Java 核心技术(进阶)

第一章 Maven

第二节 Maven基础概念和实战

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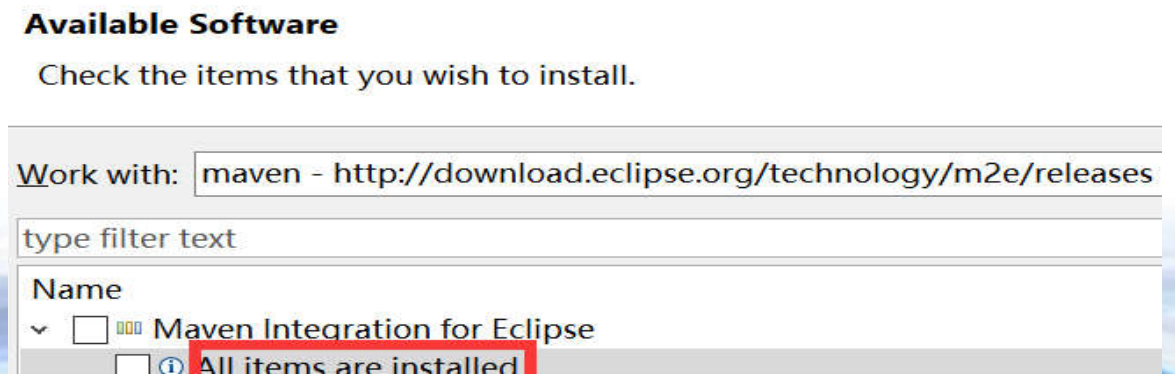
概要

- Maven安装
- Maven基础概念
- Maven实战(面向开发配置)

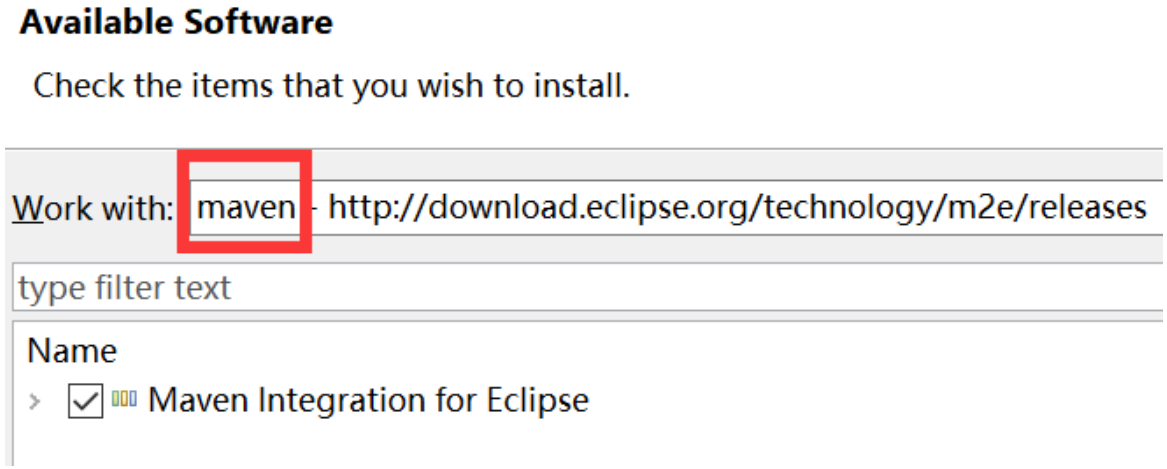
检查和安装Maven(1)

- 最新版本的Eclipse 自动集成Maven
- 检查是否正确安装Maven
  - File菜单->New->Other，在弹出窗口中查找是否有Maven项目
  - Window菜单->Preferences, 在弹出窗口左侧是否有Maven子菜单
  - Help菜单->Install New Software, 在Work with窗口中输入Maven，下面显示出All items are installed



检查和安装Maven(2)

- 在旧版本的Eclipse中安装Maven插件
  - Help菜单->Install New Software, 在Work with窗口中输入maven，打勾下面的软件，并一路Next。

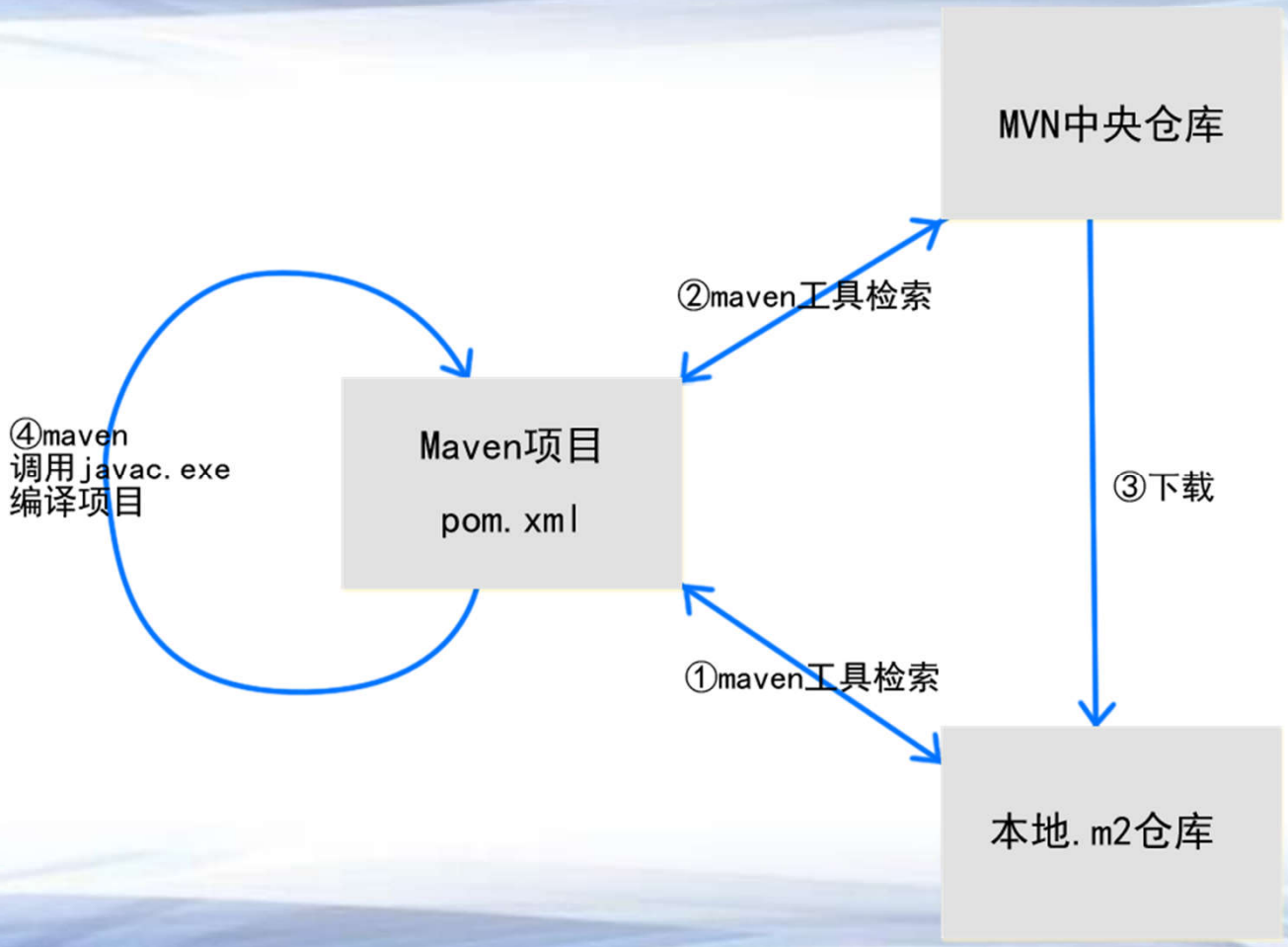


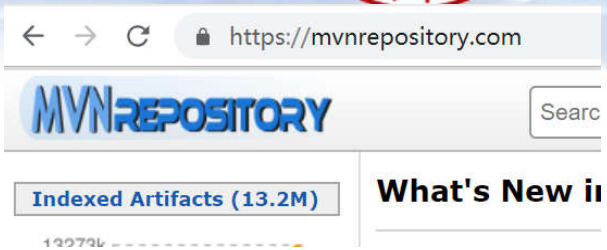
  - 或者前往 https://www.eclipse.org/m2e/ 进行下载

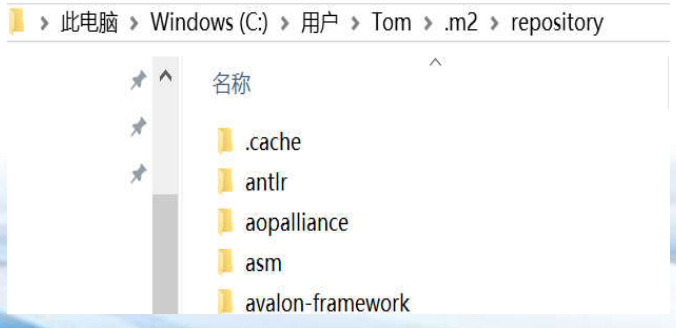
Maven基础概念

- Maven开发流程
  - 新建Maven项目
  - 在中央仓库查找第三方jar的依赖文本
  - 拷贝依赖文本至项目的pom.xml
  - 执行maven build，编译/构建整个项目
- Maven是一个软件，http://maven.apache.org/ 下载
- Maven也有一个中心仓库，https://mvnrepository.com/。
  - 包含很多第三方软件。可以有很多第三方的Maven仓库。
- Maven是一个构建工具，自动下载中心仓库的jar文件，存在本地进行管理，编译、测试、运行、和打包发布Java项目。

Maven编译工作流程







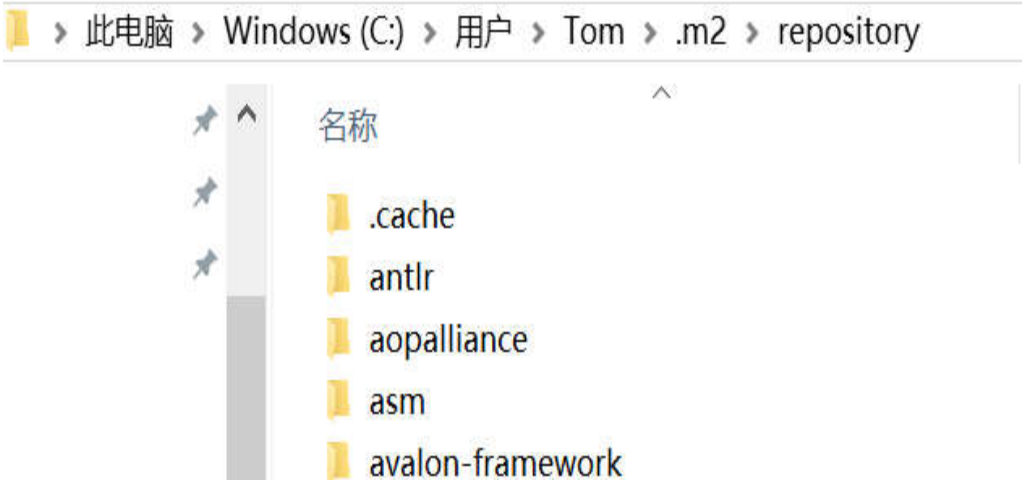
POM(Project Object Model)

- XML格式
- 包含了项目信息、依赖信息、构建信息
- 构件信息(artifact)
  - groupId：组织
  - artifactId：产品名称
  - version：版本

```
<dependency>
    <groupId>org.apache.commons</groupId>
    <artifactId>commons-math3</artifactId>
    <version>3.6.1</version>
</dependency>
```

Maven repository(仓库)

- Maven仓库存放和管理各种构件
  - 本地仓库(本地用户的.m2文件夹)
  - 远程仓库
    - 中央仓库
    - 阿里云仓库
    - 谷歌仓库
    - …

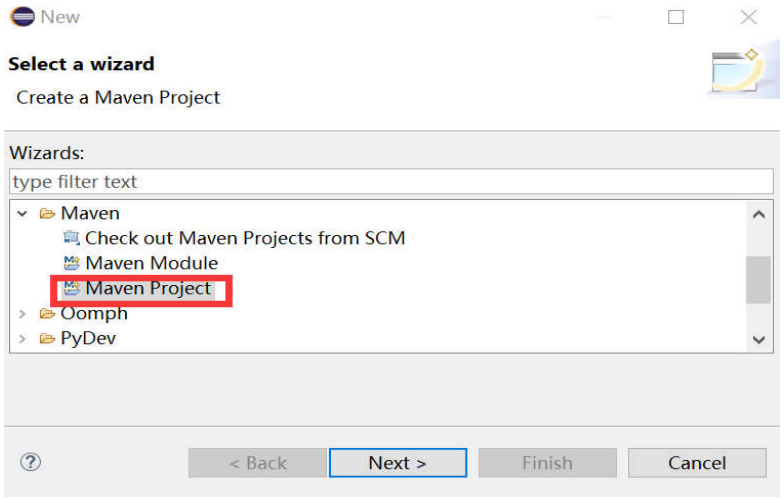


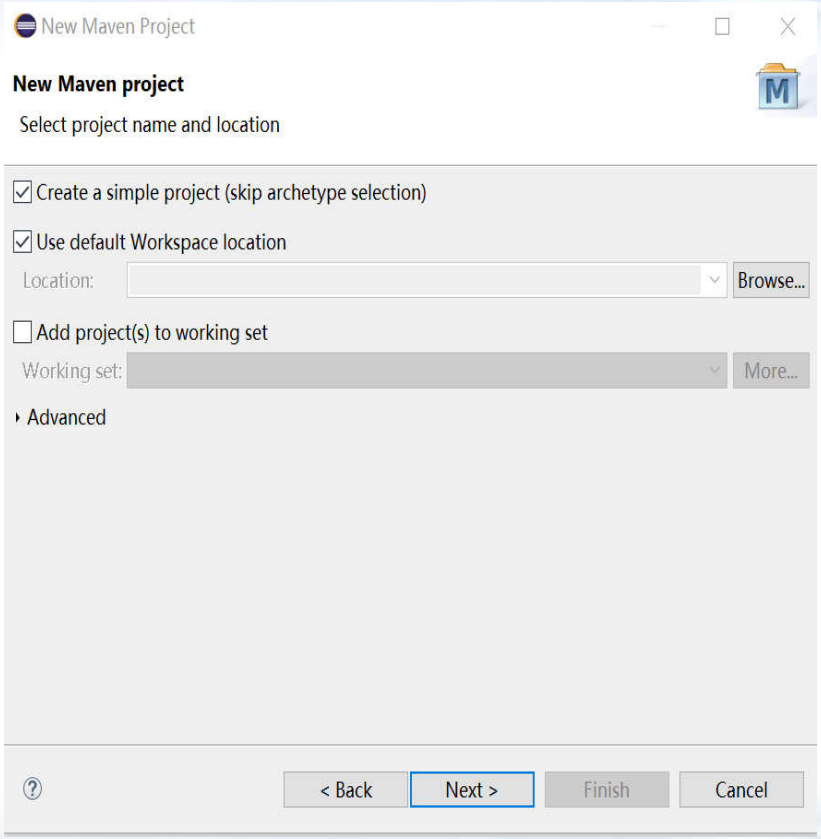
Maven项目的目录结构

- 基本目录结构
  - src
    - main
      - java/ 存放java文件
      - resources/ 存放程序资源文件
    - test/
      - java/ 存放测试程序
      - resources/ 存放测试程序资源文件
  - pom.xml

创建Maven项目(1)

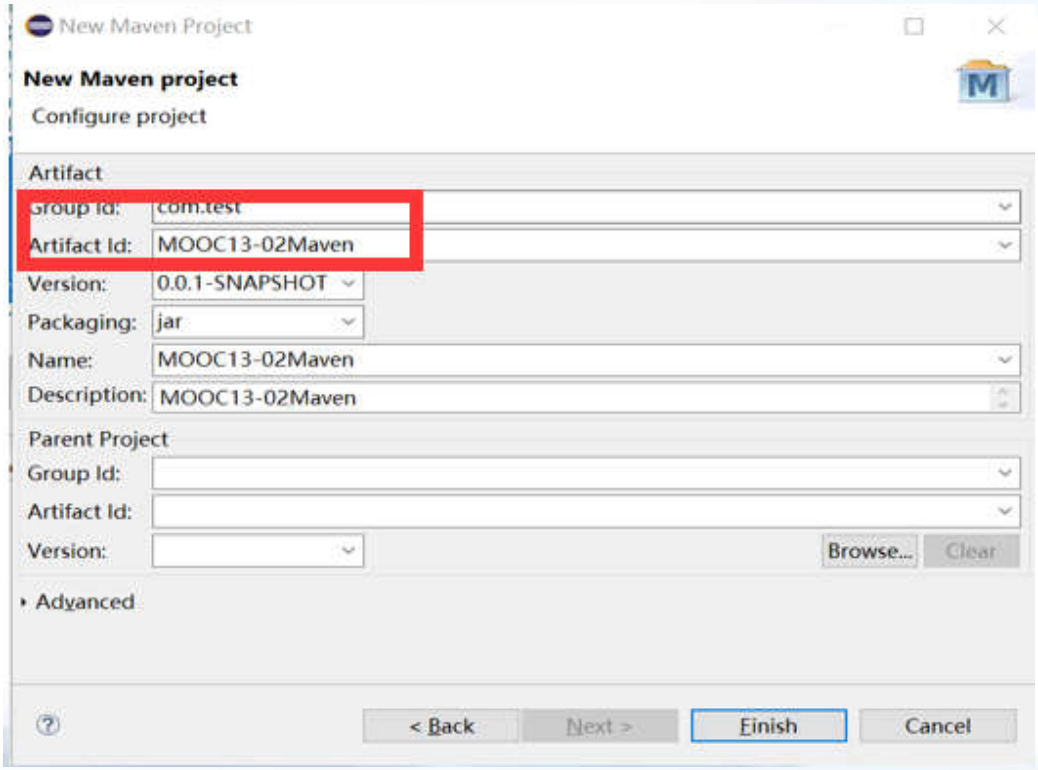
- 直接创建Maven Project





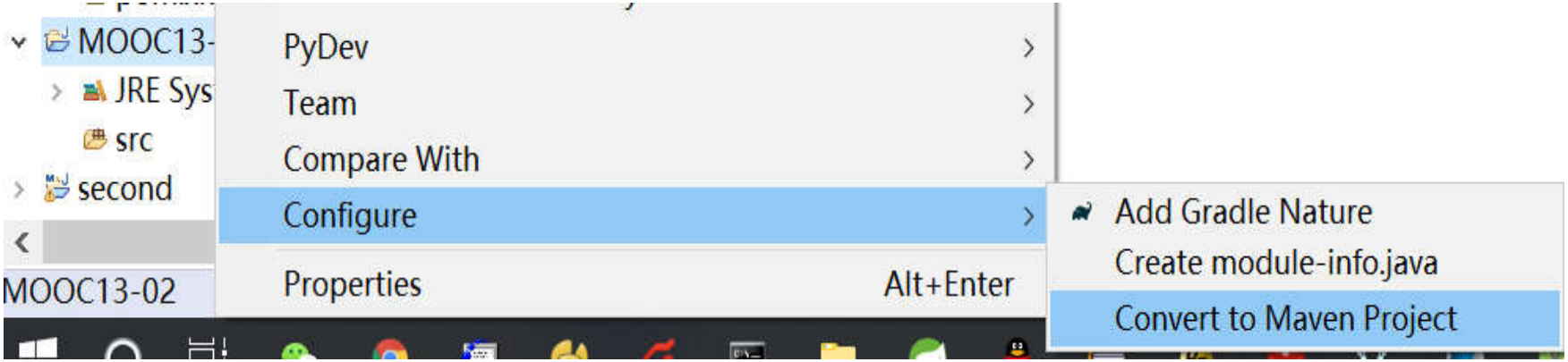
创建Maven项目(2)

- 设置信息
  - groupId：组织名
  - artifactId：作品(项目)名
  - Name：别名(optional)
  - Description: 描述(optional)



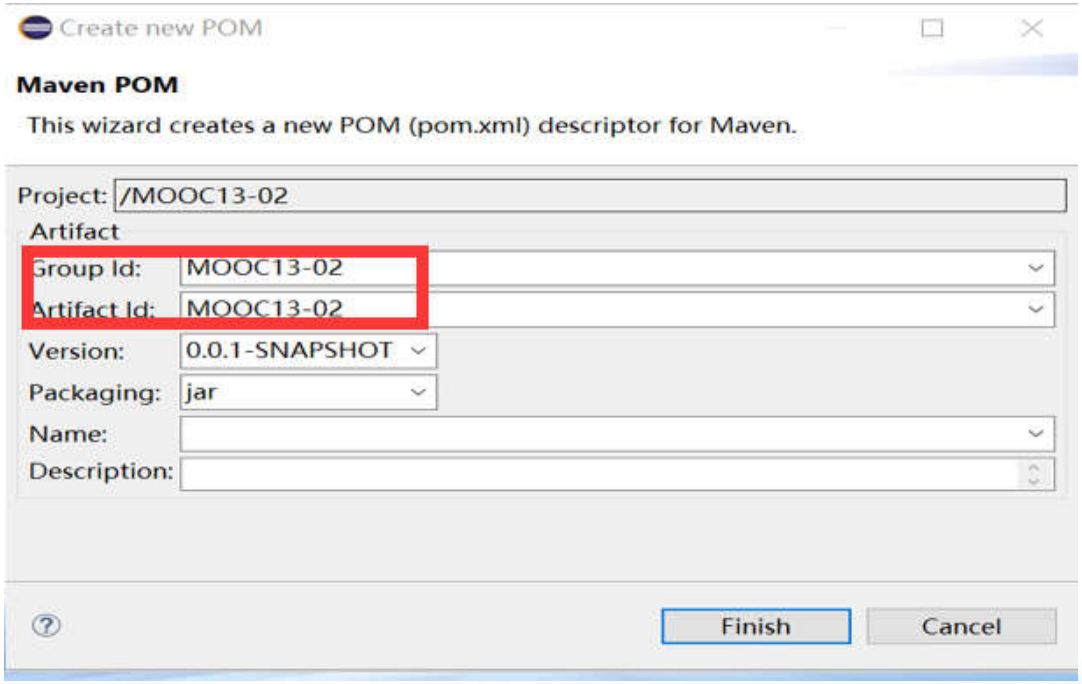
创建Maven项目(3)

- 创建普通Java Project，再转化为Maven项目，修改pom.xml



创建Maven项目(4)

- 创建普通Java Project，再转化为Maven项目，修改pom.xml



修改pom.xml，添加jar依赖

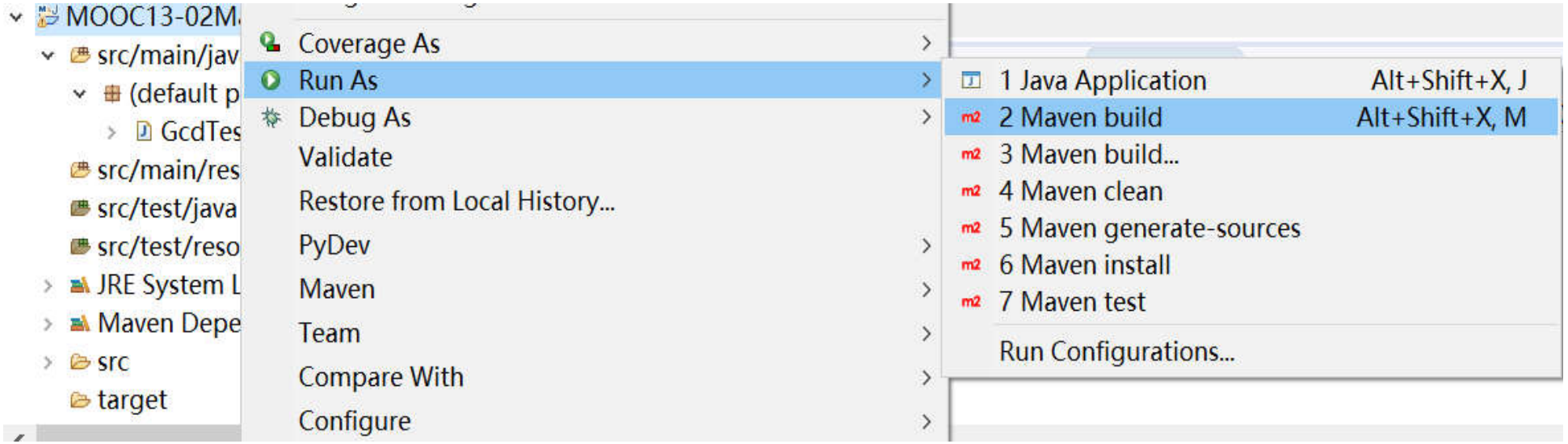

```xml
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.test</groupId>
  <artifactId>MOOC13-02Maven</artifactId>
  <version>0.0.1-SNAPSHOT</version>

  <dependencies>
    <dependency>
        <groupId>org.apache.commons</groupId>
        <artifactId>commons-math3</artifactId>
        <version>3.6.1</version>
    </dependency>
  </dependencies>

</project>
```

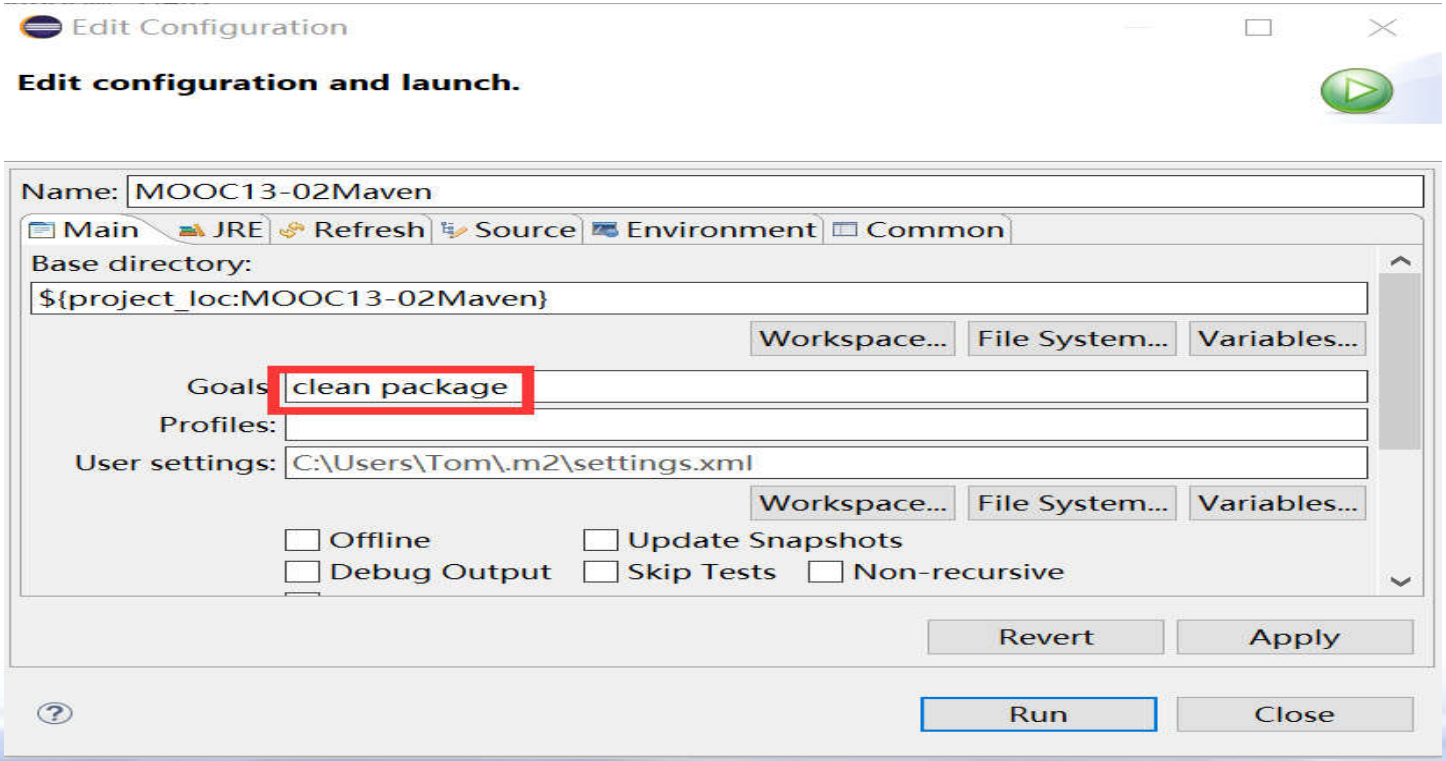
Maven 编译(1)

- 右键项目，Run As ->Maven build



Maven 编译(2)

- 配置Maven build的内容(第一次配置，后续不用配置)



Maven 编译(3)

- 编译成功，控制台输出Build Success

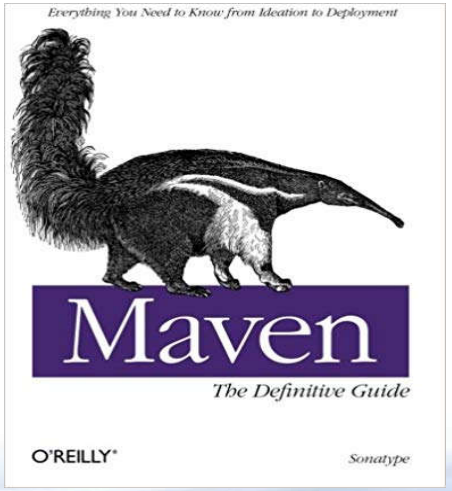
```
[INFO] Copying 0 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ MOOC13-02Maven ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding GBK, i.e. build is platform
[INFO] Compiling 1 source file to E:\java\source\MOOC13-02Maven\target\classes
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ MOOC13-02Maven
[WARNING] Using platform encoding (GBK actually) to copy filtered resources, i.e. build is pl
[INFO] Copying 0 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ MOOC13-02Maven ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ MOOC13-02Maven ---
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ MOOC13-02Maven ---
[INFO] Building jar: E:\java\source\MOOC13-02Maven\target\MOOC13-02Maven-0.0.1-SNAPSHOT.jar
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 1.413 s
[INFO] Finished at: 2018-12-13T20:21:39+08:00
[INFO] ------------------------------------------------------------------------
```

Maven构建生命周期

- 清理
- 编译
- 测试
- 打包
- 安装
- 部署

进一步研究

- 图书
  - 《Maven实战》许晓斌著，机械工业出版社。
  - 《Maven: The definitive Guide》，Sonatype Company， Oreilly.
- 同类工具
  - Gradle
  - Ivy
  - Buildr
  - Ant



Maven总结

- 总结
  - 理解Maven基础概念，如构件、仓库等
  - 理解Maven在项目中的作用
  - 掌握Maven项目创建、编译和运行

代码(1) GcdTest.java


```java
import org.apache.commons.math3.util. ArithmeticUtils;

public class GcdTest {

    public static void main(String[] args) {
        //计算两个整数的公约数
        int a = ArithmeticUtils.gcd(361, 285);
        System.out.println(a);
    }
}
```

代码(2) ChineseText.java


```java
import com.github.houbb.opencc4j.util.ZhConverterUtil;

public class ChineseText {

    public static void main(String[] args) {
        String original = "生命在于运动";

        //简体中文转化为繁体中文
        String result = ZhConverterUtil.convertToTraditional(original);

        System.out.println(result);

    }

}
```

代码(3) pom.xml


```
<dependencies>
  <dependency>
      <groupId>org.apache.commons</groupId>
      <artifactId>commons-math3</artifactId>
      <version>3.6.1</version>
  </dependency>

  <dependency>
      <groupId>com.github.houbb</groupId>
      <artifactId>opencc4j</artifactId>
      <version>1.0.2</version>
  </dependency>
</dependencies>
```

谢 谢！