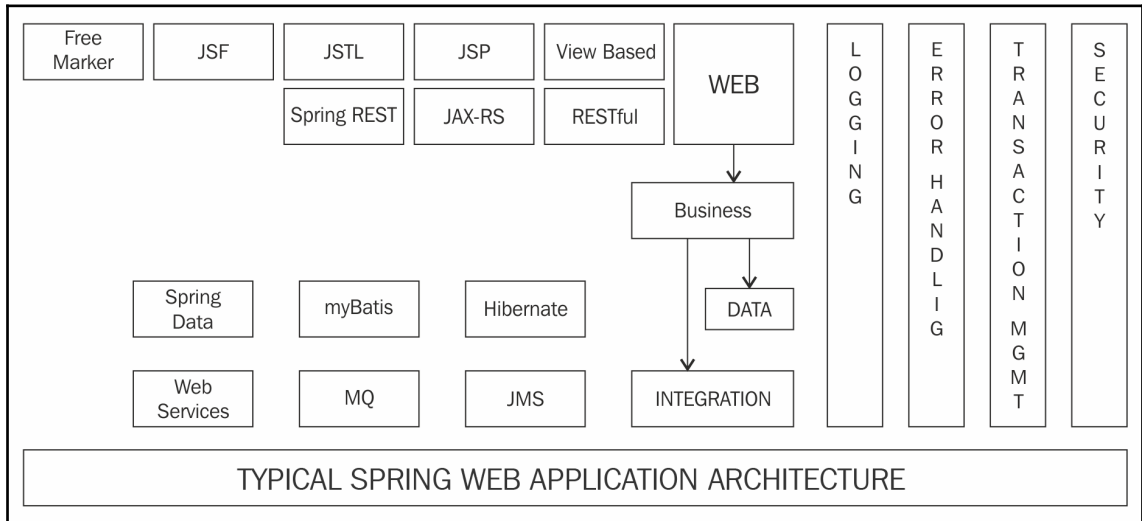
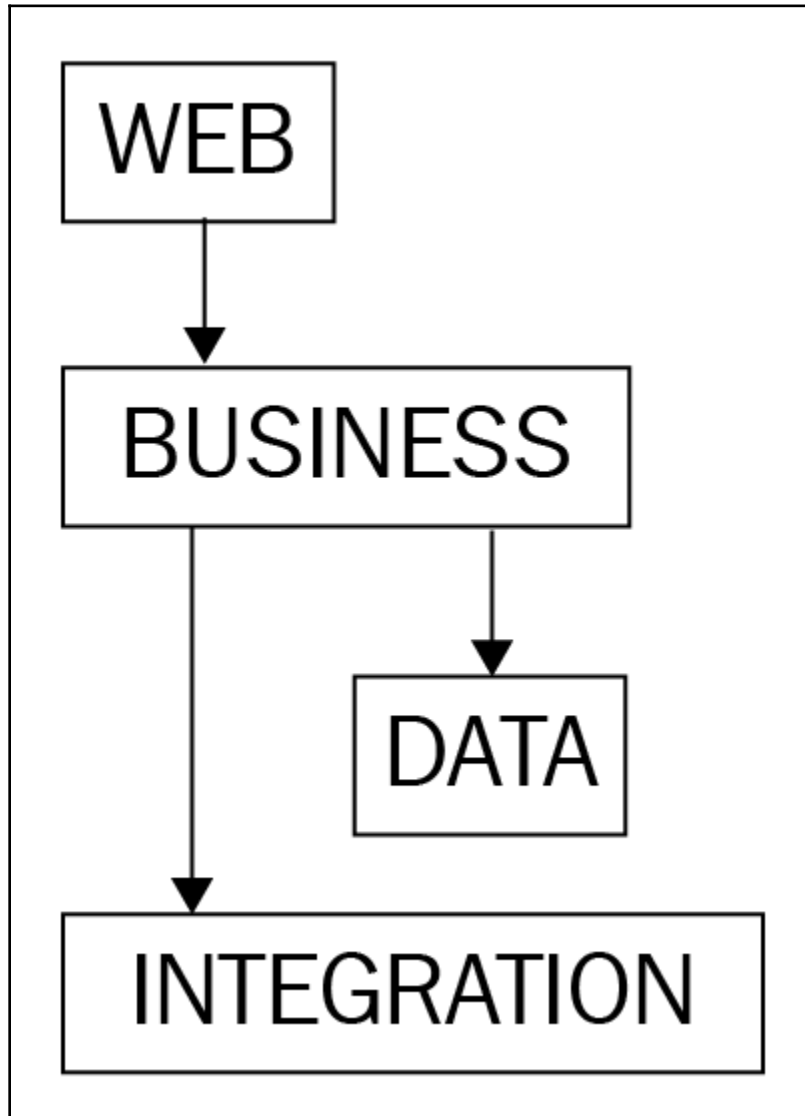
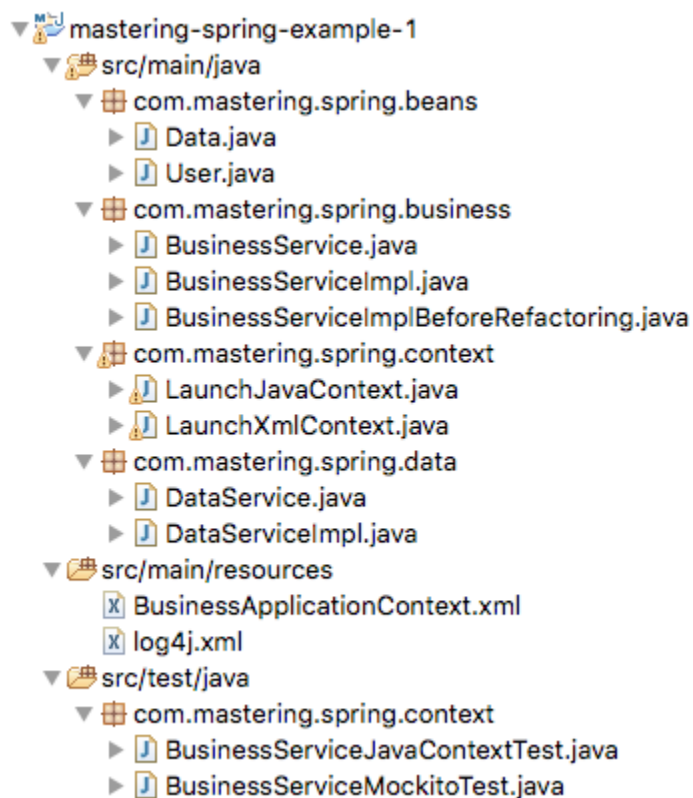


Chapter 1: Spring Landscape - Framework, Modules, and Projects



Chapter 2: Dependency Injection and Unit Testing

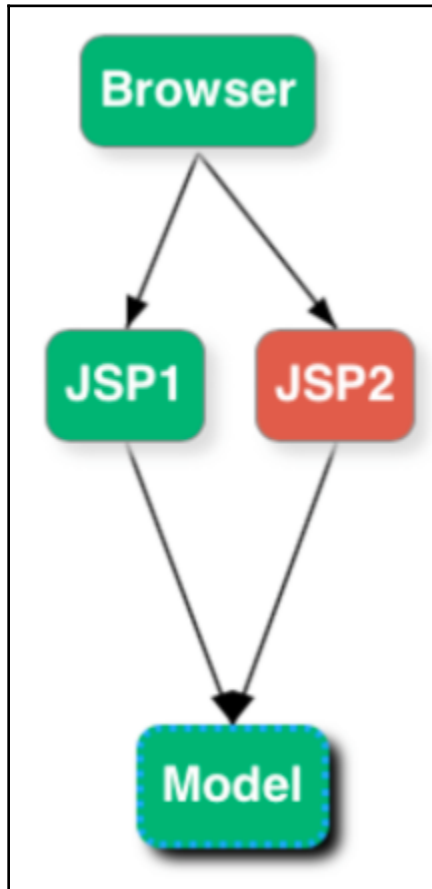


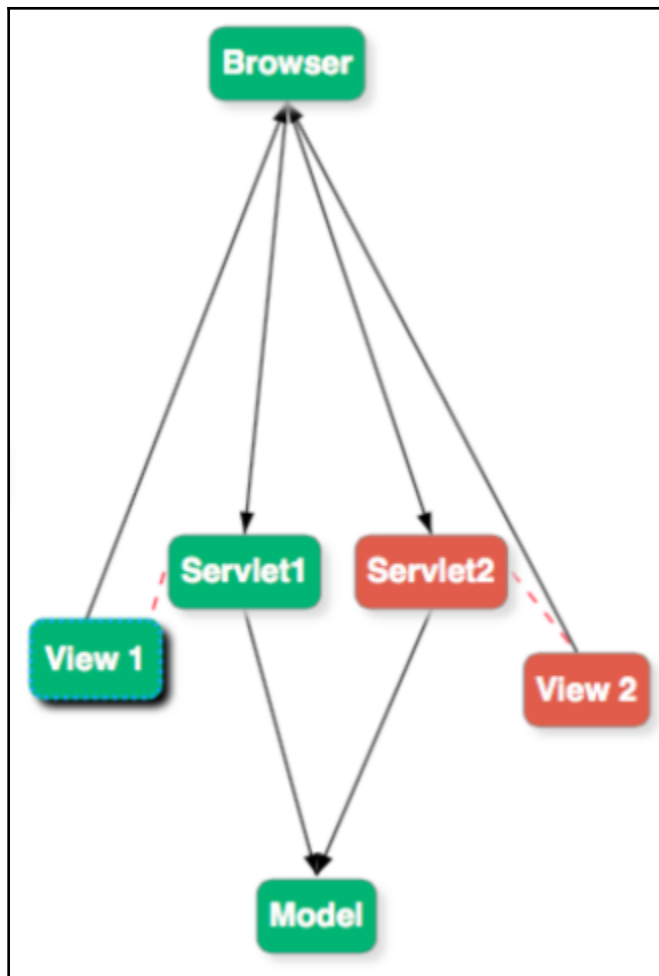


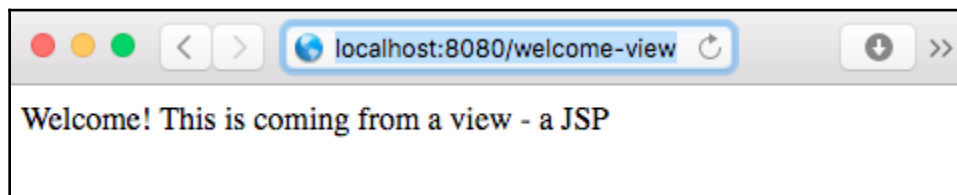
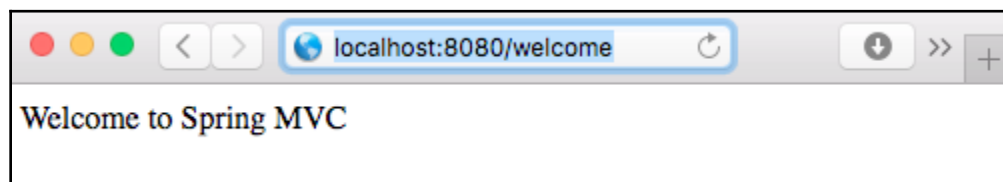
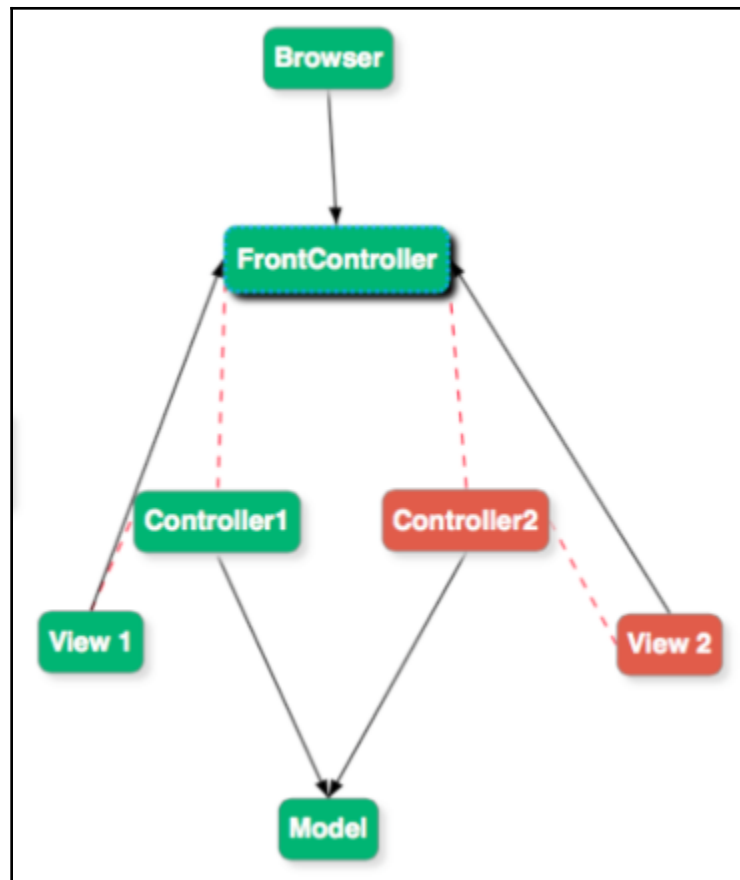
The screenshot displays the project structure of 'mastering-spring-example-1' in an IDE. The project is expanded, showing the following hierarchy:

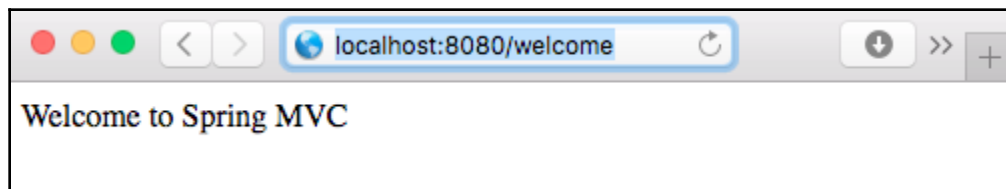
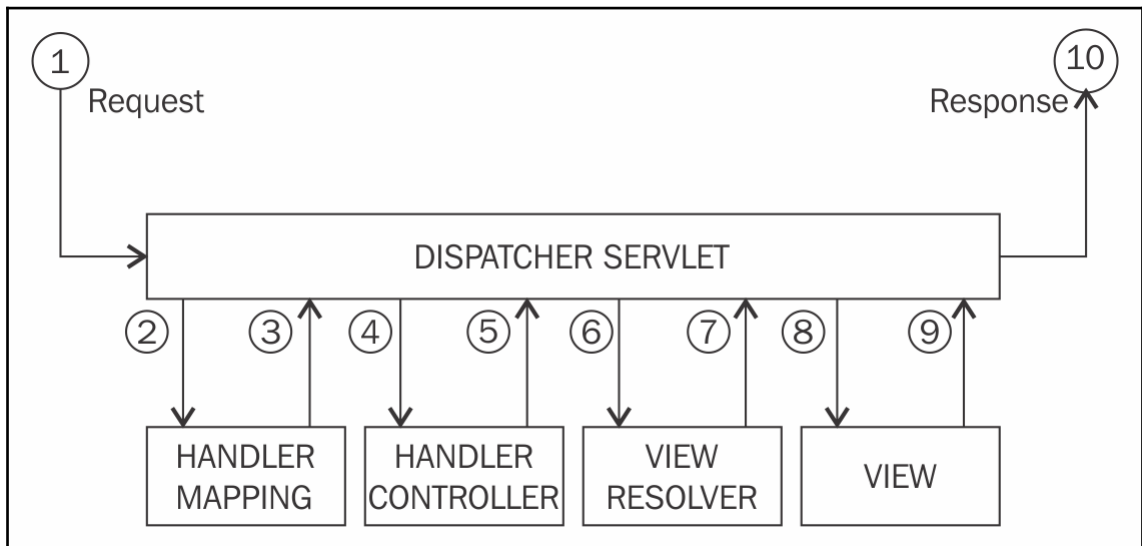
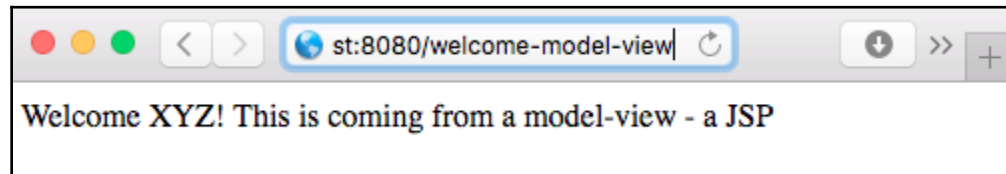
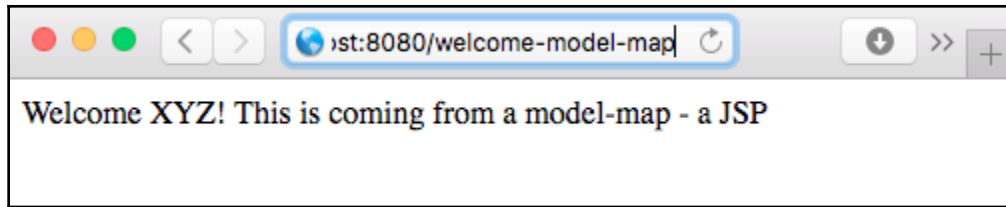
- mastering-spring-example-1
 - src/main/java
 - com.mastering.spring.beans
 - Data.java
 - User.java
 - com.mastering.spring.business
 - BusinessService.java
 - BusinessServiceImpl.java
 - BusinessServiceImplBeforeRefactoring.java
 - com.mastering.spring.context
 - LaunchJavaContext.java
 - LaunchXmlContext.java
 - com.mastering.spring.data
 - DataService.java
 - DataServiceImpl.java
 - src/main/resources
 - BusinessApplicationContext.xml
 - log4j.xml
 - src/test/java
 - com.mastering.spring.context
 - BusinessServiceJavaContextTest.java
 - BusinessServiceMockitoTest.java

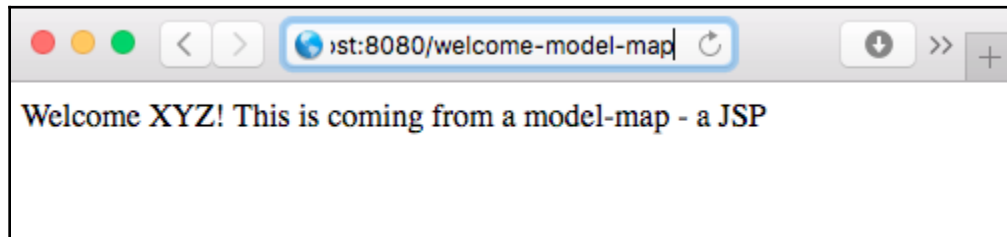
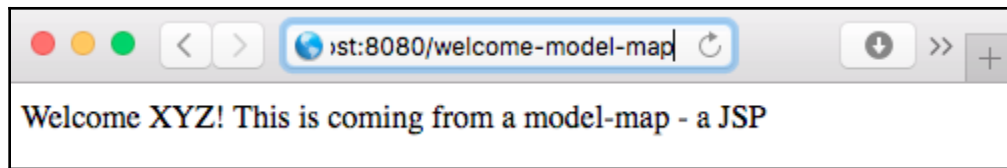
Chapter 3: Building Web Applications with Spring MVC





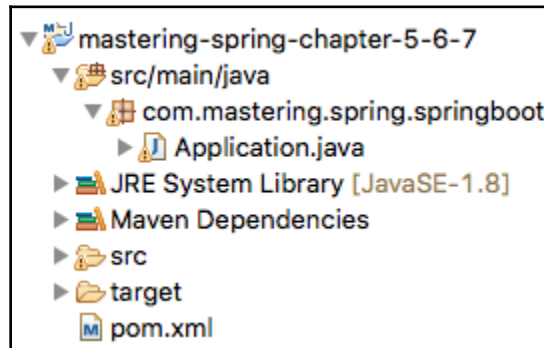






Chapter 4: Getting Started with Spring Boot

```
|
|  _____
| /  _  \  /  _  \  /  _  \  /  _  \  /  _  \  /  _  \  /  _  \  /  _  \  /  _  \
| \  __/  \  __/  \  __/  \  __/  \  __/  \  __/  \  __/  \  __/  \  __/  \  __/
|  \____/  \____/  \____/  \____/  \____/  \____/  \____/  \____/  \____/  \____/
|
| :: Spring Boot :: (v2.1.1.RELEASE)
|
| 2019-01-08 12:12:40.966 INFO 4535 --- [main] c.m.spring.springboot.Application : Starting Application on Rangas-MacBook-Pro.local with PID 4535 (
| 2019-01-08 12:12:40.975 INFO 4535 --- [main] c.m.spring.springboot.Application : No active profile set, falling back to default profiles: default
| 2019-01-08 12:12:45.463 INFO 4535 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
| 2019-01-08 12:12:45.591 INFO 4535 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
| 2019-01-08 12:12:45.591 INFO 4535 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet Engine: Apache Tomcat/9.0.13
| 2019-01-08 12:12:45.619 INFO 4535 --- [main] o.a.catalina.core.AprLifecycleListener : The APR based Apache Tomcat Native library which allows optimal
| 2019-01-08 12:12:45.975 INFO 4535 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
| 2019-01-08 12:12:45.975 INFO 4535 --- [main] o.s.web.context.ContextLoader : Root WebApplicationContext: initialization completed in 4766 ms
| 2019-01-08 12:12:46.866 INFO 4535 --- [main] o.s.s.concurrent.ThreadPoolTaskExecutor : Initializing ExecutorService 'applicationTaskExecutor'
| 2019-01-08 12:12:47.872 INFO 4535 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
| 2019-01-08 12:12:47.891 INFO 4535 --- [main] c.m.spring.springboot.Application : Started Application in 8.056 seconds (JVM running for 9.112)
|
| application
```



Dependency Hierarchy [test]

Filter:

Dependency Hierarchy

- spring-boot-starter-web : 2.1.1.RELEASE [compile]
 - spring-boot-starter : 2.1.1.RELEASE [compile]
 - spring-boot : 2.1.1.RELEASE [compile]
 - spring-core : 5.1.3.RELEASE (omitted for conflict with 5.1.3.RELEASE) [compile]
 - spring-context : 5.1.3.RELEASE (omitted for conflict with 5.1.3.RELEASE) [compile]
 - spring-boot-autoconfigure : 2.1.1.RELEASE [compile]
 - spring-boot : 2.1.1.RELEASE (omitted for conflict with 2.1.1.RELEASE) [compile]
 - spring-boot-starter-logging : 2.1.1.RELEASE [compile]
 - logback-classic : 1.2.3 [compile]
 - logback-core : 1.2.3 [compile]
 - slf4j-api : 1.7.25 (omitted for conflict with 1.7.25) [compile]
 - log4j-to-slf4j : 2.11.1 [compile]
 - slf4j-api : 1.7.25 (omitted for conflict with 1.7.25) [compile]
 - log4j-api : 2.11.1 [compile]
 - jul-to-slf4j : 1.7.25 [compile]
 - slf4j-api : 1.7.25 (omitted for conflict with 1.7.25) [compile]
 - javax.annotation-api : 1.3.2 (omitted for conflict with 1.3.2) [compile]
 - spring-core : 5.1.3.RELEASE (omitted for conflict with 5.1.3.RELEASE) [compile]
 - snakeyaml : 1.23 [runtime]
 - spring-boot-starter-json : 2.1.1.RELEASE [compile]
 - spring-boot-starter : 2.1.1.RELEASE (omitted for conflict with 2.1.1.RELEASE) [compile]
 - spring-web : 5.1.3.RELEASE (omitted for conflict with 5.1.3.RELEASE) [compile]
 - jackson-databind : 2.9.7 [compile]
 - jackson-datatype-jdk8 : 2.9.7 [compile]
 - jackson-datatype-jsr310 : 2.9.7 [compile]
 - jackson-module-parameter-names : 2.9.7 [compile]
 - spring-boot-starter-tomcat : 2.1.1.RELEASE (omitted for conflict with 2.1.1.RELEASE) [compile]
 - hibernate-validator : 6.0.13.Final [compile]
 - spring-web : 5.1.3.RELEASE [compile]
 - spring-webmvc : 5.1.3.RELEASE [compile]
 - spring-boot-starter-test : 2.1.1.RELEASE [test]
 - spring-boot-starter-tomcat : 2.1.1.RELEASE [provided]

Resolved Dependencies

- javax.annotation-api : 1.3.2 [compile]
- jaxb-api : 2.3.1 [test]
- jboss-logging : 3.3.2.Final [compile]
- json-path : 2.4.0 [test]
- json-smart : 2.3 [test]
- jsonassert : 1.5.0 [test]
- jul-to-slf4j : 1.7.25 [compile]
- junit : 4.12 [test]
- log4j-api : 2.11.1 [compile]
- log4j-to-slf4j : 2.11.1 [compile]
- logback-classic : 1.2.3 [compile]
- logback-core : 1.2.3 [compile]
- mockito-core : 2.23.4 [test]
- objenesis : 2.6 [test]
- slf4j-api : 1.7.25 [compile]
- snakeyaml : 1.23 [runtime]
- spring-aop : 5.1.3.RELEASE [compile]
- spring-beans : 5.1.3.RELEASE [compile]
- spring-boot : 2.1.1.RELEASE [compile]
- spring-boot-autoconfigure : 2.1.1.RELEASE [compile]
- spring-boot-starter : 2.1.1.RELEASE [compile]
- spring-boot-starter-json : 2.1.1.RELEASE [compile]
- spring-boot-starter-logging : 2.1.1.RELEASE [compile]
- spring-boot-starter-test : 2.1.1.RELEASE [test]
- spring-boot-starter-tomcat : 2.1.1.RELEASE [provided]
- spring-boot-starter-web : 2.1.1.RELEASE [compile]
- spring-boot-test : 2.1.1.RELEASE [test]
- spring-boot-test-autoconfigure : 2.1.1.RELEASE [test]
- spring-context : 5.1.3.RELEASE [compile]
- spring-core : 5.1.3.RELEASE [compile]
- spring-expression : 5.1.3.RELEASE [compile]
- spring-jcl : 5.1.3.RELEASE [compile]
- spring-test : 5.1.3.RELEASE [test]
- spring-web : 5.1.3.RELEASE [compile]
- spring-webmvc : 5.1.3.RELEASE [compile]

SPRING INITIALIZR

bootstrap your application now

Generate a Maven Project with Java and Spring Boot 2.1.1

Project Metadata

Artifact coordinates

Group

Artifact

Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

Selected Dependencies

[Generate Project](#)

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

Package Name

Packaging

Java Version

Language

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

Generate Project   

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

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

Project Metadata

Artifact coordinates

Group

Artifact

Name

Description

Package Name

Packaging

Java Version

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

Dependencies

Add Spring Boot Starters and dependencies to your application

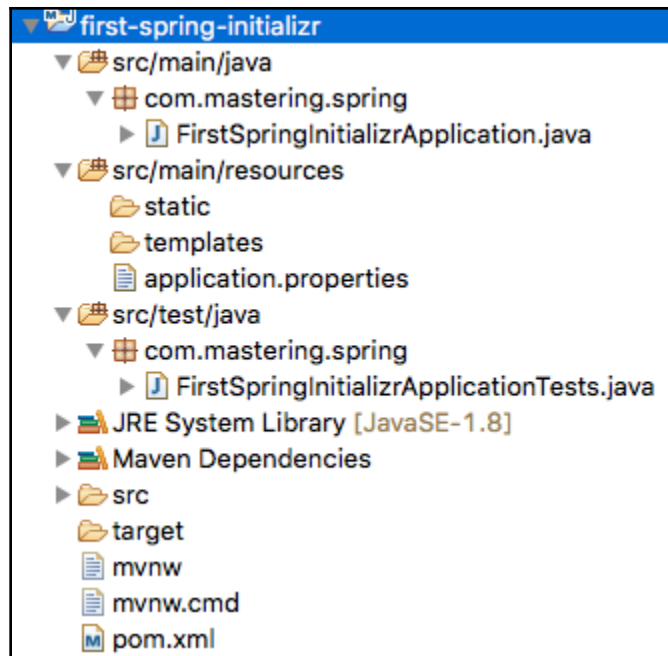
Search for dependencies

Selected Dependencies

Web ✕JPA ✕Actuator ✕DevTools ✕

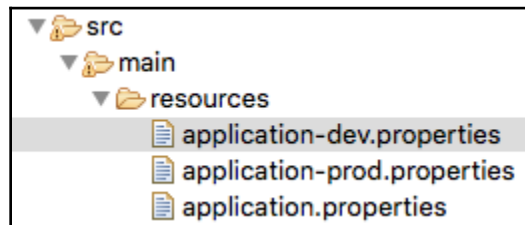
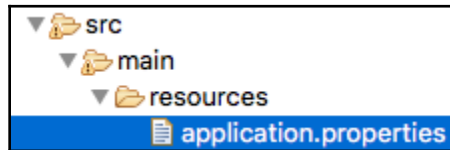
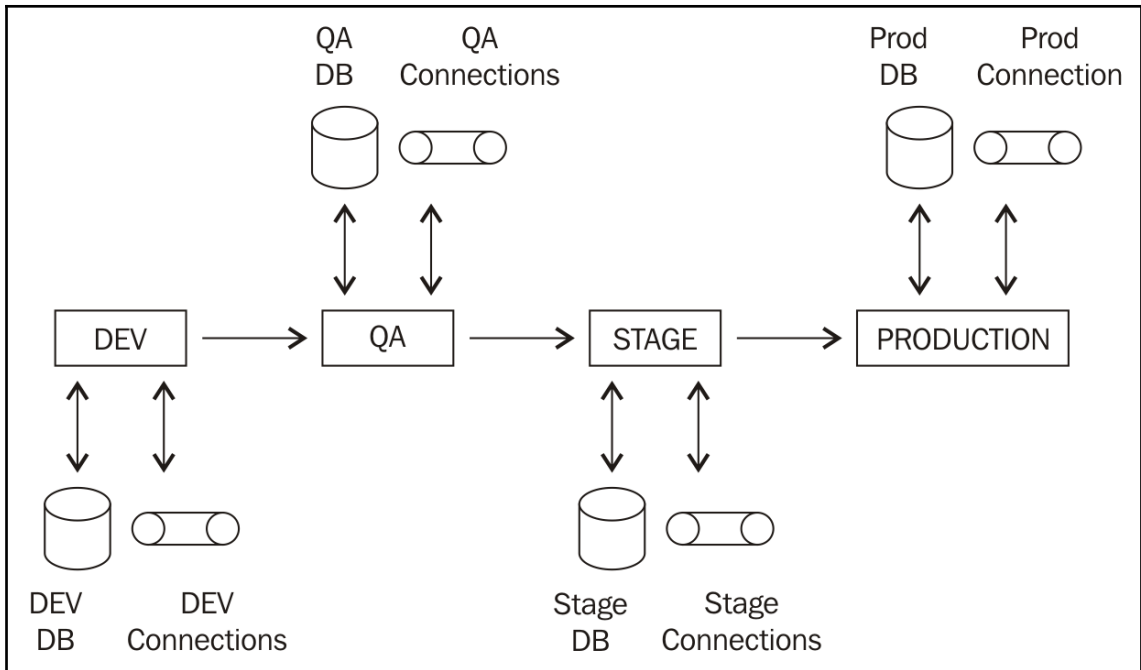
[Generate Project](#) ⌘ + ↵

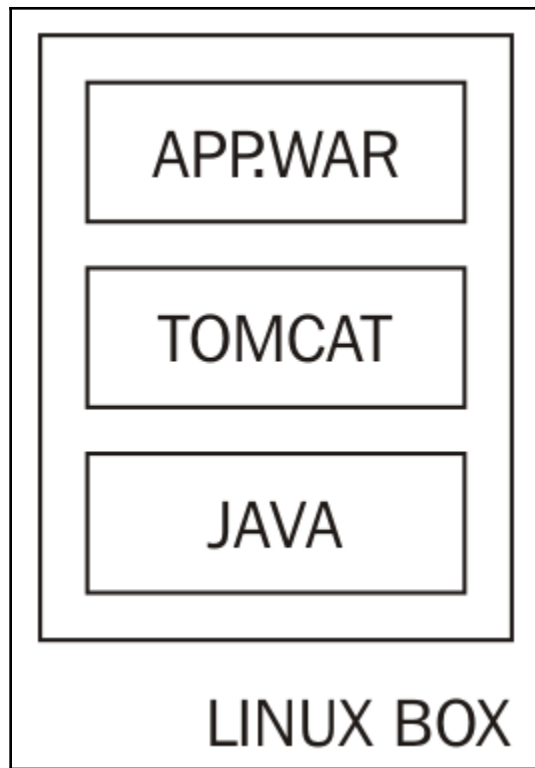
```
|__pom.xml
|__src
|  |__main
|  |  |__java
|  |    |__com
|  |      |__mastering
|  |        |__spring
|  |          |__FirstSpringInitializrApplication.java
|  |  |__resources
|  |    |__application.properties
|  |    |__static
|  |    |__templates
|  |__test
|  |  |__java
|  |    |__com
|  |      |__mastering
|  |        |__spring
|  |          |__FirstSpringInitializrApplicationTests.java
```

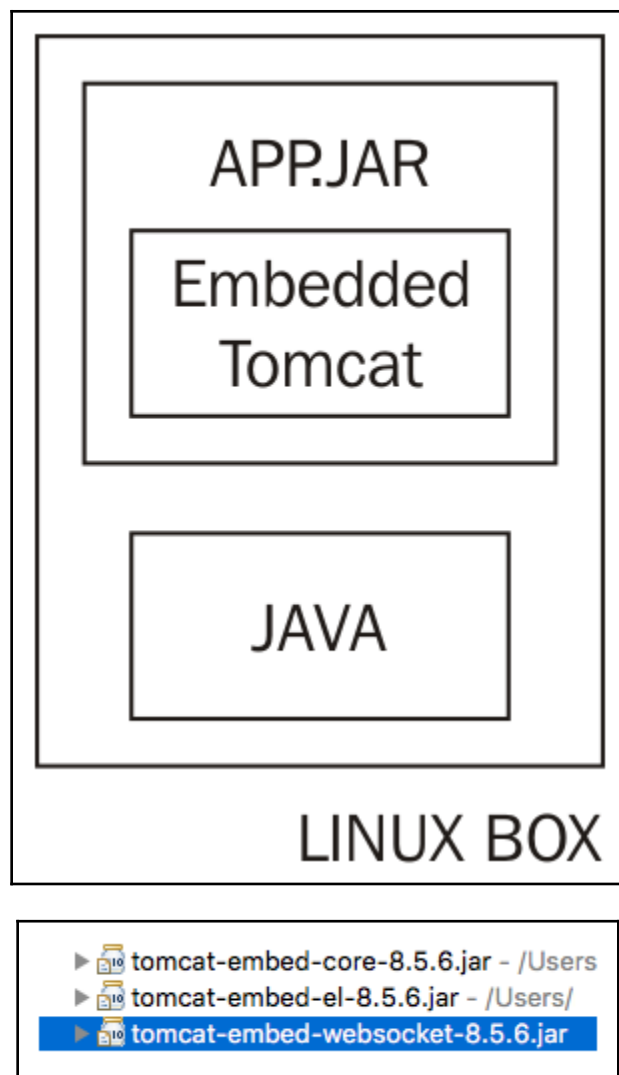


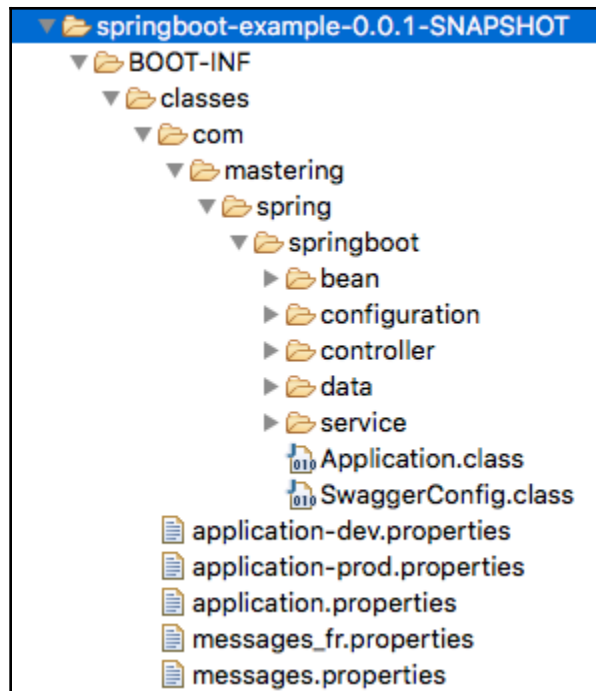
spring.factories ☒

```
31 org.springframework.boot.autoconfigure.data.jpa.JpaRepositoriesAutoConfiguration,\n32 org.springframework.boot.autoconfigure.data.mongo.MongoDataAutoConfiguration,\n33 org.springframework.boot.autoconfigure.data.mongo.MongoRepositoriesAutoConfiguration,\n34 org.springframework.boot.autoconfigure.data.neo4j.Neo4jDataAutoConfiguration,\n35 org.springframework.boot.autoconfigure.data.neo4j.Neo4jRepositoriesAutoConfiguration,\n36 org.springframework.boot.autoconfigure.data.solr.SolrRepositoriesAutoConfiguration,\n37 org.springframework.boot.autoconfigure.data.redis.RedisAutoConfiguration,\n38 org.springframework.boot.autoconfigure.data.redis.RedisRepositoriesAutoConfiguration,\n39 org.springframework.boot.autoconfigure.data.rest.RepositoryRestMvcAutoConfiguration,\n40 org.springframework.boot.autoconfigure.data.web.SpringDataWebAutoConfiguration,\n41 org.springframework.boot.autoconfigure.elasticsearch.jest.JestAutoConfiguration,\n42 org.springframework.boot.autoconfigure.freemarker.FreeMarkerAutoConfiguration,\n43 org.springframework.boot.autoconfigure.gson.GsonAutoConfiguration,\n44 org.springframework.boot.autoconfigure.h2.H2ConsoleAutoConfiguration,\n45 org.springframework.boot.autoconfigure.hateoas.HypermediaAutoConfiguration,\n46 org.springframework.boot.autoconfigure.hazelcast.HazelcastAutoConfiguration,\n47 org.springframework.boot.autoconfigure.hazelcast.HazelcastJpaDependencyAutoConfiguration,\n48 org.springframework.boot.autoconfigure.info.ProjectInfoAutoConfiguration,\n49 org.springframework.boot.autoconfigure.integration.IntegrationAutoConfiguration,\n50 org.springframework.boot.autoconfigure.jackson.JacksonAutoConfiguration,\n51 org.springframework.boot.autoconfigure.jdbc.DataSourceAutoConfiguration,\n52 org.springframework.boot.autoconfigure.jdbc.JdbcTemplateAutoConfiguration,\n53 org.springframework.boot.autoconfigure.jdbc.IndiDataSourceAutoConfiguration,\n54 org.springframework.boot.autoconfigure.jdbc.XADataSourceAutoConfiguration,\n55 org.springframework.boot.autoconfigure.jdbc.DataSourceTransactionManagerAutoConfiguration,\n56 org.springframework.boot.autoconfigure.jms.JmsAutoConfiguration,\n57 org.springframework.boot.autoconfigure.jmx.JmxAutoConfiguration,\n58 org.springframework.boot.autoconfigure.jms.IndiConnectionFactoryAutoConfiguration,\n59 org.springframework.boot.autoconfigure.jms.activemq.ActiveMQAutoConfiguration,\n60 org.springframework.boot.autoconfigure.jms.artemis.ArtemisAutoConfiguration,\n61 org.springframework.boot.autoconfigure.jms.hornetq.HornetQAutoConfiguration,\n62 org.springframework.boot.autoconfigure.flyway.FlywayAutoConfiguration,\
```





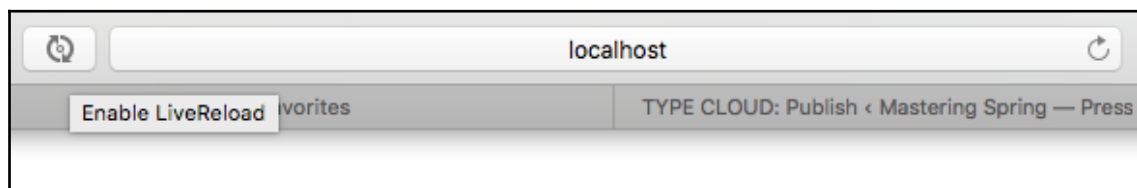




```
<dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-web</artifactId>
  <exclusions>
    <exclusion>
      <groupId>org.springframework.boot</groupId>
      <artifactId>spring-boot-starter-tomcat</artifactId>
    </exclusion>
  </exclusions>
</dependency>

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

```
▶ [jar] jetty-servlets-9.3.14.v20161028.jar - /U
▶ [jar] jetty-continuation-9.3.14.v20161028.jar
▶ [jar] jetty-http-9.3.14.v20161028.jar - /Users
▶ [jar] jetty-util-9.3.14.v20161028.jar - /Users/
▶ [jar] jetty-io-9.3.14.v20161028.jar - /Users/
▶ [jar] jetty-webapp-9.3.14.v20161028.jar - /U
▶ [jar] jetty-xml-9.3.14.v20161028.jar - /Users/
▶ [jar] jetty-servlet-9.3.14.v20161028.jar - /Us
▶ [jar] jetty-security-9.3.14.v20161028.jar - /U
▶ [jar] jetty-server-9.3.14.v20161028.jar - /Us
```



HAL BROWSER

Spring Boot Actuator

Spring Boot Application

The HAL Browser (for Spring Data REST)Go To Entry PointAbout The HAL Browser (for Spring Data REST)

Explorer

/

Go!

Custom Request Headers

Properties

{ }

Links

rel	title	name / index	docs	GET	NON-GET
profile					

Inspector

Response Headers

200 success
content-type: application/hal+json;charset=UTF-8
date: Tue, 08 Jan 2019 07:48:25 GMT
transfer-encoding: Identity

Response Body

{
 "_links": {
 "profile": {
 "href": "http://localhost:8080/profile"
 }
 }
}

The HAL Browser (for Spring Data REST)Go To Entry PointAbout The HAL Browser (for Spring Data REST)

Explorer

/actuator

Go!

Custom Request Headers

Properties

{ }

Links

rel	title	name / index	docs	GET	NON-GET
self					
auditevents					
beans					
caches-cache					
caches					
health					
health-component					
health-component-instance					
conditions					
configprops					
env					
env-toMatch					
info					
loggers					

Inspector

Response Headers

200 success
content-type: application/json;charset=UTF-8
date: Tue, 08 Jan 2019 07:51:10 GMT
transfer-encoding: Identity

Response Body

{
 "_links": {
 "self": {
 "href": "http://localhost:8080/actuator",
 "templated": false
 },
 "auditevents": {
 "href": "http://localhost:8080/actuator/auditevents",
 "templated": false
 },
 "beans": {
 "href": "http://localhost:8080/actuator/beans",
 "templated": false
 },
 "caches-cache": {
 "href": "http://localhost:8080/actuator/caches/{cache}",
 "templated": true
 },
 "caches": {
 "href": "http://localhost:8080/actuator/caches",
 "templated": false
 },
 "health": {
 "href": "http://localhost:8080/actuator/health",
 "templated": false
 },
 "health-component": {
 "href": "http://localhost:8080/actuator/health/{component}",
 "templated": true
 },
 "health-component-instance": {
 "href": "http://localhost:8080/actuator/health/{component}/{instance}",
 "templated": true
 },
 "conditions": {

[21]

Explorer

/actuator/configprops

Go!

Custom Request Headers

Properties

```
{
  "contexts": {
    "application": {
      "beans": {
        "spring.transaction-org.springframework.boot.autoconfigure.transaction.TransactionProperties": {
          "prefix": "spring.transaction",
          "properties": {
            "management.trace.http-org.springframework.boot.actuate.autoconfigure.trace.http.HttpTraceProperties": {
              "prefix": "management.trace.http",
              "properties": {
                "include": ["RESPONSE_HEADERS", "COOKIE_HEADERS", "TIME_TAKEN", "REQUEST_HEADERS"]
              }
            },
            "management.endpoints.web-org.springframework.boot.actuate.autoconfigure.endpoint.web.WebEndpointProperties": {
              "prefix": "management.endpoints.web",
              "properties": {
                "pathMapping": {
                  "exposure": {
                    "include": ["**"],
                    "exclude": []
                  },
                  "basePath": "/actuator"
                }
              }
            },
            "spring.hateoas-org.springframework.boot.autoconfigure.hateoas.HateoasProperties": {
              "prefix": "spring.hateoas"
            }
          }
        }
      }
    }
  }
}
```

Inspector

Response Headers

200 success

content-type: application/json;charset=UTF-8
date: Tue, 08 Jan 2019 08:03:24 GMT
transfer-encoding: Identity

Response Body

```
{
  "contexts": {
    "application": {
      "beans": {
        "spring.transaction-org.springframework.boot.autoconfigure.transaction.TransactionProperties": {
          "prefix": "spring.transaction",
          "properties": {
            "management.trace.http-org.springframework.boot.actuate.autoconfigure.trace.http.HttpTraceProperties": {
              "prefix": "management.trace.http",
              "properties": {
                "include": {
                  "RESPONSE_HEADERS",
                  "COOKIE_HEADERS",
                  "TIME_TAKEN",
                  "REQUEST_HEADERS"
                }
              }
            },
            "management.endpoints.web-org.springframework.boot.actuate.autoconfigure.endpoint.web.WebEndpointProperties": {
              "prefix": "management.endpoints.web",
              "properties": {
                "pathMapping": {},
                "exposure": {
                  "include": [
                    "**"
                  ],
                  "exclude": []
                }
              }
            }
          }
        }
      }
    }
  }
}
```

Explorer

/actuator/env

Go!

Custom Request Headers

Properties

```
{
  "activeProfiles": [],
  "propertySources": [
    {
      "name": "server.ports",
      "properties": {
        "local.server.port": {
          "value": 8080
        }
      }
    },
    {
      "name": "servletContextInitParams",
      "properties": {}
    },
    {
      "name": "systemProperties",
      "properties": {
        "java.runtime.name": {
          "value": "Java(TM) SE Runtime Environment"
        },
        "sun.boot.library.path": {
          "value": "/Library/Java/JavaVirtualMachines/jdk1.8.0_31.jdk/Contents/Home/jre/lib"
        },
        "java.vm.version": {
          "value": "25.31-b07"
        },
        "user.country.format": {
          "value": "IN"
        },
        "gopherProxySet": {
          "value": "false"
        }
      }
    }
  ]
}
```

Inspector

Response Headers

200 success

content-type: application/json;charset=UTF-8
date: Tue, 08 Jan 2019 08:04:05 GMT
transfer-encoding: Identity

Response Body

```
{
  "activeProfiles": [],
  "propertySources": [
    {
      "name": "server.ports",
      "properties": {
        "local.server.port": {
          "value": 8080
        }
      }
    },
    {
      "name": "servletContextInitParams",
      "properties": {}
    },
    {
      "name": "systemProperties",
      "properties": {
        "java.runtime.name": {
          "value": "Java(TM) SE Runtime Environment"
        },
        "sun.boot.library.path": {
          "value": "/Library/Java/JavaVirtualMachines/jdk1.8.0_31.jdk/Contents/Home/jre/lib"
        },
        "java.vm.version": {
          "value": "25.31-b07"
        },
        "user.country.format": {
          "value": "IN"
        }
      }
    }
  ]
}
```

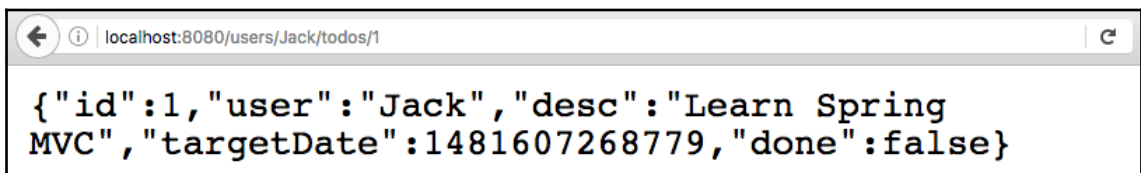
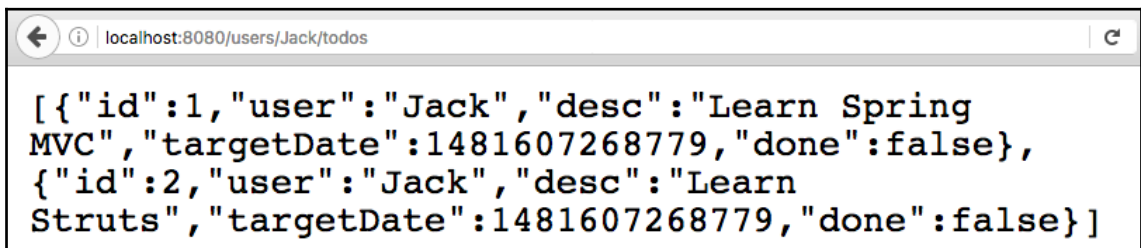
Explorer

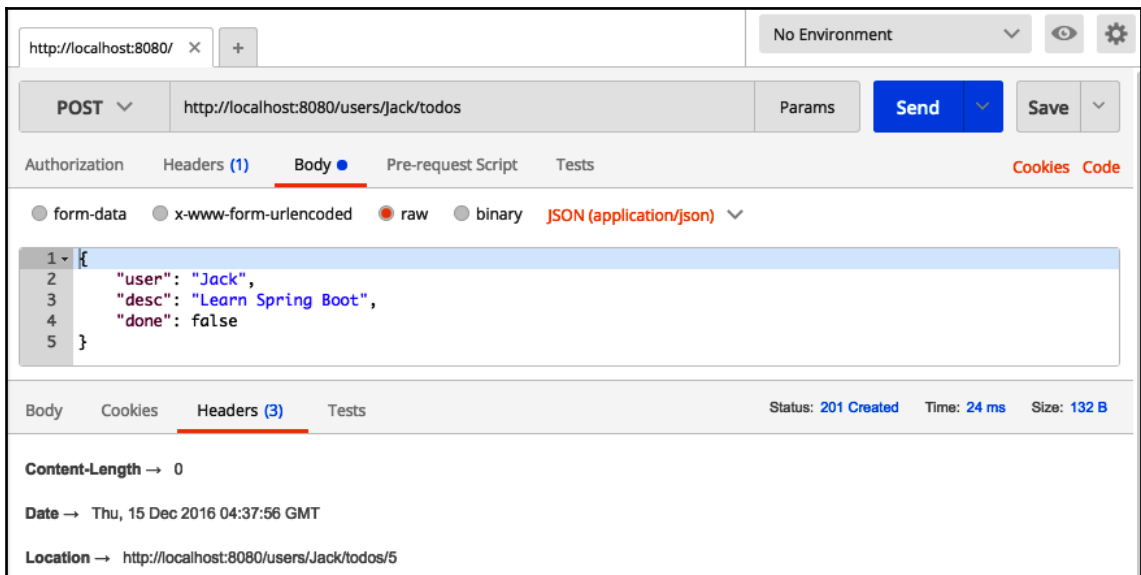
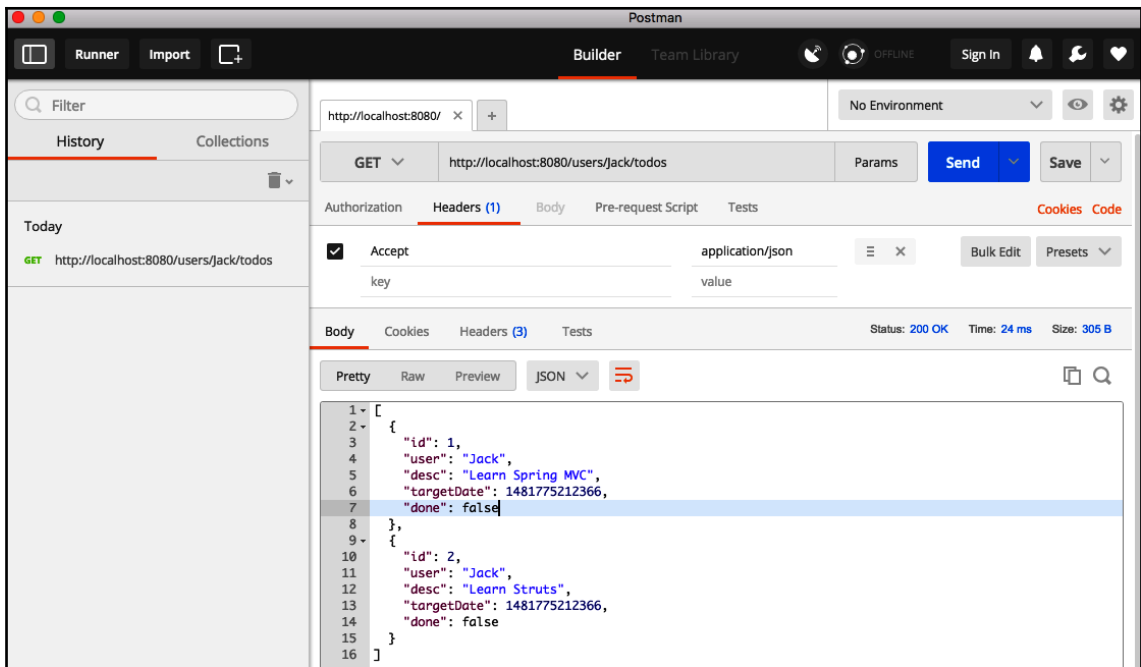
Custom Request Headers

Properties

```
{  
  "status": "UP"  
}
```

Chapter 6: Building REST APIs with Spring Boot





PUT

http://localhost:8080/users/jack/todos/1

Params

Send

Save

AuthorizationHeaders (1)BodyPre-request ScriptTestsCode

form-data

x-www-form-urlencoded

raw

binary

JSON (application/json)

```
1 {
2   "id":1,
3   "user":"Jack",
4   "desc":"Learn Spring MVC & More",
5   "targetDate":"2019-01-10",
6   "done":false
7 }
```

BodyCookiesHeaders (3)Test ResultsStatus: 200 OKTime: 419 ms

PrettyRawPreviewJSON

Save Response

```
1 {
2   "id": 1,
3   "user": "Jack",
4   "desc": "Learn Spring MVC & More",
5   "targetDate": "2019-01-10T00:00:00.000+0000",
6   "done": false
7 }
```

DELETE

http://localhost:8080/users/jack/todos/1

Params

Send

AuthorizationHeaders (1)BodyPre-request ScriptTests

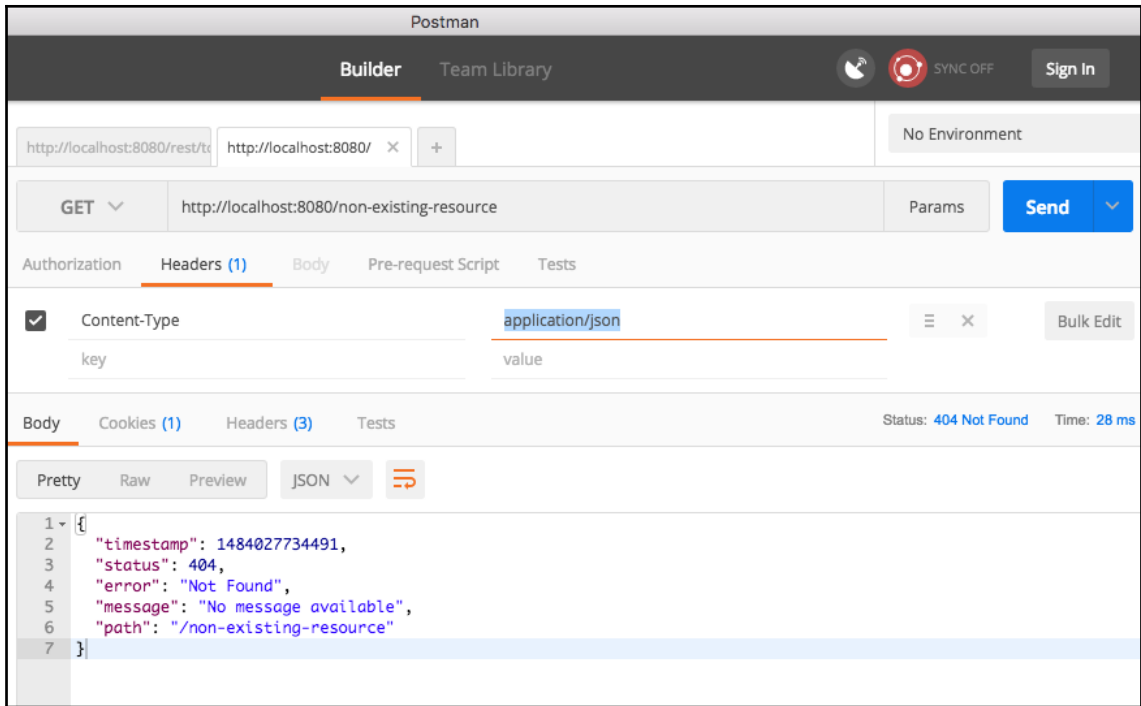
TypeNo Auth

BodyCookiesHeaders (1)Test ResultsStatus: 204 No ContentTime: 56 ms

PrettyRawPreviewText

Save Response

```
1
```





Swagger UI

localhost:8080/swagger-ui.html#/todo-controller

Search

default (/v2/api-docs)

api_key

Explore

Api Documentation

Api Documentation

[Apache 2.0](#)

basic-controller : Basic Controller

Show/Hide | List Operations | Expand Operations

basic-error-controller : Basic Error Controller

Show/Hide | List Operations | Expand Operations

todo-controller : Todo Controller

Show/Hide | List Operations | Expand Operations

GET	/users/dummy-service	errorService
GET	/users/{name}/todos	retrieveTodos
POST	/users/{name}/todos	add
GET	/users/{name}/todos/{id}	retrieveTodo

[BASE URL: / , API VERSION: 1.0]

POST

/users/{name}/todos

add

Response Class (Status 200)

OK

Model

Model Schema

```
{}
```

Response Content Type

/

Parameters

Parameter	Value	Description	Parameter Type	Data Type
name	(required)	name	path	string
todo	(required)	todo	body	Model Model Schema

Parameter content type: application/json

```
{
  "desc": "string",
  "done": true,
  "id": 0,
  "targetDate": "2017-01-10T12:00:42.154Z",
  "user": "string"
}
```

Click to set as parameter value

Response Messages

HTTP Status Code	Reason	Response Model	Headers
201	Created		
401	Unauthorized		
403	Forbidden		
404	Not Found		

GET

http://localhost:8080/welcome-internationalized

Params

Send

Save

Authorization

Headers

Body

Pre-request Script

Tests

Cookies

Code

key

value

Bulk Edit

Presets

Body

Cookies (1)

Headers (3)

Tests

Status: 200 OK

Time: 26 ms

Size: 134 B

Pretty

Raw

Preview

Text

1

Welcome in English

GET

http://localhost:8080/welcome-internationalized

Params

Send

Save

Authorization

Headers (1)

Body

Pre-request Script

Tests

Cookies

Code

☒

Accept-Language

fr

Bulk Edit

Presets

key

value

Body

Cookies (1)

Headers (3)

Tests

Status: 200 OK

Time: 94 ms

Size: 133 B

Pretty

Raw

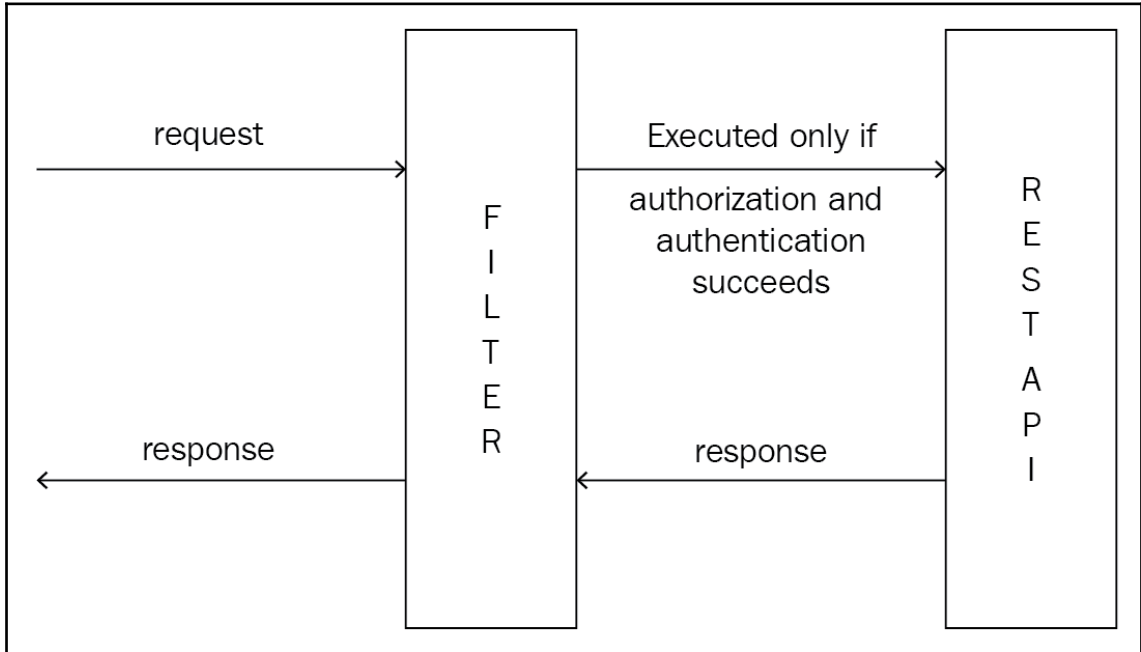
Preview

Text

1

Welcome in French

Chapter 8: Securing REST API with Spring Security



http://localhost:8080/ x http://localhost:8080/oauth http://localhost:8080/users/ + No Environment

GET http://localhost:8080/users/jack/todos Params Send Save

Authorization Headers (2) Body Pre-request Script Tests Cookies Code

Type Basic Auth Clear Update Request

Username user The authorization header will be generated and added as a custom header

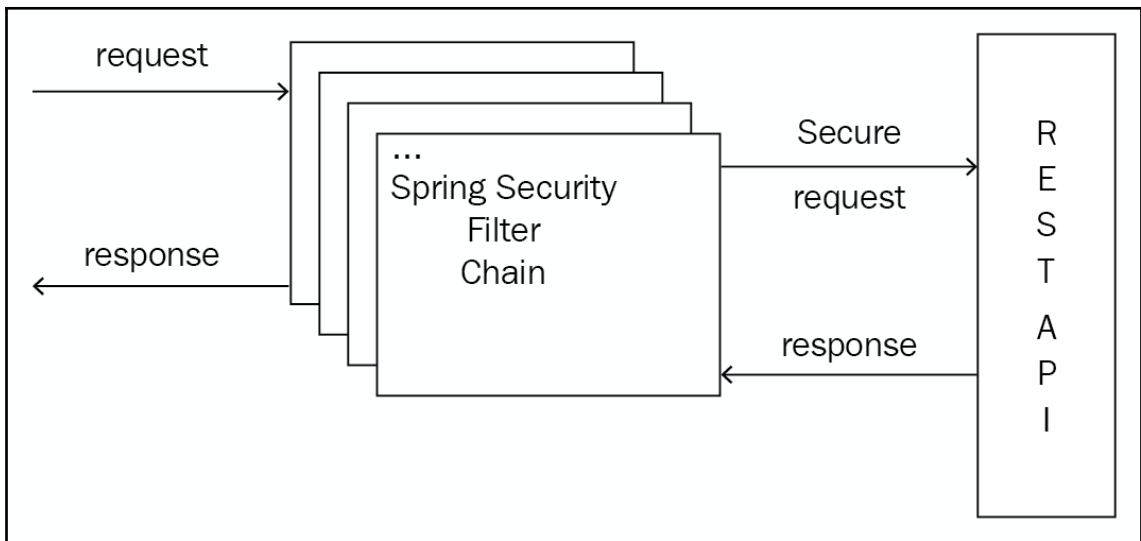
Password ☐ Save helper data to request

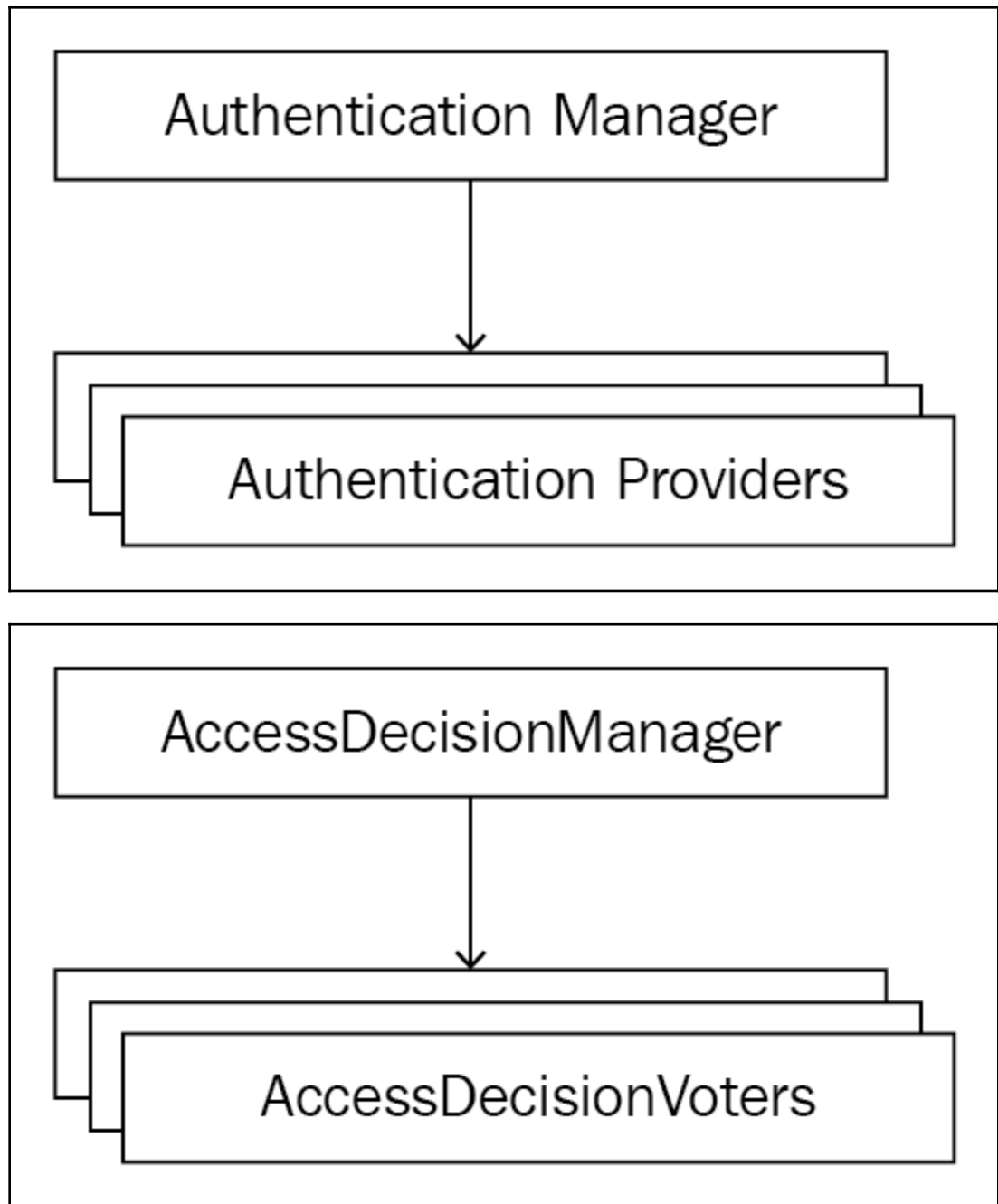
☐ Show Password

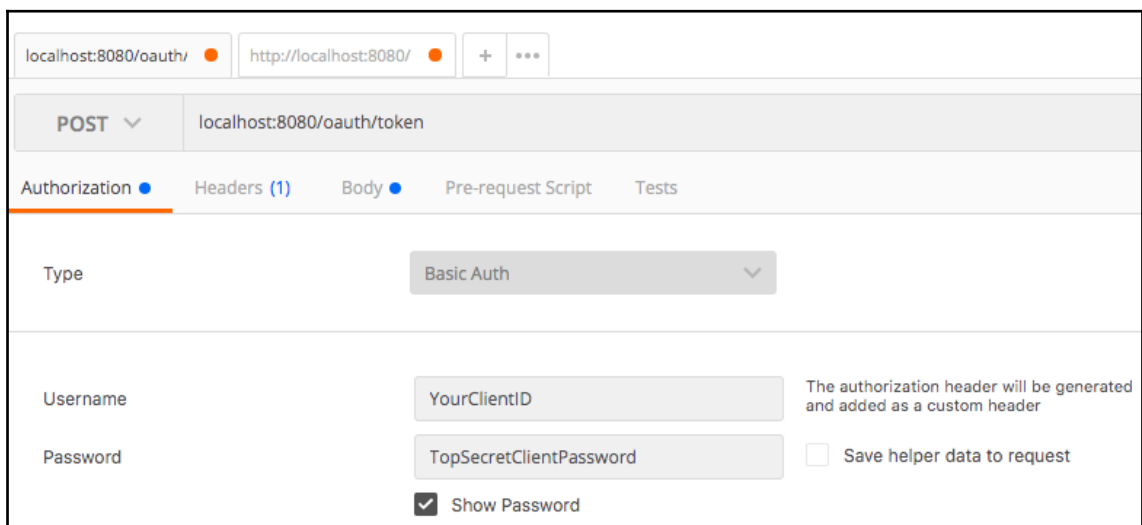
Body Cookies (1) Headers (10) Tests Status: 200 OK Time: 115 ms Size: 552 B

Pretty Raw Preview JSON

```
1- [
2- {
3-   "id": 1,
4-   "user": "Jack",
5-   "desc": "Learn Spring MVC",
6-   "targetDate": 1484120517038,
7-   "done": false
8- },
9- {
10-  "id": 2,
11-  "user": "Jack",
12-  "desc": "Learn Struts",
13-  "targetDate": 1484120517038,
14-  "done": false
15- }
16- ]
```







localhost:8080/oauth/ 

http://localhost:8080/ 

+

...

POST ▾

localhost:8080/oauth/token

Authorization 

Headers (1)

Body 

Pre-request Script

Tests

 form-data

 x-www-form-urlencoded

 raw

 binary

	Key	Value
<input checked="" data-bbox="244 626 262 649" type="checkbox"/>	grant_type	password
<input checked="" data-bbox="244 687 262 710" type="checkbox"/>	username	user1
<input checked="" data-bbox="244 749 262 772" type="checkbox"/>	password	user1-password

New key

Text ▾

Value

GET ▾

http://localhost:8080/users/Jack/todos

Params

Send ▾

Authorization

Headers (1)

Body

Pre-request Script

Tests

	Key	Value	Description	...	Bulk Edit
<input checked="" data-bbox="172 1049 191 1072" type="checkbox"/>	Authorization	Bearer b4c2c302-9fd8-4aa2-ae2d-a4e52acfcff0			
	New key	Value	Description		

Body

Cookies

Headers (9)

Test Results

Status: 200 OK

Pretty

Raw

Preview

JSON ▾



```
1 [
2   {
3     "id": 1,
4     "user": "Jack",
5     "desc": "Learn Spring MVC",
6     "targetDate": "2019-05-04T07:16:38.668+0000",
7     "done": false
8   },
9   {
10    "id": 2,
11    "user": "Jack",
12    "desc": "Learn Struts",
13    "targetDate": "2019-05-04T07:16:38.668+0000",
14    "done": false
15  }
16 ]
```

[Debugger](#)[Libraries](#)[Introduction](#)[Ask](#)[Get a T-shirt!](#)

Crafted by Auth0

```
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJzdWIiOiIxMjM0NTY3ODkwIiwibmFtZSI6IkpvaG4gRG91IiwiaWF0IjoxNTE2MjM5MDIyfQ.SflKxwRJSMeKKF2QT4fwpMeJf36P0k6yJV_adQssw5c
```

HEADER: ALGORITHM & TOKEN TYPE

```
{
  "alg": "HS256",
  "typ": "JWT"
}
```

PAYLOAD: DATA

```
{
  "sub": "1234567890",
  "name": "John Doe",
  "iat": 1516239822
}
```

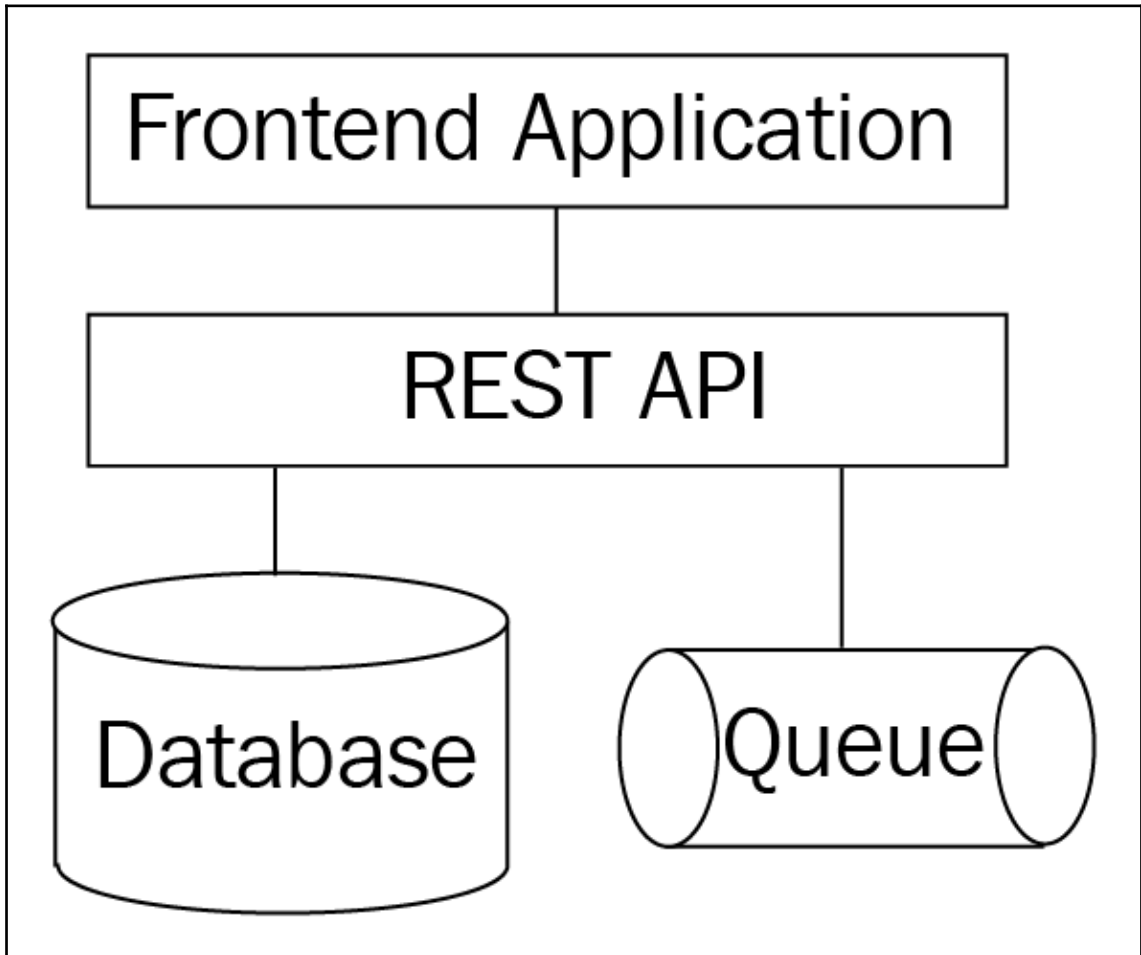
VERIFY SIGNATURE

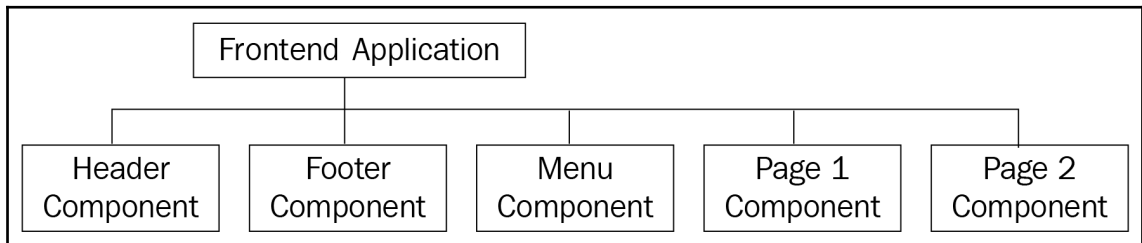
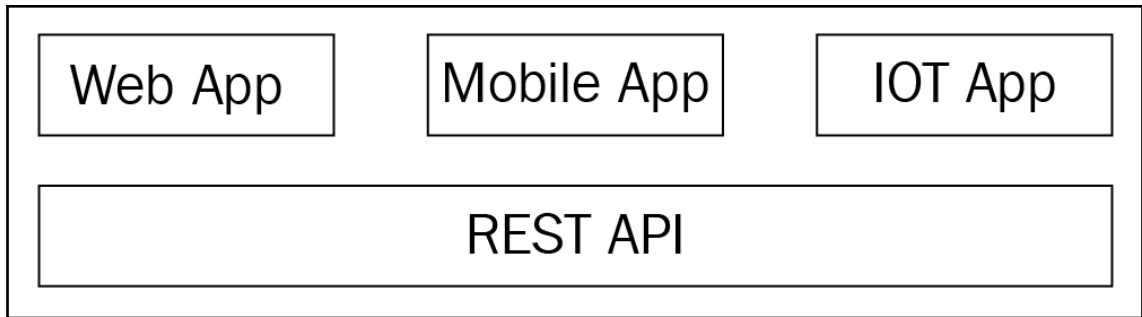
```
HMACSHA256(
  base64UrlEncode(header) + "." +
  base64UrlEncode(payload),
  your-256-bit-secret
) ☐ secret base64 encoded
```

Signature Verified

SHARE JWT

Chapter 9: Full Stack App with React and Spring Boot





Hello World, Ranga

Hello World, Ranga

Copyright Ranga

Hello World, Ranga

You want to:

- Learn React

Copyright Ranga

```
frontend — npm • node /usr/local/bin/npx create-react-app react-todo-app — 57x18
Rangas-MacBook-Air:frontend rangakaranam$ npx create-react-app react-todo-app
npx: installed 91 in 9.204s

Creating a new React app in /Ranga/MasteringSpring5.1/Code/Chapter09-FullStackWithReactAndSpringBoot/frontend/react-todo-app.

Installing packages. This might take a couple of minutes.
Installing react, react-dom, and react-scripts...

^[[B(( )) : loadDep:safe-buffer: sill resolveWit
^[[B(( )) : loadDep:safe-buffer: sill resolveWit
^[[B(( )) : fetchMetadata: sill resolveWit
^[[B(( )) : fetchMetadata: sill resolveWit
^[[B(( )) : fetchMetadata: sill resolveWit
^[[B^[[B(( )) : diffTrees: sill install ge
(( )) : finalize:fsevents: sill finalize
```

```
frontend — -bash — 103x25

Success! Created react-todo-app at /Ranga/MasteringSpring5.1/Code/Chapter09-FullStackWithReactAndSpringBoot/frontend/react-todo-app
Inside that directory, you can run several commands:

  npm start
    Starts the development server.

  npm run build
    Bundles the app into static files for production.

  npm test
    Starts the test runner.

  npm run eject
    Removes this tool and copies build dependencies, configuration files
    and scripts into the app directory. If you do this, you can't go back!

We suggest that you begin by typing:

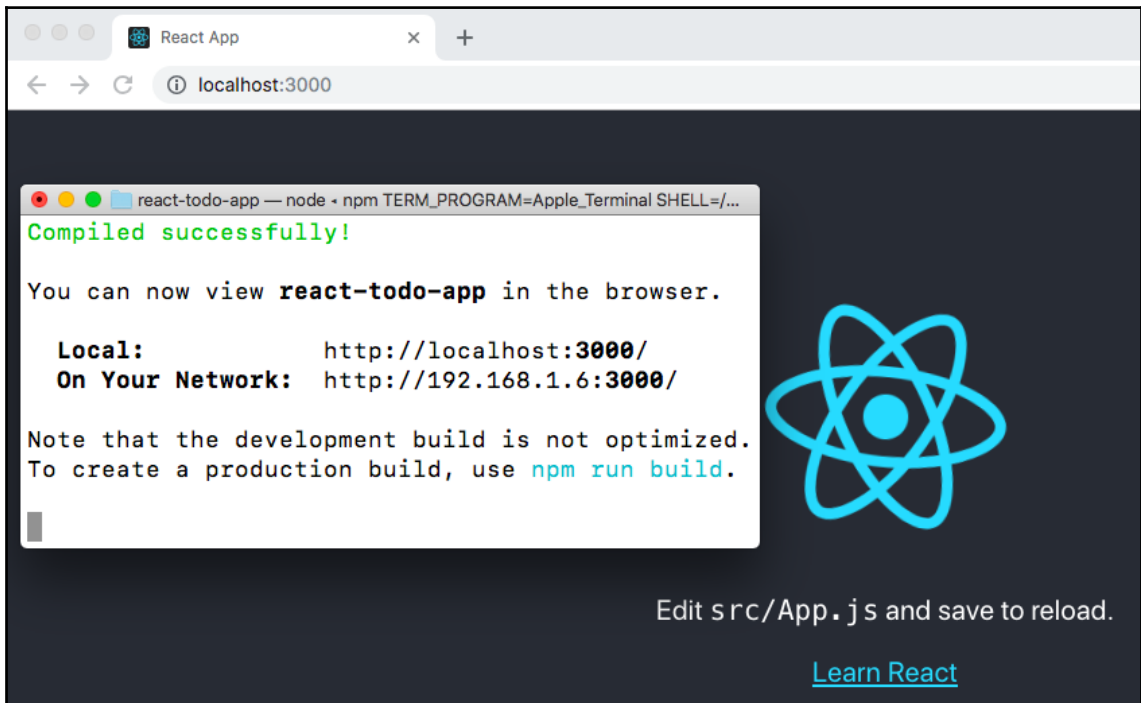
  cd react-todo-app
  npm start

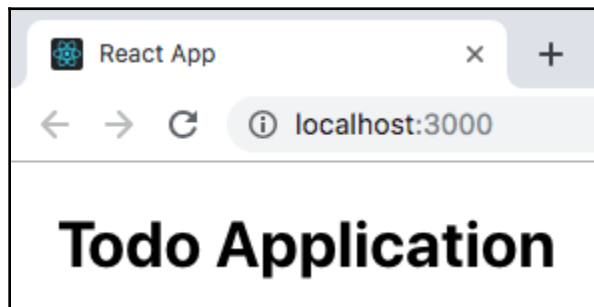
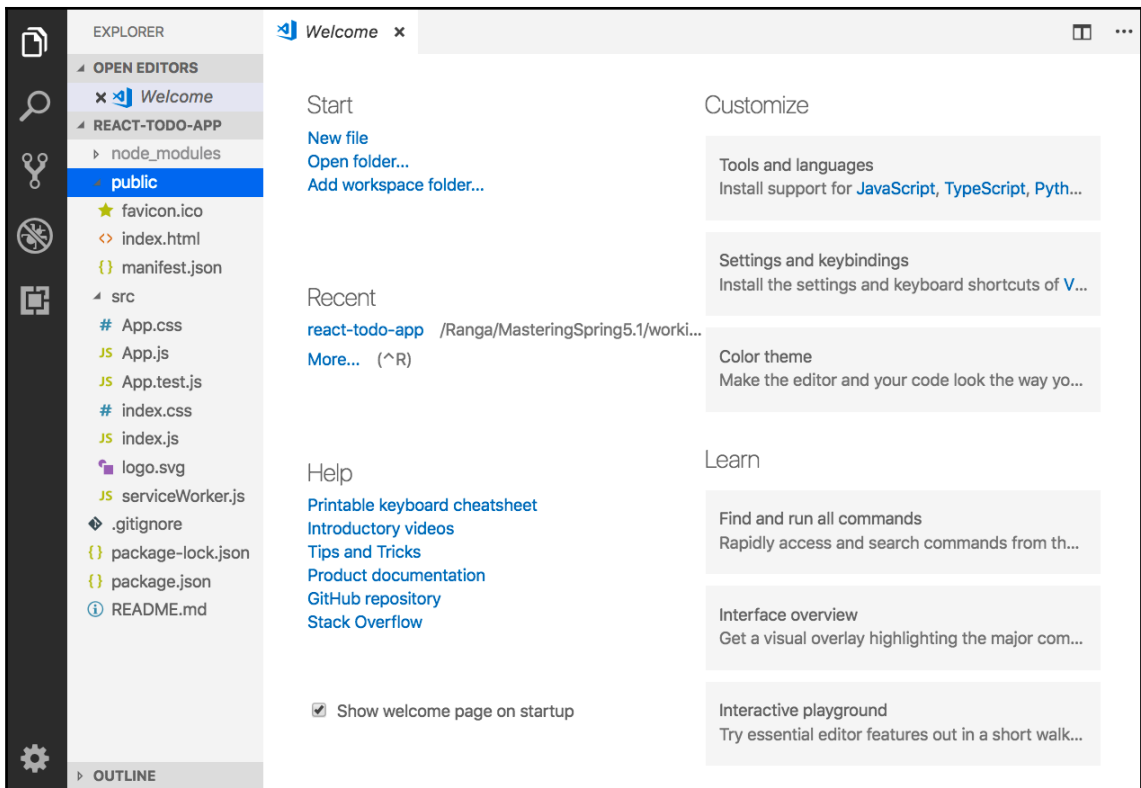
Happy hacking!
Rangas-MacBook-Air:frontend rangakaranam$
```

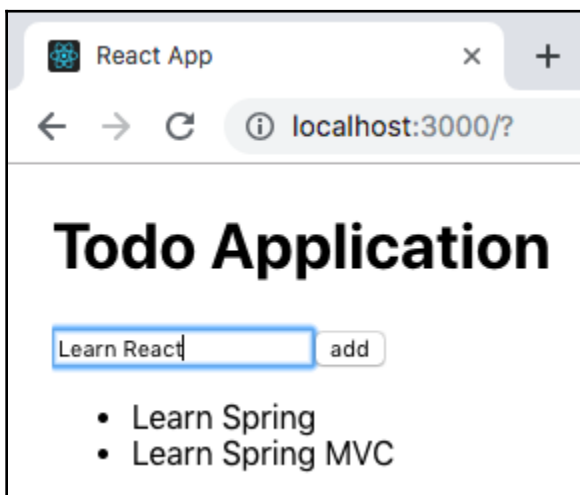
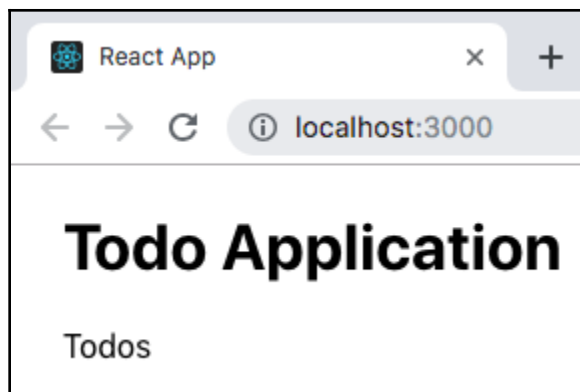


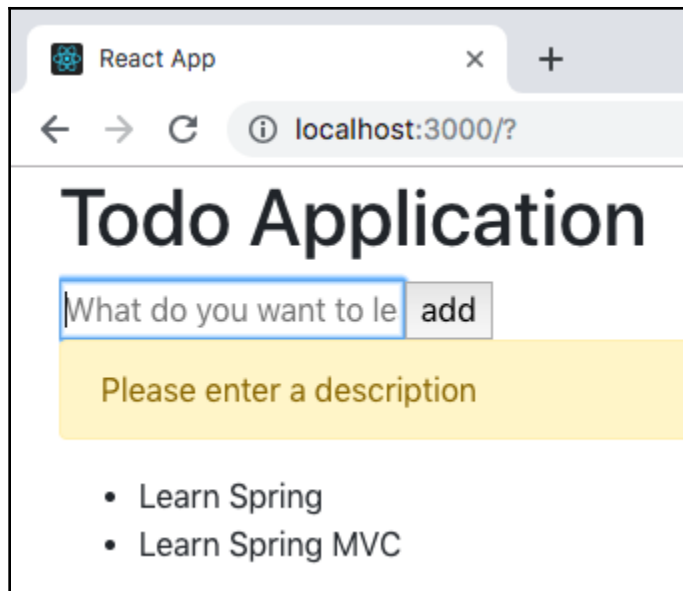
```
react-todo-app — node • npm TERM_PROGRAM=Apple_Terminal SHELL=/bin/bash — 61x13
Rangas-MacBook-Air:frontend rangakaranam$ cd react-todo-app/
Rangas-MacBook-Air:react-todo-app rangakaranam$ npm start

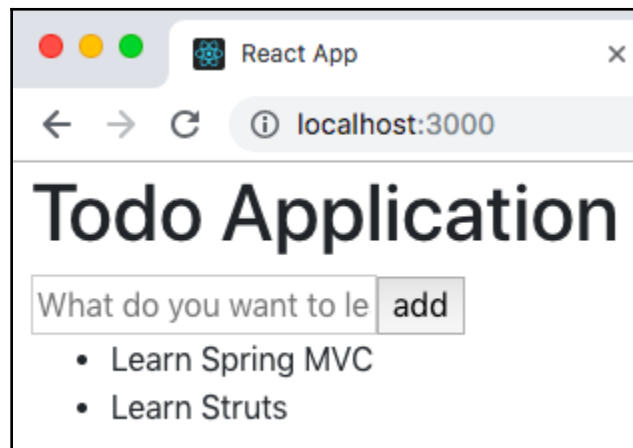
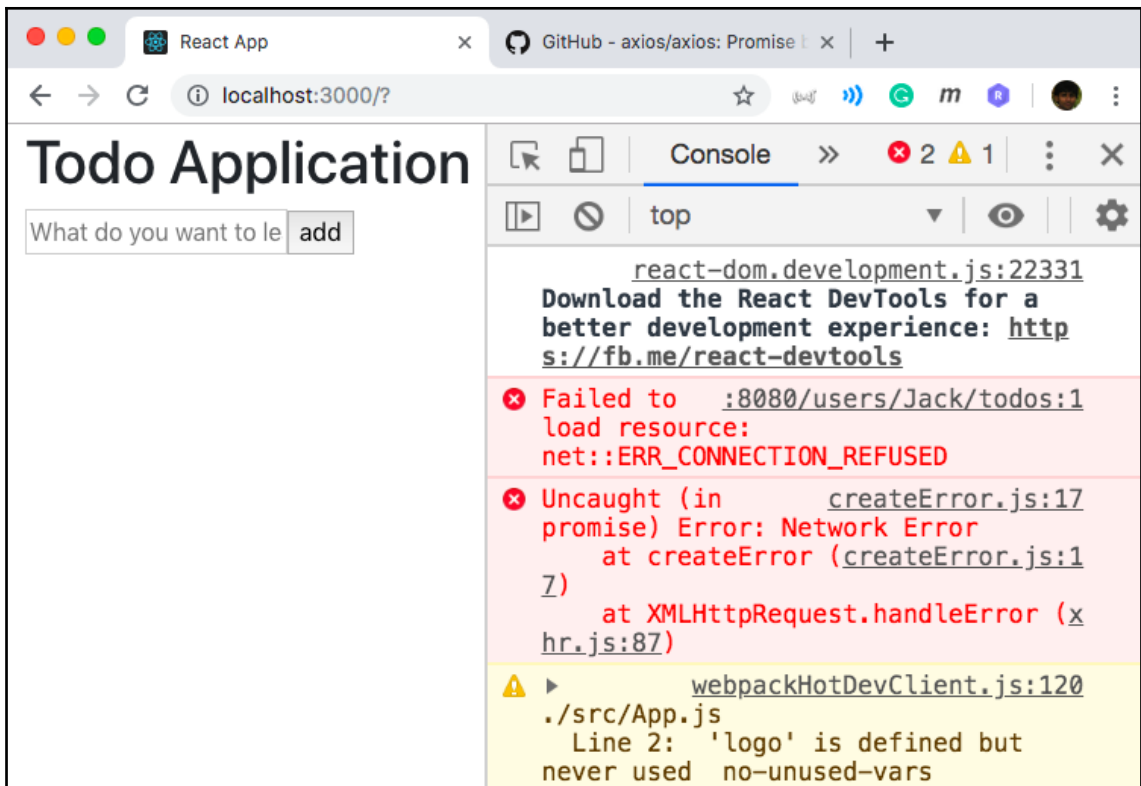
> react-todo-app@0.1.0 start /Ranga/MasteringSpring5.1/Code/C
hapter09-FullStackWithReactAndSpringBoot/frontend/react-todo-
app
> react-scripts start
```

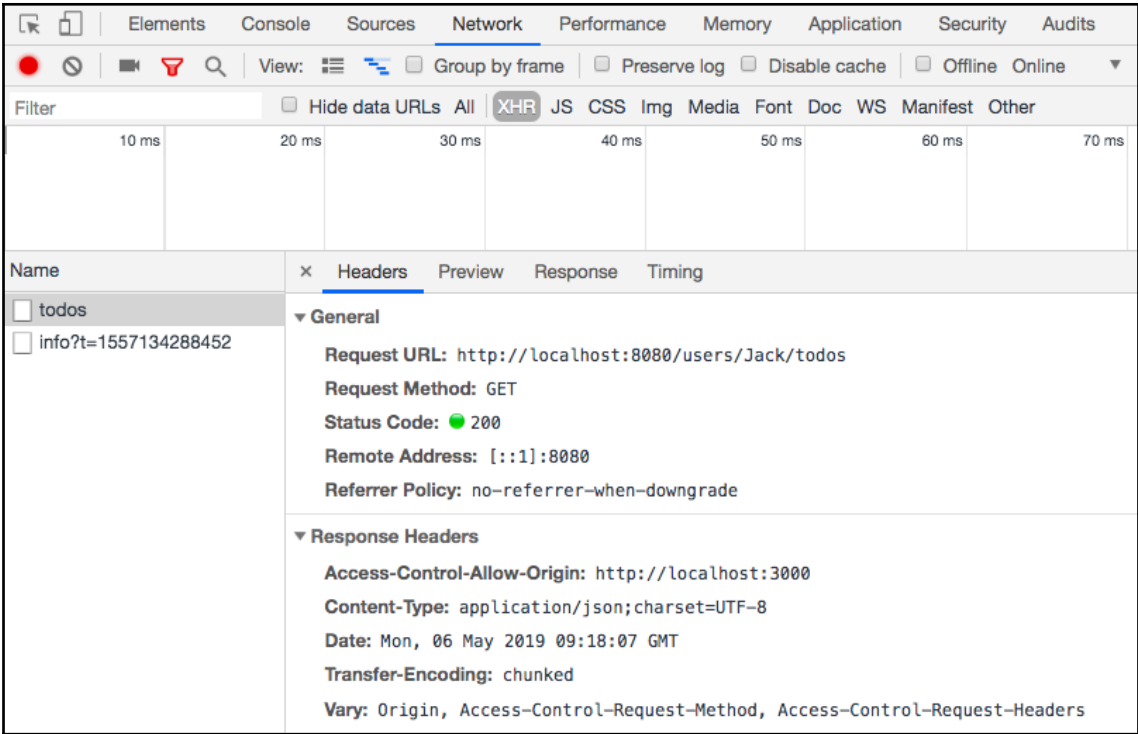


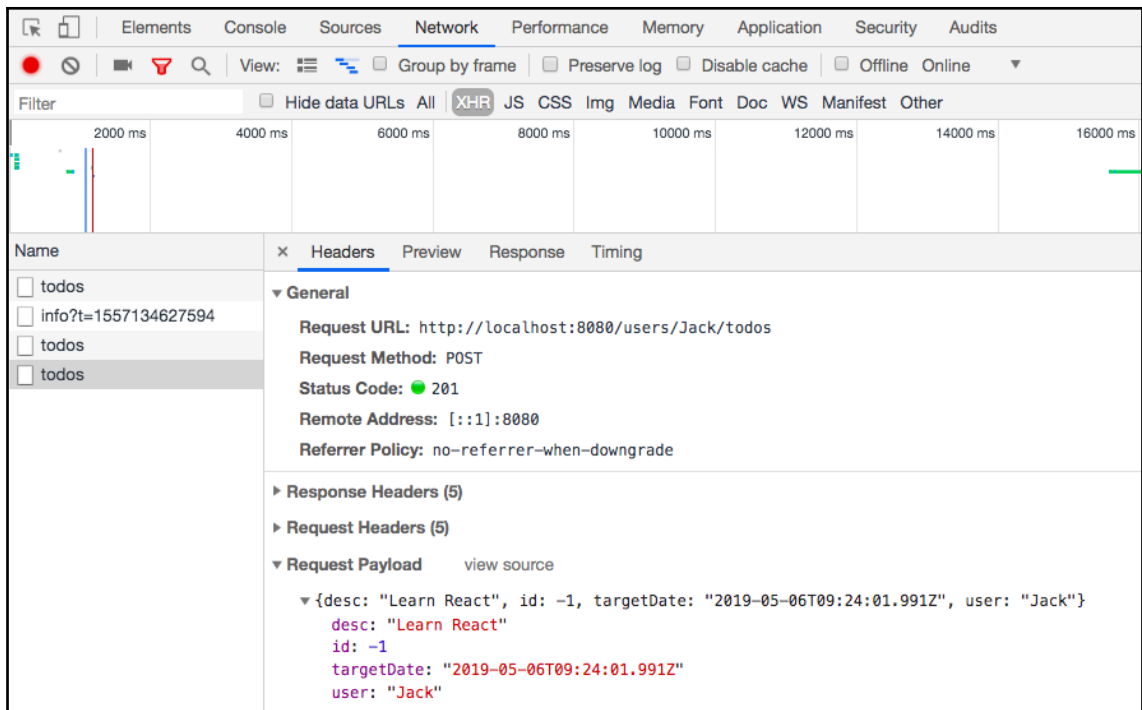




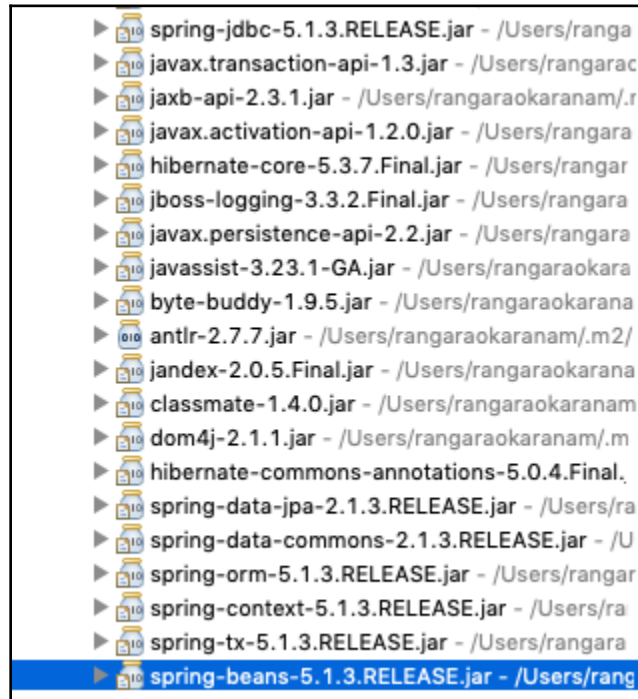






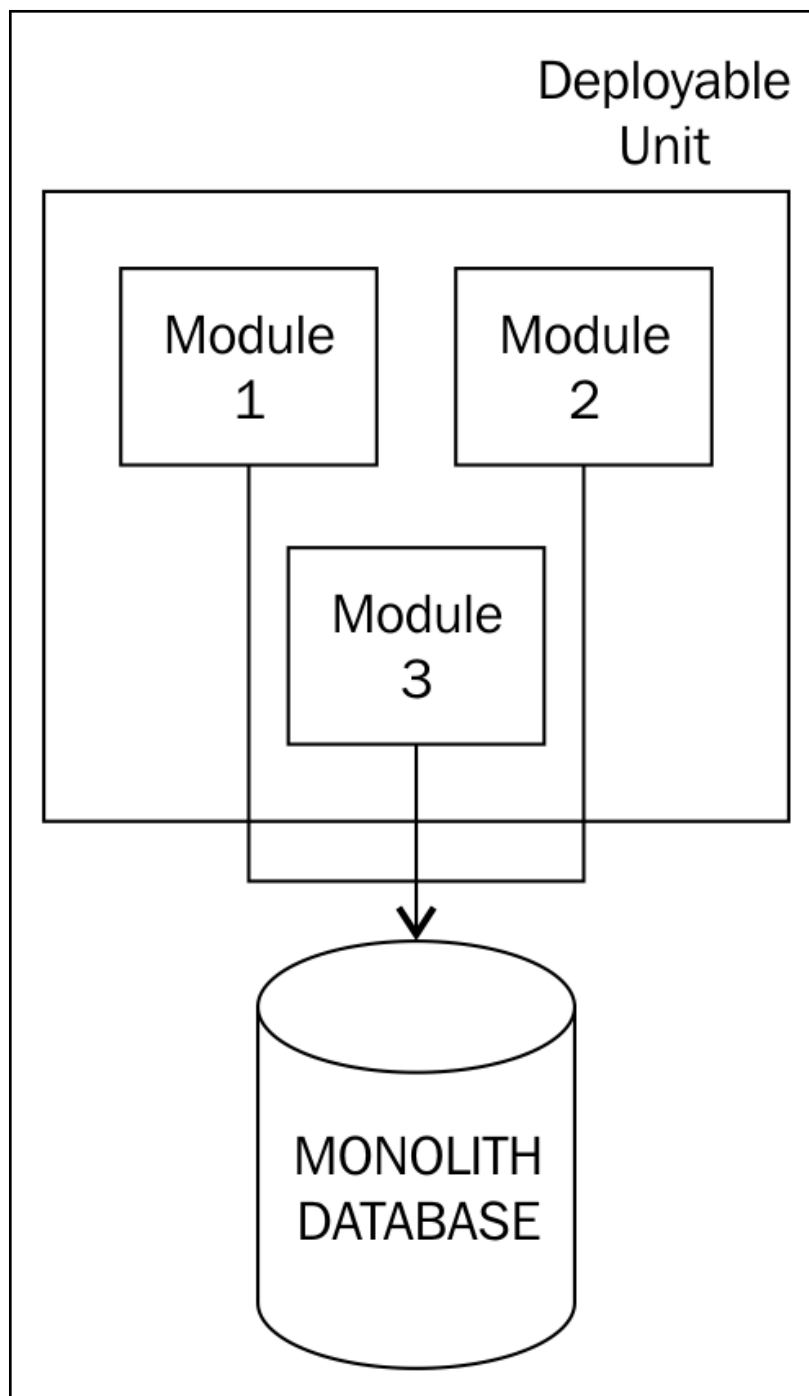


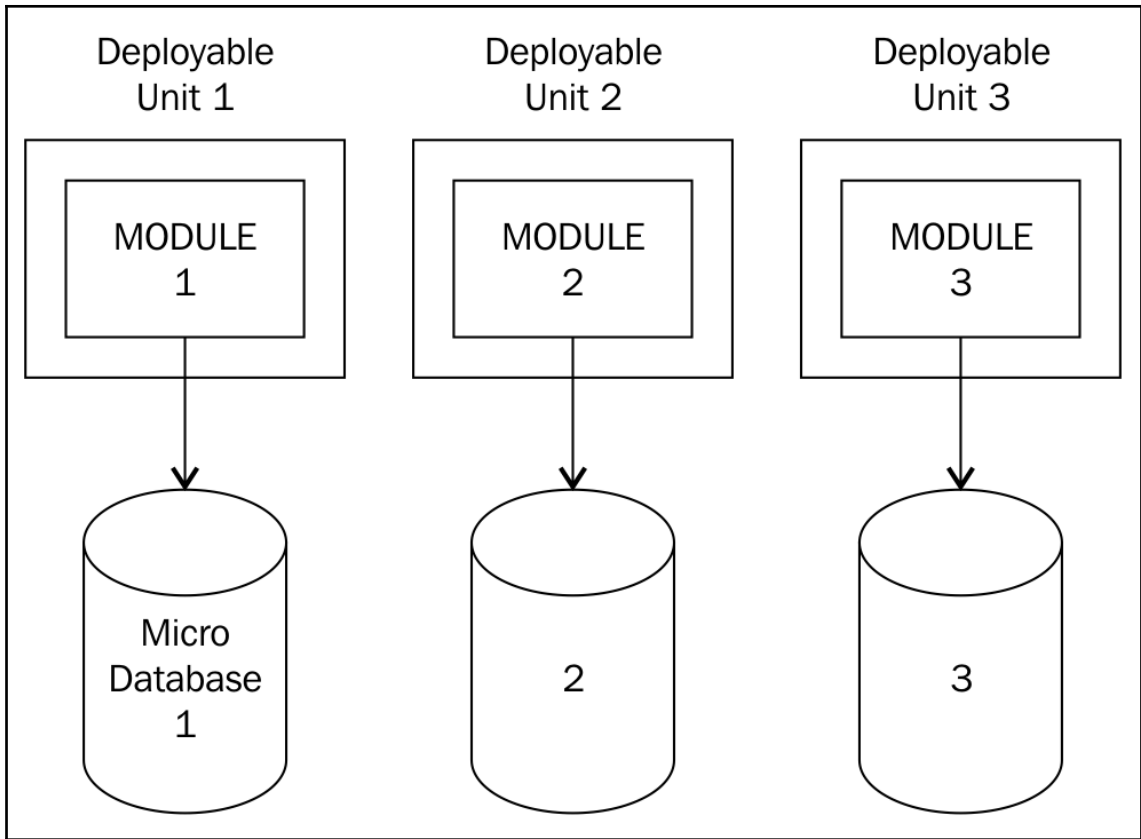
Chapter 10: Managing Data with Spring Data

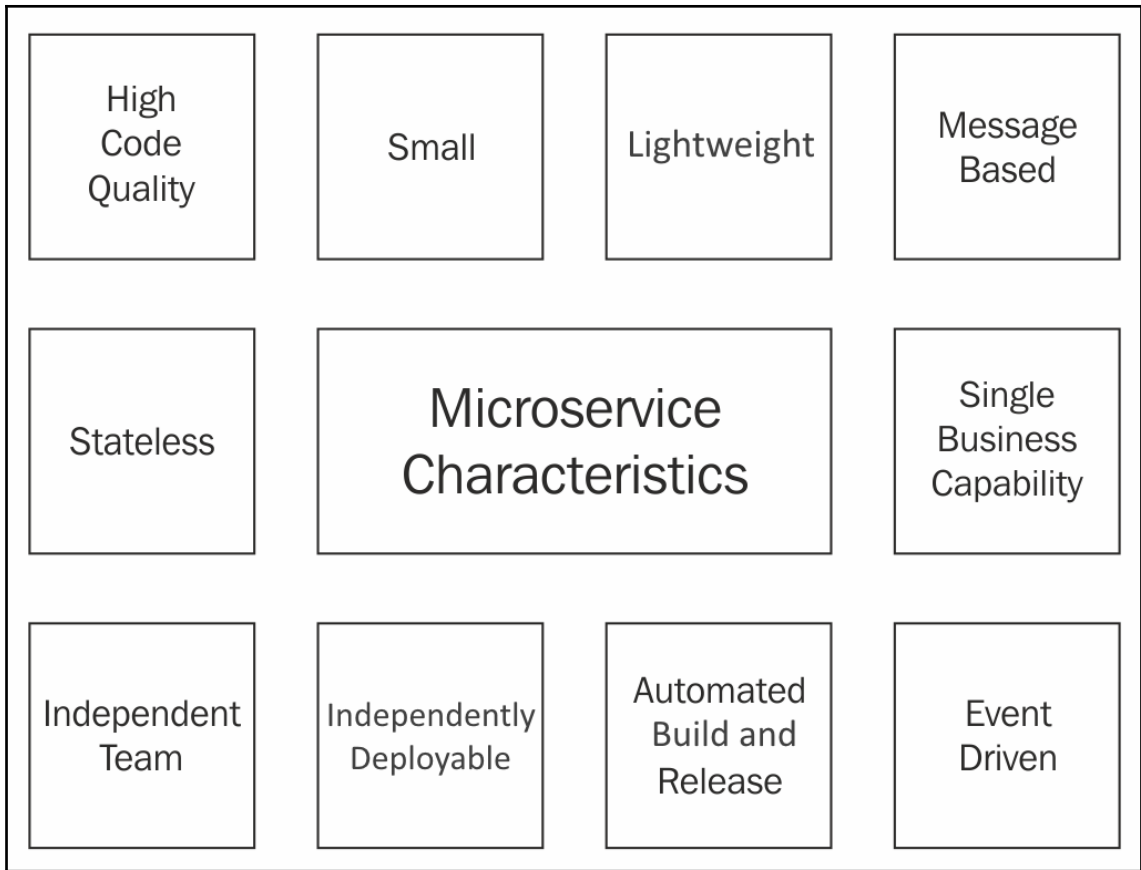


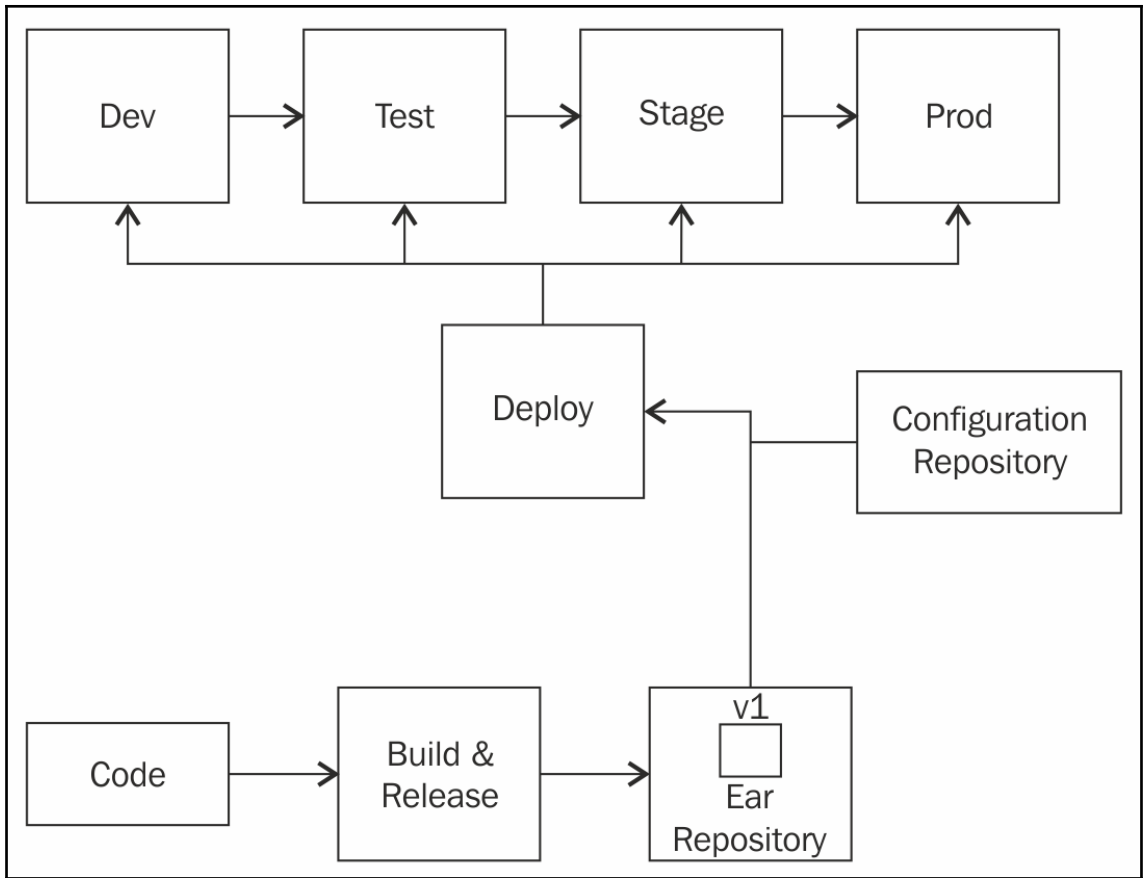
POST	http://localhost:8080/users	Params	Send	
Authorization	Headers (1)	Body	Pre-request Script	Tests
☐ form-data	☐ x-www-form-urlencoded	☒ raw	☐ binary	JSON (application/json)
<pre>1 { 2 "userid": "UserId5", 3 "name": "User Name 5" 4 } 5</pre>				

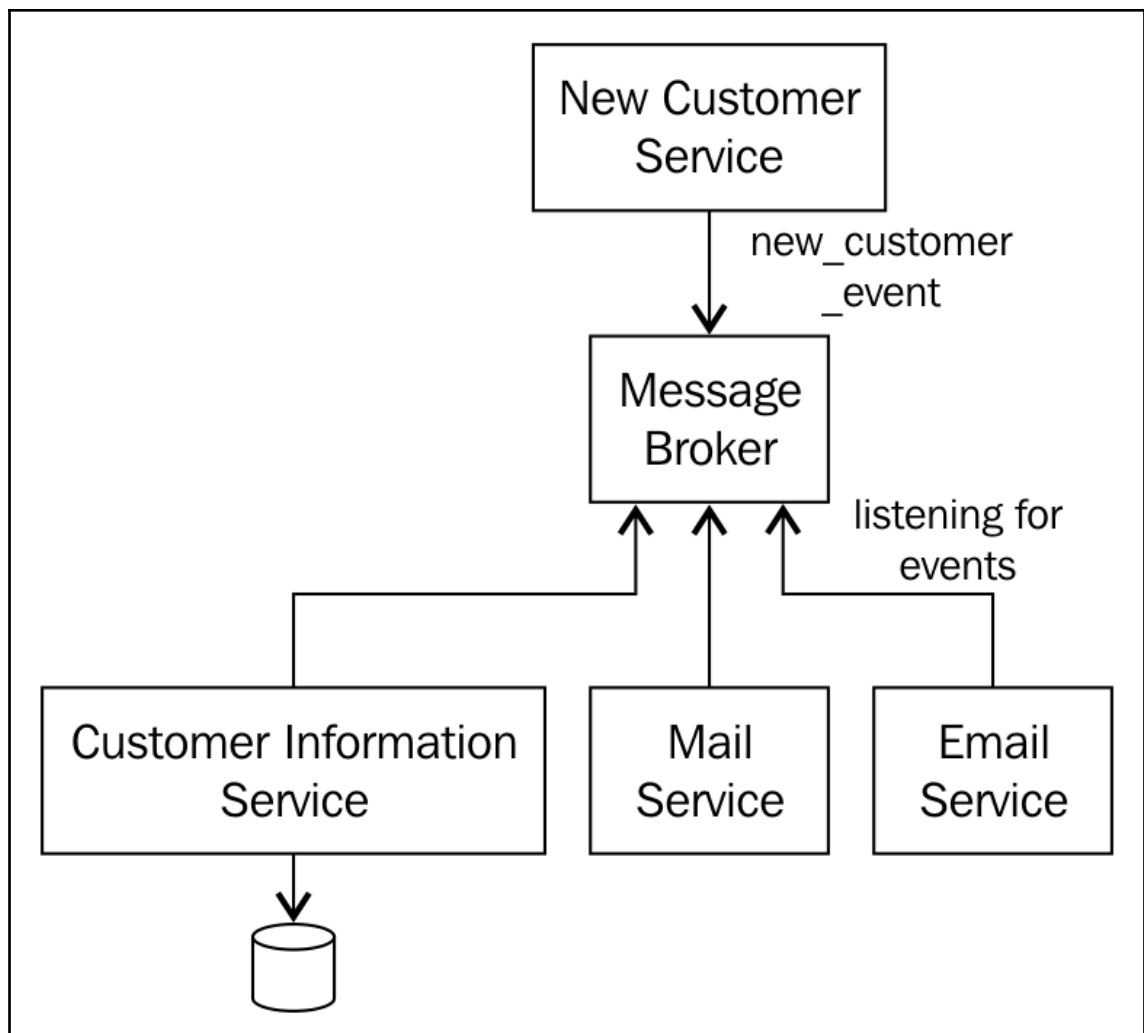
Chapter 11: Getting Started with Microservices

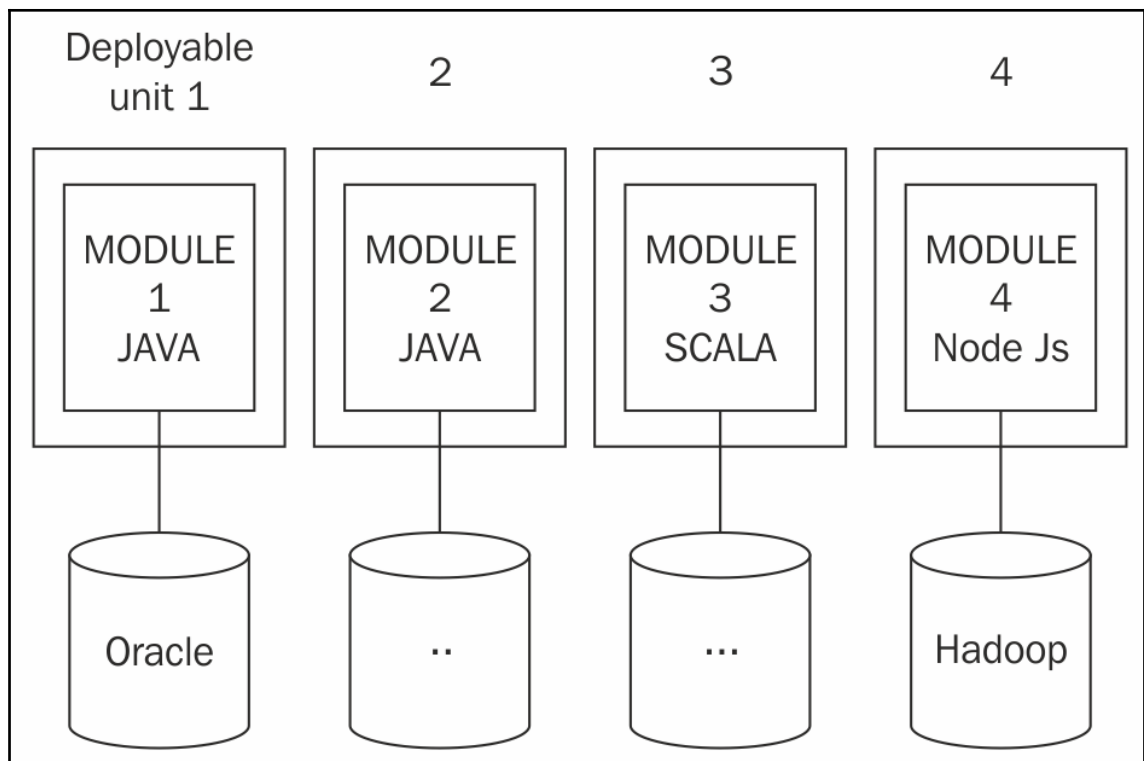


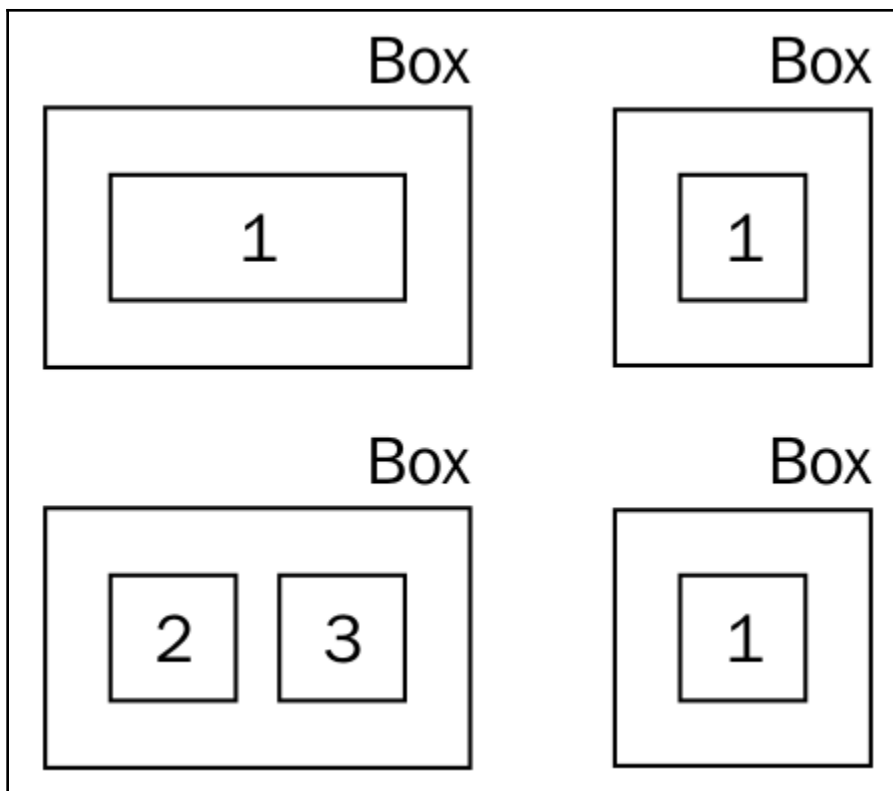






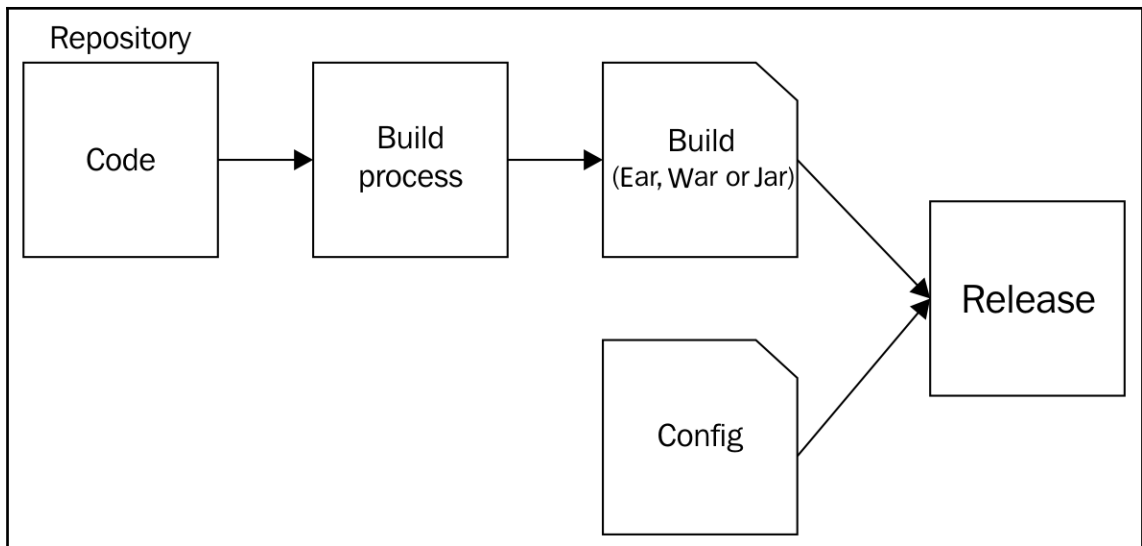




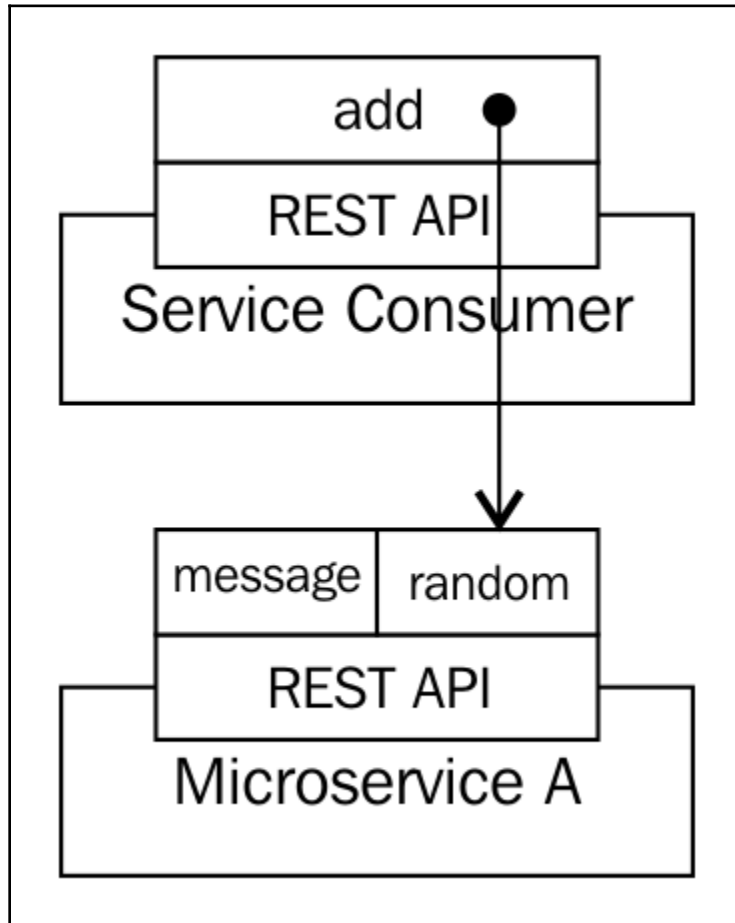


-
- ▼  Maven Dependencies
- ▶  javaee-web-api-7.0.jar - /Users/rangaraokarana
 - ▶  jstl-1.2.jar - /Users/rangaraokaranam/.m2/repos
 - ▶  spring-webmvc-5.0.0.M2.jar - /Users/rangaraok
 - ▶  spring-aop-5.0.0.M2.jar - /Users/rangaraokaran
 - ▶  spring-beans-5.0.0.M2.jar - /Users/rangaraokar
 - ▶  spring-context-5.0.0.M2.jar - /Users/rangaraoka
 - ▶  spring-core-5.0.0.M2.jar - /Users/rangaraokara
 - ▶  commons-logging-1.2.jar - /Users/rangaraokara
 - ▶  spring-expression-5.0.0.M2.jar - /Users/rangara
 - ▶  spring-web-5.0.0.M2.jar - /Users/rangaraokaran
 - ▶  spring-security-web-4.0.1.RELEASE.jar - /Users
 - ▶  aopalliance-1.0.jar - /Users/rangaraokaranam/.m
 - ▶  spring-security-core-4.0.1.RELEASE.jar - /Users
 - ▶  spring-security-config-4.0.1.RELEASE.jar - /Use
 - ▶  hibernate-validator-5.0.2.Final.jar - /Users/rang
 - ▶  validation-api-1.1.0.Final.jar - /Users/rangaraok
 - ▶  jboss-logging-3.1.1.GA.jar - /Users/rangaraokar
 - ▶  classmate-1.0.0.jar - /Users/rangaraokaranam/
 - ▶  bootstrap-3.3.6.jar - /Users/rangaraokaranam/
 - ▶  jquery-1.9.1.jar - /Users/rangaraokaranam/.m2/
 - ▶  jackson-databind-2.5.3.jar - /Users/rangaraokar
 - ▶  jackson-annotations-2.5.0.jar - /Users/rangarao
 - ▶  jackson-core-2.5.3.jar - /Users/rangaraokarana
 - ▶  log4j-1.2.17.jar - /Users/rangaraokaranam/.m2/
 - ▶  junit-4.12.jar - /Users/rangaraokaranam/.m2/rep
 - ▶  hamcrest-core-1.3.jar - /Users/rangaraokarana
 - ▶  spring-test-5.0.0.M2.jar - /Users/rangaraokaran
 - ▶  javax.servlet-api-3.1.0.jar - /Users/rangaraokara
 - ▶  mockito-core-1.9.0-rc1.jar - /Users/rangaraokar
 - ▶  objenesis-1.0.jar - /Users/rangaraokaranam/.m2

```
mastering-spring-chapter-3/pom.xml 28
42         </dependency>
43
44     <dependency>
45         <groupId>org.springframework.security</groupId>
46         <artifactId>spring-security-web</artifactId>
47         <version>4.0.1.RELEASE</version>
48     </dependency>
49
50     <dependency>
51         <groupId>org.springframework.security</groupId>
52         <artifactId>spring-security-config</artifactId>
53         <version>4.0.1.RELEASE</version>
54     </dependency>
55
56     <dependency>
57         <groupId>org.hibernate</groupId>
58         <artifactId>hibernate-validator</artifactId>
59         <version>5.0.2.Final</version>
60     </dependency>
61
62     <dependency>
63         <groupId>org.webjars</groupId>
64         <artifactId>bootstrap</artifactId>
65         <version>3.3.6</version>
66     </dependency>
67
68     <dependency>
69         <groupId>org.webjars</groupId>
70         <artifactId>jquery</artifactId>
71         <version>1.9.1</version>
72     </dependency>
```



Chapter 12: Building Microservices with Spring Boot and Spring Cloud



SPRING INITIALIZRbootstrap your application now

Generate a

Maven Project

with Spring Boot

2.0.0 (SNAPSHOT)

Project Metadata

Artifact coordinates

Group

com.mastering.spring.cloud

Artifact

microservice-a

Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

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

Selected Dependencies

Web

DevTools

Actuator

Generate Project

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

SPRING INITIALIZRbootstrap your application now

Generate a

Maven Project

with Spring Boot

2.0.0 (SNAPSHOT)

Project Metadata

Artifact coordinates

Group

com.mastering.spring.consumer

Artifact

service-consumer

Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

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

Selected Dependencies

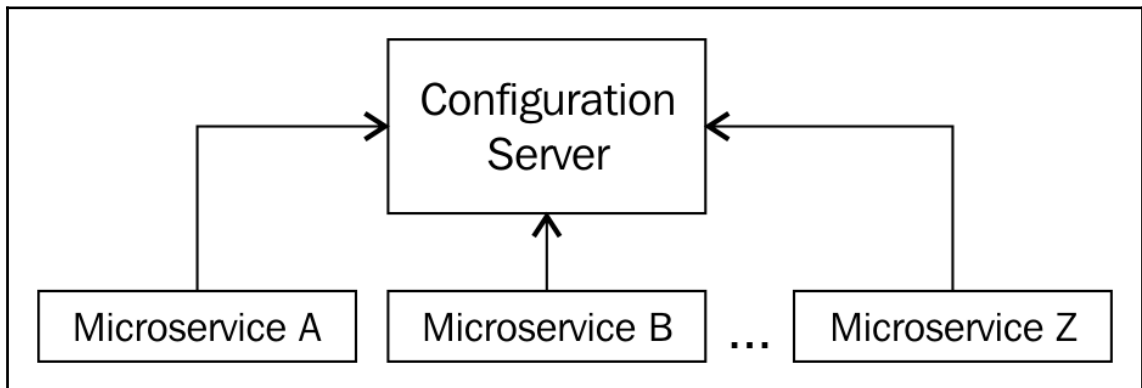
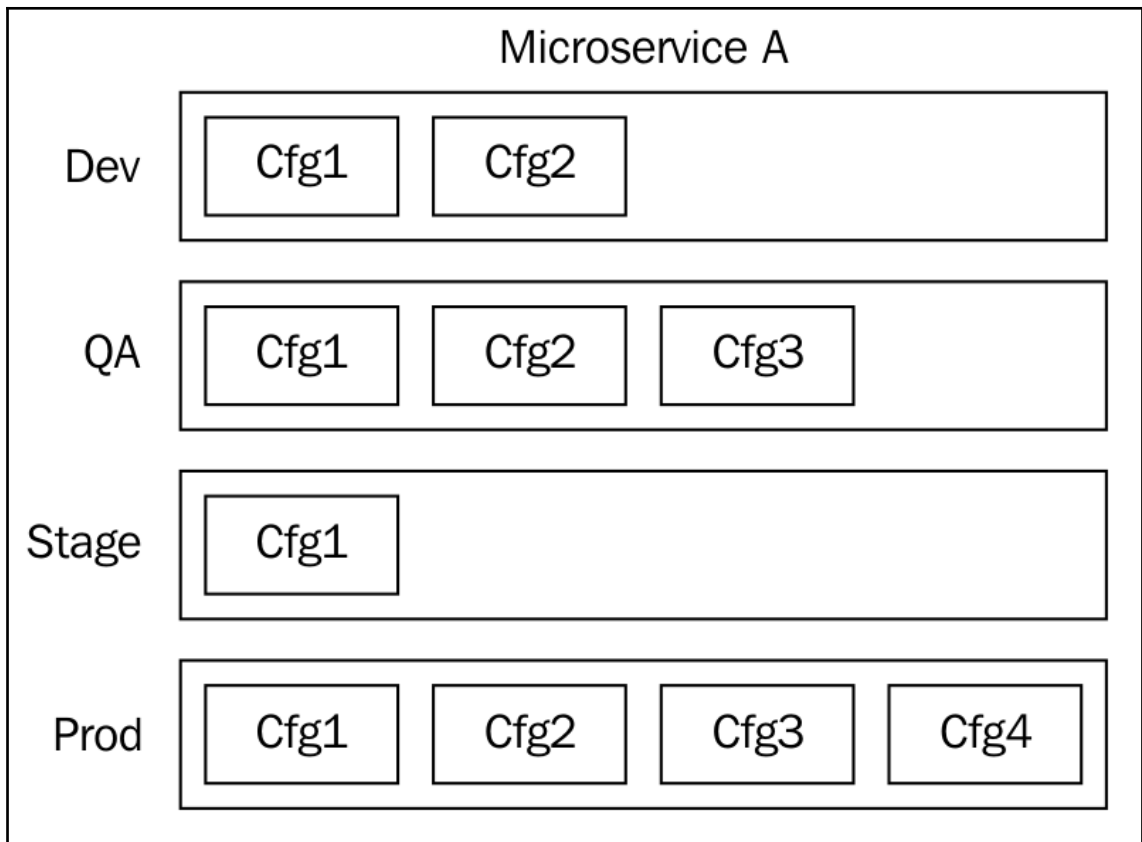
Web

DevTools

Generate Project

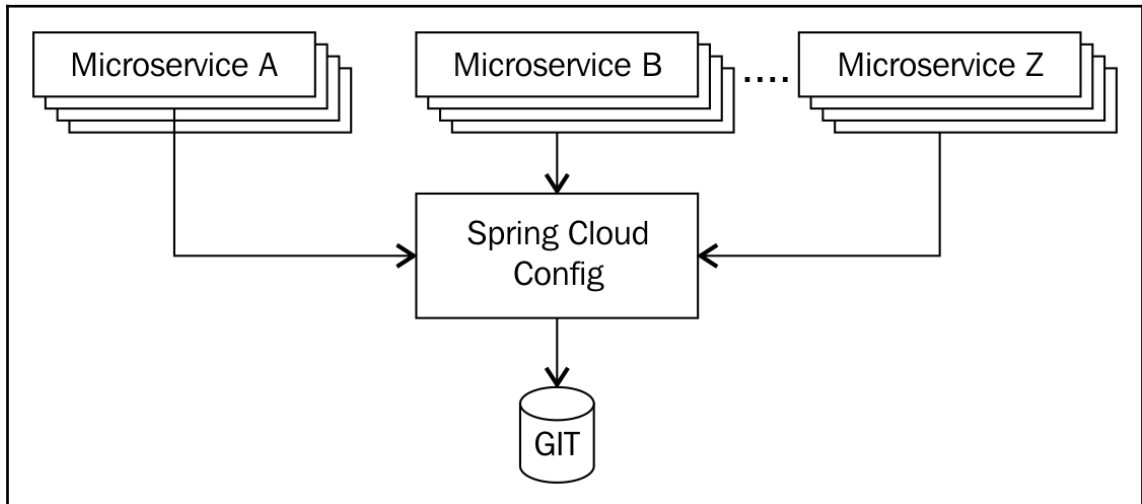
Don't know what to look for? Want more options? [Switch to the full version.](#)

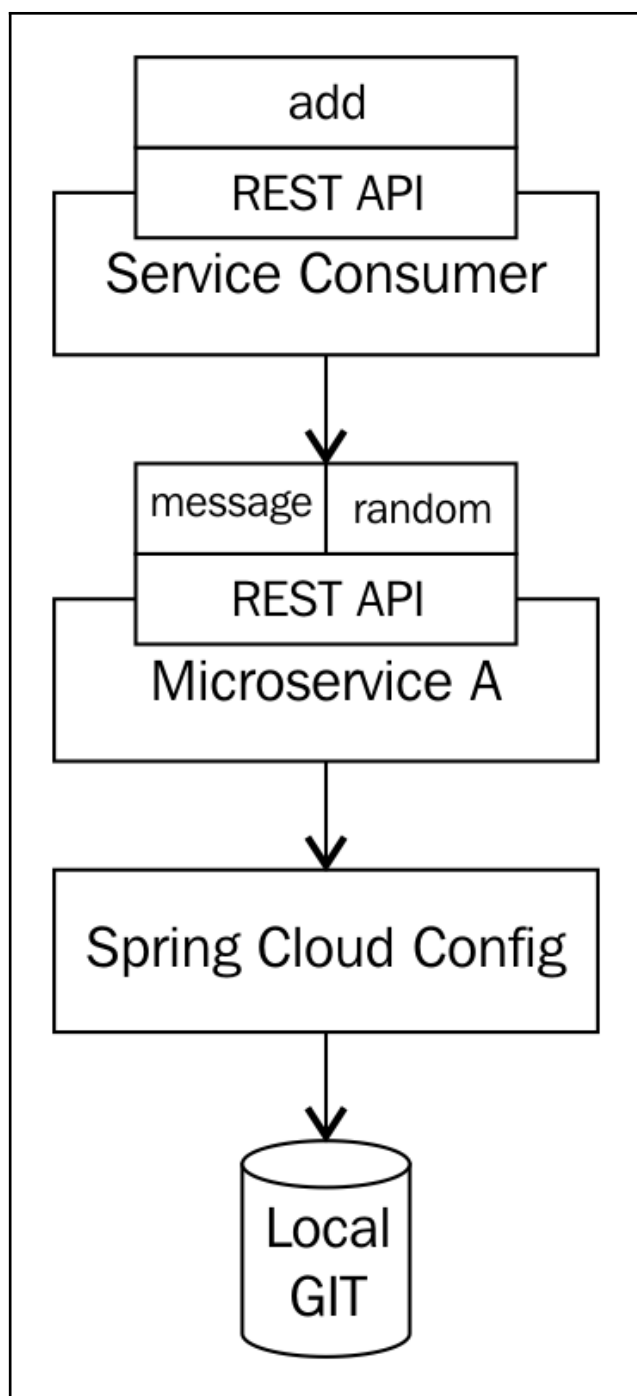
[62]



Cloud Config

- ☐ Config Client
spring-cloud-config Client
- ☐ Config Server
Central management for configuration via a git or svn backend
- ☐ Zookeeper Configuration
Configuration management with Zookeeper and spring-cloud-zookeeper-config
- ☐ Consul Configuration
Configuration management with Hashicorp Consul





SPRING INITIALIZR bootstrap your application now

Generate a Maven Project with Spring Boot 2.0.0 (SNAPSHOT)

Project Metadata

Artifact coordinates

Group

com.mastering.spring

Artifact

config-server

Dependencies

Add Spring Boot Starters and dependencies to your application

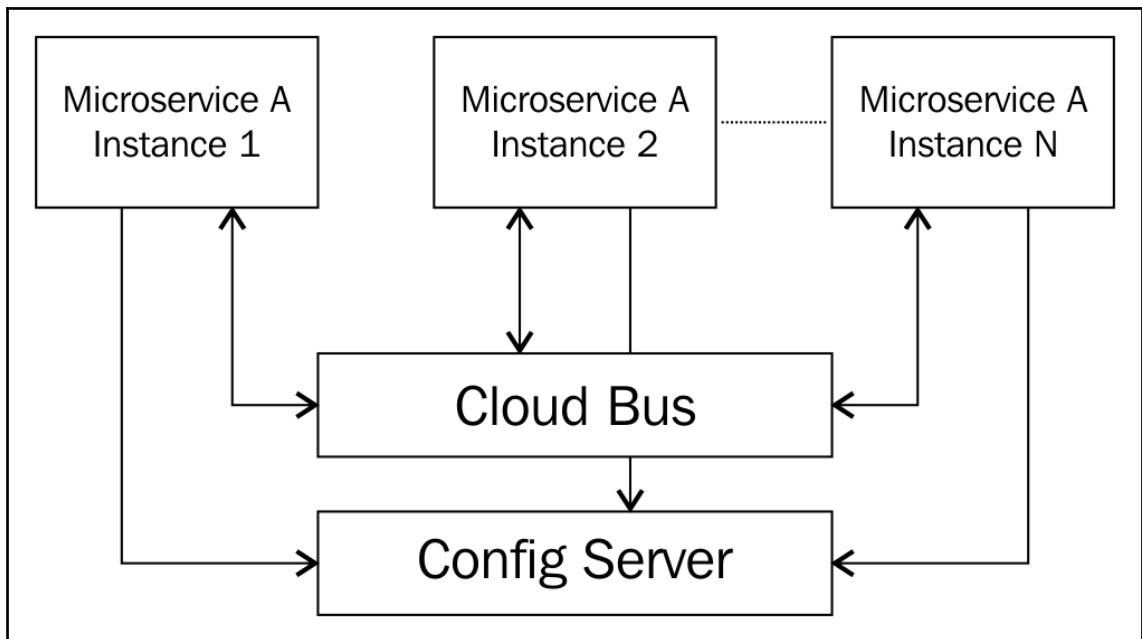
Search for dependencies

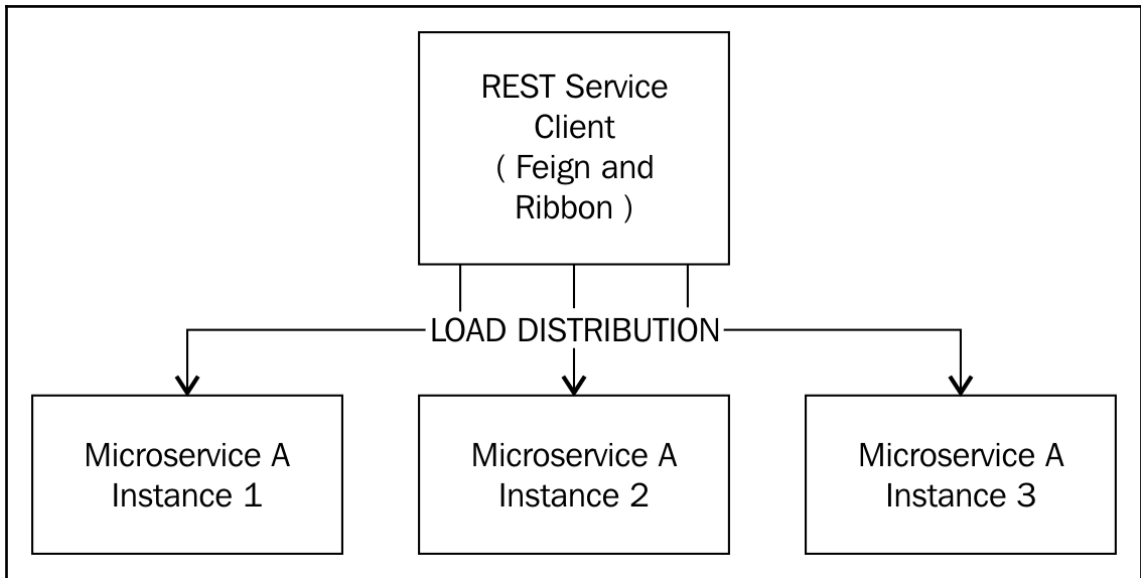
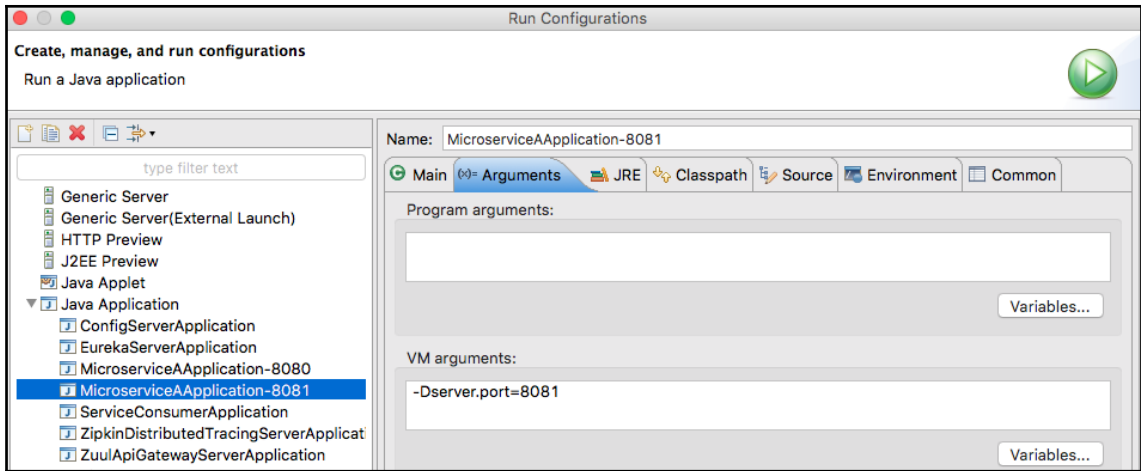
Web, Security, JPA, Actuator, Devtools...

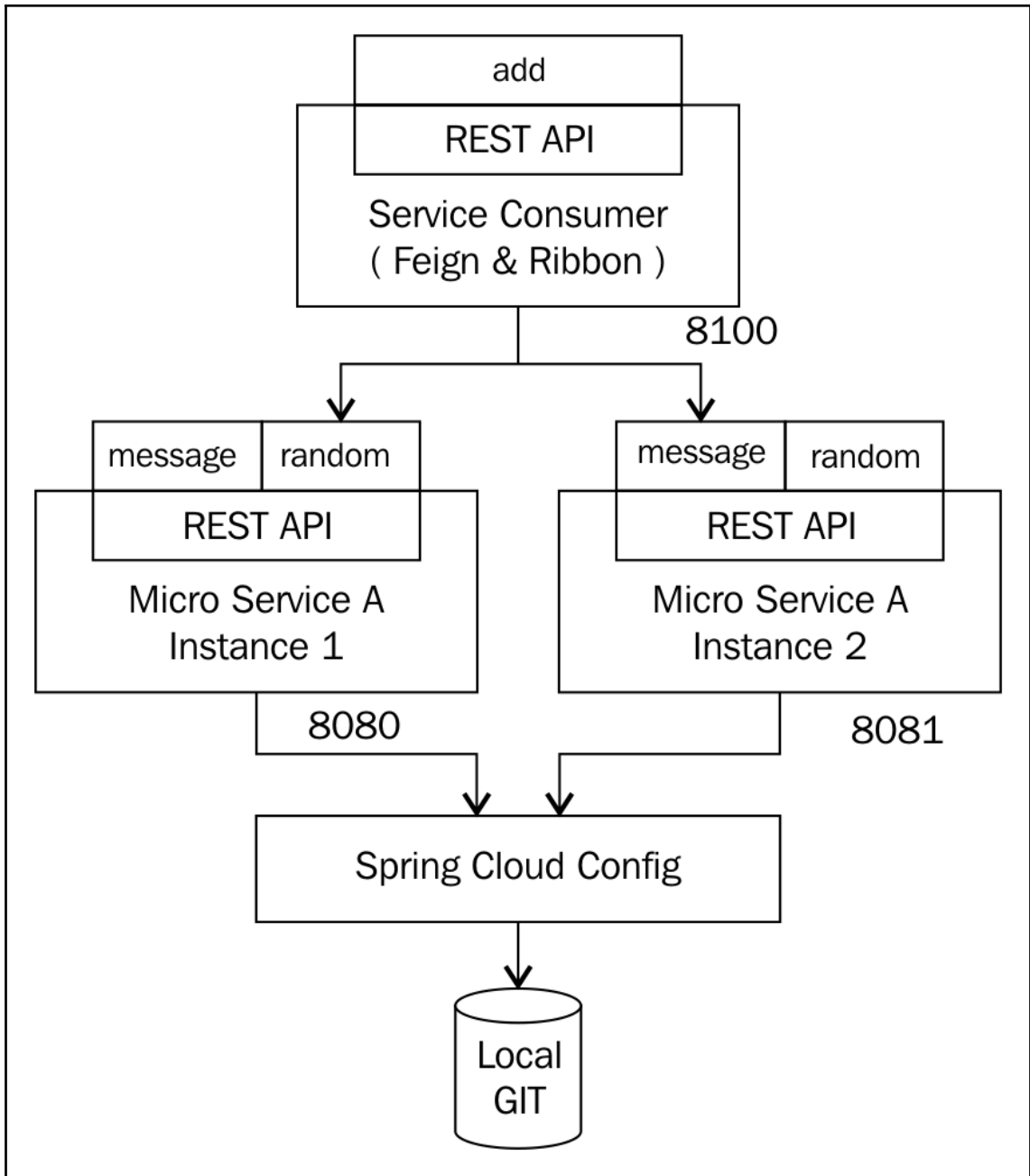
Selected Dependencies

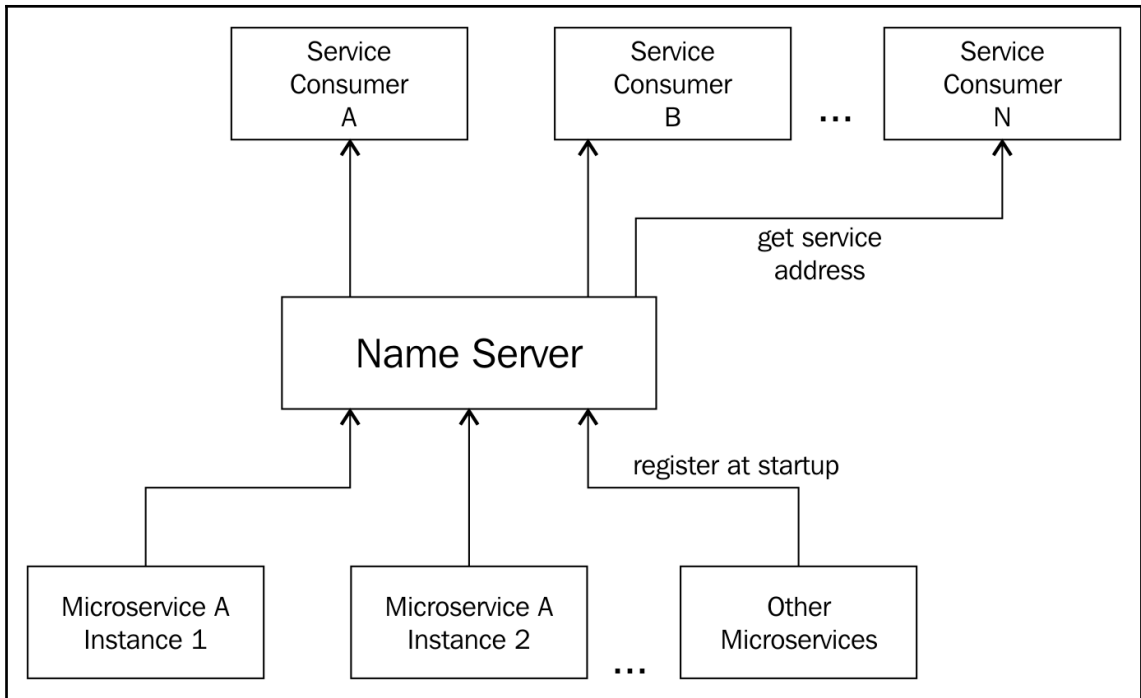
Config Server

Generate Project









Cloud Discovery

☐ Eureka Discovery

Service discovery using spring-cloud-netflix and Eureka

☐ Eureka Server

spring-cloud-netflix Eureka Server

☐ Zookeeper Discovery

Service discovery with Zookeeper and spring-cloud-zookeeper-discovery

☐ Cloud Foundry Discovery

Service discovery with Cloud Foundry

☐ Consul Discovery

Service discovery with Hashicorp Consul

SPRING INITIALIZR bootstrap your application now

Generate a Maven Project with Java and Spring Boot 2.1.1

Project Metadata

Artifact coordinates

Group

com.mastering.spring.zuul

Artifact

zuul-api-gateway-server

Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

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

Selected Dependencies

Zuul ×

Eureka Discovery ×

Generate Project   



HOME LAST 1000 SINCE STARTUP

System Status

Environment	test	Current time	2017-03-28T09:46:27 +0530
Data center	default	Uptime	00:00
		Lease expiration enabled	false
		Renews threshold	1
		Renews (last min)	0

DS Replicas

localhost

Instances currently registered with Eureka

Application	AMIs	Availability Zones	Status
No instances available			



HOME LAST 1000 SINCE STARTUP

System Status

Environment	test	Current time	2017-03-28T10:24:24 +0530
Data center	default	Uptime	00:38
		Lease expiration enabled	true
		Renews threshold	5
		Renews (last min)	10

DS Replicas

localhost

Instances currently registered with Eureka

Application	AMIs	Availability Zones	Status
MICROSERVICE-A	n/a (2)	(2)	UP (2) - 192.168.1.5:microservice-a:8081 , 192.168.1.5:microservice-a

SPRING INITIALIZR bootstrap your application now

Generate a Maven Project with Java and Spring Boot 2.1.1

Project Metadata

Artifact coordinates

Group

com.mastering.spring.zuul

Artifact

zuul-api-gateway-server

Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

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

Selected Dependencies

Zuul

Eureka Discovery

Generate Project

Instances currently registered with Eureka

Application	AMIs	Availability Zones	Status
MICROSERVICE-A	n/a (1)	(1)	UP (1) - 192.168.1.5:microservice-a
SERVICE-CONSUMER	n/a (1)	(1)	UP (1) - 192.168.1.5:service-consumer:8100
ZUUL-API-GATEWAY	n/a (1)	(1)	UP (1) - 192.168.1.5:zuul-api-gateway:8765

[illegible][73]

Zipkin

Investigate system behavior

Find a trace

Dependencies

Go to trace

Service Name

all

Span Name

all

Lookback

1 hour

Annotations Query

e.g. "http.path=/foo/bar/ and cluster=foo and cache.miss"

Duration (µs) >=

Limit

10

Find Traces

?

Sort

Longest First

Showing: 0 of 0

Services:

all

JSON

Zipkin

Investigate system behavior

Find a trace

Dependencies

Go to trace

Duration: 100.375ms

Services: 3

Depth: 3

Total Spans: 3

JSON

Expand All

Collapse All

Filter Service ...

microservice-a x1

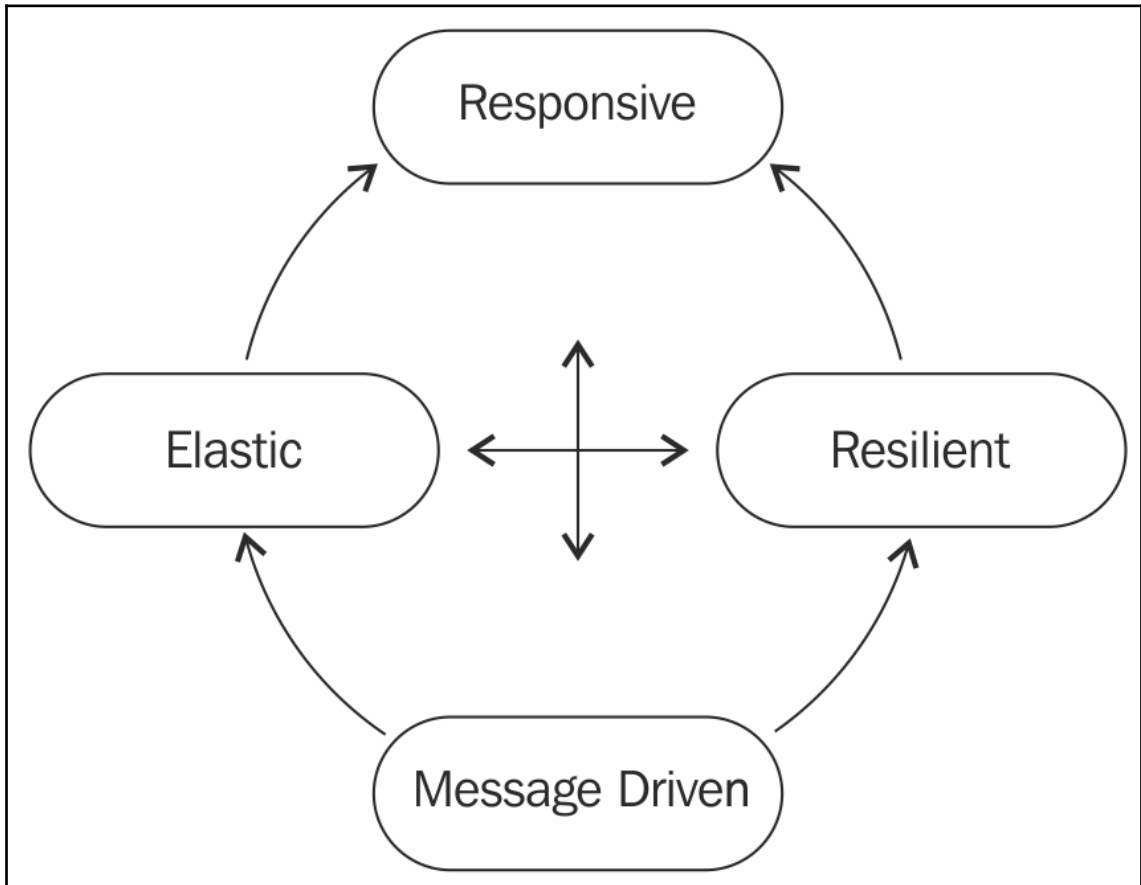
service-consumer x2

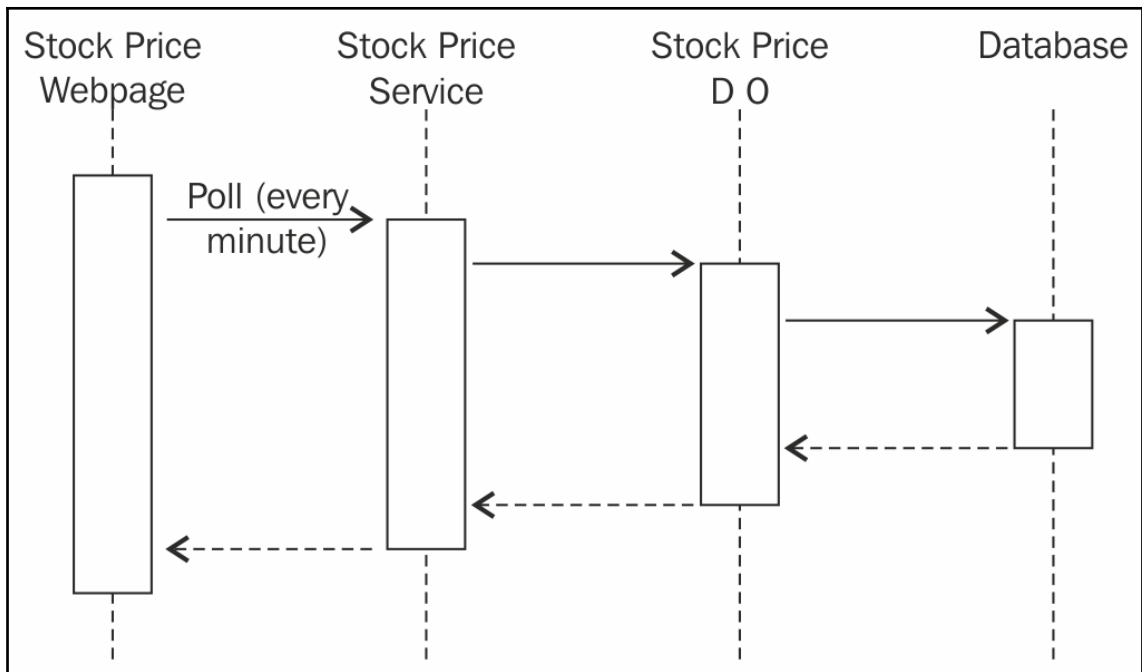
zuul-api-gateway x2

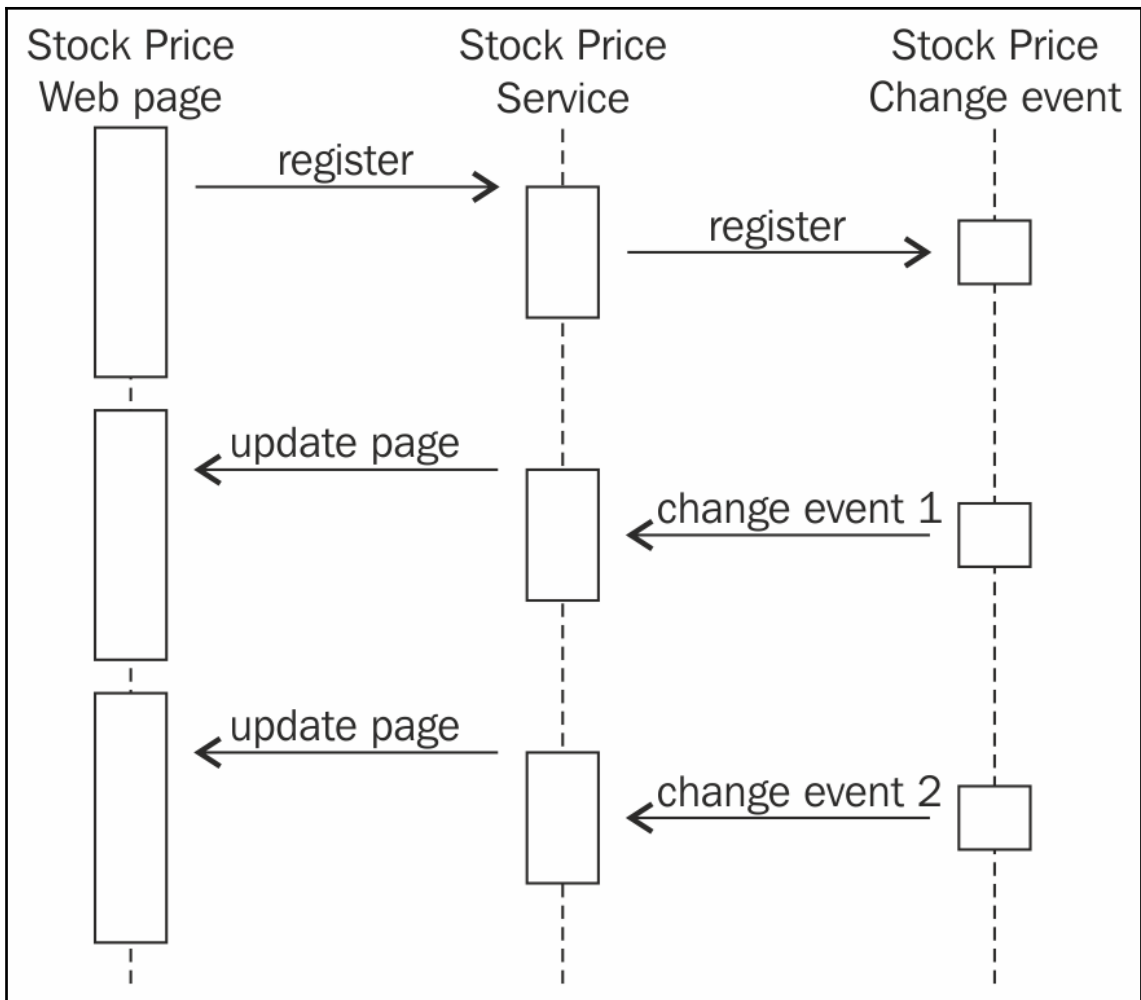
Services	20.075ms	40.150ms	60.225ms	80.300ms	100.375ms
- service-consumer	:100.375ms : http://add	.	.	.	.
- zuul-api-gateway	.	27.000ms : http://microservice-a/random	.	.	.
microservice-a	.	16.000ms : http://microservice-a/random	.	.	.

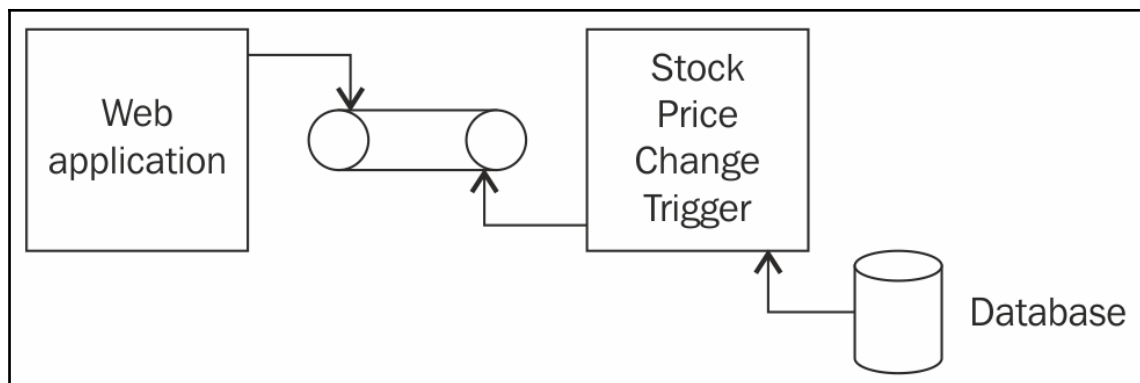
microservice-a.http/microservice-a/random: 16.000ms ✕			
AKA: zuul-api-gateway,microservice-a			
Date Time	Relative Time	Annotation	Address
3/28/2017, 10:08:08 PM	11.000ms	Client Send	192.168.1.5:8765 (zuul-api-gateway)
3/28/2017, 10:08:08 PM	14.000ms	Client Send	192.168.1.5:8765 (zuul-api-gateway)
3/28/2017, 10:08:08 PM	16.000ms	Server Receive	192.168.1.5:8080 (microservice-a)
3/28/2017, 10:08:08 PM	23.000ms	Server Send	192.168.1.5:8080 (microservice-a)
3/28/2017, 10:08:08 PM	27.000ms	Client Receive	192.168.1.5:8765 (zuul-api-gateway)
Key	Value		
http.method	GET		
http.path	/random		
http.status_code	200		
http.url	/random		
Local Component	zuul		
mvc.controller.class	RandomNumberController		
mvc.controller.method	random		
spring.instance_id	192.168.1.5:zuul-api-gateway:8765		
spring.instance_id	192.168.1.5:microservice-a		
Local Address	192.168.1.5:8765 (zuul-api-gateway)		

Chapter 13: Reactive Programming









Markers Properties Servers Data Source Explorer Snippets Console Progress JUnit

```
<terminated> SpringReactiveTest.monoExample [JUnit] /Library/Java/JavaVirtualMachines/jdk1.8.0_31.jdk/Contents/Home/bin/
19:30:17.803 [main] DEBUG reactor.util.Loggers$LoggerFactory - Using Slf4j logging framework
Received Ranga at Thu Apr 27 19:30:22 IST 2017
```

```
19:29:36.538 [main] DEBUG reactor.util.Loggers$LoggerFactory - Using Slf4j logging framework
Welcome Ranga
Received Ranga at Thu Apr 27 19:29:41 IST 2017
```

```
<terminated> SpringReactiveTest.simpleFluxStream [JUnit] /Library/Java/JavaVirtualMachines/jdk1.8.0_31.jdk/Contents/
19:19:47.896 [main] DEBUG reactor.util.Loggers$LoggerFactory - Using Slf4j logging framework
Received Jane at Thu Apr 27 19:19:47 IST 2017
Received Joe at Thu Apr 27 19:19:47 IST 2017
```

```
<terminated> SpringReactiveTest.fromAList [JUnit] /Library/Java/JavaVirtualMachines/jdk1.8.0_31.jdk/Contents/Home/bin/
19:32:49.795 [main] DEBUG reactor.util.Loggers$LoggerFactory - Using Slf4j logging framework
Welcome Ranga
Received Ranga at Thu Apr 27 19:32:50 IST 2017
Welcome Adam
Received Adam at Thu Apr 27 19:32:51 IST 2017
Welcome Joe
Received Joe at Thu Apr 27 19:32:52 IST 2017
Welcome Doe
Received Doe at Thu Apr 27 19:32:53 IST 2017
Welcome Jane
Received Jane at Thu Apr 27 19:32:54 IST 2017
```

SPRING INITIALIZRbootstrap your application now

Generate a

Maven Project

with Spring Boot

2.0.0 (SNAPSHOT)

Project Metadata

Artifact coordinates

Group

com.mastering.spring.reactive

Artifact

spring-reactive-example

Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

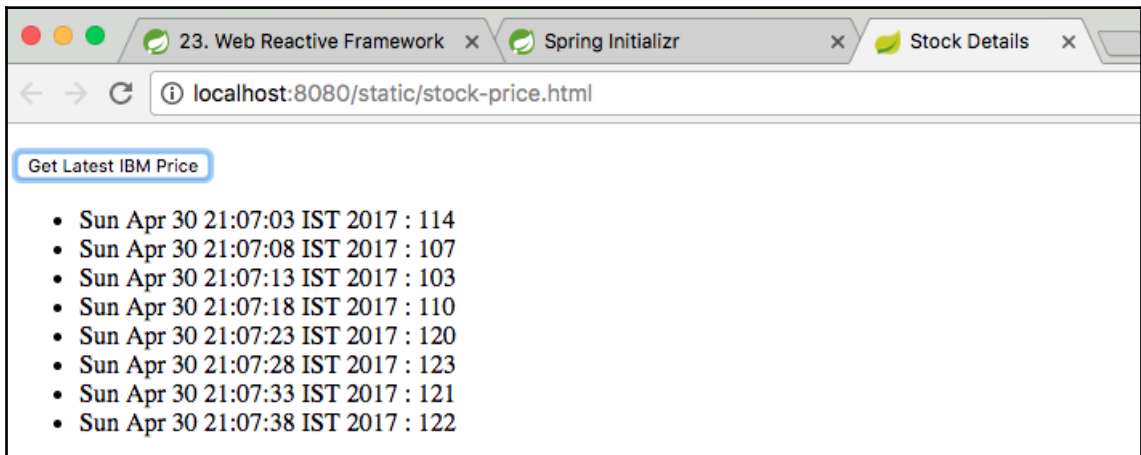
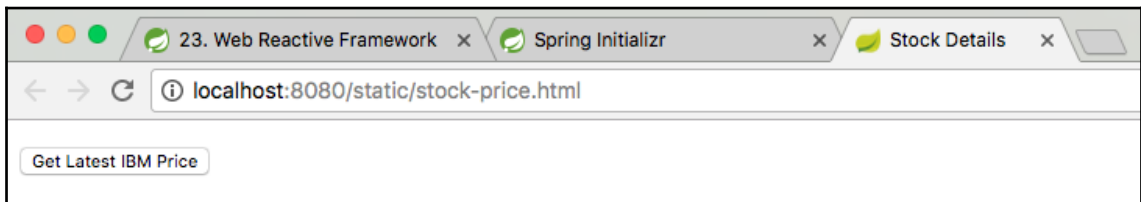
Web, Security, JPA, Actuator, DevTools...

Selected Dependencies

Reactive Web

DevTools

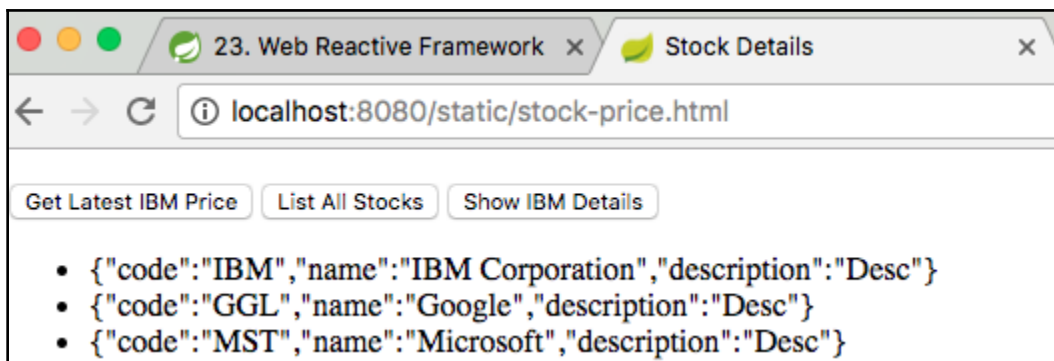
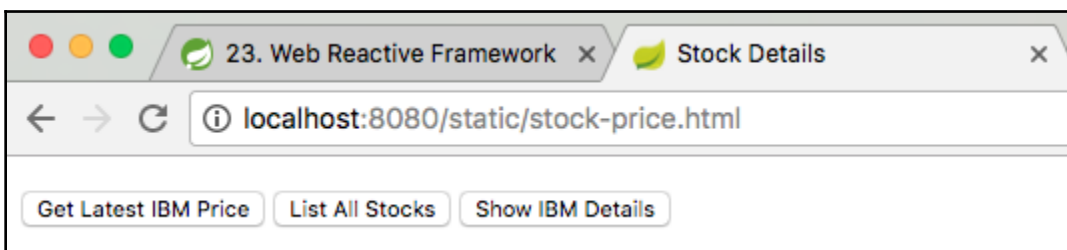
Generate Project

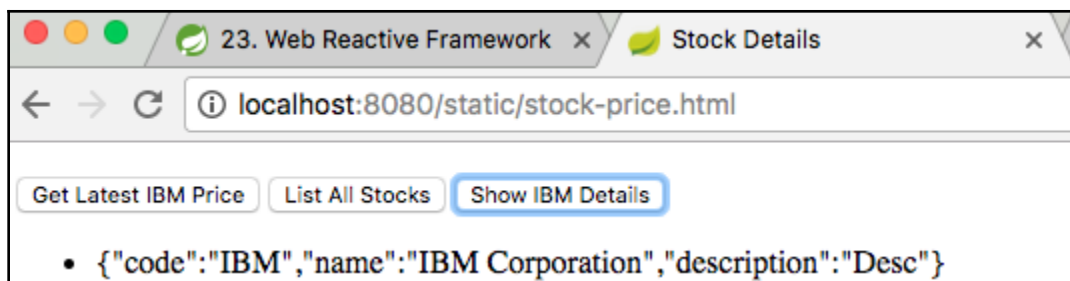



```

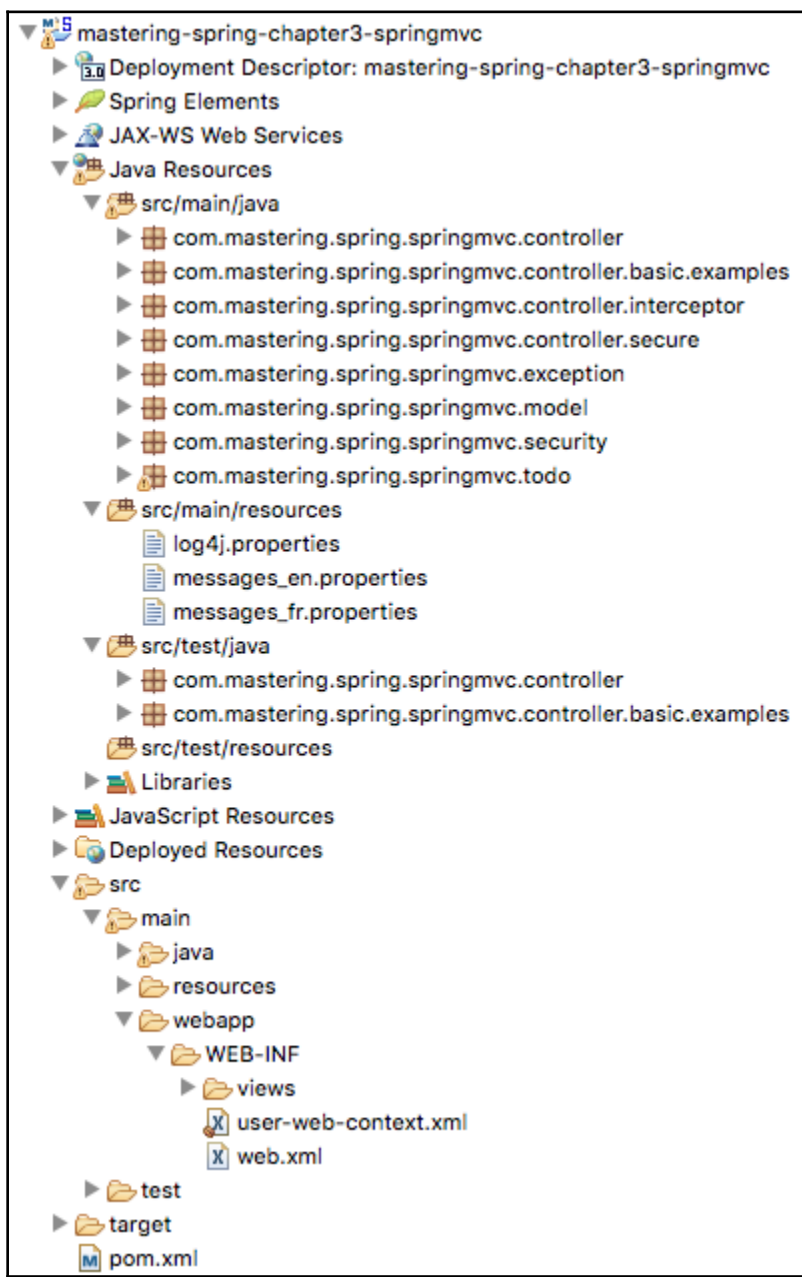
[ctor-http-nio-2] reactor.Flux.OnAssembly.1 : | onSubscribe([Fuseable] FluxOnAssembly.OnAssemblySubscriber)
[ctor-http-nio-2] reactor.Flux.OnAssembly.1 : | request(1)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:03 IST 2017 : 114)
[ctor-http-nio-2] reactor.Flux.OnAssembly.1 : | request(31)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:08 IST 2017 : 107)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:13 IST 2017 : 103)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:18 IST 2017 : 110)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:23 IST 2017 : 120)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:28 IST 2017 : 123)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:33 IST 2017 : 121)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:38 IST 2017 : 122)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:43 IST 2017 : 119)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:48 IST 2017 : 100)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:53 IST 2017 : 109)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:07:58 IST 2017 : 123)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:03 IST 2017 : 123)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:08 IST 2017 : 124)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:13 IST 2017 : 120)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:18 IST 2017 : 108)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:23 IST 2017 : 107)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:28 IST 2017 : 122)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:33 IST 2017 : 104)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:38 IST 2017 : 118)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:43 IST 2017 : 102)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:48 IST 2017 : 102)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:53 IST 2017 : 103)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:08:58 IST 2017 : 117)
[ parallel-1] reactor.Flux.OnAssembly.1 : | request(24)
[ parallel-1] reactor.Flux.OnAssembly.1 : | onNext(Sun Apr 30 21:09:03 IST 2017 : 104)
[ctor-http-nio-2] reactor.Flux.OnAssembly.1 : | cancel()

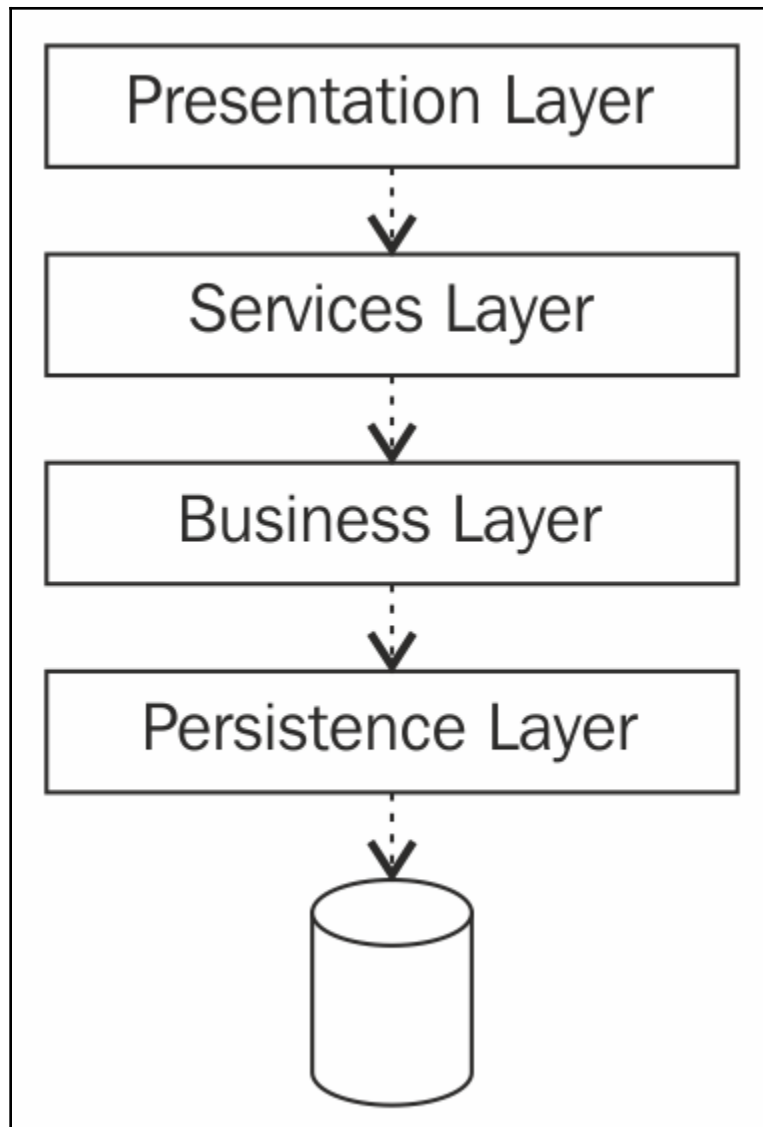
```

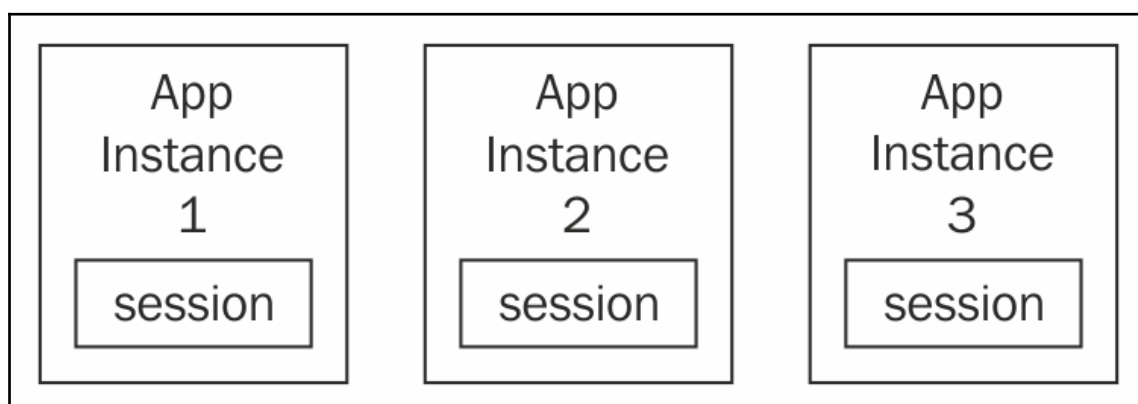
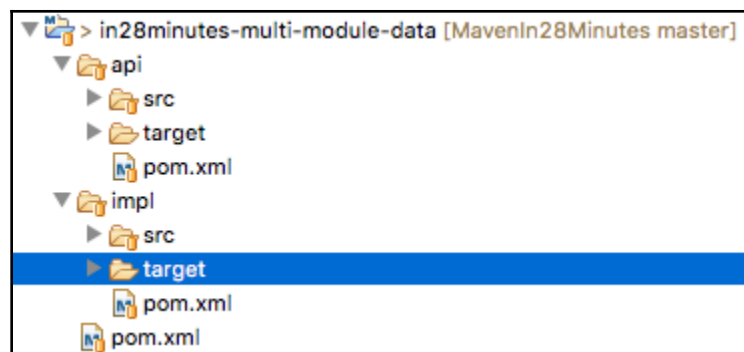


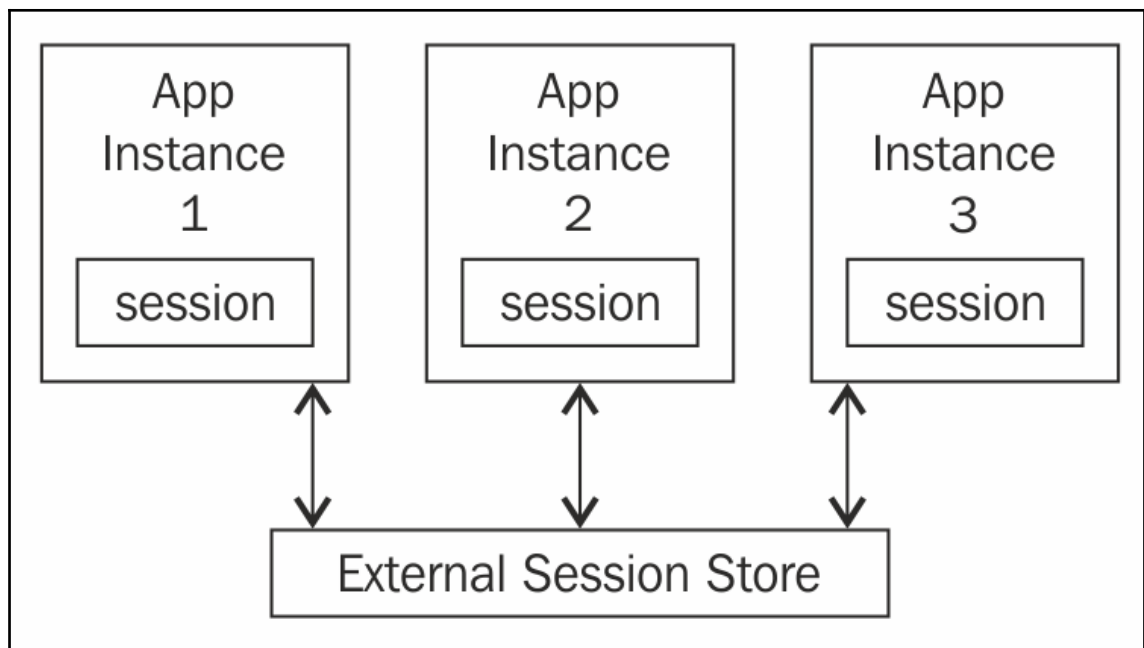


Chapter 14: Spring Best Practices









Chapter 15: Working with Kotlin in Spring

