

## UNIT 3

# Booting Spring Boot

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## Spring Boot Quick Start



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# Booting Spring Boot

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## Spring Boot Quick Start



1. Create a new Spring Boot project

2. Add the Spring Boot starter

3. Run the application



## In Unit 3

- Starting a Spring Boot App
  - Spring Initializr
  - Spring Boot CLI
  - STS IDE
- Configuration

Spring Initializr

start.spring.io

Search

SPRING INITIALIZR bootstrap your application now

Generate a 

Maven Project

 with Spring Boot 

1.4.2

### Project Metadata

Artifact coordinates

Group

com.example

Artifact

demo

### Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

Web, Security, JPA, Actuator, Devtools...

Selected Dependencies

Generate Project

Don't know what to look for? Want more options? [Switch to the full version.](#)

start.spring.io is powered by [Spring Initializr](#) and [Pivotal Web Services](#)



Spring Initializr

start.spring.io

Search

SPRING INITIALIZR bootstrap your application now

Generate a 

Maven Project

 with Spring Boot 

1.4.2

### Project Metadata

Artifact coordinates

Group

io.javabrain.springbootquickstart

Artifact

course-api

### Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

Web, Security, JPA, Actuator, Devtools...

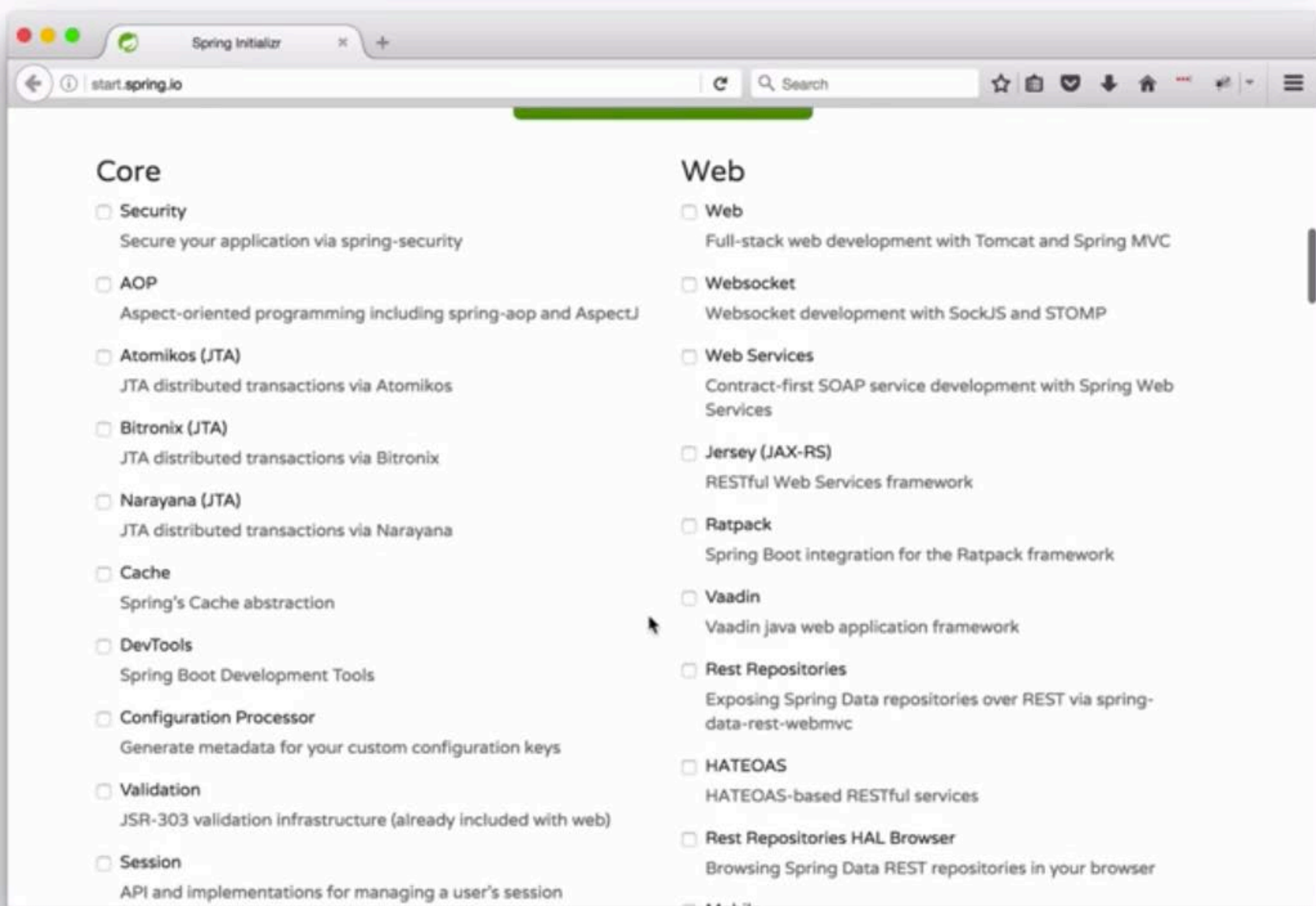
Selected Dependencies

Generate Project

Don't know what to look for? Want more options? [Switch to the full version.](#)

start.spring.io is powered by Spring Initializr and Pivotal Web Services

start.spring.io/#



The screenshot shows a web browser window with the address bar displaying 'start.spring.io'. The page content is organized into two main columns: 'Core' and 'Web'. Each column contains a list of project types, each with a checkbox and a brief description. The 'Core' column lists Security, AOP, Atomikos (JTA), Bitronix (JTA), Narayana (JTA), Cache, DevTools, Configuration Processor, Validation, and Session. The 'Web' column lists Web, Websocket, Web Services, Jersey (JAX-RS), Ratpack, Vaadin, Rest Repositories, HATEOAS, Rest Repositories HAL Browser, and Mobile. A mouse cursor is visible over the 'Vaadin' option in the 'Web' column.

## Core

- ☐ **Security**  
Secure your application via spring-security
- ☐ **AOP**  
Aspect-oriented programming including spring-aop and AspectJ
- ☐ **Atomikos (JTA)**  
JTA distributed transactions via Atomikos
- ☐ **Bitronix (JTA)**  
JTA distributed transactions via Bitronix
- ☐ **Narayana (JTA)**  
JTA distributed transactions via Narayana
- ☐ **Cache**  
Spring's Cache abstraction
- ☐ **DevTools**  
Spring Boot Development Tools
- ☐ **Configuration Processor**  
Generate metadata for your custom configuration keys
- ☐ **Validation**  
JSR-303 validation infrastructure (already included with web)
- ☐ **Session**  
API and implementations for managing a user's session

## Web

- ☐ **Web**  
Full-stack web development with Tomcat and Spring MVC
- ☐ **Websocket**  
Websocket development with SockJS and STOMP
- ☐ **Web Services**  
Contract-first SOAP service development with Spring Web Services
- ☐ **Jersey (JAX-RS)**  
RESTful Web Services framework
- ☐ **Ratpack**  
Spring Boot integration for the Ratpack framework
- ☐ **Vaadin**  
Vaadin java web application framework
- ☐ **Rest Repositories**  
Exposing Spring Data repositories over REST via spring-data-rest-webmvc
- ☐ **HATEOAS**  
HATEOAS-based RESTful services
- ☐ **Rest Repositories HAL Browser**  
Browsing Spring Data REST repositories in your browser
- ☐ **Mobile**

Spring Initializr

start.spring.io

Generate a Maven Project with Spring Boot 1.4.2

## Project Metadata

Artifact coordinates

Group

io.javabrain.springbootquickstart

Artifact

course-api

Name

course-api

Description

Java Brains Course API

Package Name

io.javabrain.springbootquickstart

Packaging

Jar

Java Version

1.8

Language

## Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

Web, Security, JPA, Actuator, Devtools...

Selected Dependencies

Web

Spring Initializr

start.spring.io

Search

Artifact

course-api

Name

course-api

Description

Java Brains Course API

Package Name

io.javabrain.springbootquickstart

Packaging

Jar

Java Version

1.8

Language

Java

Too many options? [Switch back to the simple version.](#)

Generated Project

Selected Dependencies

Web

Core

Web



The screenshot shows the Spring Initializr web application in a browser window. The address bar shows 'start.spring.io'. The page has two tabs: 'Artifact' and 'Selected Dependencies', with 'Selected Dependencies' being the active tab. The configuration fields are as follows:

- Artifact:** course-api
- Name:** course-api
- Description:** Java Brains Course API
- Package Name:** io.javabrain.springbootquickstart
- Packaging:** Jar
- Java Version:** 1.8
- Language:** Java

Below the configuration fields, there is a link: "Too many options? [Switch back to the simple version.](#)"

A modal dialog box titled "Opening course-api.zip" is overlaid on the page. It contains the following text:

You have chosen to open:

- course-api.zip
- which is: ZIP archive (51.4 KB)
- from: <http://start.spring.io>

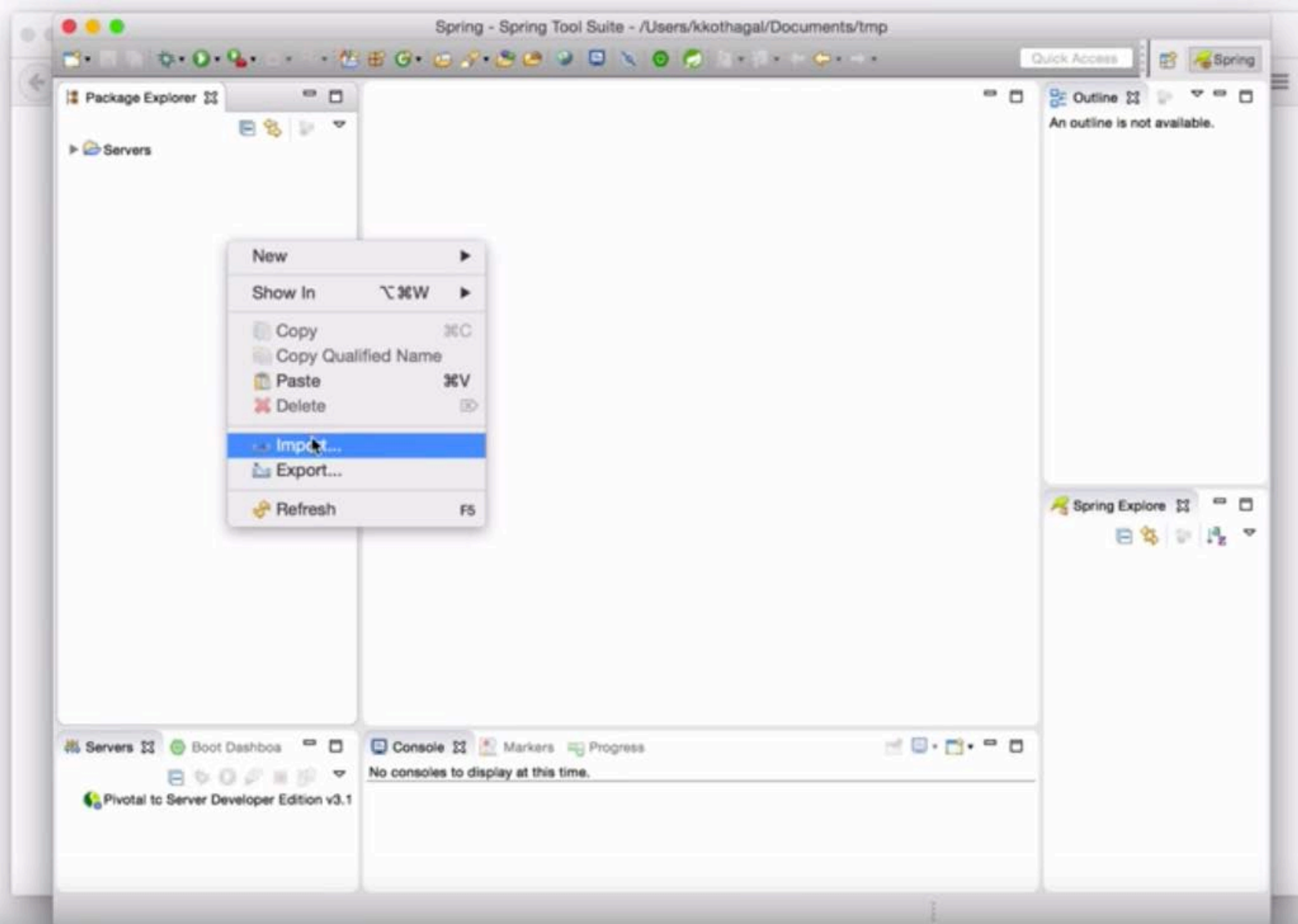
What should Firefox do with this file?

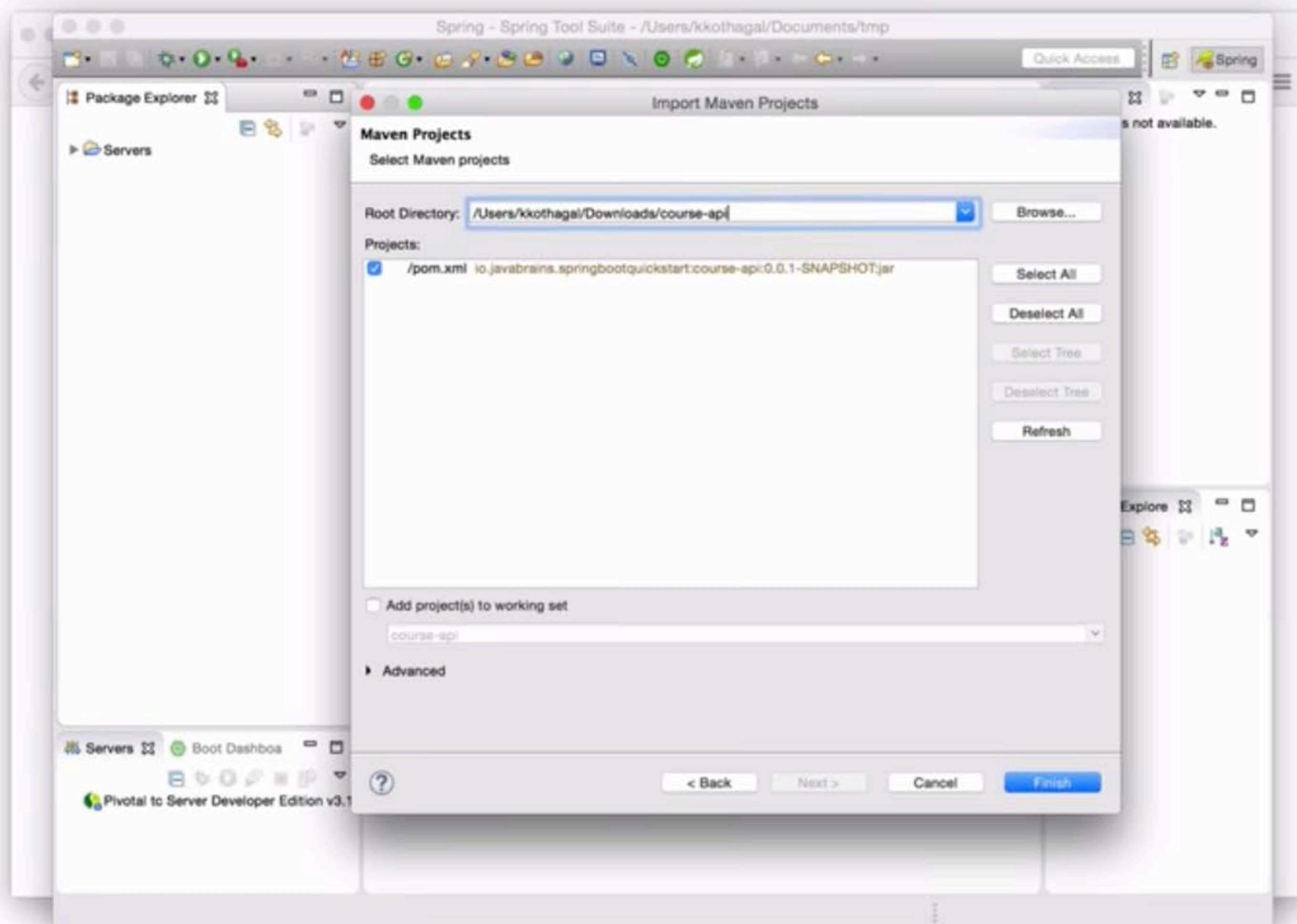
- ☒ Open with Archive Utility (default)
- ☐ Save File
- ☐ Do this automatically for files like this from now on.

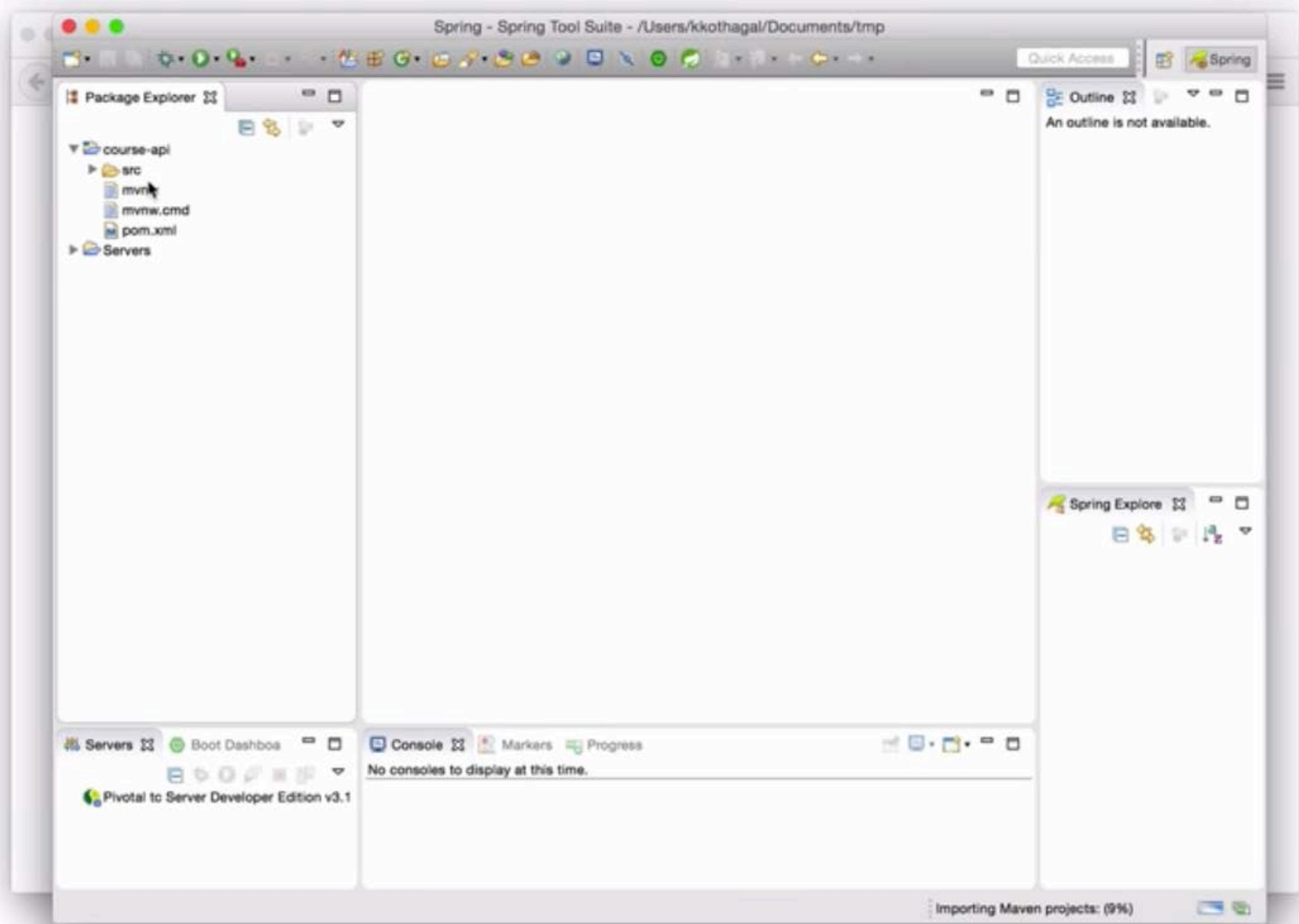
Buttons: Cancel, OK

At the bottom of the page, there is a green button labeled "Generate Project" with a close, add, and refresh icon.

At the bottom of the page, there are two tabs: "Core" and "Web".









Spring - course-api/pom.xml - Spring Tool Suite - /Users/kkothagal/Documents/tmp

Package Explorer

- course-api [boot]
  - src/main/java
  - src/main/resources
  - src/test/java
  - JRE System Library [JavaSE-1.8]
  - Maven Dependencies
  - src
    - target
    - mvnw
    - mvnw.cmd
    - pom.xml
  - Servers

course-api/pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<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>io.javabrains.springbootquickstart</groupId>
  <artifactId>course-api</artifactId>
  <version>0.0.1-SNAPSHOT</version>
  <packaging>jar</packaging>

  <name>course-api</name>
  <description>Java Brains Course API</description>

  <parent>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-parent</artifactId>
    <version>1.4.2.RELEASE</version>
    <relativePath/> <!-- lookup parent from repository -->
  </parent>

  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    <java.version>1.8</java.version>
  </properties>

  <dependencies>
    <dependency>
      <groupId>org.springframework.boot</groupId>
      <artifactId>spring-boot-starter-web</artifactId>
    </dependency>
  </dependencies>
</project>
```

Outline

- ?xml
- <project xmlns=http://maven.apache.org/POM/4.0.0>
- <modelVersion 4.0.0>
- <groupId io.javabrains.springbootquickstart>
- <artifactId course-api>
- <version 0.0.1-SNAPSHOT>
- <packaging jar>
- <name course-api>
- <description Java Brains Course API>
- parent org.springframework.boot
- <groupId org.springframework.boot>
- <artifactId spring-boot-starter-parent>
- <version 1.4.2.RELEASE>
- <relativePath/>
- <!-- lookup parent from repository -->
- properties
- dependencies

Spring Explore

- course-api

Servers

Boot Dashboard

Pivotal to Server Developer Edition v3.1

Console

Markers

Progress

No consoles to display at this time.

Overview Dependencies Dependency Hierarchy Effective POM pom.xml

project/parent/groupid/#text

Writable Smart Insert 15 : 28

course-api/pom.xml

```
<name>course-api</name>
<description>Java Brains Course API</description>

<parent>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-parent</artifactId>
  <version>1.4.2.RELEASE</version>
  <relativePath/> <!-- lookup parent from repository -->
</parent>

<properties>
  <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
  <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
  <java.version>1.8</java.version>
</properties>

<dependencies>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-web</artifactId>
  </dependency>

  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-test</artifactId>
    <scope>test</scope>
  </dependency>
</dependencies>

<build>
  <plugins>
    <plugin>
      <groupId>org.springframework.boot</groupId>
      <artifactId>spring-boot-maven-plugin</artifactId>
    </plugin>
  </plugins>
</build>

</project>
```



Spring - course-api/src/main/java/io/javabrain/springbootquickstart/CourseApiApplication.java - Spring Tool Suite - /Users/kkothagal/Documents/tmp

Package Explorer

- course-api [boot]
  - src/main/java
    - io.javabrain.springbootquickstart
      - CourseApiApplication.java
    - src/main/resources
    - src/test/java
    - JRE System Library [JavaSE-1.8]
    - Maven Dependencies
    - src
    - target
    - mvnw
    - mvnw.cmd
    - pom.xml
  - Servers

course-api/pom.xml

CourseApiApplication.java

```
package io.javabrain.springbootquickstart;

import org.springframework.boot.SpringApplication;

@SpringBootApplication
public class CourseApiApplication {

    public static void main(String[] args) {
        SpringApplication.run(CourseApiApplication.class, args);
    }
}
```

Outline

- io.javabrain.springbootqu
- CourseApiApplication
  - main(String[] : void

Spring Explore

- course-api

Servers

Boot Dashboard

Pivotal to Server Developer Edition v3.1

Console

Markers

Progress

No consoles to display at this time.

Writable Smart Insert 9:16

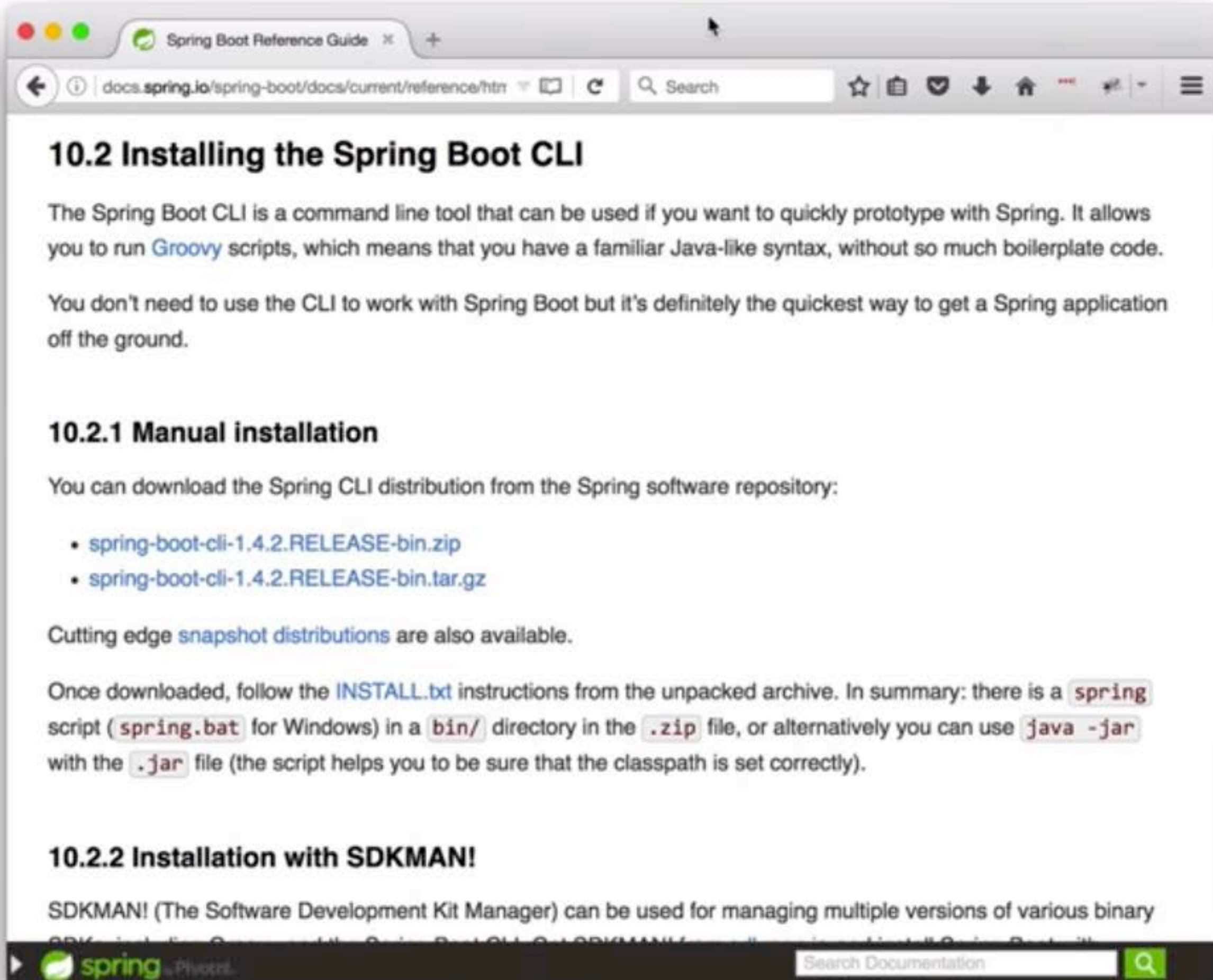
# Spring Initializr

`http://start.spring.io`





# Spring Boot CLI



Spring Boot Reference Guide

docs.spring.io/spring-boot/docs/current/reference/html

## 10.2 Installing the Spring Boot CLI

The Spring Boot CLI is a command line tool that can be used if you want to quickly prototype with Spring. It allows you to run [Groovy](#) scripts, which means that you have a familiar Java-like syntax, without so much boilerplate code.

You don't need to use the CLI to work with Spring Boot but it's definitely the quickest way to get a Spring application off the ground.

### 10.2.1 Manual installation

You can download the Spring CLI distribution from the Spring software repository:

- [spring-boot-cli-1.4.2.RELEASE-bin.zip](#)
- [spring-boot-cli-1.4.2.RELEASE-bin.tar.gz](#)

Cutting edge [snapshot distributions](#) are also available.

Once downloaded, follow the [INSTALL.txt](#) instructions from the unpacked archive. In summary: there is a `spring` script (`spring.bat` for Windows) in a `bin/` directory in the `.zip` file, or alternatively you can use `java -jar` with the `.jar` file (the script helps you to be sure that the classpath is set correctly).

### 10.2.2 Installation with SDKMAN!

SDKMAN! (The Software Development Kit Manager) can be used for managing multiple versions of various binary

spring

Search Documentation

Spring Boot Reference Guide

docs.spring.io/spring-boot/docs/current/reference/html

Search

=====

- + - local version
- \* - installed
- > - currently in use


=====

### 10.2.3 OSX Homebrew installation

If you are on a Mac and using [Homebrew](#), all you need to do to install the Spring Boot CLI is:

```
$ brew tap pivotal/tap
$ brew install springboot
```

Homebrew will install `spring` to `/usr/local/bin`.




If you don't see the formula, your installation of brew might be out-of-date. Just execute `brew update` and try again.

### 10.2.4 MacPorts installation

If you are on a Mac and using [MacPorts](#), all you need to do to install the Spring Boot CLI is:

```
$ sudo port install spring-boot-cli
```

 **spring** Pivotal

Search Documentation



## New Spring Starter Project



Name

demo

☒ Use default location

Location

/Users/kkothagal/Documents/springboot/demo

Browse

Type:

Maven Project

Packaging:

Jar

Java Version:

1.8

Language:

Java

Group

com.example

Artifact

demo

Version

0.0.1-SNAPSHOT

Description

Demo project for Spring Boot

Package

com.example

Working sets

☐ Add project to working sets

Working sets:



Select...



&lt; Back

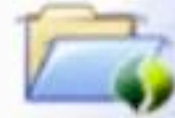
Next &gt;

Cancel

Finish



## New Spring Starter Project



Name

☒ Use default location

Location

Type:

Packaging:

Java Version:

Language:

Group

Artifact

Version

Description

Package

Working sets

☐ Add project to working sets

Working sets:



< Back

Next >

Cancel

Finish

## New Spring Starter Project



- ▶ Cloud AWS
- ▶ Cloud Circuit Breaker
- ▶ Cloud Cluster
- ▶ Cloud Config
- ▶ Cloud Contract
- ▶ Cloud Core
- ▶ Cloud Data Flow
- ▶ Cloud Discovery
- ▶ Cloud Messaging
- ▶ Cloud Routing
- ▶ Cloud Tracing
- ▶ Core
- ▶ Experimental
- ▶ I/O
- ▶ NoSQL
- ▶ Ops
- ▶ Pivotal Cloud Foundry
- ▶ SQL
- ▶ Social
- ▶ Template Engines

## ▼ Web

- |   |  |                                       |  |                                  |
|---|--|---------------------------------------|--|----------------------------------|
| <input checked="" type="checkbox"/> Web | <input type="checkbox"/> Websocket         | <input type="checkbox"/> Web Services | <input type="checkbox"/> Jersey (JAX-RS)               | <input type="checkbox"/> Ratpack |
| <input type="checkbox"/> Vaadin         | <input type="checkbox"/> Rest Repositories | <input type="checkbox"/> HATEOAS      | <input type="checkbox"/> Rest Repositories HAL Browser | <input type="checkbox"/> Mobile  |
| <input type="checkbox"/> REST Docs      |  |                                       |  |                                  |



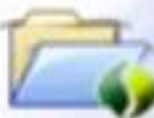
&lt; Back

Next &gt;

Cancel

Finish

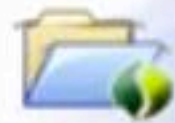
### New Spring Starter Project



- ▶ Cloud AWS
- ▶ Cloud Circuit Breaker
- ▶ Cloud Cluster
- ▶ Cloud Config
- ▶ Cloud Contract
- ▶ Cloud Core
- ▶ Cloud Data Flow
- ▶ Cloud Discovery
- ▶ Cloud Messaging
- ▶ Cloud Routing
- ▶ Cloud Tracing
- ▶ Core
- ▶ Experimental
- ▶ I/O
- ▶ NoSQL
- ▶ Ops
- ▶ Pivotal Cloud Foundry
- ▶ SQL
- ▶ Social
- ▶ Template Engines
- ▼ **Web**
  - ☒ Web
  - ☐ Vaadin
  - ☐ REST Docs
  - ☐ Websocket
  - ☐ Rest Repositories
  - ☐ Web Services
  - ☐ HATEOAS
  - ☐ Jersey (JAX-RS)
  - ☐ Rest Repositories HAL Browser
  - ☐ Ratpack
  - ☐ Mobile

? < Back Next > Cancel Finish

## New Spring Starter Project



## Site Info

Base Uri

<http://start.spring.io/starter.zip>

Full Uri

<http://start.spring.io/starter.zip?name=tmp&groupId=com.example&artifactId=demo&version=0.0.1-SNAPSHOT&description=Demo+project+for+Spring+Boot&packageName=com.example&type=maven-project&packaging=jar&javaVersion=1.8&language=java&bootVersion=1.4.2.RELEASE&dependencies=web>

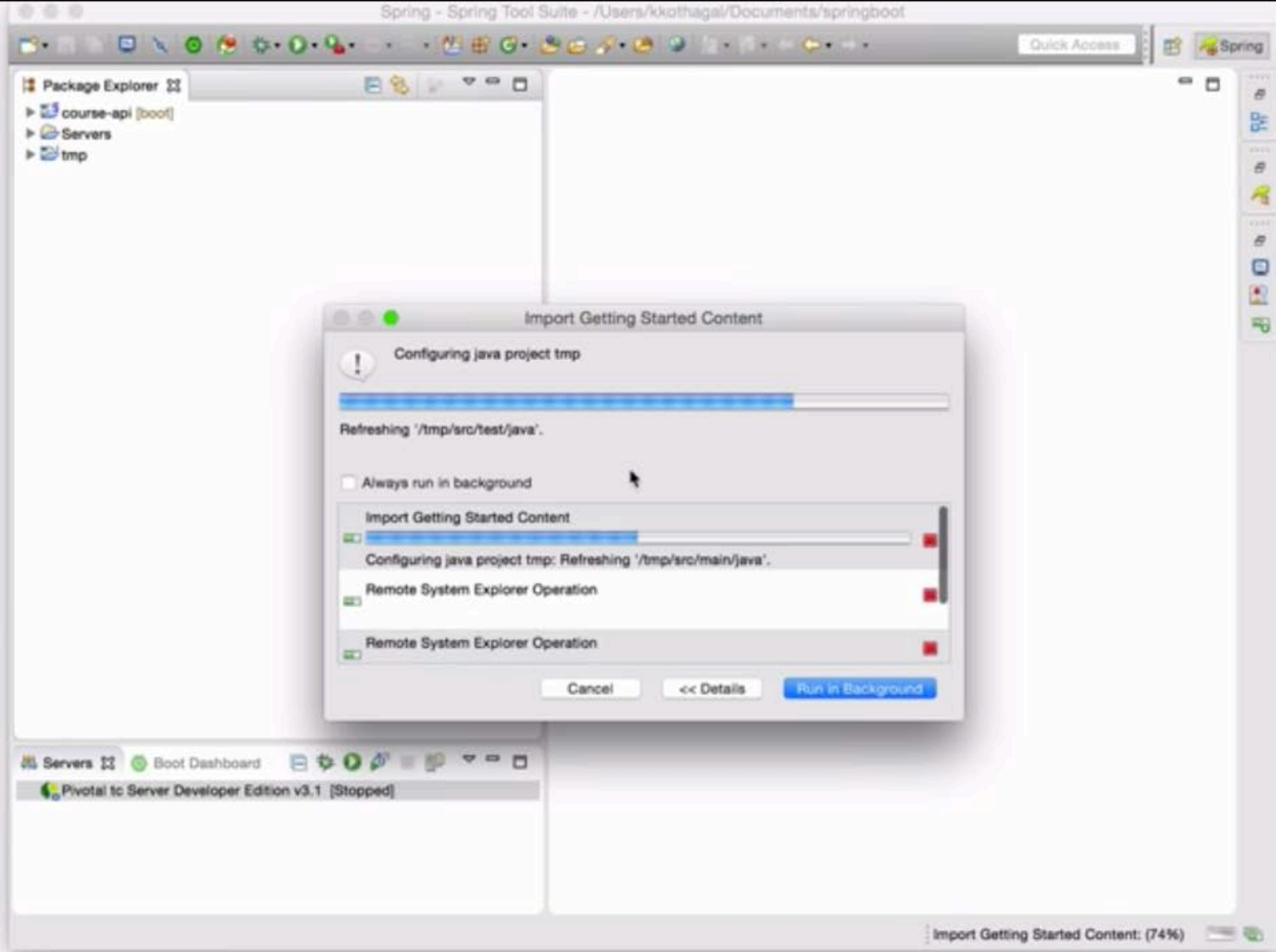
&lt; Back

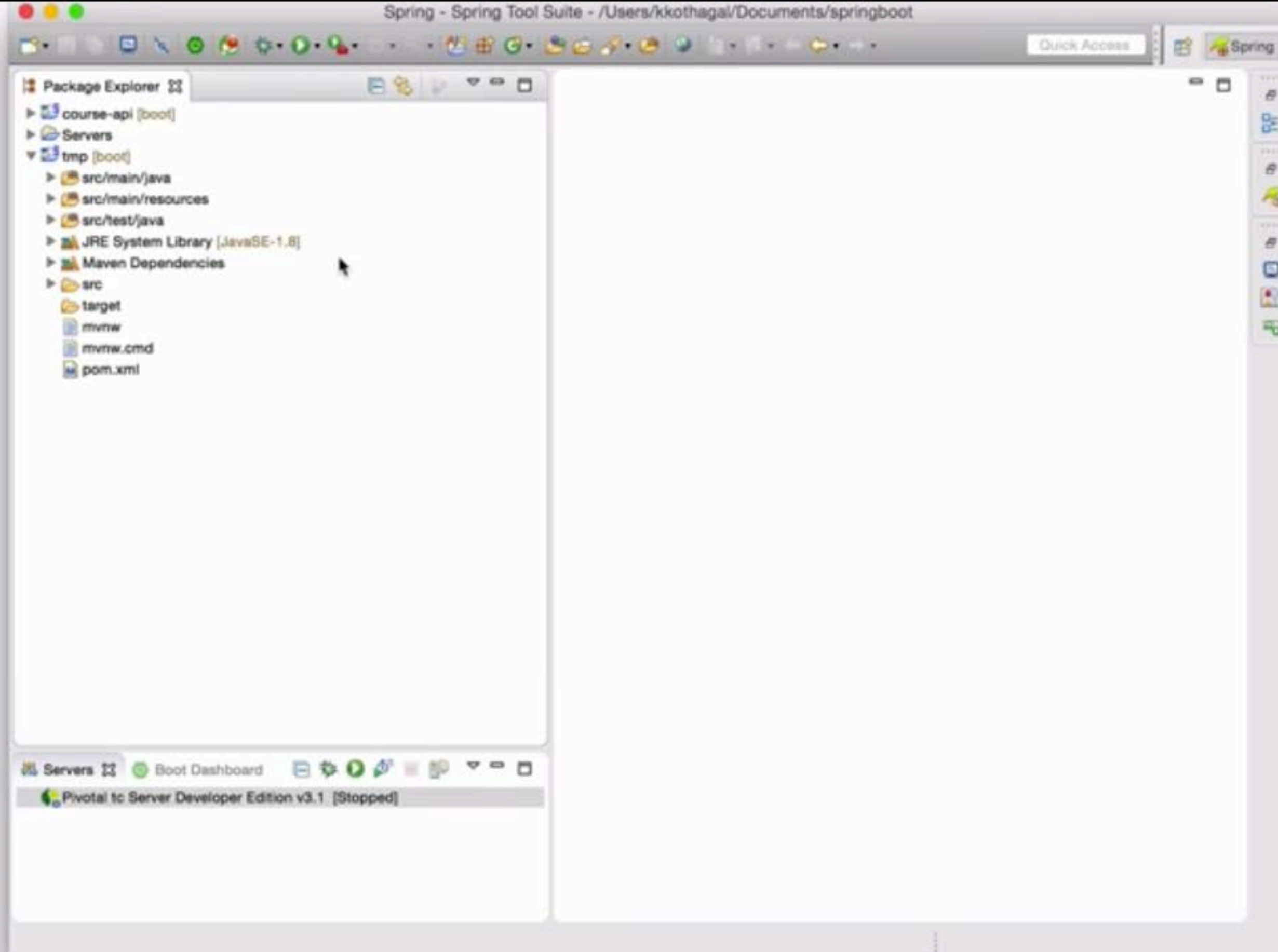
Next &gt;

Cancel

Finish







Spring - tmp/pom.xml - Spring Tool Suite - /Users/kkothagal/Documents/springboot

Quick Access Spring

Package Explorer

- course-api [boot]
- Servers
- tmp [boot]
  - src/main/java
  - src/main/resources
  - src/test/java
  - JRE System Library [JavaSE-1.8]
  - Maven Dependencies
  - src
  - target
  - mvnw
  - mvnw.cmd
  - pom.xml

tmp/pom.xml

```
<name>tmp</name>
<description>Demo project for Spring Boot</description>

<parent>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-parent</artifactId>
  <version>1.4.2.RELEASE</version>
  <relativePath/> <!-- lookup parent from repository -->
</parent>

<properties>
  <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
  <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
  <java.version>1.8</java.version>
</properties>

<dependencies>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-web</artifactId>
  </dependency>

  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-test</artifactId>
    <scope>test</scope>
  </dependency>
</dependencies>

<build>
  <plugins>
    <plugin>
      <groupId>org.springframework.boot</groupId>
      <artifactId>spring-boot-maven-plugin</artifactId>
    </plugin>
  </plugins>
</build>

</project>
```

Servers Boot Dashboard

Pivotal to Server Developer Edition v3.1 [Stopped]

project/dependencies/dependency/artifactId/#text

Overview Dependencies Dependency Hierarchy Effective POM pom.xml

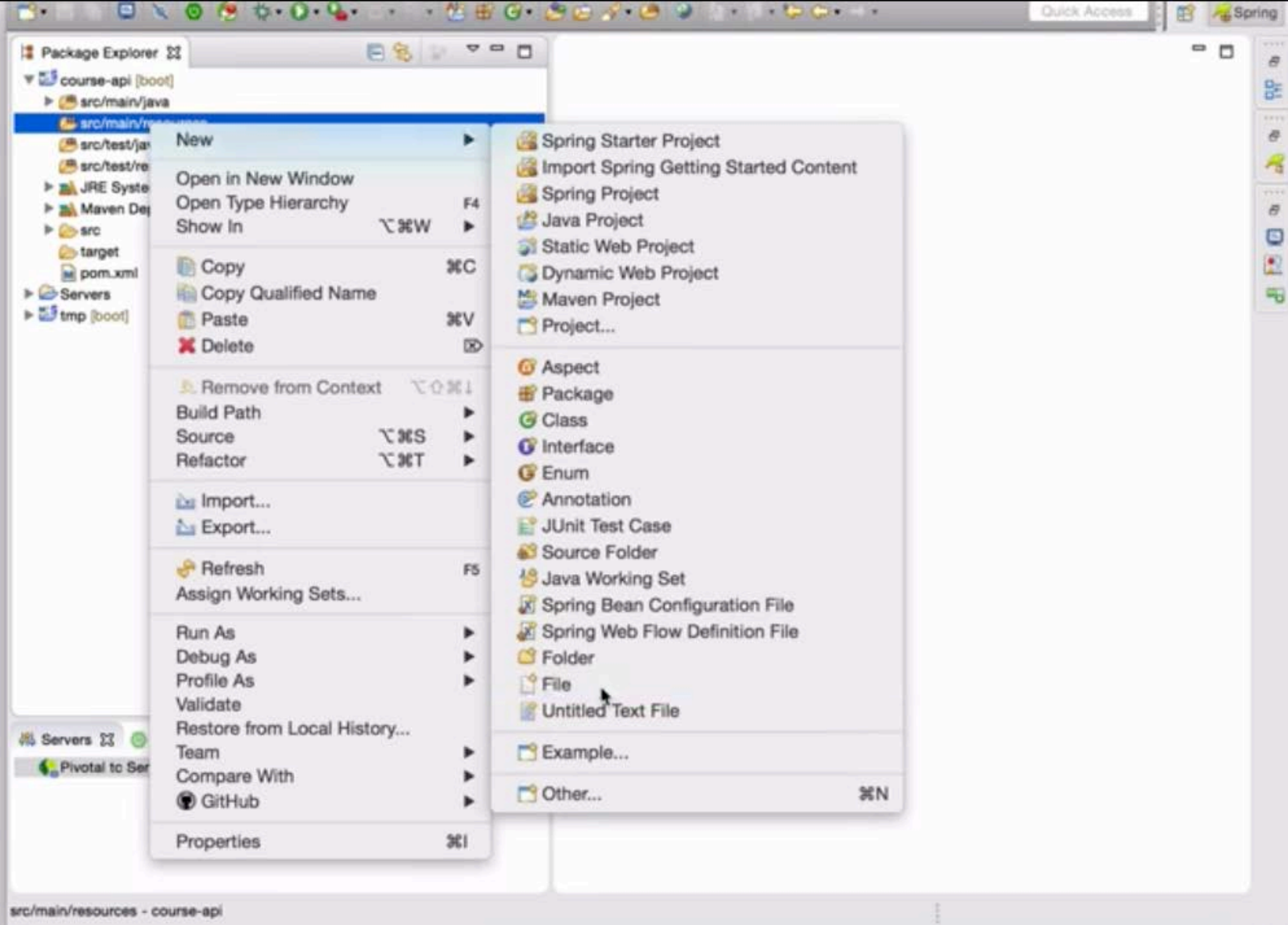
Whitable Smart Insert 30 : 39

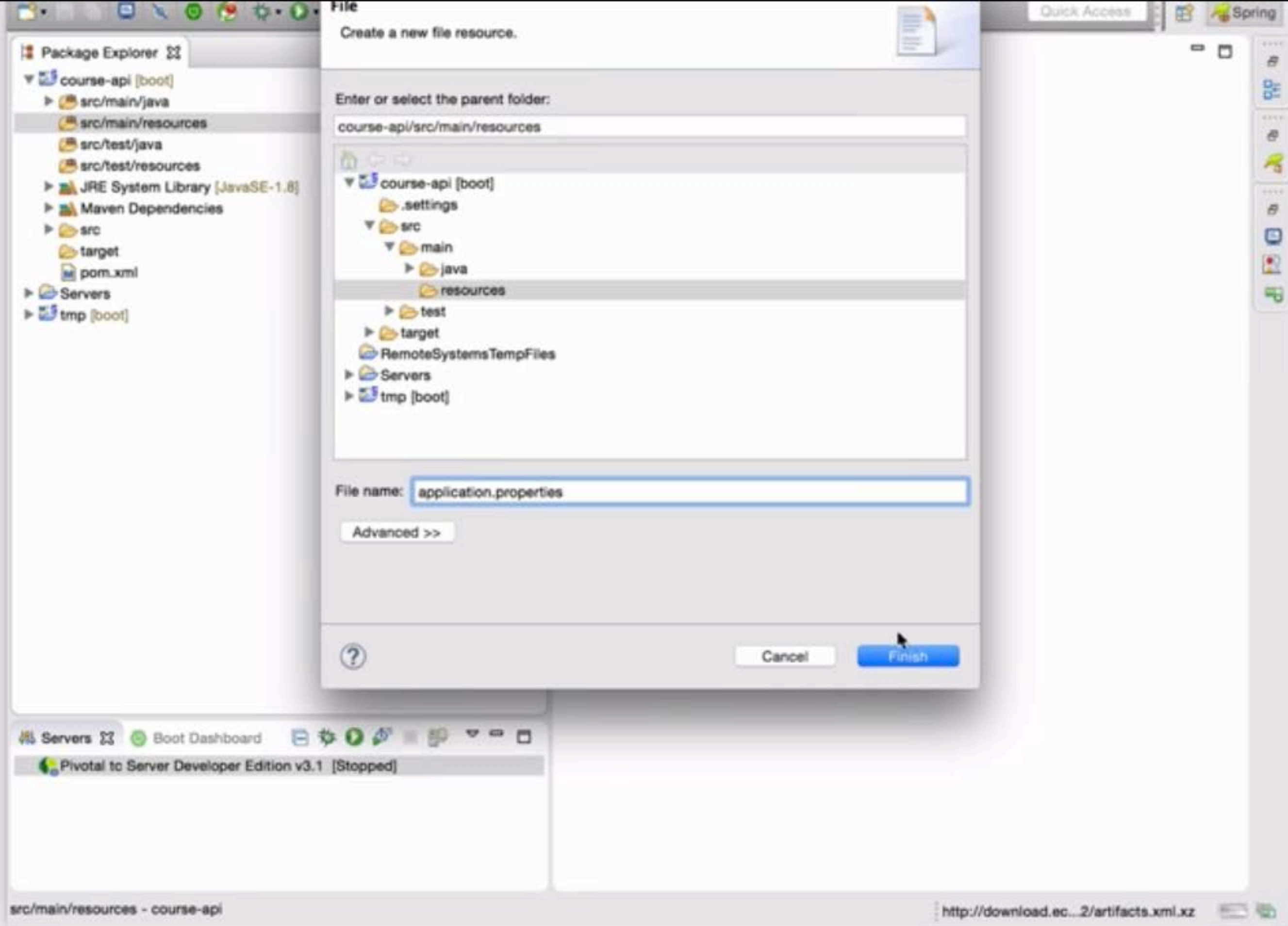


# Customizing Spring Boot

`application.properties`









The screenshot shows an IDE interface with the following components:

- Package Explorer (Left):** Displays the project structure for 'course-api [boot]'. The 'application.properties' file is selected under 'src/main/resources'. Other visible items include 'src/main/java', 'src/test/java', 'src/test/resources', 'JRE System Library [JavaSE-1.8]', 'Maven Dependencies', 'src', 'target', 'pom.xml', 'Servers', and 'tmp [boot]'.
- Editors (Center):** The 'application.properties' file is open, showing the line `server.port=8081`. The cursor is positioned at the end of this line.
- Servers View (Bottom Left):** Shows a 'Boot Dashboard' and a server entry 'Pivotal tc Server Developer Edition v3.1 [Stopped]'.
- Top Bar:** Includes a 'Quick Access' search bar and a 'Spring' icon.
- Right Margin:** Contains a vertical toolbar with icons for Run, Debug, Test, and other IDE functions.



Spring - Spring Tool Suite - /Users/kkothagal/Documents/springboot

Package Explorer

- course-api [boot]
  - src/main/java
  - src/main/resources
    - application.properties
  - src/test/java
  - src/test/resources
  - JRE System Library [JavaSE-1.8]
  - Maven Dependencies
  - src
  - target
  - pom.xml
- Servers
- tmp [boot]

Console

```
<terminated> CourseApiApp [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home
... 14 common frames omitted

2016-12-27 14:19:46.820 - INFO 10803 --- [main] o.apache.catalina.core.St
-2016-12-27 14:19:46.832 - INFO 10803 --- [main] utoConfigurationReportIo

Error starting ApplicationContext. To display the auto-configuration report re-run y
-2016-12-27 14:19:46.835 -ERROR 10803 --- [main] o.s.b.d.LoggingFailureAn

*****
APPLICATION FAILED TO START
*****

Description:

The Tomcat connector configured to listen on port 8081 failed to start. The port may

Action:

Verify the connector's configuration, identify and stop any process that's listening

-2016-12-27 14:19:46.836 - INFO 10803 --- [main] ationConfigEmbeddedWebAp
-2016-12-27 14:19:46.838 - INFO 10803 --- [main] o.s.j.e.a.AnnotationMBea
-
```

Servers

Boot Dashboard

Pivotal tc Server Developer Edition v3.1 [Stopped]

```

Spring - Spring Tool Suite - /Users/kkoihagal/Documents/springboot
Quick Access
Spring

Console  Markers  Progress

<terminated> CourseApiApp [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_66.jdk/Contents/Home/bin/java (Dec 6, 2016, 2:19:43 PM)
at org.springframework.boot.SpringApplication.refreshContext(SpringApplication.java:371) [spring-boot-1.4.2.RELEASE.jar:1.4.2.R
at org.springframework.boot.SpringApplication.run(SpringApplication.java:315) [spring-boot-1.4.2.RELEASE.jar:1.4.2.RELEASE]
at org.springframework.boot.SpringApplication.run(SpringApplication.java:1186) [spring-boot-1.4.2.RELEASE.jar:1.4.2.RELEASE]
at org.springframework.boot.SpringApplication.run(SpringApplication.java:1175) [spring-boot-1.4.2.RELEASE.jar:1.4.2.RELEASE]
at io.javabrain.springbootstarter.CourseApiApp.main(CourseApiApp.java:10) [classes/:na]
Caused by: org.apache.catalina.LifecycleException: service.getName(): "Tomcat"; Protocol handler start failed
at org.apache.catalina.connector.Connector.startInternal(Connector.java:976) ~[tomcat-embed-core-8.5.6.jar:8.5.6]
at org.apache.catalina.util.LifecycleBase.start(LifecycleBase.java:150) ~[tomcat-embed-core-8.5.6.jar:8.5.6]
... 13 common frames omitted
Caused by: java.net.BindException: Address already in use
at sun.nio.ch.Net.bind0(Native Method) ~[na:1.8.0_66]
at sun.nio.ch.Net.bind(Net.java:433) ~[na:1.8.0_66]
at sun.nio.ch.Net.bind(Net.java:425) ~[na:1.8.0_66]
at sun.nio.ch.ServerSocketChannelImpl.bind(ServerSocketChannelImpl.java:223) ~[na:1.8.0_66]
at sun.nio.ch.ServerSocketAdaptor.bind(ServerSocketAdaptor.java:74) ~[na:1.8.0_66]
at org.apache.tomcat.util.net.NioEndpoint.bind(NioEndpoint.java:228) ~[tomcat-embed-core-8.5.6.jar:8.5.6]
at org.apache.tomcat.util.net.AbstractEndpoint.start(AbstractEndpoint.java:874) ~[tomcat-embed-core-8.5.6.jar:8.5.6]
at org.apache.coyote.AbstractProtocol.start(AbstractProtocol.java:590) ~[tomcat-embed-core-8.5.6.jar:8.5.6]
at org.apache.catalina.connector.Connector.startInternal(Connector.java:969) ~[tomcat-embed-core-8.5.6.jar:8.5.6]
... 14 common frames omitted

2016-12-27 14:19:46.820 - INFO 10803 --- [main] o.apache.catalina.core.StandardService : Stopping service Tomcat
-2016-12-27 14:19:46.832 - INFO 10803 --- [main] utoConfigurationReportLoggingInitializer :

Error starting ApplicationContext. To display the auto-configuration report re-run your application with 'debug' enabled.
-2016-12-27 14:19:46.835 -ERROR 10803 --- [main] o.s.b.d.LoggingFailureAnalysisReporter :

*****
APPLICATION FAILED TO START
*****

Description:

The Tomcat connector configured to listen on port 8081 failed to start. The port may already be in use or the connector may be misconfi.

Action:

Verify the connector's configuration, identify and stop any process that's listening on port 8081, or configure this application to lis

-2016-12-27 14:19:46.836 - INFO 10803 --- [main] ationConfigEmbeddedWebApplicationContext : Closing org.springframework.boot
-2016-12-27 14:19:46.838 - INFO 10803 --- [main] o.s.j.e.a.AnnotationMBeanExporter : Unregistering JMX-exposed beans
-

```






Looks like there is another program using port 8081 on my machine. That's why this failed to start. This might work on your machine!



The screenshot shows the Spring Tool Suite IDE interface. The Package Explorer on the left displays the project structure for 'course-api [boot]', with 'application.properties' selected. A context menu is open over the project, showing options: '1 CourseApiApp', 'Run As', 'Run Configurations...', and 'Organize Favorites...'. The Console window at the bottom shows the following error output:

```
<terminated> CourseApiApp [Java Application] /Library/Java/JavaVirtualMachines/dk1.8.0_66.jdk/Contents/Resources/Java/bin/java -Dspring.config.location=classpath:/application.properties -jar target/course-api-0.0.1-SNAPSHOT.jar
at org.springframework.boot.SpringApplication.refreshContext(SpringApplication.java:102)
at org.springframework.boot.SpringApplication.run(SpringApplication.java:136)
at org.springframework.boot.SpringApplication.run(SpringApplication.java:136)
at org.springframework.boot.SpringApplication.run(SpringApplication.java:136)
at io.javabrains.springbootstarter.CourseApiApp.main(CourseApiApp.java:10)
Caused by: org.apache.catalina.LifecycleException: service.getName(): "Tomcat"
at org.apache.catalina.connector.Connector.startInternal(Connector.java:447)
at org.apache.catalina.util.LifecycleBase.start(LifecycleBase.java:150)
... 13 common frames omitted
Caused by: java.net.BindException: Address already in use
at sun.nio.ch.Net.bind0(Native Method) ~[na:1.8.0_66]
at sun.nio.ch.Net.bind(Net.java:433) ~[na:1.8.0_66]
at sun.nio.ch.Net.bind(Net.java:425) ~[na:1.8.0_66]
at sun.nio.ch.ServerSocketChannelImpl.bind(ServerSocketChannelImpl.java:113)
at sun.nio.ch.ServerSocketAdaptor.bind(ServerSocketAdaptor.java:74)
at org.apache.tomcat.util.net.NioEndpoint.bind(NioEndpoint.java:228) ~[na:1.8.0_66]
```



Looks like there is another program using port 8081 on my machine. That's why this failed to start. This might work on your machine!



Spring - Spring Tool Suite - /Users/kkothagal/Documents/springboot

Package Explorer

- course-api [boot]
  - src/main/java
  - src/main/resources
    - application.properties
  - src/test/java
  - src/test/resources
- JRE System Library [JavaSE-1.8]
- Maven Dependencies
- src
- target
- pom.xml
- Servers
- tmp [boot]

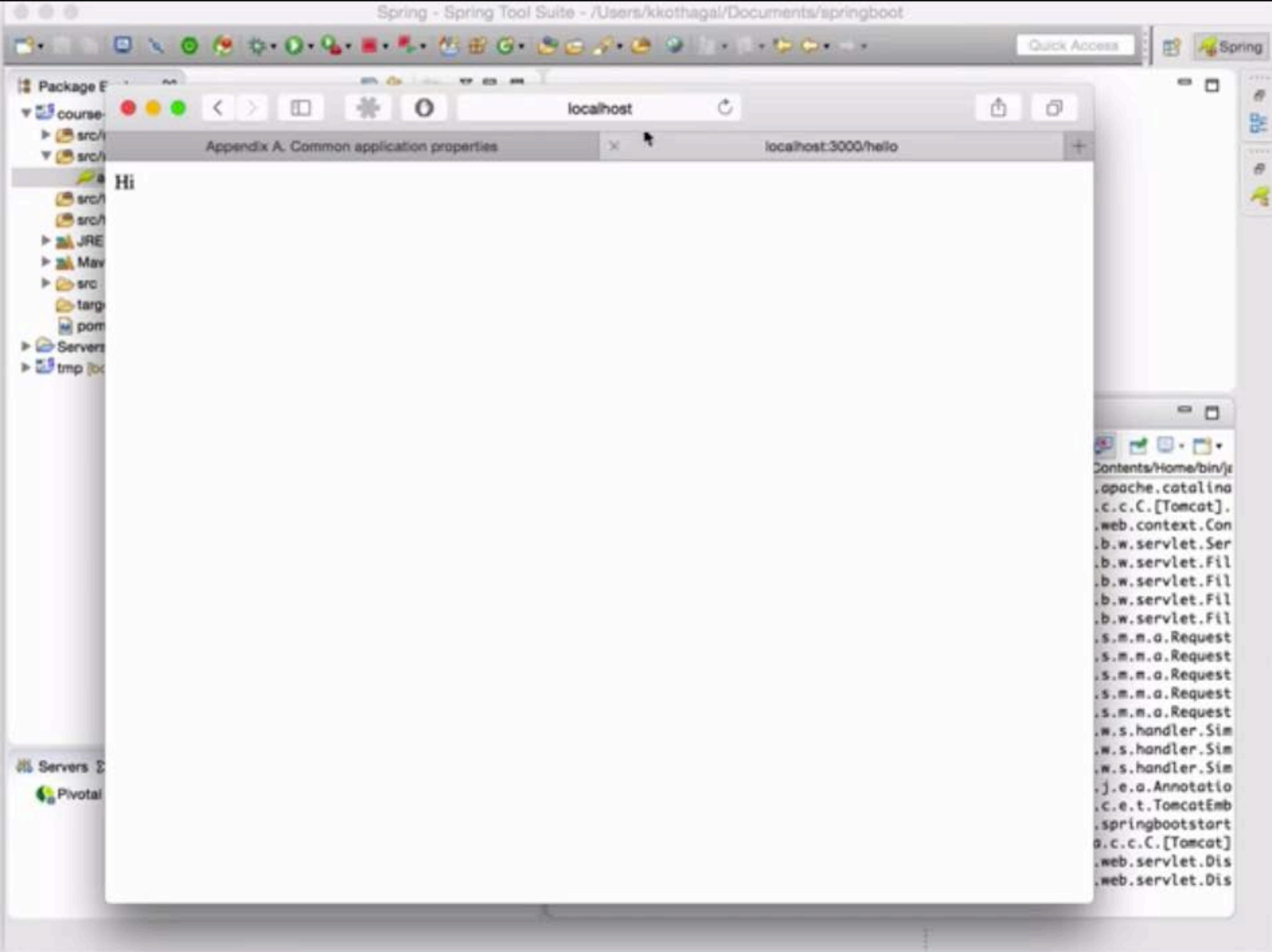
Console

```
CourseApiApp [Java Application] /Library/Java/JavaVirtualMachines/dk1.8.0_66.jdk/Contents/Home/bin/j
:ionContext : Refreshing org.springframework.boot.context.embedded.AnnotationCo
itContainer : Tomcat initialized with port(s): 3000 (http)
'dService   : Starting service Tomcat
lardEngine  : Starting Servlet Engine: Apache Tomcat/8.5.6
i.[/]       : Initializing Spring embedded WebApplicationContext
              : Root WebApplicationContext: initialization completed in 1422 ms
'ationBean  : Mapping servlet: 'dispatcherServlet' to [/]
itionBean   : Mapping filter: 'characterEncodingFilter' to: [/]
itionBean   : Mapping filter: 'hiddenHttpMethodFilter' to: [/]
itionBean   : Mapping filter: 'httpPutFormContentFilter' to: [/]
itionBean   : Mapping filter: 'requestContextFilter' to: [/]
lerAdapter  : Looking for @ControllerAdvice: org.springframework.boot.context.i
lerMapping  : Mapped " [/hello]" onto public java.lang.String io.javabrain.s
lerMapping  : Mapped " [/topics]" onto public java.util.List<io.javabrain.spr
lerMapping  : Mapped " [/error]" onto public org.springframework.http.Response
lerMapping  : Mapped " [/error,produces=[text/html]]" onto public org.springfr
.erMapping  : Mapped URL path [/webjars/**] onto handler of type [class org.spr
.erMapping  : Mapped URL path [/**] onto handler of type [class org.springfram
.erMapping  : Mapped URL path [/*/*favicon.ico] onto handler of type [class org
'ter        : Registering beans for JMX exposure on startup
itContainer : Tomcat started on port(s): 3000 (http)
riApp       : Started CourseApiApp in 2.649 seconds (JVM running for 2.993)
```

Servers

Boot Dashboard

Pivotal to Server Developer Edition v3.1 [Stopped]





The screenshot shows the Spring Tool Suite interface. On the left is a Package Explorer showing a project structure with folders like 'course', 'src/main/resources', 'src/main/webapp', 'JRE', 'Maven', 'target', 'port', 'Servers', and 'tmp'. The main editor area displays the 'docs.spring.io' website, specifically 'Appendix A. Common application properties'. The browser's address bar shows 'localhost:3000/hello'. The page has a title bar 'Appendix A. Common application properties' and a breadcrumb 'Part X. Appendices'. The content includes a section header '§ Appendix A. Common application properties', a paragraph about specifying properties in 'application.properties' or 'application.yml', and two callouts: one with a green leaf icon about property contributions from jar files, and another with a green exclamation mark icon warning not to copy the entire sample file. At the bottom, a code block shows the beginning of a sample 'application.properties' file with comments. The bottom of the screen features a 'spring' logo, a 'Pivotal' logo, and a 'Search Documentation' input field.

Appendix A. Common application properties

Prev Part X. Appendices Next

## § Appendix A. Common application properties

Various properties can be specified inside your `application.properties` / `application.yml` file or as command line switches. This section provides a list common Spring Boot properties and references to the underlying classes that consume them.

- Property contributions can come from additional jar files on your classpath so you should not consider this an exhaustive list. It is also perfectly legit to define your own properties.
- This sample file is meant as a guide only. Do **not** copy/paste the entire content into your application; rather pick only the properties that you need.

```
# =====  
# COMMON SPRING BOOT PROPERTIES  
#  
# This sample file is provided as a guideline. Do NOT copy it in its
```

spring Pivotal Search Documentation



Spring course-api/src/main/resources/application.properties - Spring Tool Suite - /Users/kkothagal/Documents/springboot

docs.spring.io

localhost:3000/hello

Appendix A. Common application properties

```
spring.sendgrid.proxy.port= # SendGrid proxy port

# -----
# WEB PROPERTIES
# -----

# EMBEDDED SERVER CONFIGURATION (ServerProperties)
server.address= # Network address to which the server should bind to.
server.compression.enabled=false # If response compression is enabled.
server.compression.excluded-user-agents= # List of user-agents to exclude from compression.
server.compression.mime-types= # Comma-separated list of MIME types that should be compressed.
server.compression.min-response-size= # Minimum response size that is required for compression.
server.connection.timeout= # Time in milliseconds that connectors will wait for another connection.
server.context-parameters.*= # Servlet context init parameters. For instance 'server.context-parameters.org.springframework.web.servlet.DispatcherServlet.multipart-config'.
server.context-path= # Context path of the application.
server.display-name=application # Display name of the application.
server.max-http-header-size=0 # Maximum size in bytes of the HTTP message header.
server.max-http-post-size=0 # Maximum size in bytes of the HTTP post content.
server.error.include-stacktrace=never # When to include a "stacktrace" attribute.
server.error.path=/error # Path of the error controller.
server.error.whitelabel.enabled=true # Enable the default error page displayed in browser.
server.jetty.acceptors= # Number of acceptor threads to use.
server.jetty.selectors= # Number of selector threads to use.
server.jsp-servlet.class-name=org.apache.jasper.servlet.JspServlet # The class name of the JSP servlet.
server.jsp-servlet.init-parameters.*= # Init parameters used to configure the JSP servlet.
server.jsp-servlet.registered=true # Whether or not the JSP servlet is registered.
```

Package Explorer

- course-api
- src/main
- src/main/resources
- src/main/webapp
- JRE
- Maven
- src
- target
- port
- Servers
- tmp

Servers

- Pivotal

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Spring course-api/src/main/resources/application.properties - Spring Tool Suite - /Users/kkothagal/Documents/springboot

docs.spring.io

Appendix A. Common application properties

localhost:3000/hello

```
server.compression.mime-types= # Comma-separated list of MIME types that should be compressed
server.compression.min-response-size= # Minimum response size that is required for compression
server.connection-timeout= # Time in milliseconds that connectors will wait for another connection
server.context-parameters.*= # Servlet context init parameters. For instance `server.context-path`
server.context-path= # Context path of the application.
server.display-name=application # Display name of the application.
server.max-http-header-size=0 # Maximum size in bytes of the HTTP message header.
server.max-http-post-size=0 # Maximum size in bytes of the HTTP post content.
server.error.include-stacktrace=never # When to include a "stacktrace" attribute.
server.error.path=/error # Path of the error controller.
server.error.whitelabel.enabled=true # Enable the default error page displayed in browser
server.jetty.acceptors= # Number of acceptor threads to use.
server.jetty.selectors= # Number of selector threads to use.
server.jsp-servlet.class-name=org.apache.jasper.servlet.JspServlet # The class name of the JSP servlet
server.jsp-servlet.init-parameters.*= # Init parameters used to configure the JSP servlet
server.jsp-servlet.registered=true # Whether or not the JSP servlet is registered
server.port=8080 # Server HTTP port.
server.server-header= # Value to use for the Server response header (no header is sent if empty)
server.servlet-path=/ # Path of the main dispatcher servlet.
server.use-forward-headers= # If X-Forwarded-* headers should be applied to the HttpRequest
server.session.cookie.comment= # Comment for the session cookie.
server.session.cookie.domain= # Domain for the session cookie.
server.session.cookie.http-only= # "HttpOnly" flag for the session cookie.
server.session.cookie.max-age= # Maximum age of the session cookie in seconds.
server.session.cookie.name= # Session cookie name.
server.session.cookie.path= # Path of the session cookie.
server.session.cookie.secure= # "Secure" flag for the session cookie.
```

Contents/Home/bin/j...  
opache.catalina...  
c.c.C.[Tomcat].  
web.context.Con...  
b.w.servlet.Ser...  
b.w.servlet.Fil...  
b.w.servlet.Fil...  
b.w.servlet.Fil...  
b.w.servlet.Fil...  
s.m.m.a.Request...  
s.m.m.a.Request...  
s.m.m.a.Request...  
s.m.m.a.Request...  
s.m.m.a.Request...  
w.s.handler.Sim...  
w.s.handler.Sim...  
j.e.a.Annotatio...  
c.e.t.TomcatEmb...  
springbootstart...  
a.c.c.C.[Tomcat]  
web.servlet.Dis...  
web.servlet.Dis...

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