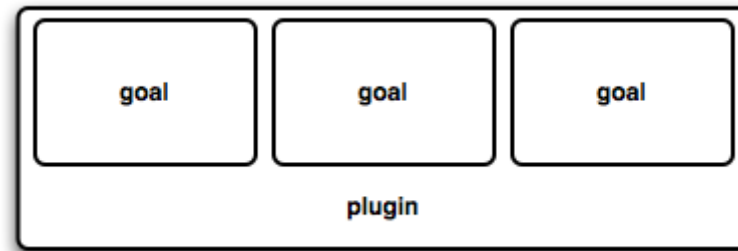


Основы Maven

2. Сборка

Задачи и плагины

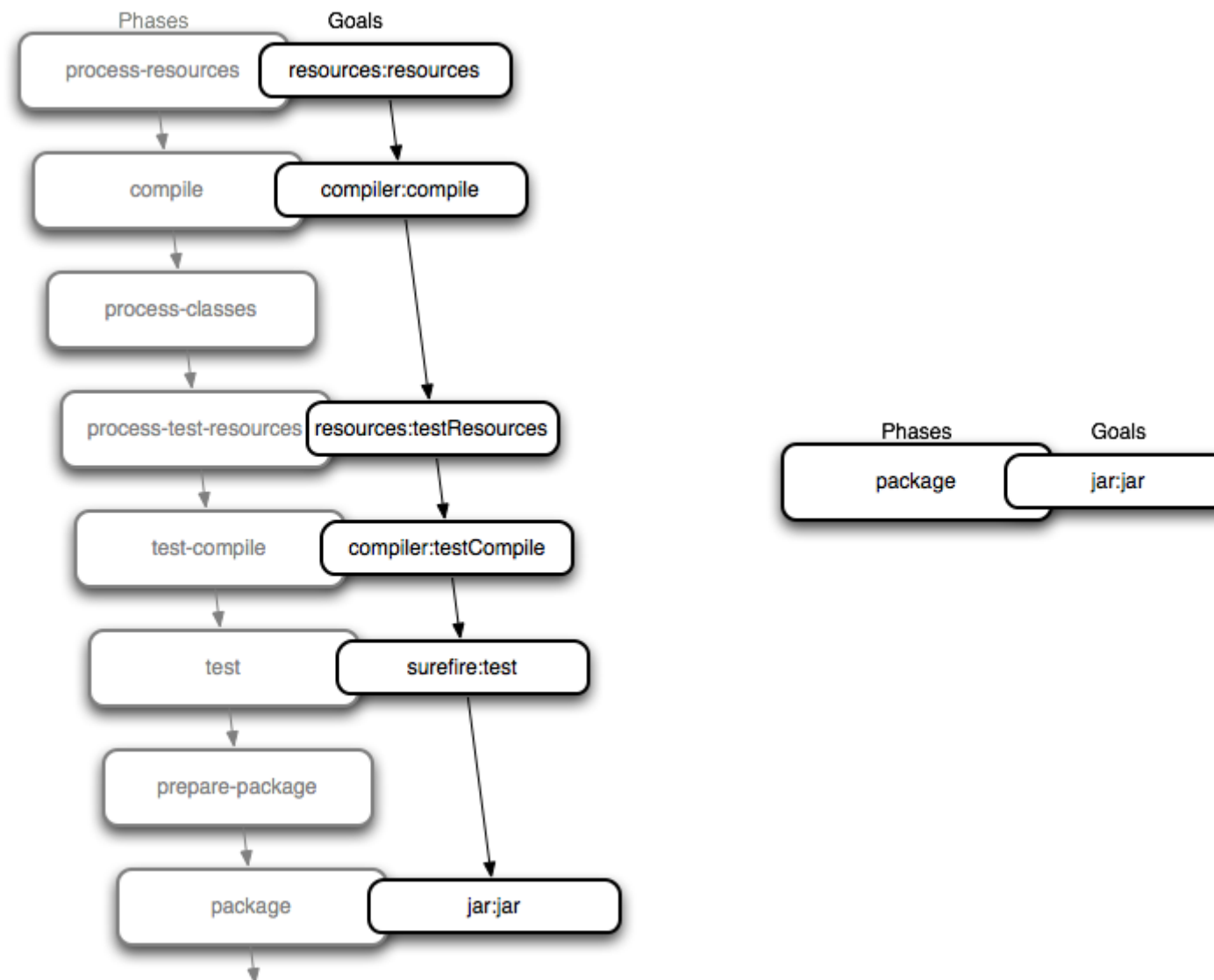


Плагин – программный модуль используемый Maven для выполнения действий над проектом. Плагин является артефактом и у него есть координаты. Плагины хранятся в репозиториях плагинов которые как правило совпадают с репозиториями артефактов.



Задача – единица работы над проектом (действие) которое плагин может выполнить. Плагин может содержать несколько задач.

Сборка проекта



Note: There are more phases than shown above, this is a partial list



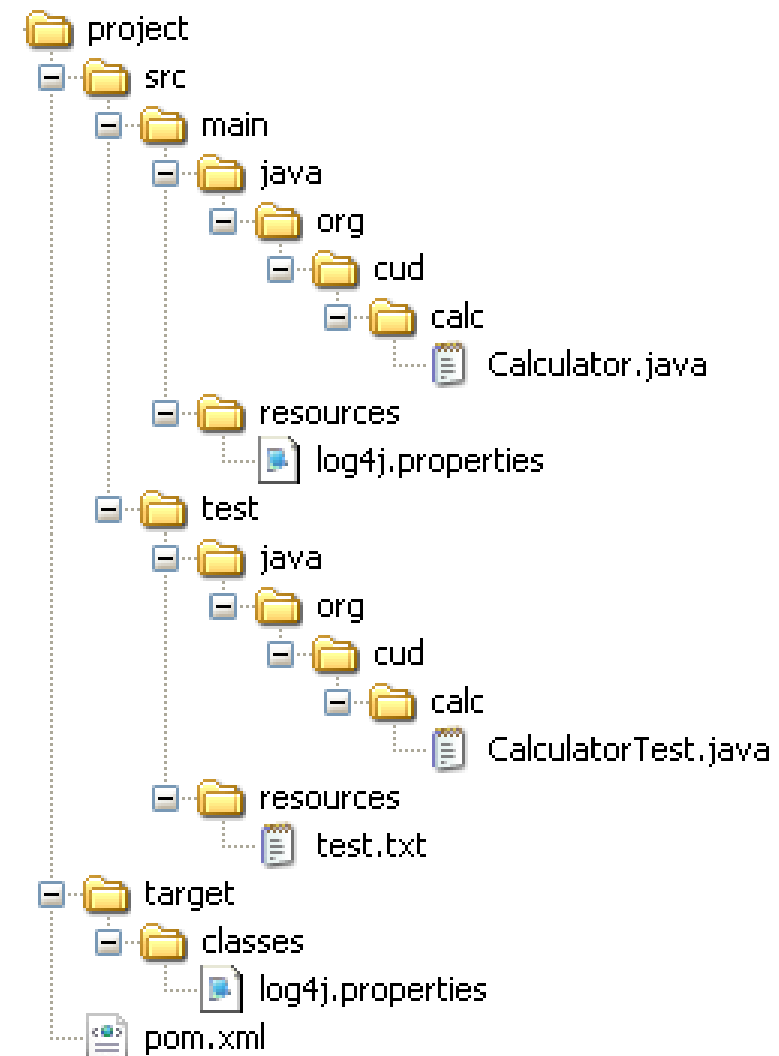
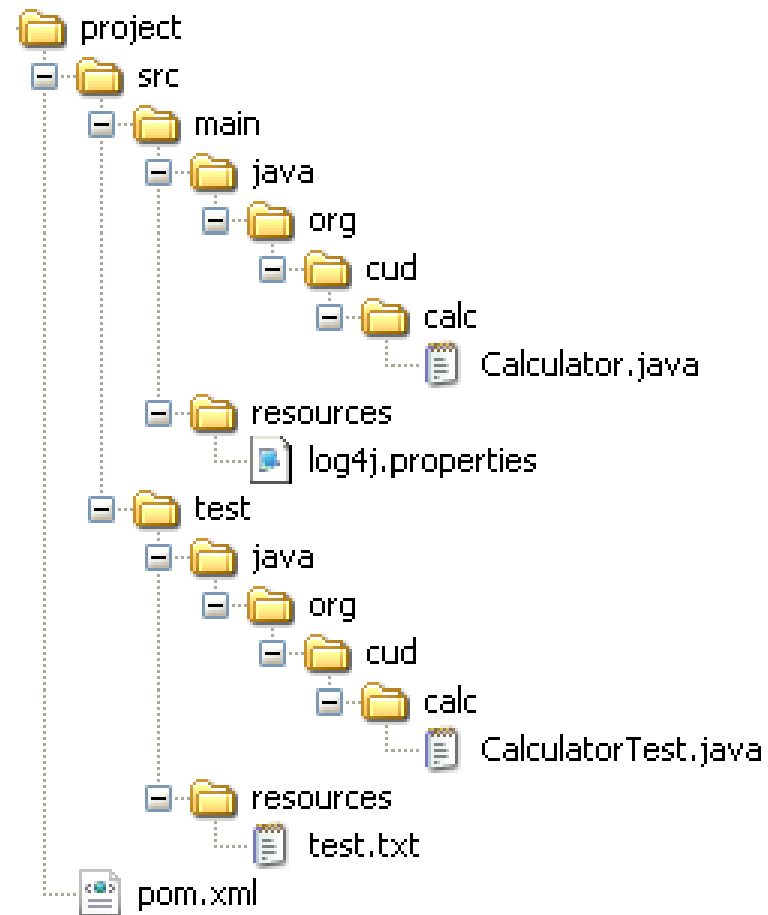
Собрать проект - пройти через определённую последовательность фаз и для каждой фазы выполнить задачи зарегистрированные у этой фазы.

Основные задачи

Задача resources:resources

```
I:\project>mvn resources:resources
[INFO] Scanning for projects...
[INFO] Searching repository for plugin with prefix: 'resources'.
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [resources:resources]
[INFO] -----
[INFO] [resources:resources {execution: default-cli}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 14:27:01 GMT+07:00 2013
[INFO] Final Memory: 5M/15M
[INFO] -----
I:\project>
```

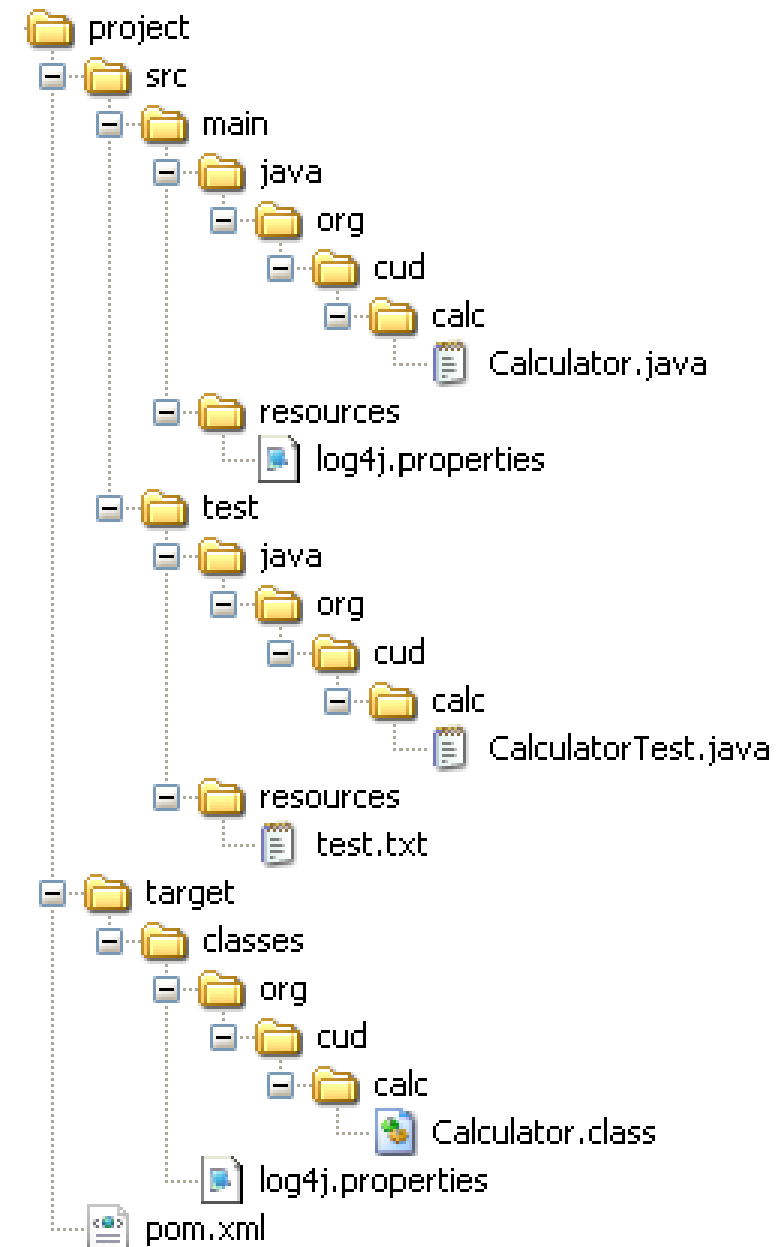
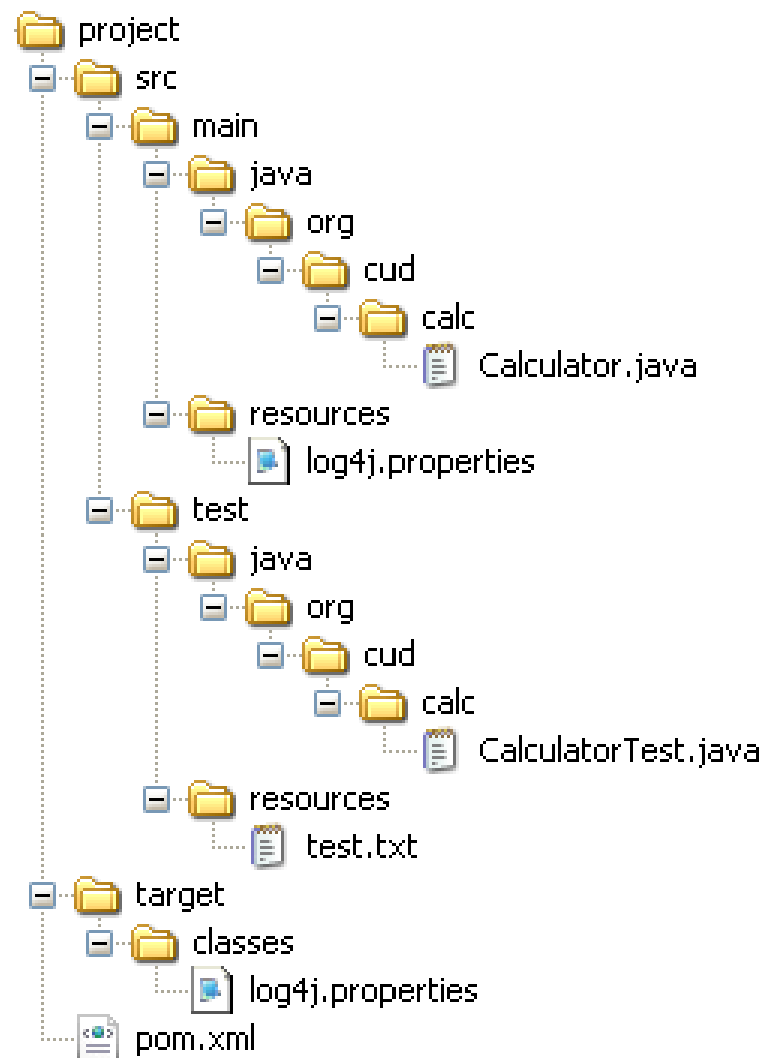
Задача resources:resources



Задача compiler:compile

```
I:\project>mvn compiler:compile
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [compiler:compile]
[INFO] -----
[INFO] [compiler:compile {execution: default-cli}]
[INFO] Compiling 1 source file to I:\project\target\classes
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 14:34:07 GMT+07:00 2013
[INFO] Final Memory: 5M/15M
[INFO] -----
I:\project>
```

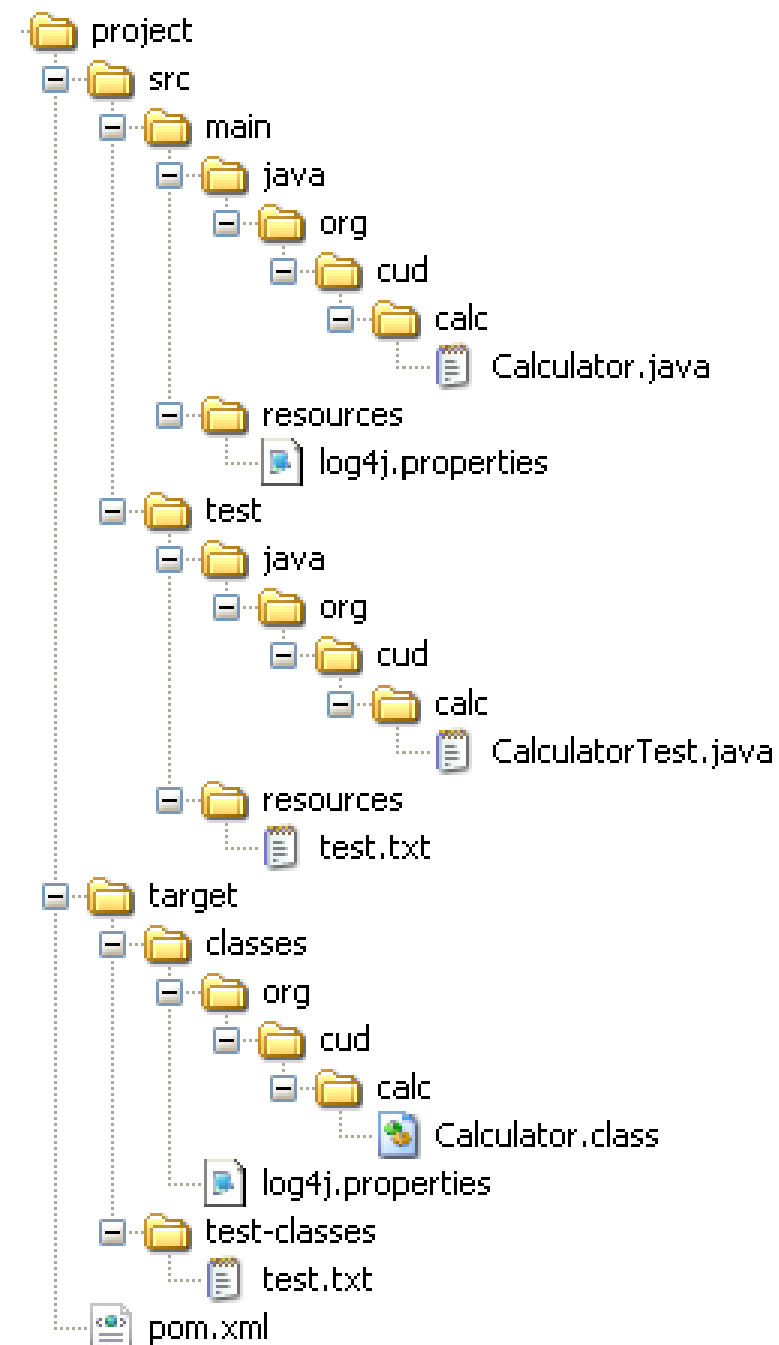
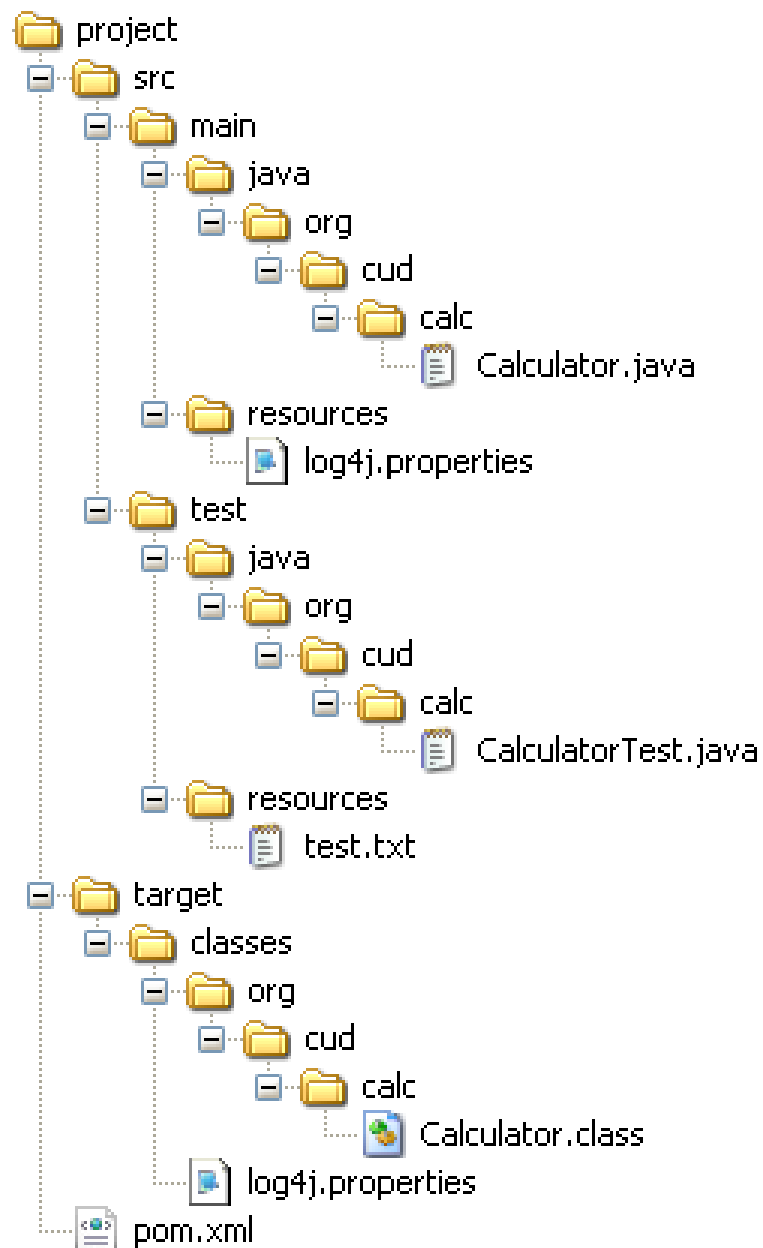
Задача compiler:compile



Задача resources:testResources

```
I:\project>mvn resources:testResources
[INFO] Scanning for projects...
[INFO] Searching repository for plugin with prefix: 'resources'.
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [resources:testResources]
[INFO] -----
[INFO] [resources:testResources {execution: default-cli}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 14:38:06 GMT+07:00 2013
[INFO] Final Memory: 5M/15M
[INFO] -----
I:\project>
```

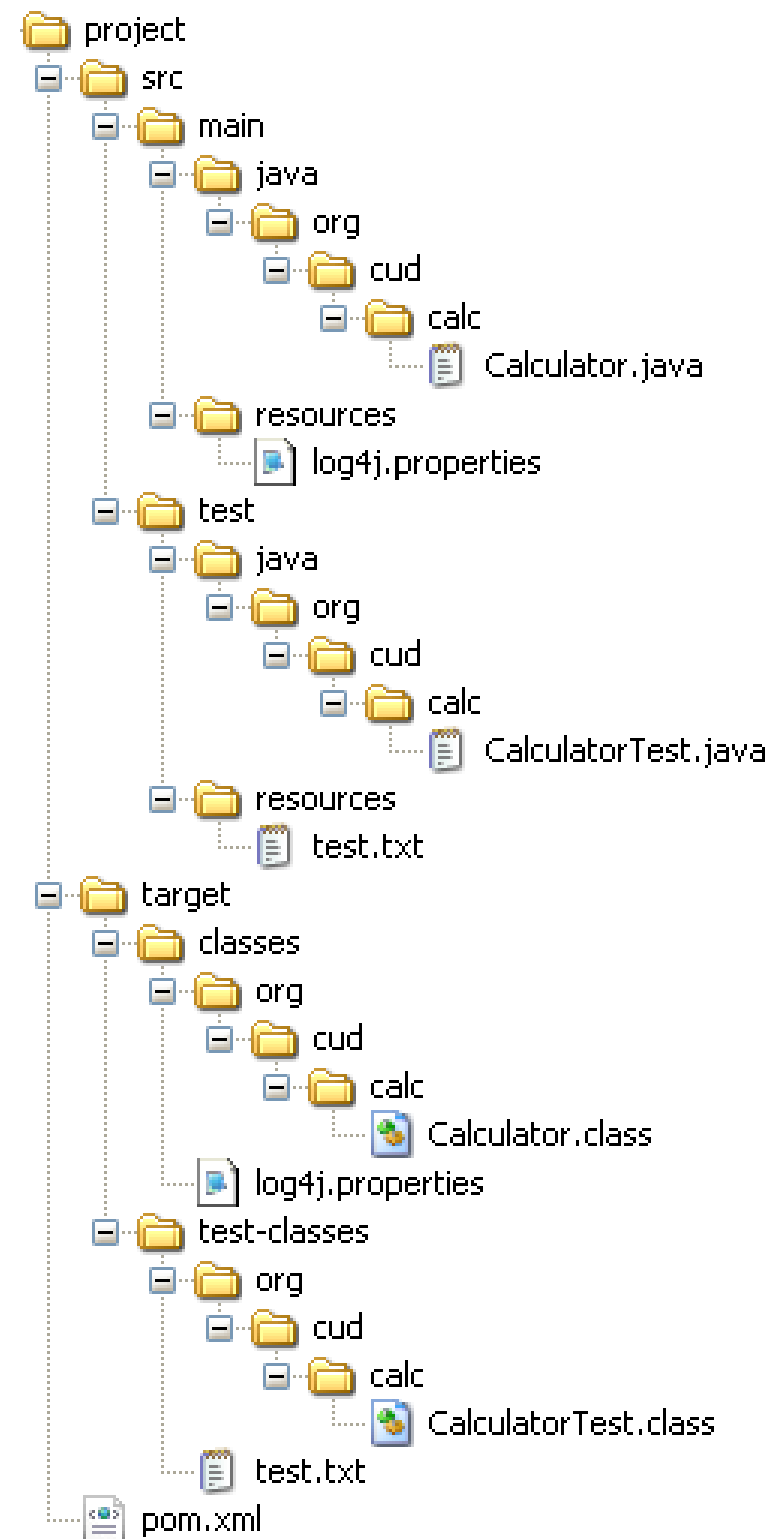
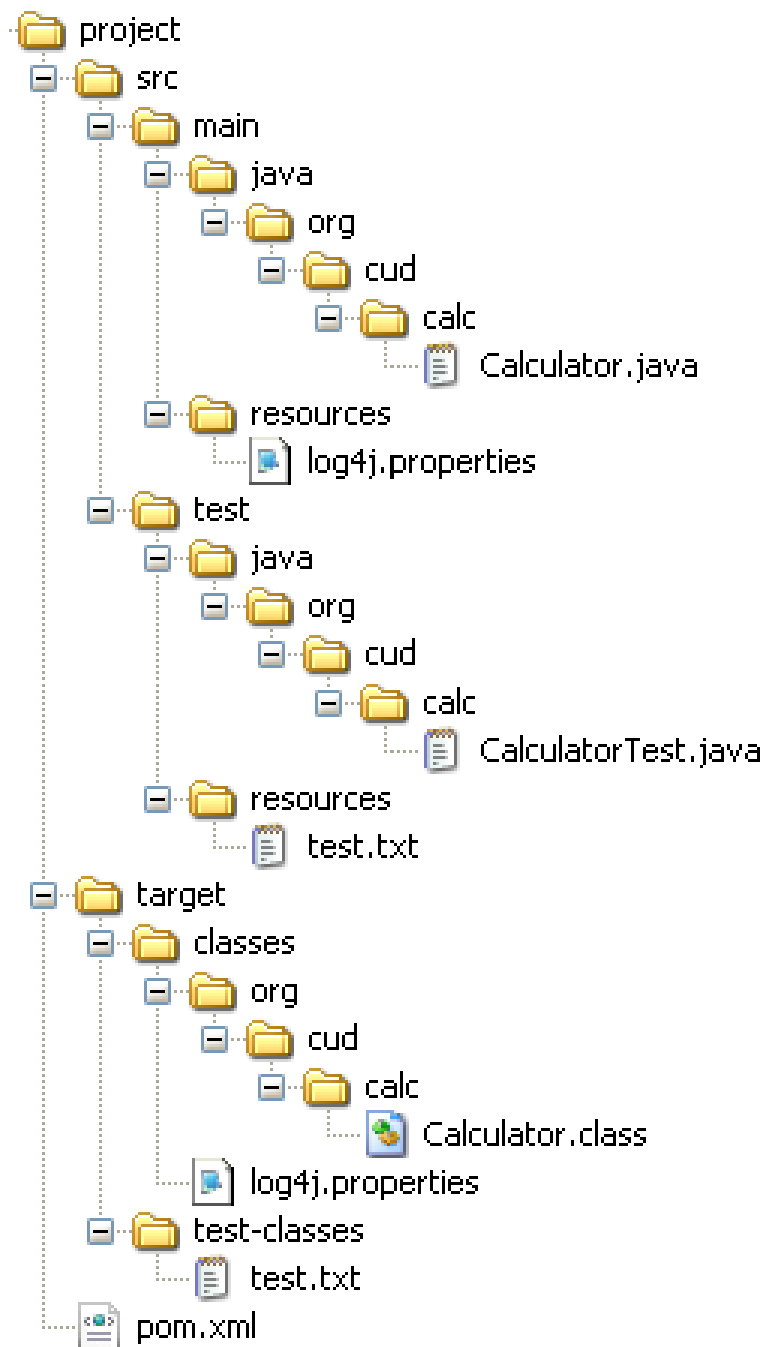
Задача resources:testResources



Задача compiler:testCompile

```
I:\project>mvn compiler:testCompile
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [compiler:testCompile]
[INFO] -----
[INFO] [compiler:testCompile {execution: default-cli}]
[INFO] Compiling 1 source file to I:\project\target\test-classes
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 14:41:38 GMT+07:00 2013
[INFO] Final Memory: 5M/15M
[INFO] -----
I:\project>
```

Задача compiler:testCompile



Задача surefire:test

```
I:\project>mvn surefire:test
[INFO] Scanning for projects...
[INFO] Searching repository for plugin with prefix: 'surefire'.
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [surefire:test]
[INFO] -----
[INFO] [surefire:test {execution: default-cli}]
[INFO] Surefire report directory: I:\project\target\surefire-reports

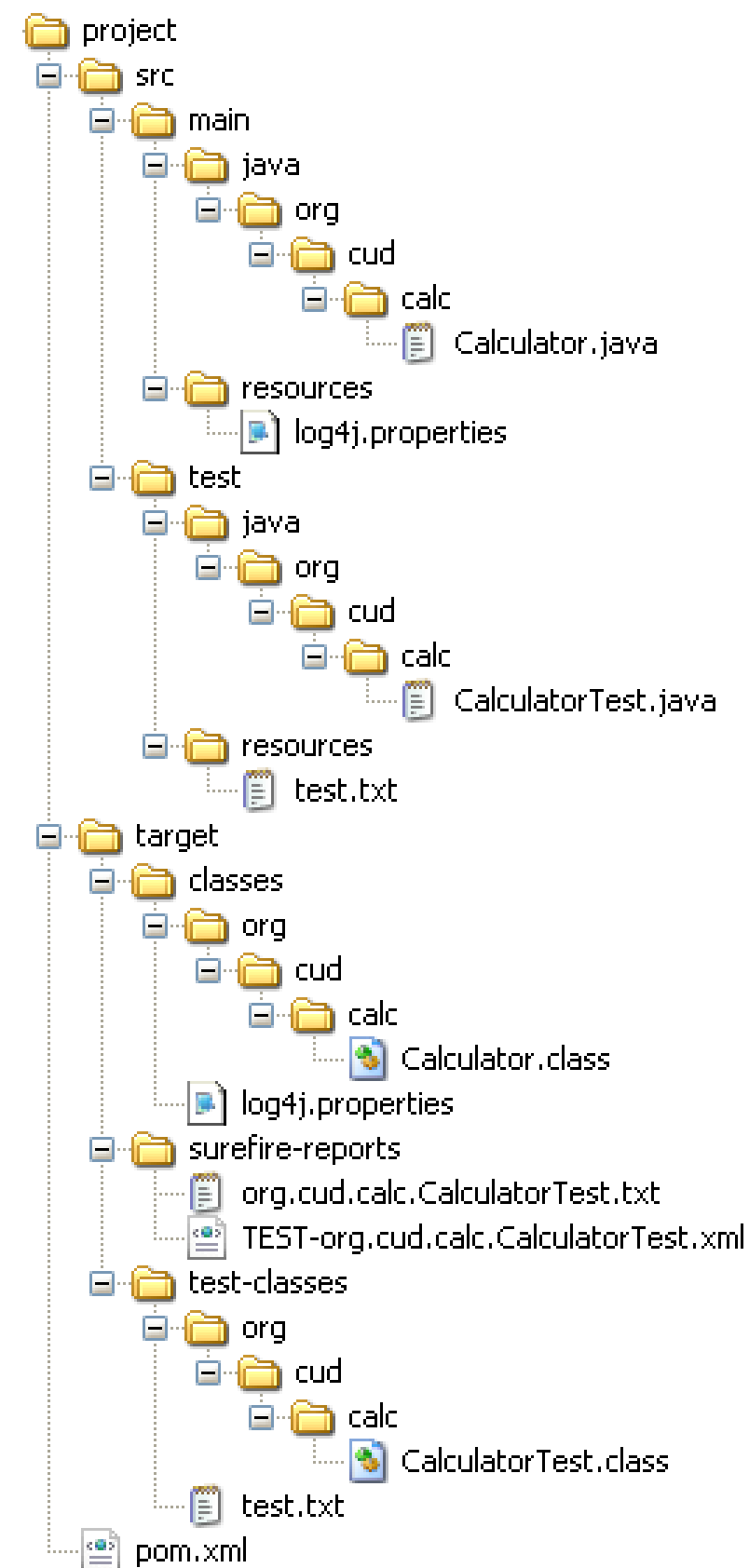
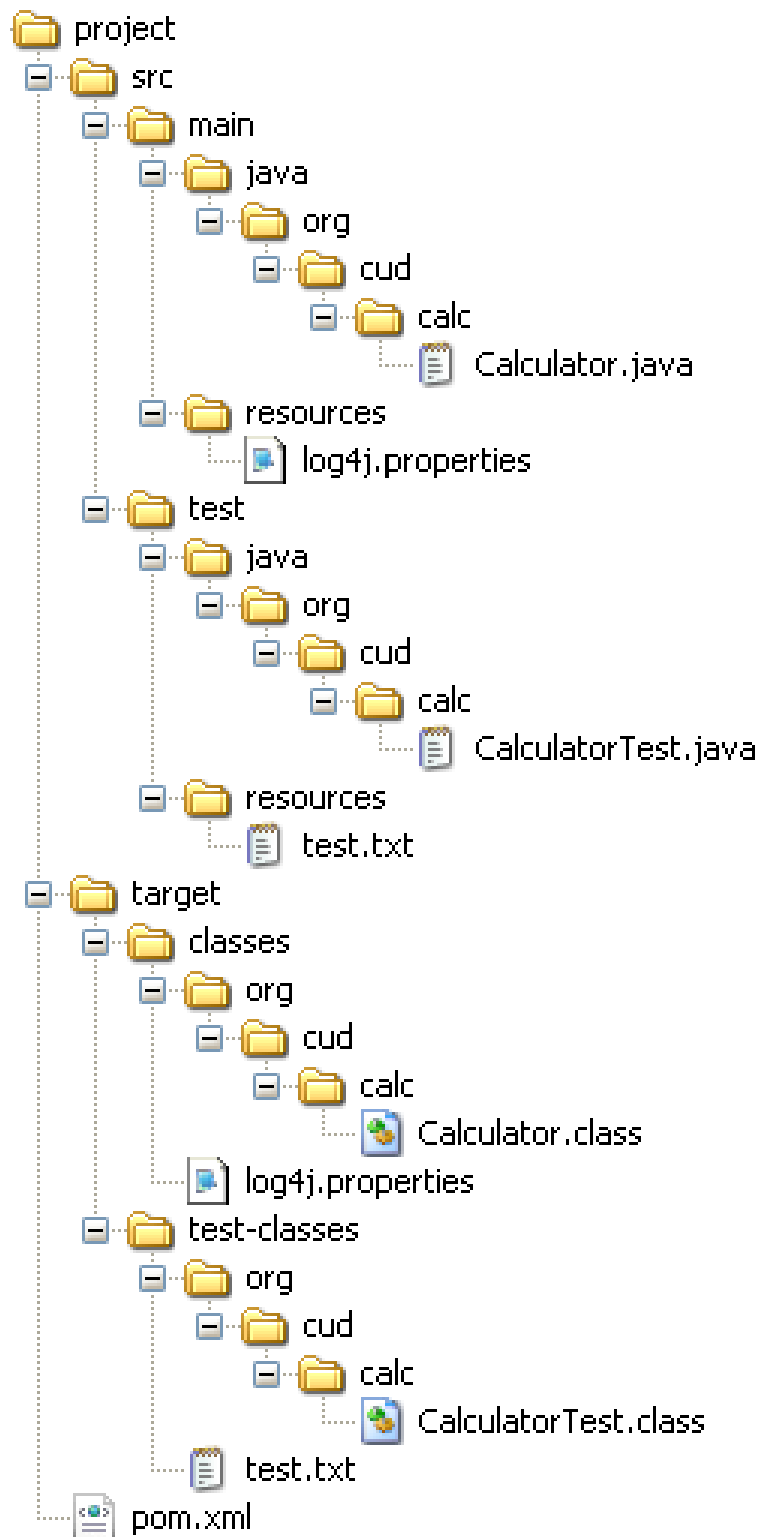
-----
  T E S T S
-----
Running org.cud.calc.CalculatorTest
0      INFO  Calculator - Performing summation of [2, 3, 4]
0      INFO  Calculator - Performing summation of []
0      INFO  Calculator - Performing summation of [23]
0      INFO  Calculator - Performing summation of [0, 0, 0, 0, 0]
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.078 sec

Results :

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

[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 1 second
[INFO] Finished at: Tue Jun 18 14:44:21 GMT+07:00 2013
[INFO] Final Memory: 5M/15M
[INFO] -----
I:\project>
```

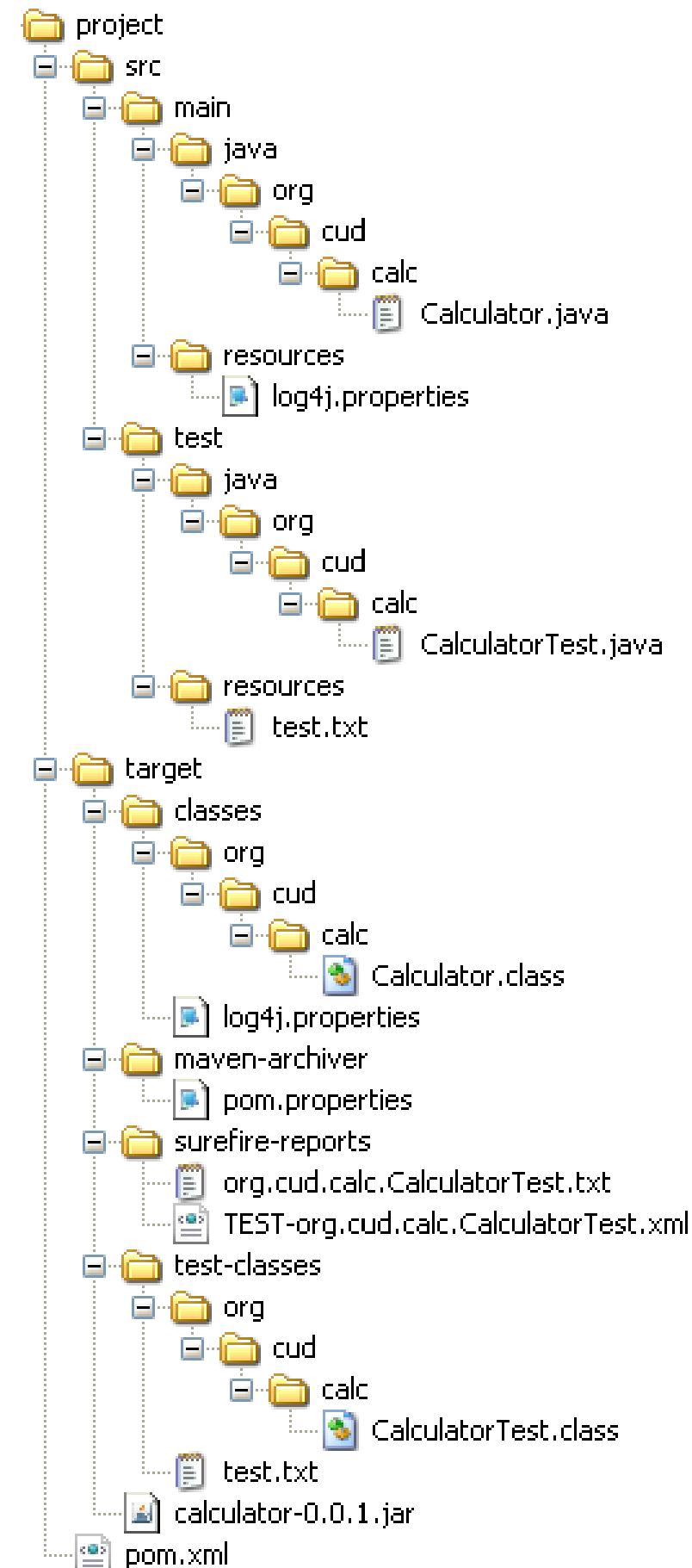
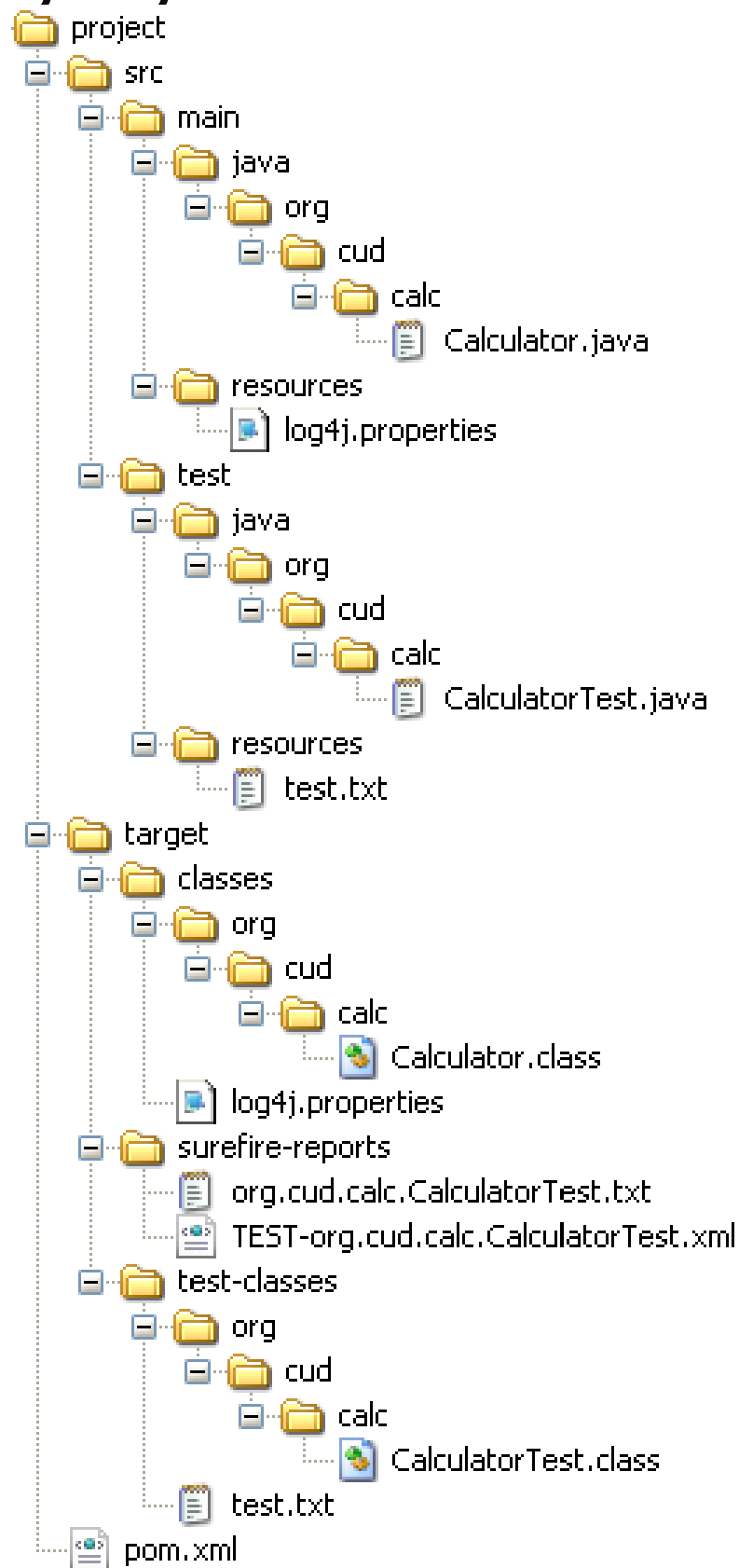
Задача surefire:test



Задача jar:jar

```
I:\project>mvn jar:jar
[INFO] Scanning for projects...
[INFO] Searching repository for plugin with prefix: 'jar'.
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [jar:jar]
[INFO] -----
[INFO] [jar:jar {execution: default-cli}]
[INFO] Building jar: I:\project\target\calculator-0.0.1.jar
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 14:47:38 GMT+07:00 2013
[INFO] Final Memory: 4M/15M
[INFO] -----
I:\project>
```

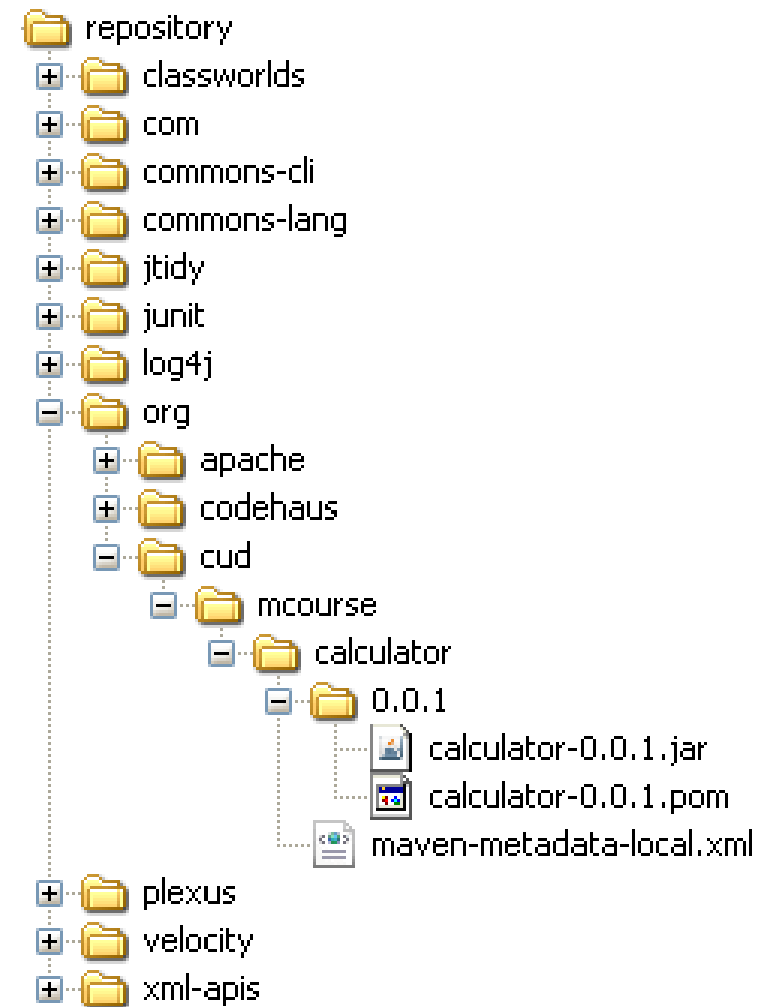
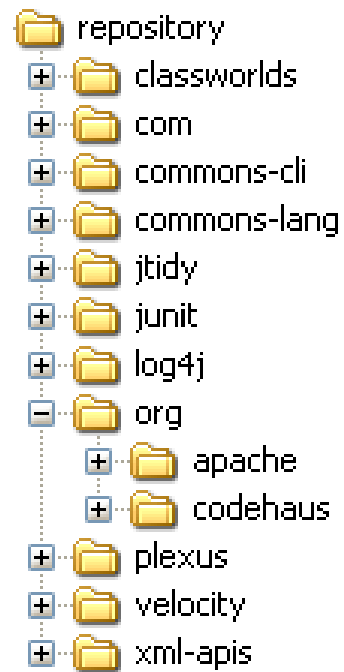
Задача jar:jar



Задача install:install

```
I:\project>mvn install:install-file -Dfile=target\calculator-0.0.1.jar -DpomFile=pom.xml
[INFO] Scanning for projects...
[INFO] Searching repository for plugin with prefix: 'install'.
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [install:install-file] (aggregator-style)
[INFO] -----
[INFO] [install:install-file {execution: default-cli}]
[INFO] Installing I:\project\target\calculator-0.0.1.jar to C:\Documents and
Settings\Administrator\.m2\repository\org\codemc\calculator\0.0.1\calculator-0.0.1.jar
[INFO] Installing I:\project\pom.xml to C:\Documents and
Settings\Administrator\.m2\repository\org\codemc\calculator\0.0.1\calculator-0.0.1.pom
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 14:52:25 GMT+07:00 2013
[INFO] Final Memory: 3M/15M
[INFO] -----
I:\project>
```

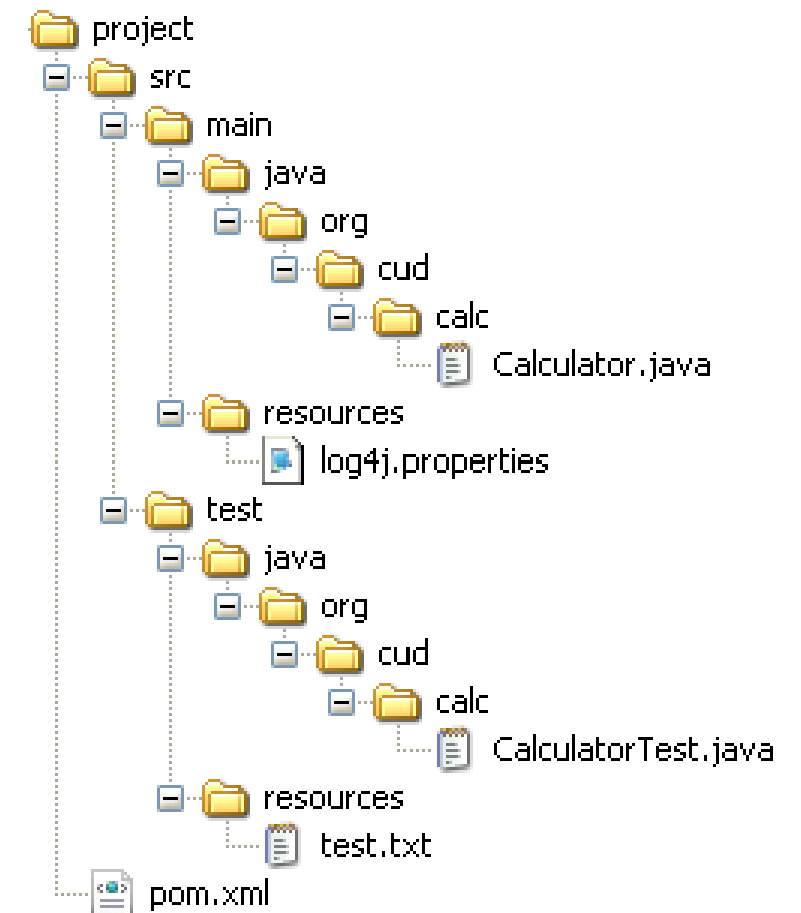
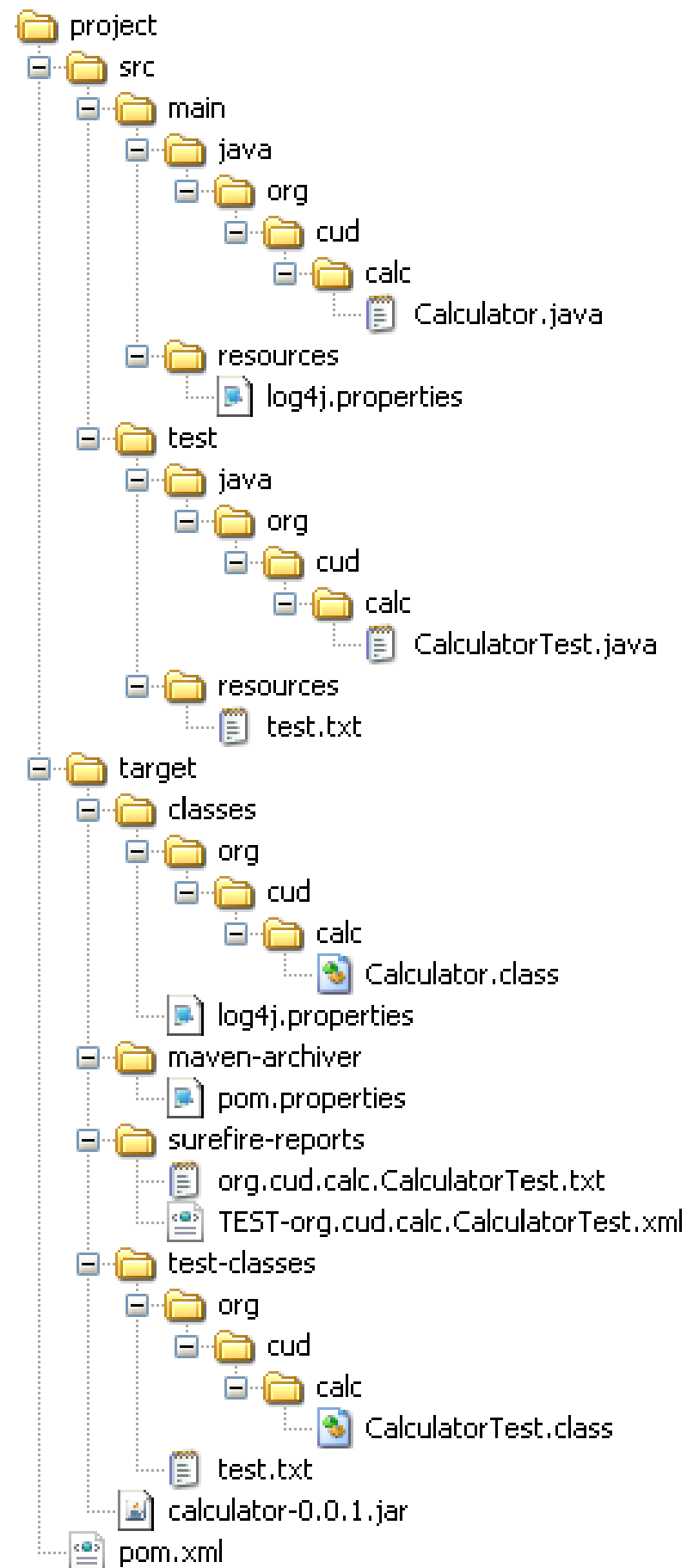
Задача install:install



Задача clean:clean

```
I:\project>mvn clean:clean
[INFO] Scanning for projects...
[INFO] Searching repository for plugin with prefix: 'clean'.
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [clean:clean]
[INFO] -----
[INFO] [clean:clean {execution: default-cli}]
[INFO] Deleting directory I:\project\target
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 15:41:06 GMT+07:00 2013
[INFO] Final Memory: 3M/15M
[INFO] -----
I:\project>
```

Задача clean:clean



Сборка проекта

Сборка проекта



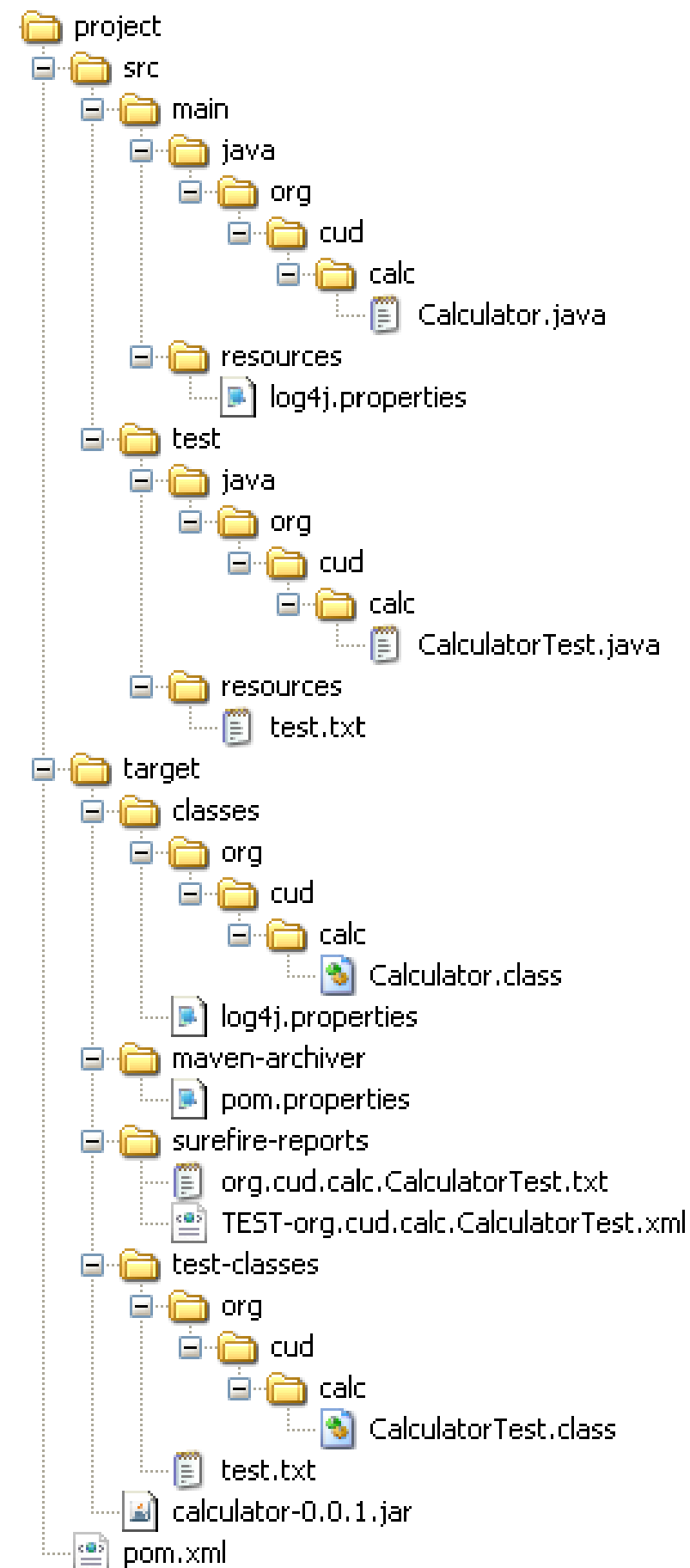
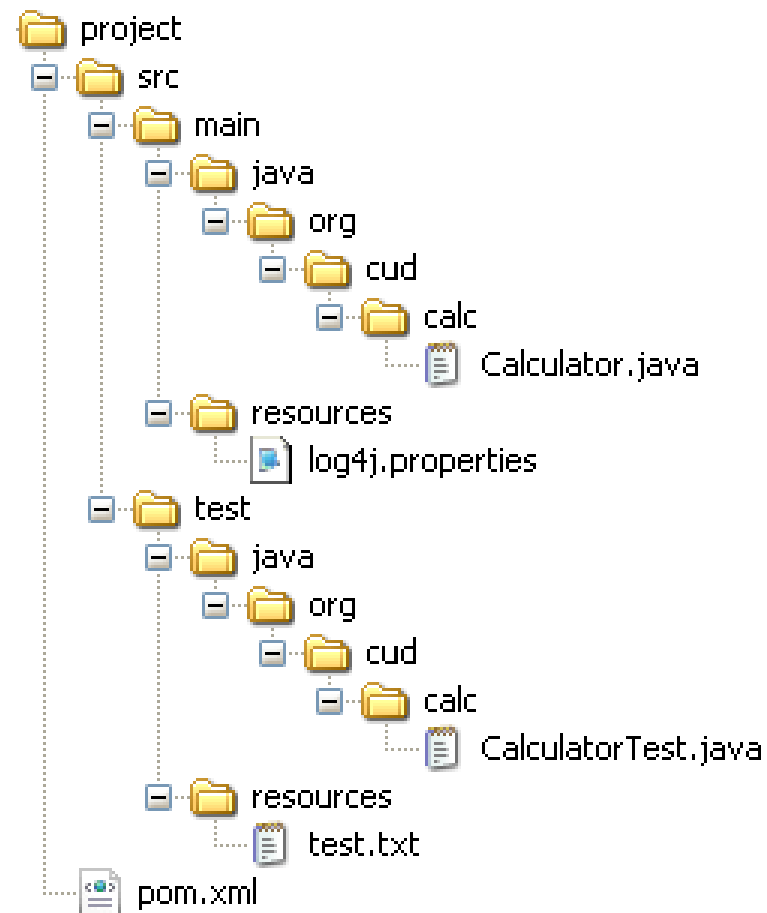
У Maven есть три цикла сборки : default, clean и site. Каждый из циклов состоит из последовательности фаз. Можно сразу же вызывать любую фазу любого цикла. В этом случае будут по очереди выполняться задачи зарегистрированные у всех фаз в цикле до этой фазы после чего будут выполнены задачи вызванной фазы.

Фазз install

```
I:\project>mvn install
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [install]
[INFO] -----
[INFO] [resources:resources {execution: default-resources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:compile {execution: default-compile}]
[INFO] Compiling 1 source file to I:\project\target\classes
[INFO] [resources:testResources {execution: default-testResources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:testCompile {execution: default-testCompile}]
[INFO] Compiling 1 source file to I:\project\target\test-classes
[INFO] [surefire:test {execution: default-test}]
[INFO] Surefire report directory: I:\project\target\surefire-reports
...
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO] [jar:jar {execution: default-jar}]
[INFO] Building jar: I:\project\target\calculator-0.0.1.jar
[INFO] [install:install {execution: default-install}]
[INFO] Installing I:\project\target\calculator-0.0.1.jar to C:\Documents and
Settings\Administrator\.m2\repository\org\cud\mcourse\calculator\0.0.1\calculator-0.0.1.jar
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 2 seconds
[INFO] Finished at: Tue Jun 18 15:34:23 GMT+07:00 2013
[INFO] Final Memory: 15M/36M
[INFO] -----
I:\project>
```

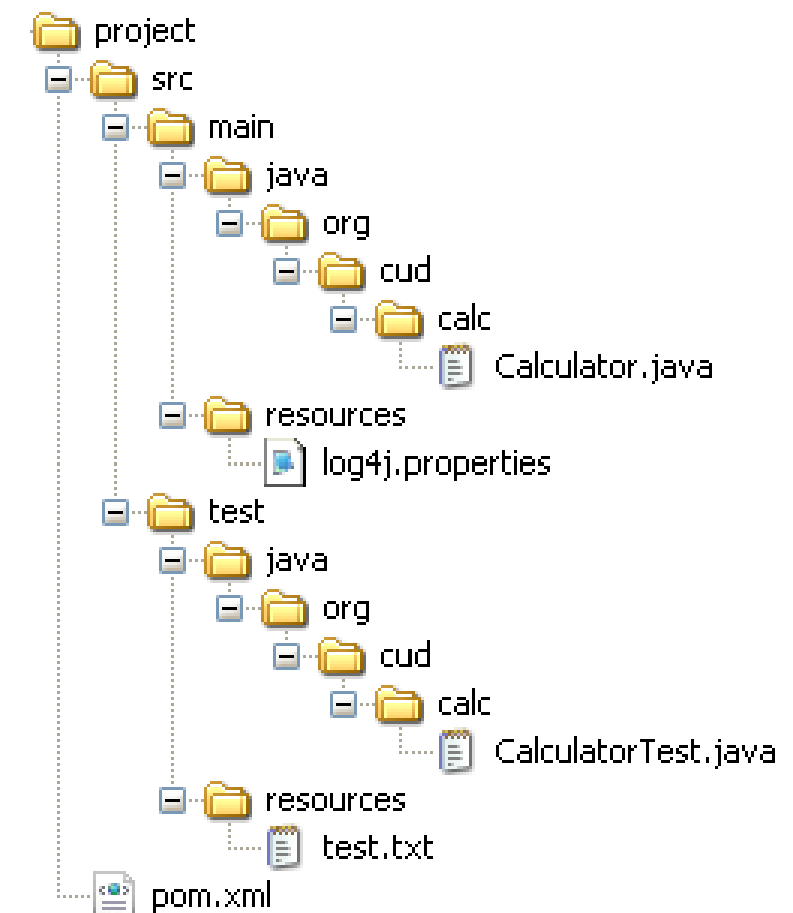
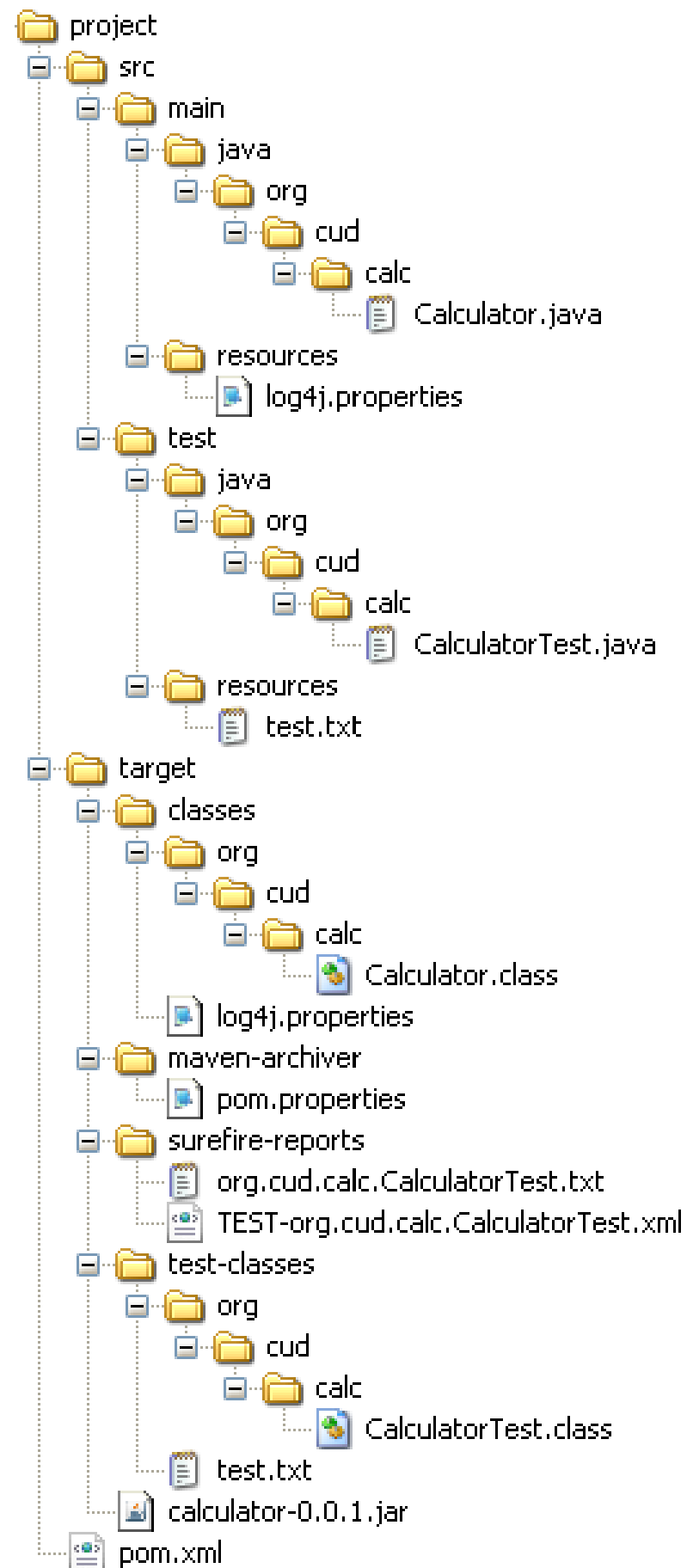
Фаза install



Фазз clean

```
I:\project>mvn clean
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [clean]
[INFO] -----
[INFO] [clean:clean {execution: default-clean}]
[INFO] Deleting directory I:\project\target
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 15:39:43 GMT+07:00 2013
[INFO] Final Memory: 3M/15M
[INFO] -----
I:\project>
```

Фаза clean



Настройка плагинов и задач по умолчанию

```
<plugin>
  <artifactId>maven-resources-plugin</artifactId>
  <version>2.5</version>
  <executions>
    <execution>
      <id>default-resources</id>
      <phase>process-resources</phase>
      <goals>
        <goal>resources</goal>
      </goals>
    </execution>
    <execution>
      <id>default-testResources</id>
      <phase>process-test-resources</phase>
      <goals>
        <goal>testResources</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

```
<plugin>
  <artifactId>maven-install-plugin</artifactId>
  <version>2.3.1</version>
  <executions>
    <execution>
      <id>default-install</id>
      <phase>install</phase>
      <goals>
        <goal>install</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

```
<plugin>
  <artifactId>maven-surefire-plugin</artifactId>
  <version>2.10</version>
  <executions>
    <execution>
      <id>default-test</id>
      <phase>test</phase>
      <goals>
        <goal>test</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

```
<plugin>
  <artifactId>maven-compiler-plugin</artifactId>
  <version>2.3.2</version>
  <executions>
    <execution>
      <id>default-testCompile</id>
      <phase>test-compile</phase>
      <goals>
        <goal>testCompile</goal>
      </goals>
    </execution>
    <execution>
      <id>default-compile</id>
      <phase>compile</phase>
      <goals>
        <goal>compile</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

```
<plugin>
  <artifactId>maven-jar-plugin</artifactId>
  <version>2.3.2</version>
  <executions>
    <execution>
      <id>default-jar</id>
      <phase>package</phase>
      <goals>
        <goal>jar</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

```
<plugin>
  <artifactId>maven-deploy-plugin</artifactId>
  <version>2.7</version>
  <executions>
    <execution>
      <id>default-deploy</id>
      <phase>deploy</phase>
      <goals>
        <goal>deploy</goal>
      </goals>
    </execution>
  </executions>
</plugin>
```

Получение информации о цикле default

```
I:\project>mvn help:describe -Dcmd=install
...
[INFO] [help:describe {execution: default-cli}]
[INFO] 'install' is a phase corresponding to this plugin:
org.apache.maven.plugins:maven-install-plugin:install

It is a part of the lifecycle for the POM packaging 'jar'. This lifecycle includes the following phases:
* validate: Not defined
* initialize: Not defined
* generate-sources: Not defined
* process-sources: Not defined
* generate-resources: Not defined
* process-resources: org.apache.maven.plugins:maven-resources-plugin:resources
* compile: org.apache.maven.plugins:maven-compiler-plugin:compile
* process-classes: Not defined
* generate-test-sources: Not defined
* process-test-sources: Not defined
* generate-test-resources: Not defined
* process-test-resources: org.apache.maven.plugins:maven-resources-plugin:testResources
* test-compile: org.apache.maven.plugins:maven-compiler-plugin:testCompile
* process-test-classes: Not defined
* test: org.apache.maven.plugins:maven-surefire-plugin:test
* prepare-package: Not defined
* package: org.apache.maven.plugins:maven-jar-plugin:jar
* pre-integration-test: Not defined
* integration-test: Not defined
* post-integration-test: Not defined
* verify: Not defined
* install: org.apache.maven.plugins:maven-install-plugin:install
* deploy: org.apache.maven.plugins:maven-deploy-plugin:deploy

[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
...
I:\project>
```

Получение информации о цикле clean

```
I:\project>mvn help:describe -Dcmd=clean
[INFO] Scanning for projects...
[INFO] Searching repository for plugin with prefix: 'help'.
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [help:describe] (aggregator-style)
[INFO] -----
[INFO] [help:describe {execution: default-cli}]
[INFO] 'clean' is a lifecycle with the following phases:
* pre-clean: Not defined
* clean: org.apache.maven.plugins:maven-clean-plugin:clean
* post-clean: Not defined

[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 1 second
[INFO] Finished at: Tue Jun 18 15:48:50 GMT+07:00 2013
[INFO] Final Memory: 11M/26M
[INFO] -----
I:\project>
```

Изменение цикла сборки

Регистрация и настройка плагинов и задач в pom

```
<project>  
  <modelVersion>4.0.0</modelVersion>  
  
  <!-- Build Settings -->  
  <build>...</build>  
  
</project>
```

Регистрация плагинов и задач

```
<build>
...
<plugins>
  <plugin>
    <artifactId> ... </artifactId>
    <version> ... </version>
    <executions>
      <execution>
        <id> ... </id>
        <phase> ... </phase>
        <goals>
          <goal> ... </goal>
        </goals>
        <configuration>
          ...
        </configuration>
      </execution>
    </executions>
    <configuration>
      ...
    </configuration>
  </plugin>
</plugins>
</build>
```



Можно задать параметры для всех задач плагина. Можно привязать задачу плагина к фазе и для выполнения этой задачи задать параметры.

Конфигурация всех задач плагина

Конфигурация всех задач плагина

```
<build>
  <plugins>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-jar-plugin</artifactId>
      <configuration>
        <archive>
          <manifest>
            <mainClass>org.cud.mavencourse.App</mainClass>
            <addClasspath>true</addClasspath>
          </manifest>
        </archive>
      </configuration>
    </plugin>
  </plugins>
</build>
```

Конфигурация всех задач плагина

```
I:\project>mvn package -DskipTests=true
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [package]
[INFO] -----
[INFO] [resources:resources {execution: default-resources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:compile {execution: default-compile}]
[INFO] Nothing to compile - all classes are up to date
[INFO] [resources:testResources {execution: default-testResources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:testCompile {execution: default-testCompile}]
[INFO] Nothing to compile - all classes are up to date
[INFO] [surefire:test {execution: default-test}]
[INFO] Tests are skipped.
[INFO] [jar:jar {execution: default-jar}]
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 1 second
[INFO] Finished at: Tue Jun 18 16:20:50 GMT+07:00 2013
[INFO] Final Memory: 9M/21M
[INFO] -----
I:\project>cd target

I:\project\target>java -jar calculator-0.0.1.jar 1 2 3 4 5
Hello Calculator
2+3+4 = 9

I:\project\target>
```

Конфигурация всех задач плагина

```
I:\project>mvn compiler:compile
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [compiler:compile]
[INFO] -----
[INFO] [compiler:compile {execution: default-cli}]
[INFO] Compiling 2 source files to I:\project\target\classes
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 16:25:24 GMT+07:00 2013
[INFO] Final Memory: 5M/15M
[INFO] -----
I:\project>mvn jar:jar
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [jar:jar]
[INFO] -----
[INFO] [jar:jar {execution: default-cli}]
[INFO] Building jar: I:\project\target\calculator-0.0.1.jar
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: < 1 second
[INFO] Finished at: Tue Jun 18 16:25:28 GMT+07:00 2013
[INFO] Final Memory: 4M/15M
[INFO] -----
I:\project>cd target

I:\project\target>java -jar calculator-0.0.1.jar 1 2 3 4 5
Hello Calculator
2+3+4 = 9

I:\project\target>
```

Конфигурация конкретного выполнения

Конфигурация конкретного выполнения

```
<build>
  <plugins>
    <plugin>
      <groupId>org.apache.maven.plugins</groupId>
      <artifactId>maven-jar-plugin</artifactId>
      <executions>
        <execution>
          <id>default-jar</id>
          <phase>compile</phase>
          <goals>
            <goal>jar</goal>
          </goals>
          <configuration>
            <archive>
              <manifest>
                <mainClass>org.cud.mavencourse.App</mainClass>
                <addClasspath>true</addClasspath>
              </manifest>
            </archive>
          </configuration>
        </execution>
      </executions>
    </plugin>
  </plugins>
</build>
```

Конфигурация конкретного выполнения

```
I:\project>mvn compile -DskipTests=true
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building simple
[INFO]    task-segment: [compile]
[INFO] -----
[INFO] [resources:resources {execution: default-resources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory I:\project\src\main\resources
[INFO] [compiler:compile {execution: default-compile}]
[INFO] Compiling 1 source file to I:\project\target\classes
[INFO] [jar:jar {execution: default-jar}]
[INFO] Building jar: I:\project\target\calculator-0.0.1.jar
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 1 second
[INFO] Finished at: Mon Jul 07 15:25:34 NOVT 2014
[INFO] Final Memory: 10M/26M
[INFO] -----
I:\project>cd target

I:\project\target>java -jar calculator-0.0.1.jar 1 2 3 4 5
Hello World!
```

Регистрация задачи у фазы

Регистрация задачи у фазы

```
<project...>
  <modelVersion>4.0.0</modelVersion>
  <groupId>org.cud.mcourse</groupId>
  <artifactId>calculator</artifactId>
  <version>0.1</version>
  <packaging>jar</packaging>
  <scm>
    <connection>scm:svn:http://127.0.0.1/dummy</connection>
  </scm>
  <build>
    <plugins>
      <plugin>
        <groupId>org.codehaus.mojo</groupId>
        <artifactId>buildnumber-maven-plugin</artifactId>
        <version>1.2</version>
        <executions>
          <execution>
            <phase>validate</phase>
            <goals>
              <goal>create</goal>
            </goals>
          </execution>
        </executions>
        <configuration>
          <format>${version}.{0,number}</format>
          <items>
            <item>buildNumber</item>
          </items>
        </configuration>
      </plugin>
    </plugins>
    <finalName> ${project.artifactId}-${buildNumber} </finalName>
  </build>
</project>
```

Регистрация задачи у фазы

```
I:\project>mvn -f registr_pom.xml package -DskipTests=true
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [package]
[INFO] -----
[INFO] [buildnumber:create {execution: default}]
[INFO] Storing buildNumber: 0.1.1 at timestamp: 1371548695250
[INFO] Executing: cmd.exe /X /C "svn --non-interactive info"
[INFO] Working directory: I:\project
[INFO] Storing buildScmBranch: UNKNOWN_BRANCH
[INFO] [resources:resources {execution: default-resources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:compile {execution: default-compile}]
[INFO] Nothing to compile - all classes are up to date
[INFO] [resources:testResources {execution: default-testResources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:testCompile {execution: default-testCompile}]
[INFO] Nothing to compile - all classes are up to date
[INFO] [surefire:test {execution: default-test}]
[INFO] Tests are skipped.
[INFO] [jar:jar {execution: default-jar}]
[INFO] Building jar: I:\project\target\calculator-0.1.1.jar
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 2 seconds
[INFO] Finished at: Tue Jun 18 16:44:55 GMT+07:00 2013
[INFO] Final Memory: 14M/34M
[INFO] -----
```

Регистрация задачи у фазы

```
I:\project>mvn -f registr_pom.xml package -DskipTests=true
[INFO] Scanning for projects...
[INFO] -----
[INFO] Building calculator
[INFO]    task-segment: [package]
[INFO] -----
[INFO] [buildnumber:create {execution: default}]
[INFO] Storing buildNumber: 0.1.2 at timestamp: 1371548702546
[INFO] Executing: cmd.exe /X /C "svn --non-interactive info"
[INFO] Working directory: I:\project
[INFO] Storing buildScmBranch: UNKNOWN_BRANCH
[INFO] [resources:resources {execution: default-resources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:compile {execution: default-compile}]
[INFO] Nothing to compile - all classes are up to date
[INFO] [resources:testResources {execution: default-testResources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] [compiler:testCompile {execution: default-testCompile}]
[INFO] Nothing to compile - all classes are up to date
[INFO] [surefire:test {execution: default-test}]
[INFO] Tests are skipped.
[INFO] [jar:jar {execution: default-jar}]
[INFO] Building jar: I:\project\target\calculator-0.1.2.jar
[INFO] -----
[INFO] BUILD SUCCESSFUL
[INFO] -----
[INFO] Total time: 2 seconds
[INFO] Finished at: Tue Jun 18 16:45:03 GMT+07:00 2013
[INFO] Final Memory: 14M/34M
[INFO] -----
I:\project>
```

