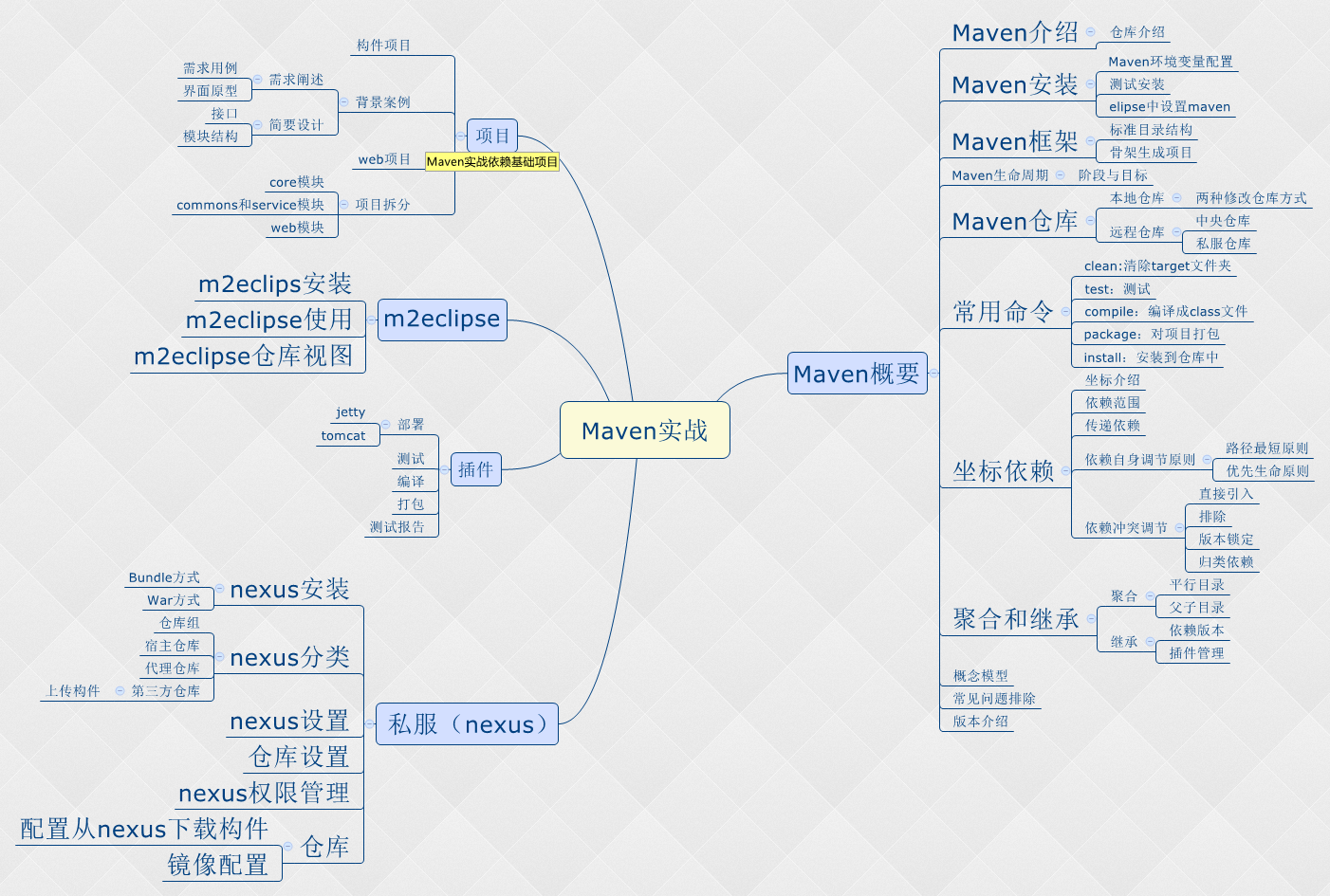
# Maven实践

## 文档结构

### 1.1目录视图

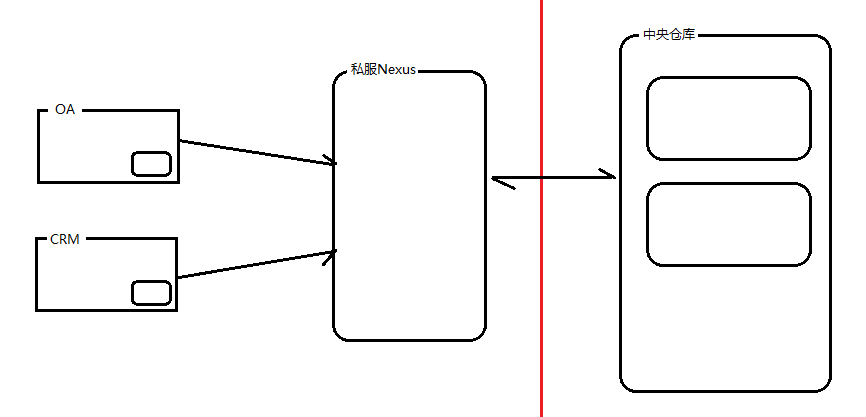


## 第2节 Maven概要

### 2.1Maven介绍

maven是Apache的一个开源项目，可以对项目进行构建，依赖管理。

可以通过命令对项目进行编译，测试，打包，安装，部署，测试报告以及文档生成等。

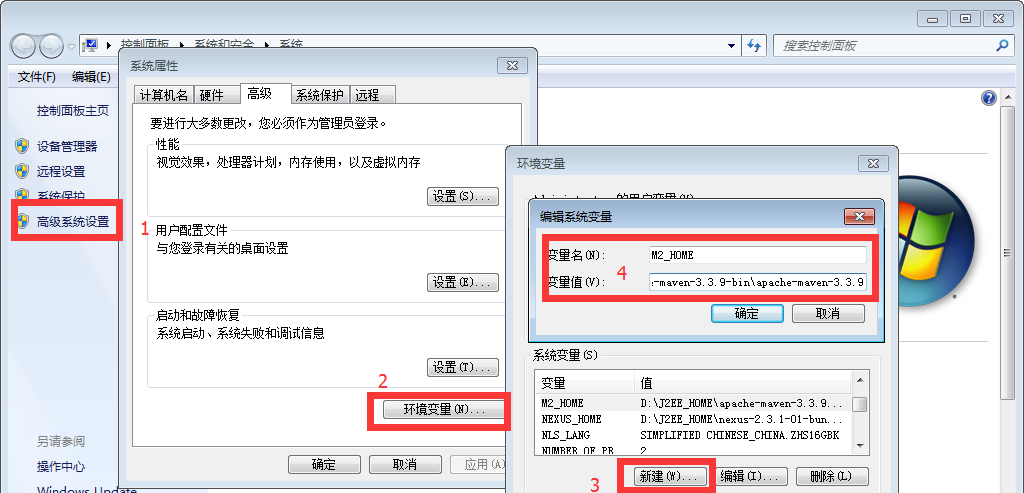


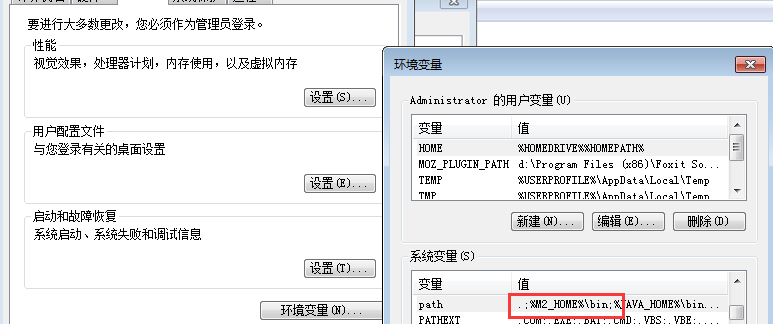
GAV(groupId, artifactId,version) 相当于X,Y,Z坐标。

### 2.2Maven安装

<http://maven.apache.org/guides/getting-started/index.html>

1. 确保JAVA\_HOME环境变量指定JDK的安装目录，也就是保证JDK能够正确运行。
2. 解压apache-maven-3.3.9-bin.zip；
3. 配置环境变量，将bin目录配置到path环境变量。







### 2.3Maven框架

1）Maven安装文件介绍：

bin文件夹 命令脚本文件 包括windows和linuxs下面的脚本；

boot文件夹 他是一个类加载框架，maven使用还框架来加载自己的类库；

conf文件夹 主要包含一个主要的文件settings.xml文件；

lib文件夹 包括了maven运行所需要的所有java类库，自身及第三方类库；

2）maven标准项目结构

使用命令新建maven项目

mvn -B archetype:generate -DarchetypeGroupId=org.apache.maven.archetypes -DgroupId=com.mycompany.app -DartifactId=my-app

|  |
| --- |
| [INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-quickstart:1.0  [INFO] ----------------------------------------------------------------------------  [INFO] Parameter: basedir, Value: G:\eclipse\workspace\tmp  [INFO] Parameter: package, Value: com.mycompany.app  [INFO] Parameter: groupId, Value: com.mycompany.app  [INFO] Parameter: artifactId, Value: my-app  [INFO] Parameter: packageName, Value: com.mycompany.app  [INFO] Parameter: version, Value: 1.0-SNAPSHOT  [INFO] project created from Old (1.x) Archetype in dir: G:\eclipse\workspace\tmp\my-app  [INFO] ------------------------------------------------------------------------  [INFO] BUILD SUCCESS  [INFO] ------------------------------------------------------------------------  [INFO] Total time: 26.547 s  [INFO] Finished at: 2018-12-16T16:22:32+08:00  [INFO] Final Memory: 15M/170M  [INFO] ------------------------------------------------------------------------ |

${basedir}/my-app

└───pom.xml

│

└───src

├───main

│ └───java

│ └───com

│ └───mycompany

│ └───app

│ App.java

└───test

└───java

└───com

└───mycompany

└───app

AppTest.java

3）

### 2.4Maven生命周期

<http://maven.apache.org/ref/3.6.0/maven-core/lifecycles.html>

Maven defines 3 lifecycles in META-INF/plexus/components.xml:

default Lifecycle

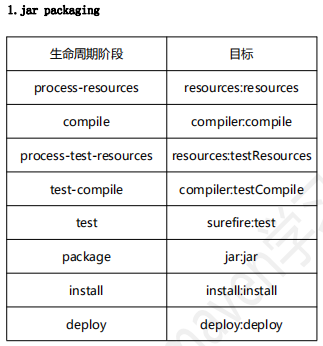
clean Lifecycle

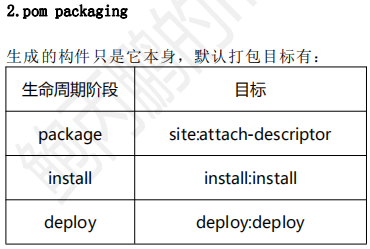
site Lifecycle

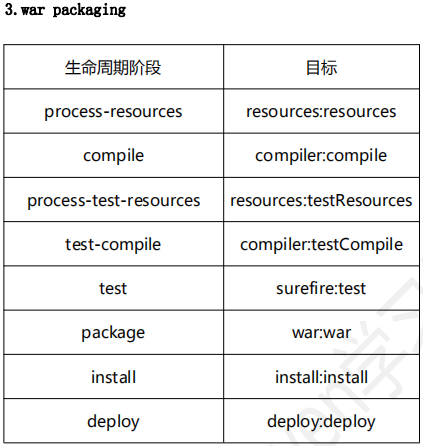
|  |
| --- |
| 1. <phases> 2. <phase>validate</phase> 3. <phase>initialize</phase> 4. <phase>generate-sources</phase> 5. <phase>process-sources</phase> 6. <phase>generate-resources</phase> 7. <phase>process-resources</phase> 8. <phase>compile</phase> 9. <phase>process-classes</phase> 10. <phase>generate-test-sources</phase> 11. <phase>process-test-sources</phase> 12. <phase>generate-test-resources</phase> 13. <phase>process-test-resources</phase> 14. <phase>test-compile</phase> 15. <phase>process-test-classes</phase> 16. <phase>test</phase> 17. <phase>prepare-package</phase> 18. <phase>package</phase> 19. <phase>pre-integration-test</phase> 20. <phase>integration-test</phase> 21. <phase>post-integration-test</phase> 22. <phase>verify</phase> 23. <phase>install</phase> 24. <phase>deploy</phase> 25. </phases> |

运行任何一个阶段的时候，它前面的所有阶段都会被运行，这也就是为什么我们运行 mvn install 的时候，代码会被编译，测试，打包。此外，Maven 的插件机制是完全依赖 Maven 的生命周期的，因此理解生命周期至关重要









### 2.5Maven仓库

1）仓库的概念

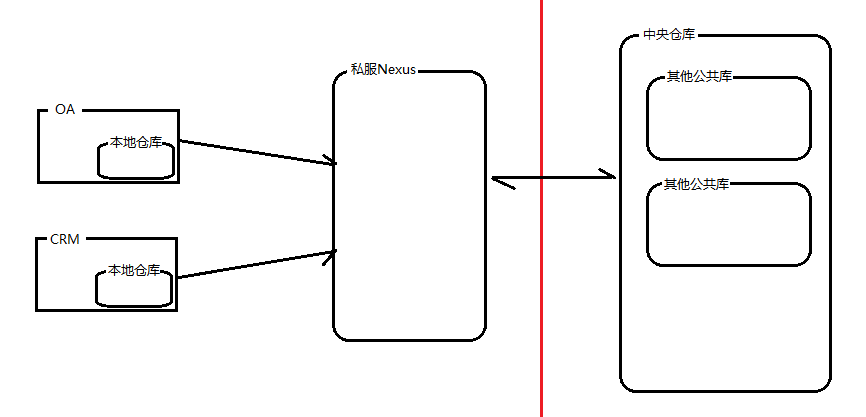
在 Maven 中，任何一个依赖、插件或者项目构建的输出，都可以称之为构件。

Maven 在某个统一的位置存储所有项目的共享的构件，这个统一的位置，我们就称之为仓库。（仓库就是存放依赖和插件的地方）任何的构件都有唯一的坐标，Maven 根据这个坐标定义了构件在仓库中的唯一存储路径。

2）仓库的分类

Maven 的仓库只有两大类：1.本地仓库 2.远程仓库。

在远程仓库中又分成了 3 种：① 中央仓库 ② 私服 ③其它公共库



3）仓库详解

**本地仓库**

是 Maven 在本地存储构件的地方。Maven 本地仓库的默认位置：无论是

Windows 还是 Linux，在用户的目录下都有一个.m2/repository/的仓库目录，这就是 Maven 仓库的默认位置。

【注】maven 的本地仓库，在安装 maven 后并不会创建，它是在第一次执行 maven 命令的时候才被创建。

【更改默认的本地仓库位置】

更改本地仓库有两种方式：① 基于用户范围 ② 基于全局范围

**更改配置用户范围的本地仓库**：先在/.m2/目录下创建 settings.xml 文件，

然后在~/.m2/settings.xml，设置 localRepository 元素的值为想要的仓库地址

<settings>

<localRepository>D:\maven\_new\_repository</localRepository>

</settings>

这时候，maven 的本地仓库地址就变成了 D:\maven\_new\_repository ，注：此时配置的 maven 的本地仓库是属于用户范围的。

**更改配置全局范围的本地仓库**：在 M2\_HOME/conf/settings.xml 中更改配置，

更改配置的方法同上

【注】此时更改后，所有的用户都会受到影响，而且如果 maven 进行升级，那么所有的配置都会被清除，所以要提前复制和备份 M2\_HOME/conf/settings.xml 文件，一般情况下不推荐配置全局的 settings.xml

**远程仓库**

### 2.6Maven常用命令

1）mvn compile 编译

|  |
| --- |
| G:\eclipse\workspace\my-app>mvn compile  [INFO] Scanning for projects...  [INFO]  [INFO] ------------------------------------------------------------------------  [INFO] Building Maven Quick Start Archetype 1.0-SNAPSHOT  [INFO] ------------------------------------------------------------------------  [INFO] 插件 版本号 目标  [INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ my-app ---  [WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is platform dep  [INFO] skip non existing resourceDirectory G:\eclipse\workspace\my-app\src\main\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ my-app ---  [INFO] Changes detected - recompiling the module!  [WARNING] File encoding has not been set, using platform encoding GBK, i.e. build is platform dependent  [INFO] Compiling 1 source file to G:\eclipse\workspace\my-app\target\classes  [INFO] ------------------------------------------------------------------------  [INFO] BUILD SUCCESS  [INFO] ------------------------------------------------------------------------  [INFO] Total time: 1.751 s  [INFO] Finished at: 2018-12-16T15:12:17+08:00  [INFO] Final Memory: 12M/111M  [INFO] ------------------------------------------------------------------------ |
| target  ├───classes  │ └───com  │ └───mycompany  │ └───app  │ App.class  │  └───maven-status  └───maven-compiler-plugin  └───compile  └───default-compile  createdFiles.lst  inputFiles.lst |

2）mvn test 测试

|  |
| --- |
| G:\eclipse\workspace\my-app>mvn test  [INFO] Scanning for projects...  [INFO]  [INFO] ------------------------------------------------------------------------  [INFO] Building Maven Quick Start Archetype 1.0-SNAPSHOT  [INFO] ------------------------------------------------------------------------  [INFO]  [INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ my-app ---  [WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is platform dep  [INFO] skip non existing resourceDirectory G:\eclipse\workspace\my-app\src\main\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ my-app ---  [INFO] Nothing to compile - all classes are up to date  [INFO]  [INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ my-app ---  [WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is platform dep  [INFO] skip non existing resourceDirectory G:\eclipse\workspace\my-app\src\test\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ my-app ---  [INFO] Nothing to compile - all classes are up to date  [INFO]  [INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ my-app ---  [INFO] Surefire report directory: G:\eclipse\workspace\my-app\target\surefire-reports  -------------------------------------------------------  T E S T S  -------------------------------------------------------  Running com.mycompany.app.AppTest  \*\*\*\*\*\*\*\*testApp\*\*\*\*\*\*\*\*  Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.064 sec  Results :  Tests run: 1, Failures: 0, Errors: 0, Skipped: 0  [INFO] ------------------------------------------------------------------------  [INFO] BUILD SUCCESS  [INFO] ------------------------------------------------------------------------  [INFO] Total time: 2.797 s  [INFO] Finished at: 2018-12-16T16:31:02+08:00  [INFO] Final Memory: 8M/151M  [INFO] ------------------------------------------------------------------------ |

3）mvn package 打包

|  |
| --- |
| G:\eclipse\workspace\my-app>mvn package  [INFO] Scanning for projects...  [INFO]  [INFO] ------------------------------------------------------------------------  [INFO] Building Maven Quick Start Archetype 1.0-SNAPSHOT  [INFO] ------------------------------------------------------------------------  [INFO]  [INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ my-app ---  [WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is platform dep  [INFO] skip non existing resourceDirectory G:\eclipse\workspace\my-app\src\main\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ my-app ---  [INFO] Nothing to compile - all classes are up to date  [INFO]  [INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ my-app ---  [WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is platform dep  [INFO] skip non existing resourceDirectory G:\eclipse\workspace\my-app\src\test\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ my-app ---  [INFO] Changes detected - recompiling the module!  [WARNING] File encoding has not been set, using platform encoding GBK, i.e. build is platform dependent  [INFO] Compiling 1 source file to G:\eclipse\workspace\my-app\target\test-classes  [INFO]  [INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ my-app ---  [INFO] Surefire report directory: G:\eclipse\workspace\my-app\target\surefire-reports  -------------------------------------------------------  T E S T S  -------------------------------------------------------  Running com.mycompany.app.AppTest  \*\*\*\*\*\*\*\*testApp\*\*\*\*\*\*\*\*  Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.084 sec  Results :  Tests run: 1, Failures: 0, Errors: 0, Skipped: 0  [INFO]  [INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ my-app ---  [INFO] Building jar: G:\eclipse\workspace\my-app\target\my-app-1.0-SNAPSHOT.jar  [INFO] ------------------------------------------------------------------------  [INFO] BUILD SUCCESS  [INFO] ------------------------------------------------------------------------  [INFO] Total time: 3.576 s  [INFO] Finished at: 2018-12-16T15:14:30+08:00  [INFO] Final Memory: 16M/166M  [INFO] ------------------------------------------------------------------------ |
|  |

4）mvn install 安装到maven仓库

|  |
| --- |
| G:\eclipse\workspace\my-app>mvn install  [INFO] Scanning for projects...  [INFO]  [INFO] ------------------------------------------------------------------------  [INFO] Building Maven Quick Start Archetype 1.0-SNAPSHOT  [INFO] ------------------------------------------------------------------------  [INFO]  [INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ my-app ---  [WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is platform dependent!  [INFO] skip non existing resourceDirectory G:\eclipse\workspace\my-app\src\main\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ my-app ---  [INFO] Changes detected - recompiling the module!  [WARNING] File encoding has not been set, using platform encoding GBK, i.e. build is platform dependent!  [INFO] Compiling 1 source file to G:\eclipse\workspace\my-app\target\classes  [INFO]  [INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ my-app ---  [WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is platform dependent!  [INFO] skip non existing resourceDirectory G:\eclipse\workspace\my-app\src\test\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ my-app ---  [INFO] Changes detected - recompiling the module!  [WARNING] File encoding has not been set, using platform encoding GBK, i.e. build is platform dependent!  [INFO] Compiling 1 source file to G:\eclipse\workspace\my-app\target\test-classes  [INFO]  [INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ my-app ---  [INFO] Surefire report directory: G:\eclipse\workspace\my-app\target\surefire-reports  -------------------------------------------------------  T E S T S  -------------------------------------------------------  Running com.mycompany.app.AppTest  \*\*\*\*\*\*\*\*testApp\*\*\*\*\*\*\*\*  Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.063 sec  Results :  Tests run: 1, Failures: 0, Errors: 0, Skipped: 0  [INFO]  [INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ my-app ---  [INFO] Building jar: G:\eclipse\workspace\my-app\target\my-app-1.0-SNAPSHOT.jar  [INFO]  [INFO] --- maven-install-plugin:2.4:install (default-install) @ my-app ---  [INFO] Installing G:\eclipse\workspace\my-app\target\my-app-1.0-SNAPSHOT.jar to C:\Users\BYF\.m2\repository\com\mycompany\app\my-app\1.0-SNAPSHOT\my-a  pp-1.0-SNAPSHOT.jar  [INFO] Installing G:\eclipse\workspace\my-app\pom.xml to C:\Users\BYF\.m2\repository\com\mycompany\app\my-app\1.0-SNAPSHOT\my-app-1.0-SNAPSHOT.pom  [INFO] ------------------------------------------------------------------------  [INFO] BUILD SUCCESS  [INFO] ------------------------------------------------------------------------  [INFO] Total time: 3.528 s  [INFO] Finished at: 2018-12-16T16:16:05+08:00  [INFO] Final Memory: 17M/162M  [INFO] ------------------------------------------------------------------------ |
|  |

5）mvn clean清除

|  |
| --- |
| G:\eclipse\workspace\my-app>mvn clean  [INFO] Scanning for projects...  [INFO]  [INFO] ------------------------------------------------------------------------  [INFO] Building Maven Quick Start Archetype 1.0-SNAPSHOT  [INFO] ------------------------------------------------------------------------  [INFO]  [INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ my-app ---  [INFO] Deleting G:\eclipse\workspace\my-app\target  [INFO] ------------------------------------------------------------------------  [INFO] BUILD SUCCESS  [INFO] ------------------------------------------------------------------------  [INFO] Total time: 0.368 s  [INFO] Finished at: 2018-12-16T16:36:55+08:00  [INFO] Final Memory: 6M/117M  [INFO] ------------------------------------------------------------------------ |
|  |

### 2.7Maven坐标依赖

**1）scope：依赖范围**

 compile:编译范围,默认scope,在classpath中存在

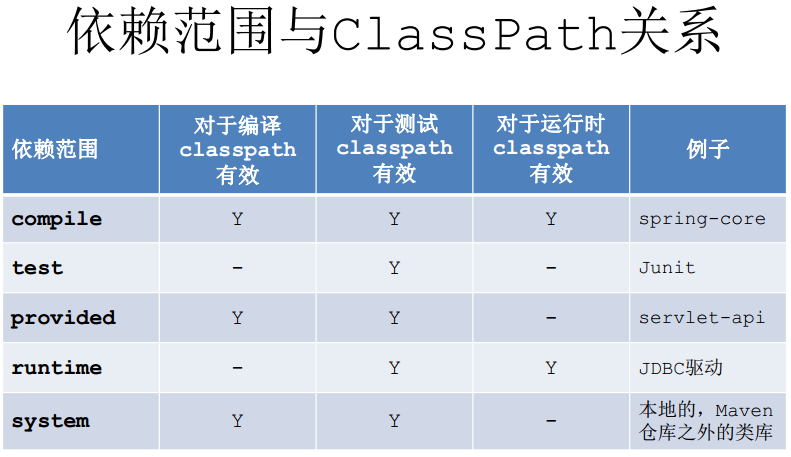
 provided:已提供范围,比如容器提供Servlet API

 runtime:运行时范围,编译不需要,接口与实现分离

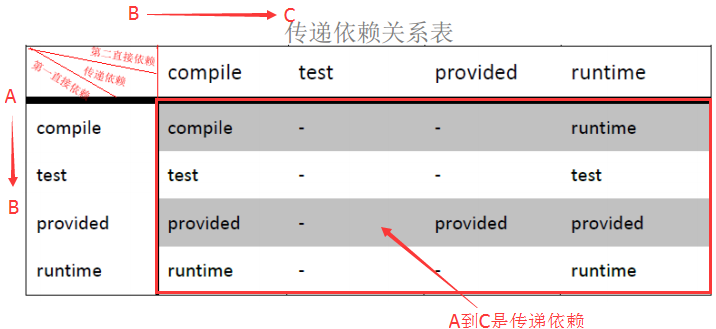
 test:测试范围,单元测试环境需要

 system:系统范围,自定义构件，指定systemPath

 import：导入依赖



**2）Maven传递依赖**



传递依赖的依赖范围要么是两个直接依赖的其中一个值

传递依赖会取 两个依赖范围中的一个值，或者中断。

总结：当传递依赖中断的时候，直接在项目中引入依赖即可。

**3）依赖冲突解决**

传递依赖： A依赖B,B依赖C，那么C是A的传递依赖，B是A的直接依赖。

解决依赖有两个原则：

1.路径最短原则

例如：a-log4j1.1 a-b-log4j1.2 最终会用到log4j1.1

2.最先声明优先。

例如：a模块的pom.xml引入log4j1.2，a的父模块也引用log4j1.1，那么最先使用在前边声明的版本log4j1.1。

**4）依赖调解**

A->B->D->X(1.6)

A->D-X(2.0)

X是A的传递依赖。B是A的直接依赖，D也是A的直接依赖。

依赖调解原则：

第一原则：路径近者优先原则 x2.0传递给A最近

第二原则：第一声明者优先原则 当路径相等时，则由POM声明的依赖顺序决定

### 2.8Maven聚合和继承

### 2.9其他

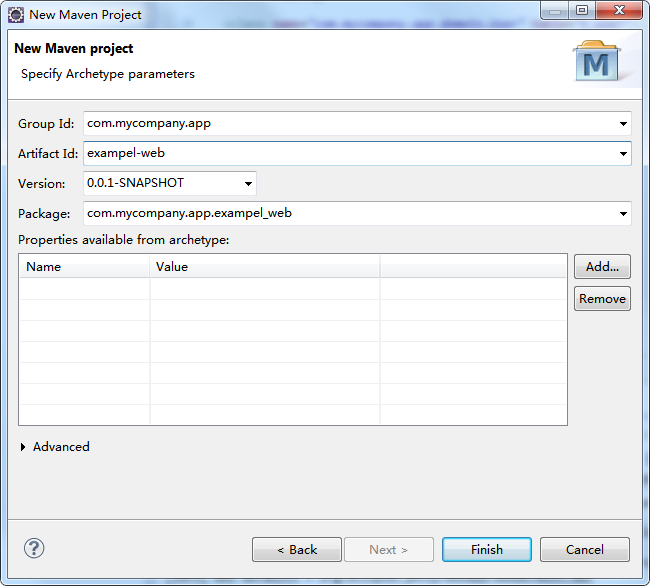
1）概念模型

1. 常见问题排除

3）版本介绍

## 第3节 Maven项目

### 3.1构建项目



### 3.2背景案例

1. 客户需求

注册账号服务

根据账号查询密码服务

2需求阐述

了解了客户服务之后，从软件工程的角度来分析下服务需求。

2.1需求用例

注册账号

主要场景：

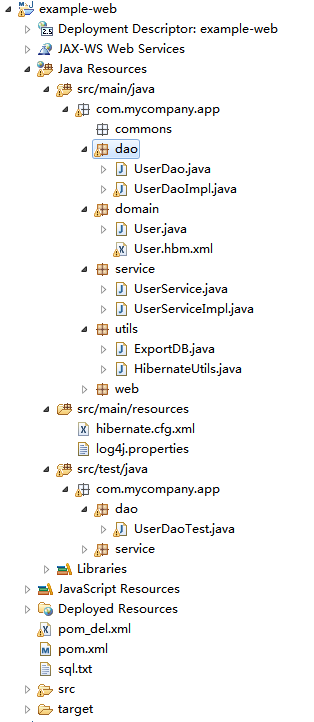
1. 用户访问注册页面
2. 用户输入用户名和密码
3. 用户提交注册请求
4. 系统检测账号是否被注册过
5. 系统保护账号信息
6. 用户登录

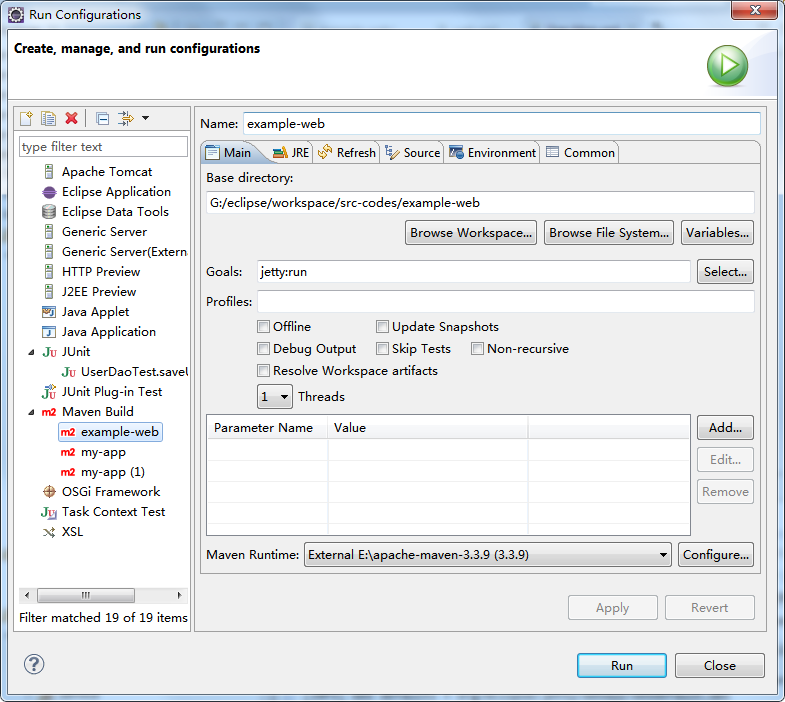
扩展场景：

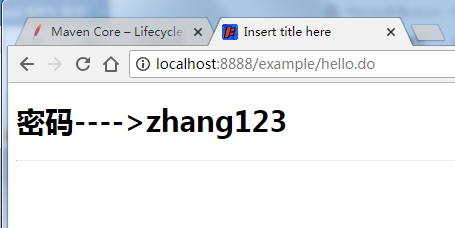
4a:系统检测到账号已经被注册

1. 提示账号被注册
2. 跳转到步骤2

3.3web项目







3.4项目拆分

## 第4节 m2eclipse

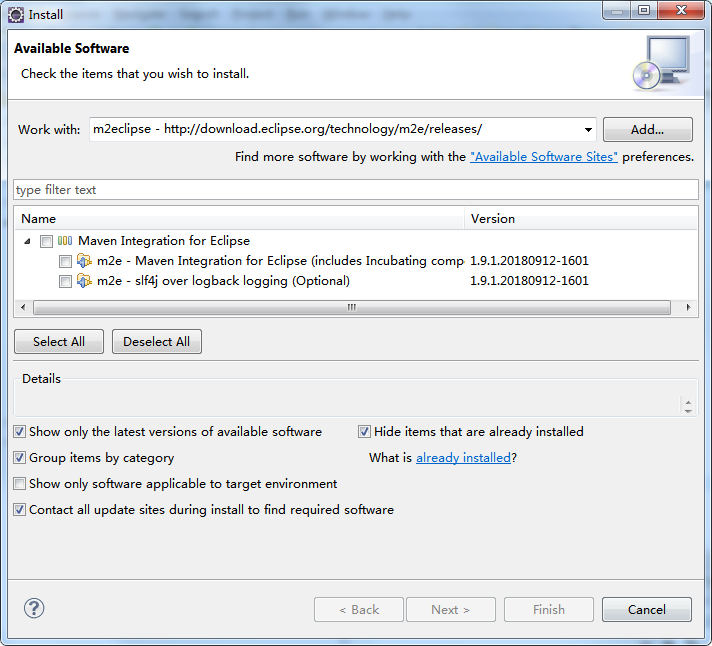
1）m2eclipse安装

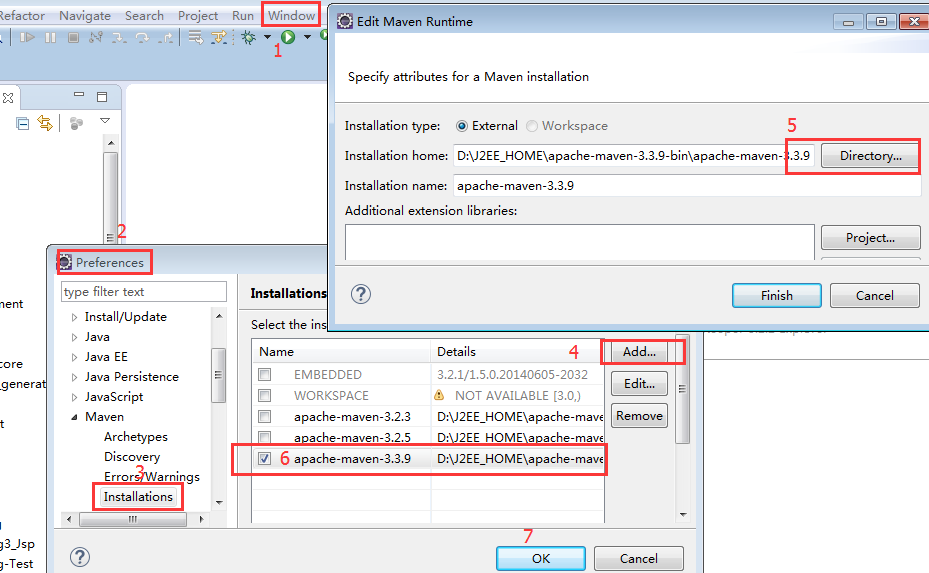
有的eclipse版本已经集成了maven插件，例如eclipse-jee-kepler-SR2-win32-x86\_64.zip；

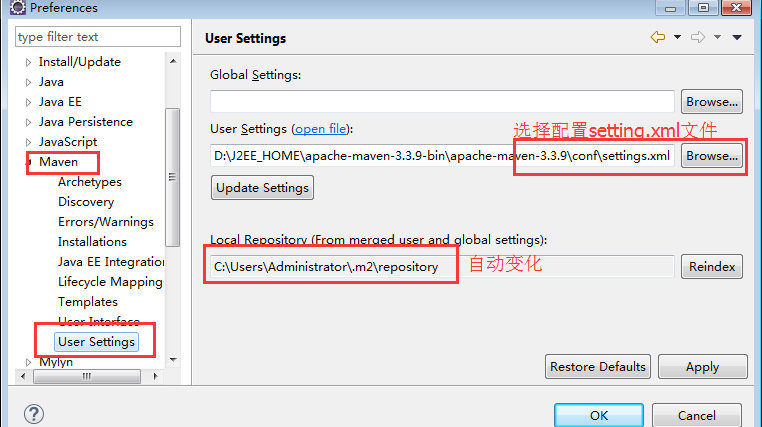
如果eclipse没有集成maven插件，需要手动安装。

1.在线安装

地址：<http://download.eclipse.org/technology/m2e/releases/>







下载插件包安装...

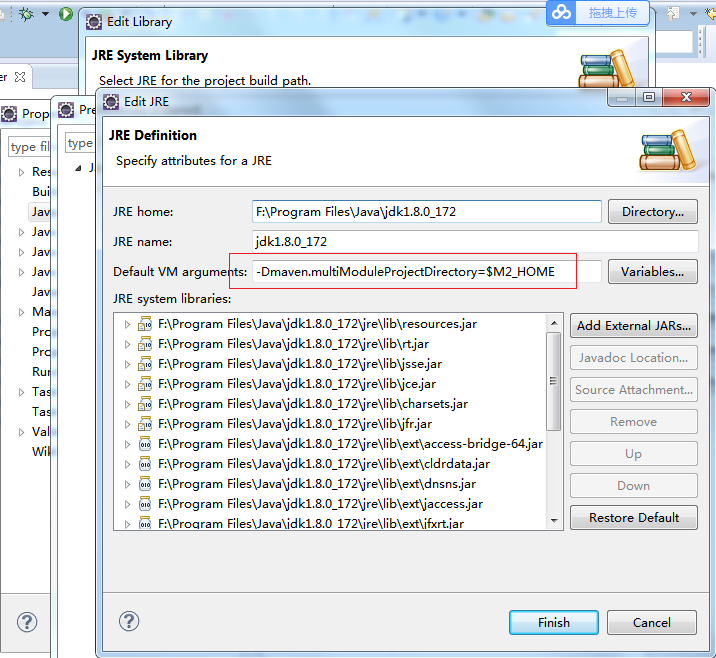
2）m2eclipse使用

当我们在测试的时候，报下面错误

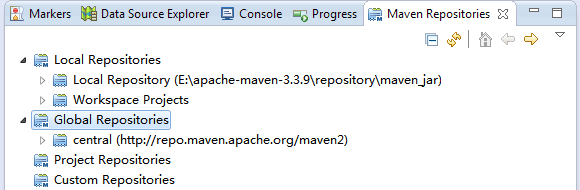
-Dmaven.multiModuleProjectDirectory system property is not set. Check $M2\_HOME environment variable and mvn script match.

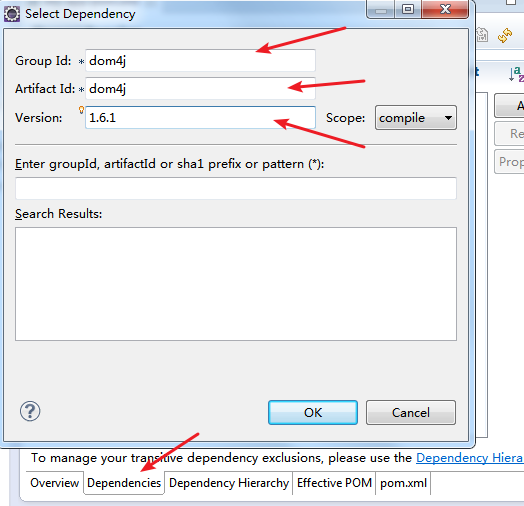
解决方法：

-Dmaven.multiModuleProjectDirectory=$M2\_HOME



3）m2eclipse仓库视图





## 第5节 Maven插件

1）部署

2）测试

3）编译

4）打包

5）测试报告

## 第6节 Nexus私服

1）nexus安装

**Bundle方式安装**

* 下载后的文件：nexus-2.3.1-01-bundle.zip

安装：直接解压到某个目录即可解压后，会有两个目录：

nexus-2.3.1-01 运行所需要的文件

sonatype-work ：私服的默认仓库，配置文件，日志文件，仓库文件

* 将bin目录添加到windows系统环境变量中
* 配置java文件的路径

${NEXUS\_HOME}\bin\jsw\conf\wrapper.conf文件

修改wrapper.java.command=java为你的java.exe文件的路径，并去掉#注释

|  |
| --- |
| # Java Application  wrapper.java.command=F:\Program Files\Java\jdk1.7.0\_17\bin\java |

* 安装nexus服务，并启动nexus

|  |
| --- |
| C:\Users\BYF>nexus install  wrapper | nexus installed.  C:\Users\BYF>nexus start  wrapper | Starting the nexus service...  wrapper | Waiting to start...  wrapper | Waiting to start...  wrapper | Waiting to start...  wrapper | Waiting to start...  wrapper | Waiting to start...  wrapper | nexus started. |

例如：wrapper.java.command=${Your\_Java\_Home}\jdk1.7\bin\java

注意：执行nexus start时，报错${NEXUS\_HOME}\logs\wrapper.log

|  |
| --- |
| jvm 1 | 2018-12-16 22:22:45 INFO [er\_start\_runner] - org.sonatype.nexus.bootstrap.jsw.JswLauncher - Current directory: G:\eclipse\nexus-2.3.1-01-bundle\nexus-2.3.1-01  jvm 1 | Error in WrapperListener.start callback. java.lang.StackOverflowError |

把jdk版本换成1.7.(换jdk方式1：改环境变量；方式2：修改nexus/bin/jsw/conf/wrapper.conf 第15行 wrapper.java.command=java 改为 wrapper.java.command=/jdk路径/bin/java )

* 登录nexus

地址：http://localhost:8081/nexus

默认用户名密码 admin/admin123

2）nexus分类

3）nexus设置

4）仓库设置

5）nexus权限管理

6）仓库

## 第7节 JUnit用例覆盖率插件