dependency>
</dependencies>
```



# Управление зависимостями. Пример

-----  
Reactor Summary:

MySampleApp .....	SUCCESS	[0.761s]
jarModule .....	SUCCESS	[4.828s]
webModule Maven Webapp .....	SUCCESS	[1.891s]

-----

BUILD SUCCESS

-----

Total time: 7.859s  
Finished at: Sat Nov 17 15:55:05 EET 2012  
Final Memory: 5M/10M

-----

# Вопросы?

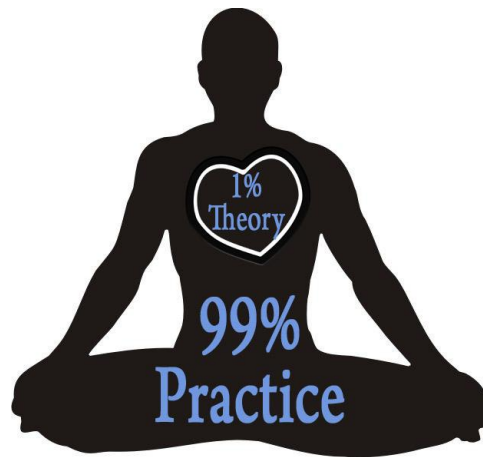


# Установка в репозиторий своих библиотек

<http://dev.mysql.com/downloads/connector/j/>

```
mvn install:install-file -Dfile= mysql-connector-java-5.1.34-bin.jar  
-DgroupId=mysql -DartifactId=mysql-connector-java -Dversion=5.1.34  
-Dpackaging=jar -DgeneratePom=true
```

```
<dependency>  
  <groupId>mysql</groupId>  
  <artifactId>mysql-connector-java</artifactId>  
  <version>5.1.6</version>  
</dependency>
```



# Apache Maven dependency plugin



## → Overview

### Introduction

Goals  
Usage  
FAQ

## → Examples

Preparing dependencies  
for Maven 2.0.6 / 2.1  
Customizing

## Maven Dependency Plugin

The dependency plugin provides the capability

### → Goals Overview

The Dependency plugin has several goals:

# Apache Maven dependency plugin

Зависимости в maven имеют 6 возможных областей действий:

1. `mvn dependency:analyze`. Анализирует зависимости (используемые, неиспользуемые, декларируемые или не декларируемые зависимости)
2. `mvn dependency:analyze-duplicate`. Определяет дублирующие друг друга зависимости.
3. `mvn dependency:resolve`. Определить все зависимости
4. `mvn dependency:resolve-plugin`. Определить все плагины.
5. `mvn dependency:tree`. Определить дерево зависимостей.
6. `mvn dependency:copy-dependencies`. Копирует зависимости.

# Apache Maven dependency plugin

- *mvn dependency:analyze*

```
mvn dependency:analyze
```

```
[WARNING] Unused declared dependencies found:
```

```
[WARNING]   junit:junit:jar:3.8.1:test
```

```
[WARNING]   com.oracle:ojdbc6:jar:11.2.0.3:compile
```

- mvn dependency:copy-dependencies

```
[INFO] Copying ojdbc6-11.2.0.3.jar to D:\projects\MySampleApp
```

```
\webModule\target\dependency\ojdbc6-11.2.0.3.jar
```

```
[INFO] Copying junit-3.8.1.jar to D:\projects\MySampleApp
```

```
\webModule\target\dependency\junit-3.8.1.jar
```

<http://maven.apache.org/plugins/maven-dependency-plugin/examples/copying-project-dependencies.html>

# Вопросы?







# Пример конфигурационного файла Gradle

File build.gradle

```
group = 'com.example'  
version = '0.0.1-SNAPSHOT'  
sourceCompatibility = '1.8'
```

```
dependencies {  
    compile 'org.springframework.boot:spring-boot-starter:2.1.1'  
    test 'org.springframework.boot:spring-boot-starter-test:2.1.1'  
}
```

# Домашнее задание

- Установить maven
- Собрать проект с помощью maven
- Создайте многомодульный проект. Одни модуль - jar, другой модуль – war. Создайте parent модуль. Проверьте процесс сборки

## Доп. задание

- 1.Класс с Вашей реализацией List (либо любой другой) расположить в проекте с Maven.
- 2.Командой mvn install загрузить jar файл в локальный репозиторий (папка .m2)
- 3.В другом проекте подключить реализацию List при помощи добавления зависимости в pom.xml.
- 4.Использовать в main методе подключенную зависимость вызовом объекта подключенного класса.