Tutorial for Rakuten Travel Development Department

Takahiro Fujii

Table of Contents

Overview

This document is tutorial document for learning fundamental knowlege in Rakuten Travel Technology.

If you have any inquiry about this tutorial, please send mail to trv-tech-inquiry@mail.rakuten.com .

And when you have inquiry about programming code, if you can upload your source code on your github account, we can check it easily.

1.Download & Install tools.

Following tools are required for this tutorial. Please download and install following tools.

1-1 Java

If you already downloaded, installed Java before, please download/install latest one.

In Rakuten Travel, a lot of applications are implemented by Java.
For working in Rakuten Travel, you must learn fundamental things about Java.
At first, please download jdk(Java Development Kit) from Official site.

1-2 IDE

If you use IDE in past, please download/install latest version for this tutorial.

IDE(Integrated Development Environment) supports your development.
Generally, almost all of coder are using IDE for Java development.

If you have never been to use any IDE, we recommend to use **Spring Tool Suites** for this tutorial.
If you have already used any IDE for your development(Eclipse,IntelliJ,NetBeans, and so on), please use your favorite one :).

1-2 Git

Git is the de-facto standard of version control system for web application development.
If you don't know version conrtol system and git, please watch official introduction video. And please download and install from official site.

1-3 Maven

Maven is a software project manegement and comprehension tool.
You can use a lot of third party Java library from a maven repository.
Please download and install latest version.

1-4 Console emulator

If you use Mac, please skip this section.
Default command prompt of Windows is a little bit difficult to handle Unit commands. cmder is one of the best console emulator for Windows.
Please download it from official site.

If you already downloaded Git, "Download mini" is enough.

1-5 Editor

I think you already have your favorite editor :) If you don’t use any editor for developer. I strongly recommend to install the editor. For example Atom is an editor by GitHub.

2.Learn fundamental technology for developping web application.

In this chapter, we introduce learning site/tool you learn fundamental knowledge for Rakuten Travel Development.

2-1 Git

You already downloaded and installed Git in prior chapter. So lets understand fundamental things about git. Following tutorial site help you to understand git.
Learn Git Branching

2-2 Java code naming rule.

Before you start Java code implementation, please read following document.

- Wikipedia

2-3 Java(Basic)

A lot of Rakuten Travel Service is implemented by Java.
So if you don't know Java well, please learn as much as possible before joining our department.
LearnJavaOnline is the one of the tutorial site for learning Java.
If you learn Java from above site, please complete both **Basics** and **Advanced Topics**.
As you know, there are a lot of tutorial sites/text of Java in the world. Please also look at other tutorial site/books.

2-4 Java(Unit Test Code)

What is the difference between personal development and company development?
One of the difference is we must verify own code is working correctly with other colleagues.
And you may modify source code written by other person and vice versa.
Unit test code can show that the indivisual parts are correct.

Junit is one of de-facto standard unit testing library for Java.
These are the tutorial site of Junit.
Please read and watch Junit Tutorial Video on youtube.

java code geeks
dzone

2-5 Java(Latest Syntax)

Code Kata tutorial is more difficult than above tutorials. If you stack exercise, please skip this tutorial at once. Please continue this exercise step by step continuously.

Do you know **latest** Java syntax?
Even if you have experience of Java, if you don't know "latest" syntax, function of Java, its insufficient.
Following code kata repository help you learn latest syntax.

https://github.com/konohiroaki/java8-code-kata (Created by our department engineer.)

This code kata repository have a lot of exercise test code.
All of test code are failed when you checked out this repository.
Please add code in exercise test code for passing all of test.
When you pass the all of test, you understand latest syntax of Java.

Java syntax is changed from Java8 dramatically.
You google about Java8, you will find a lot of document.

2-6 Java(Design pattern)

Above tutorials are focusd on function,syntax of Java.
So, how about class architecture?
As same as other programming language, Java also have many design patterns.
One of the famous design pattern is MVC pattern.

http://www.tutorialspoint.com/design_pattern/mvc_pattern.htm
https://developer.apple.com/library/ios/documentation/General/Conceptual/DevPedia-CocoaCore/MVC.html

2-7 SQL

Currently not only SQL but also other technology is able to used for accesing database.
But still SQL is standard technology for accesing database.
In Rakuten Travel many back-end service use SQL for accesing database.
So please learn fundamental things of SQL.
Here is one of tutorial site for learning SQL.

SQLZOO

If you learn sql by above site, at lease please exercise following chapter.

- 0 SELECT basics
- 1 SELECT name

- 4 SELECT within SELECT
- 5 SUM and COUNT
- 8 Using Null

2-8 Unix,Linux

As you know, knowledge of Unix,Linux is an important element forming the basis of development. In Rakuten Travel, huge number of VM are running by Unix operating system. You needn’t to understand whole part of Unix system before joining us, but Unix knowledge helps you to develop web application in Rakuten Travel.

3.Create simple application

In our department, of course every engineer should have skill of creating web application.
In this chapter, through this tutorial, let's learn how to create web application by Java.

3-1 Web application

If you have never developed a web application, please learn the fundamental of the web application.
It's difficult to understand all at a time, but a web application developer must know how a web application works.
You can find a lot of books, documents, blogs.

3-2 Create simple application by Spring Boot.(60min)

In this tutorial, you create a sample application by using "Spring" framework with "Spring Boot".
Even if you don't know "Spring", let's try to do tutorial.

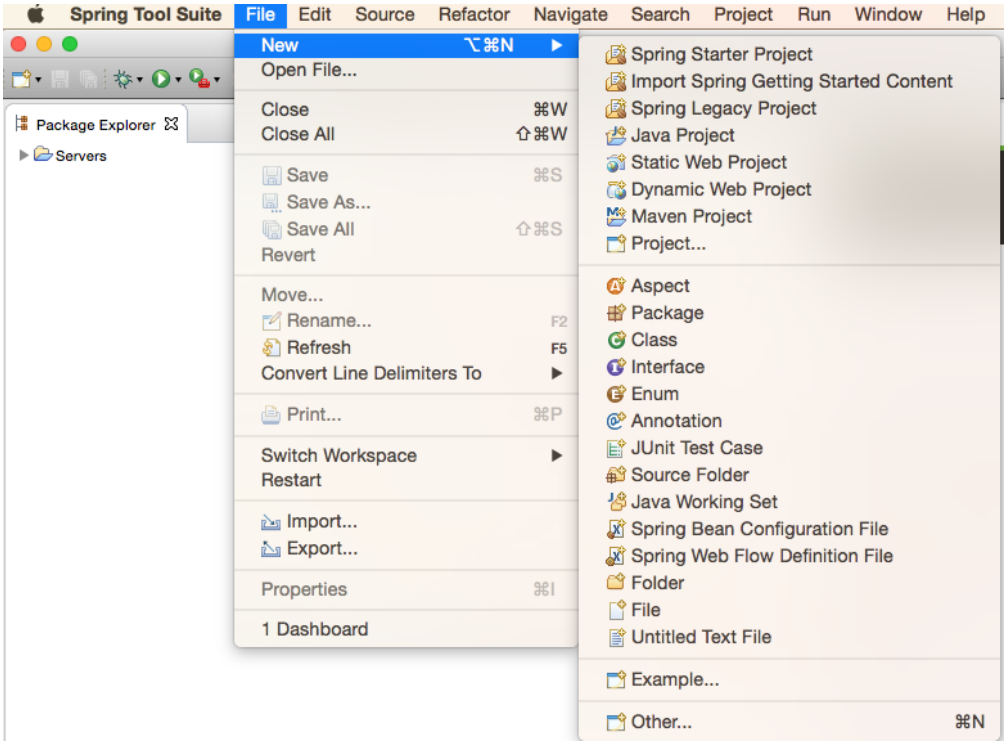
https://spring.io/guides/gs/spring-boot/

3-2-1 Support document

If you aren't familiar with IDE, please do tutorial with this document.

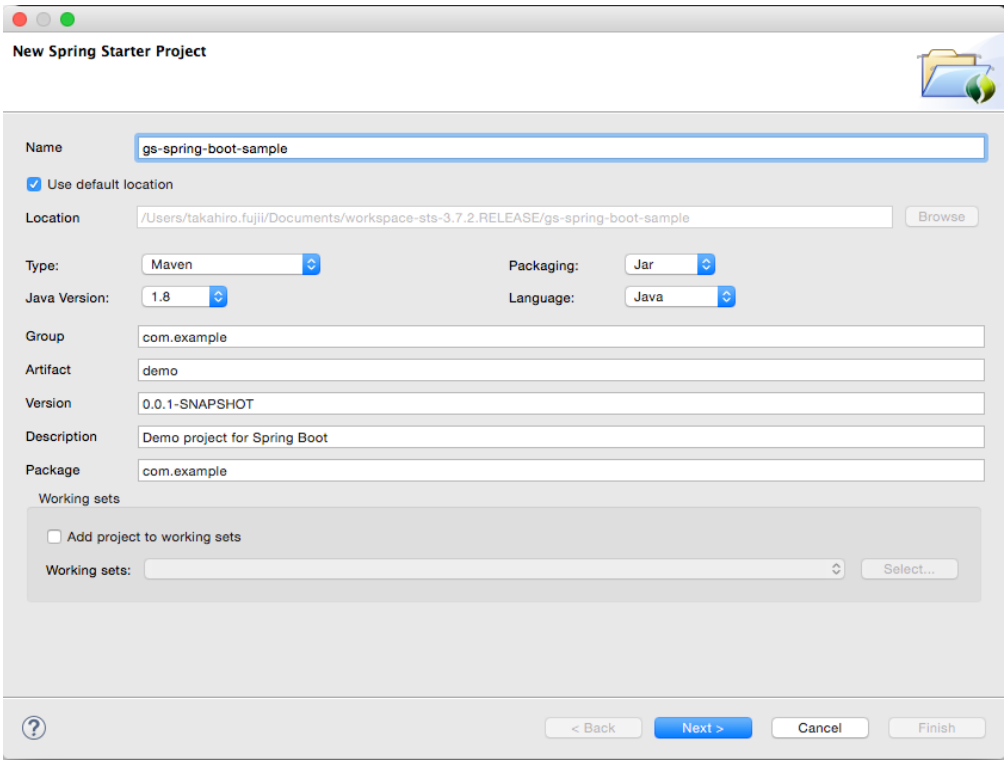
1.Create new project

Create new project from "File > New > Spring Starter Project".



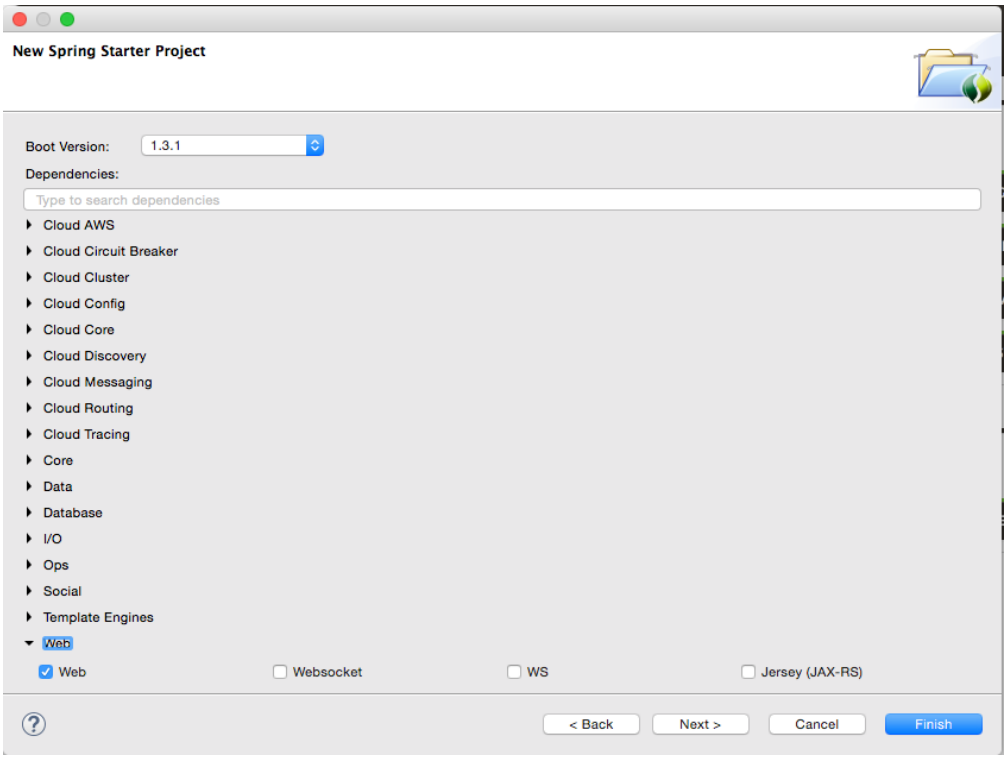
And then, input each elements.

Name	Anything is OK.
Type	If you aren't familiar with Gradle, please choose Maven
Packaging	Jar
Java Version	Latest one
Language	Java
Group,Artifact,Version	Maven document
Package	Anything is OK for this tutorial. But please read this document

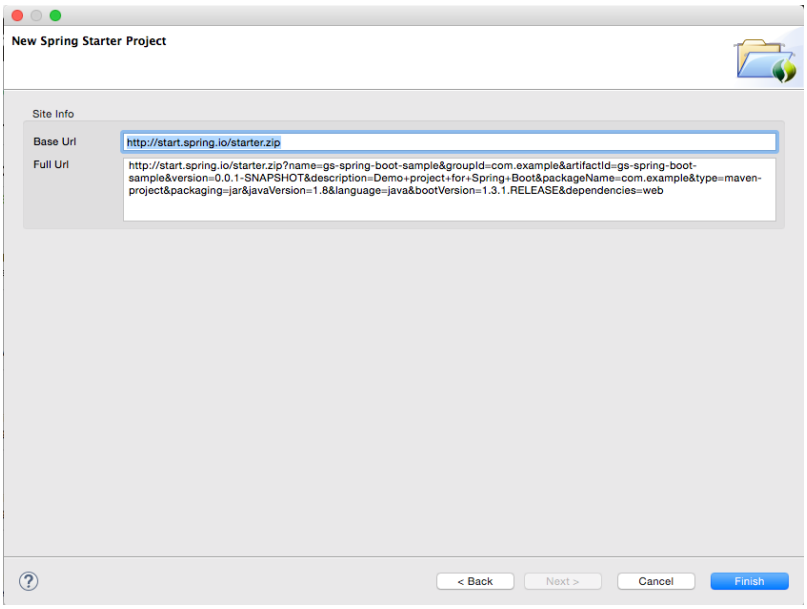


When you create new project by spring starter project, you can choose function you would like to use. If you check function, necessary Java library will be included your project automatically. For this tutorial, only "Web" function is required.

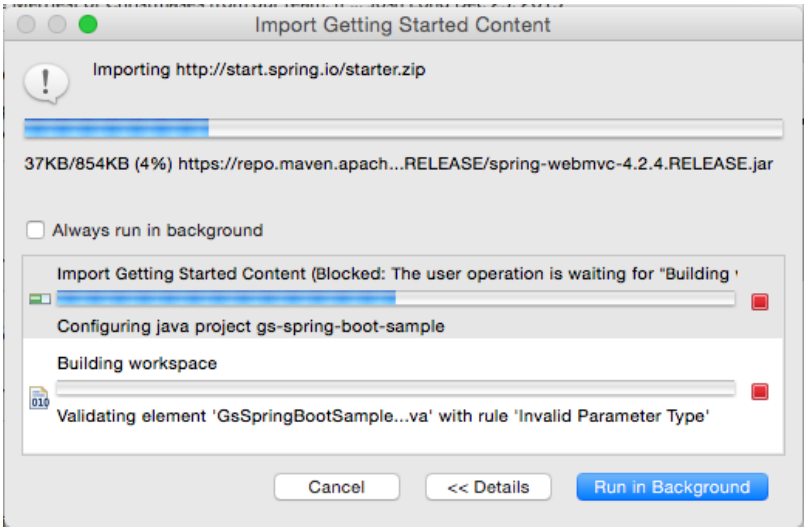
- ☑ Web



Click "Finish"(no need to edit).

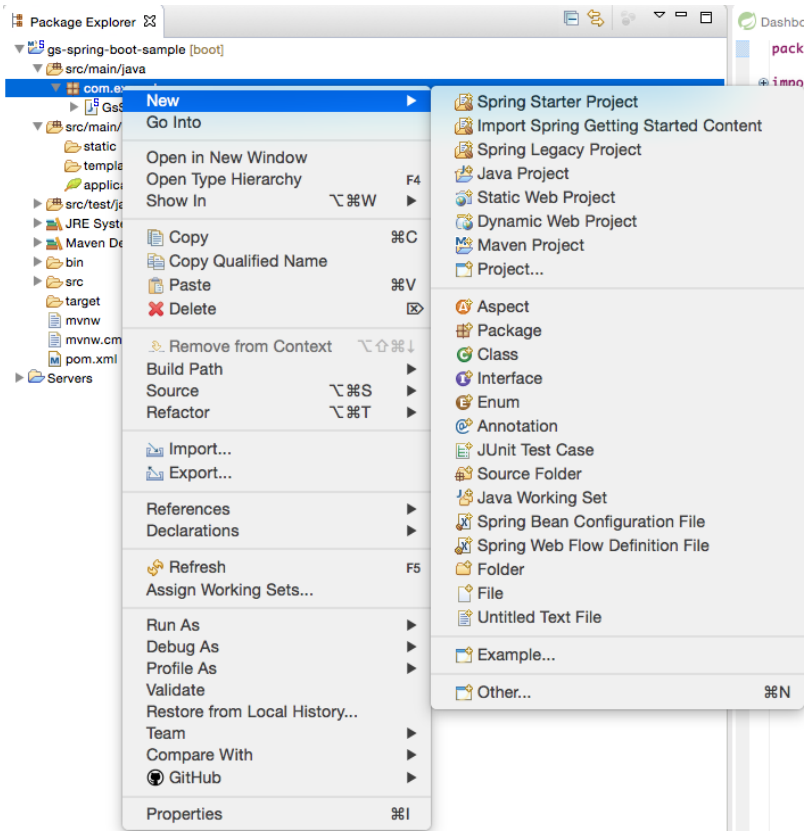


And then, start to import required libralies.



2. Create new class

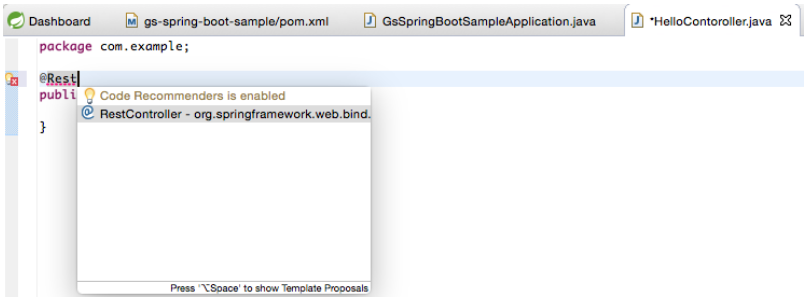
Finally you got your own project. Next, create new class from "Ctrl+Click(Right Click) com.example" > New > Class or File > New > Class.

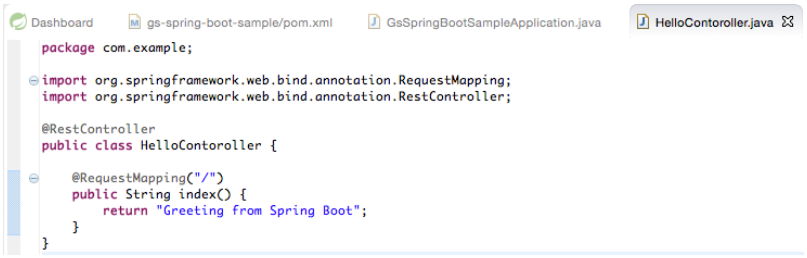


In this time, as same as Spring tutorial, input class name as "HelloContoroller". image::3-2-create-simple-application-7-create-new-class-2.png[width="300", height="400"]

3. Implementation

As same as tutorial, implement HelloController.java. If you use Mac, you need to edit key bind for using content assist function. Please check key bind setting.



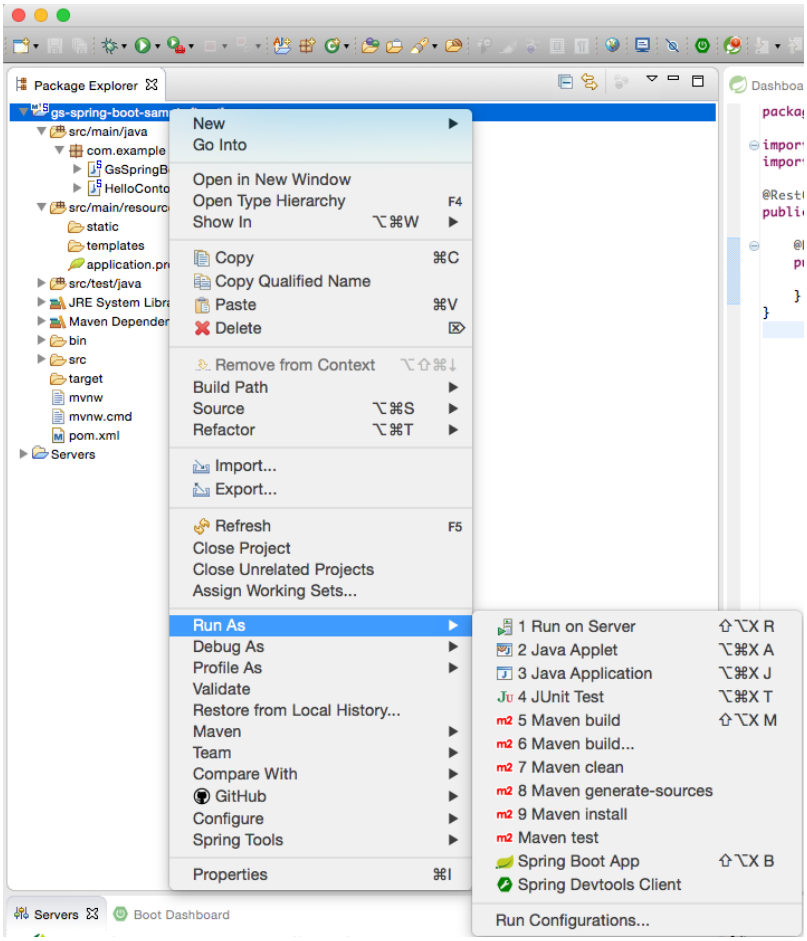


4. Start up application.

After you implemented HelloController.java, let's start up your application. You can start up your app from "Run As > Spring Boot App". Following message is displayed on your console, its successful.

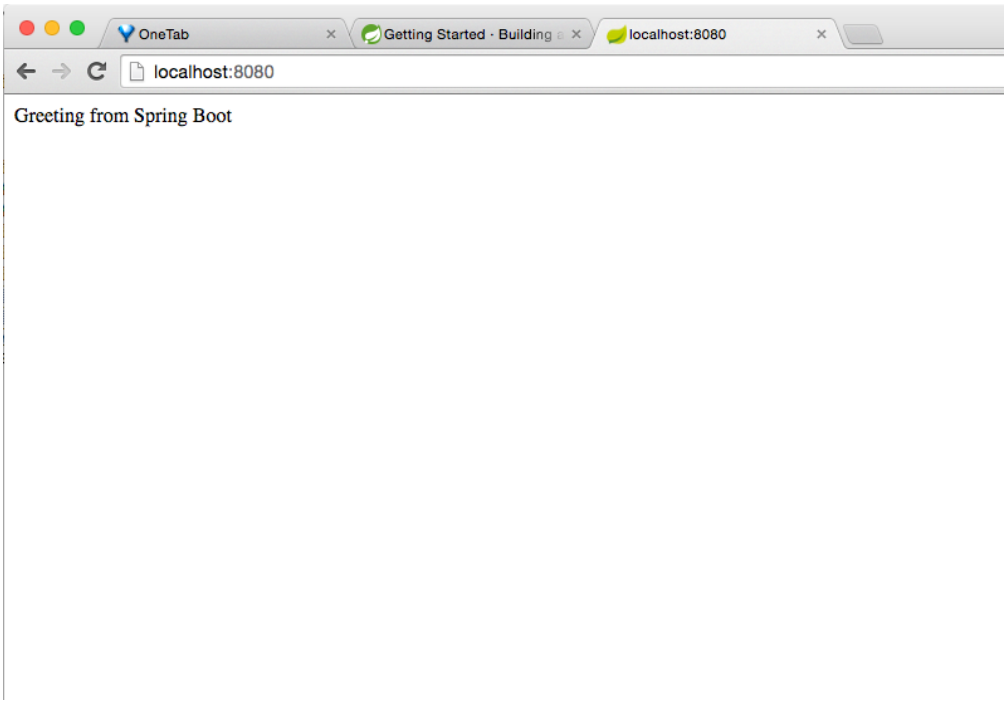
console.log

```
Started {Your app name} in * Seconds.
```

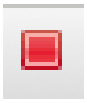


5. Confirm your app.

So let's access http://localhost:8080/ from your browser. You would see "Greeting from Spring Boot" as same as following capture.



This is one of the most simple web application by Java with Spring. After you confirmed, please shutdown app from this button.



6. Run application by jar

Currently you can run your application from IDE. But if other person(pc) would like to run your application, or you would like to runn app from server, how to run it? In such kind of case, we need to package application. Maven(Gradle) have function for packaging application.

So please look at "Run the application" part in Spring tutorial.

console

```
##1.Please move at your workspace directory.
cd /Users/takahiro.fujii/Documents/workspace-sts-3.7.2.RELEASE/gs-spring-boot-sample

##2.Execute mvn package
mvn package

Following message is displayed, packaging is succuessful.
[INFO] --- spring-boot-maven-plugin:1.3.1.RELEASE:repackage (default) @ gs-spring-boot-
sample ---
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 7.637 s
[INFO] Finished at: 2015-12-25T15:08:31+09:00
[INFO] Final Memory: 17M/214M
[INFO] ------------------------------------------------------------------------

##3.You can confirm output under target directory
ls -ltr target/gs-spring-boot-sample-0.0.1-SNAPSHOT.jar
-rw-r--r--  1 takahiro.fujii Users  13389425 12 25 15:08 target/gs-spring-boot-sample-
0.0.1-SNAPSHOT.jar

##4.And then, you can start up application as a packaged application by following
command.
java -jar target/gs-spring-boot-sample-0.0.1-SNAPSHOT.jar

##5.Please access http://localhost:8080/ or curl http://localhost:8080/
curl http://localhost:8080/
```

7. Add unit tests.

Please look at "Add Unite Tests" part in Spring tutorial. Basically, you just implement as same as Spring tutorial.

One thing my advice is Generate static import in STS(Eclipse). This sample code use static import for

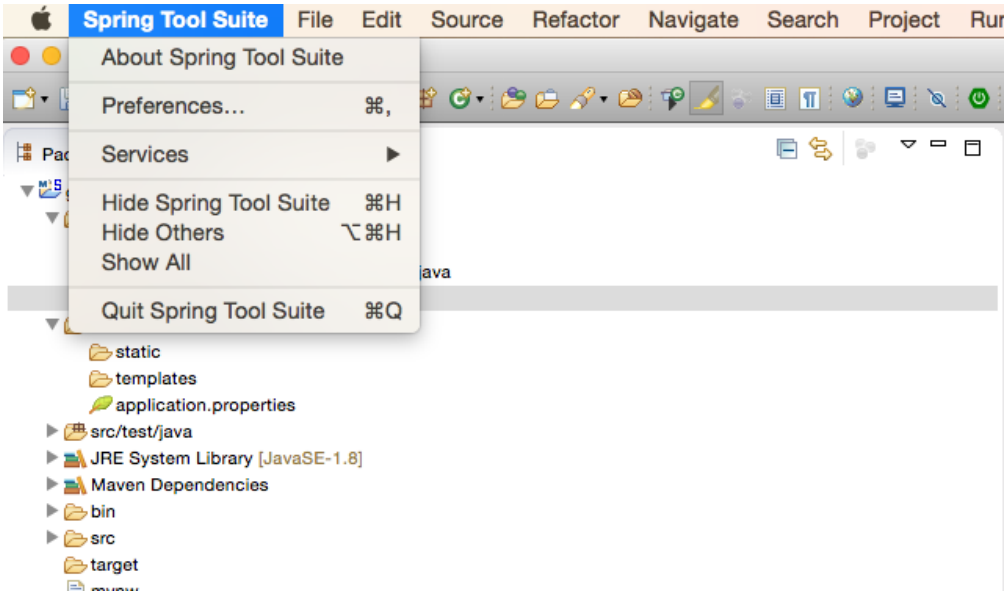
- org.hamcrest.Matchers.*
- org.springframework.test.web.servlet.result.MockMvcResultMatchers.*

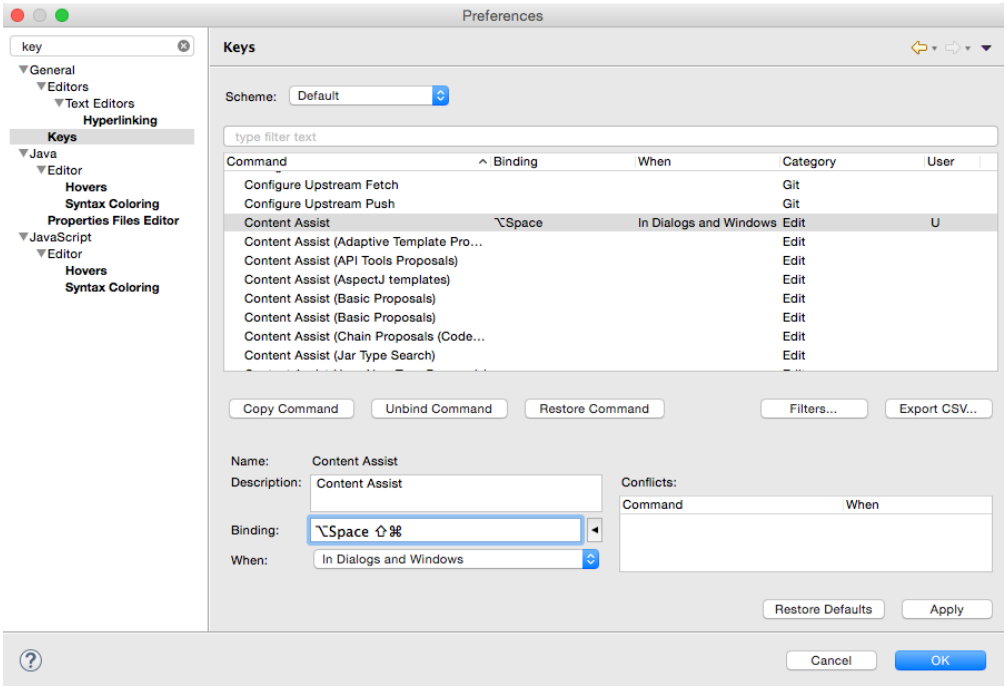
these packages. This tips support your implementation.

X-1. STS key bind for content assist

When you use sts or eclipse by mac, content assist shortcut(Command+Space) is intercepted by Spotlight. You can change key bind setting from Spring Tool Suite(Eclipce) > Preference > General >

Keys > Content Assist. In following capture, I changed key bind as "alt + space".





X-2. Generate static import in STS(Eclipse)

In this tutorial, some of sample code use static import. In STS(Eclipse) don't support autocomplete for static import. So please read this document. Then you can also use autocomplete for static import.

4.Create sample applications

In chapter 3, you learned how to create simple web application with Spring Boot.
In this chapter, let's create other sample application for various situations.

4-1 Serving Web Content with Spring MVC(20min)

In chapter 3, you just displayed text on browser.
In this section is how to create web contents(html) with Spring.
Let's create sample application by this tutorial.

For this tutorial, only Thymeleaf function is required.
This function is belong to "Template Engines" category.

- [x] Thymeleaf

4-2 Accessing Relational Data using JDBC with Spring(30min)

This section, you learn how to connect database from Java application.
Nowadays a lot of relational database are existing like a oracleDB, mysql, and so on.
In this tutorial, for focusing on learning application architecture, we use h2 database.
This is the one of in-memory database, and it's easy to adopt spring boot application.
If you would like to create an application which manage a lot of data, please consider to use another database.

Let's create sample application by this tutorial.

4-3 Building a RESTful Web Service(20min)

This section, you learn how to create REST api. Have you ever use following apis?

- Google Maps APIs
- Facebook Graph API

If you publish api, other developer can create application by using your api.
Also, if you publish common function as api, multiple application can use this function by calling api.

- api(wikipedia)

Spring is one of the easiest framwwork for creating rest api.
We, TRVDD provides many rest api for internal.
Let's create simple rest api by this tutorials :).

4-4 Consuming a RESTful Web Service(20min)

Previous section, you learned how to create api.
This section, you learn how to call/use rest api by this tutorial.

4-5 Spring Boot Actuator(5min)

Now you created REST api and client applications.
So, how you monitor and manage these applications?
Spring boot's sub module which is called as "Spring Boot Actuator" provides some of features to help you monitor and manage application when its pushed to production.
Let try it out. This section use sample rest app is created by "4-3 Building a RESTful Web Service". And you can check additional information from official document.

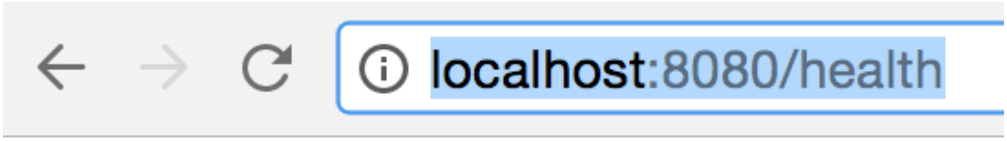
1.Add dependency for actuator.

pom.xml

```
    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-actuator</artifactId>
    </dependency>
```

2.Run app and access health endpoint.

Access http://localhost:8080/health then you can check following information.




```
{
    status: "UP",
  - diskSpace: {
        status: "UP",
        total: 249779060736,
        free: 54367350784,
        threshold: 10485760
    }
}
```

It’s really easy to implement. And its easy to custom to add information like a DB check information and so on.

4-6 Centralized configuration(Spring Cloud Config)(30min)

This guide walks you through the process of standing up, and consuming configuration from, the Spring Cloud Config Server. Please check following guides.