09、原理解析

1、Profile功能

为了方便多环境适配，springboot简化了profile功能。

1、application-profile功能

- 默认配置文件 application.yaml；任何时候都会加载
- 指定环境配置文件 application-{env}.yaml
- 激活指定环境
  - 配置文件激活
  - 命令行激活：java -jar xxx.jar --**spring.profiles.active=prod --person.name=haha**
    - **修改配置文件的任意值，命令行优先**
- 默认配置与环境配置同时生效
- 同名配置项，profile配置优先

2、@Profile条件装配功能

```java
@Configuration(proxyBeanMethods = false)
@Profile("production")
public class ProductionConfiguration {

    // ...

}
```

3、profile分组

```
spring.profiles.group.production[0]=proddb
spring.profiles.group.production[1]=prodmq

使用：--spring.profiles.active=production  激活
```

2、外部化配置

https://docs.spring.io/spring-boot/docs/current/reference/html/spring-boot-features.html#boot-features-external-config <https://docs.spring.io/spring-boot/docs/current/reference/html/spring-boot-features.html#boot-features-external-config>

1. Default properties (specified by setting `SpringApplication.setDefaultProperties`).
2. `@PropertySource <https://docs.spring.io/spring/docs/5.3.1/javadoc-api/org/springframework/context/annotation/PropertySource.html>` annotations on your `@Configuration` classes. Please note that such property sources are not added to the `Environment` until the application context is being refreshed. This is too late to configure certain properties such as `logging.*` and `spring.main.*` which are read before refresh begins.
3. **Config data (such as `application.properties` files)**
4. A `RandomValuePropertySource` that has properties only in `random.*`.
5. OS environment variables.
6. Java System properties (`System.getProperties()`).

7. JNDI attributes from `java:comp/env`.
8. `ServletContext` init parameters.
9. `ServletConfig` init parameters.
10. Properties from `SPRING_APPLICATION_JSON` (inline JSON embedded in an environment variable or system property).
11. Command line arguments.
12. `properties` attribute on your tests. Available on `@SpringBootTest <https://docs.spring.io/spring-boot/docs/2.4.0/api/org/springframework/boot/test/context/SpringBootTest.html>` and the test annotations for testing a particular slice of your application <https://docs.spring.io/spring-boot/docs/current/reference/html/spring-boot-features.html#boot-features-testing-spring-boot-applications-testing-autoconfigured-tests> .
13. `@TestPropertySource <https://docs.spring.io/spring/docs/5.3.1/javadoc-api/org/springframework/test/context/TestPropertySource.html>` annotations on your tests.
14. Devtools global settings properties <https://docs.spring.io/spring-boot/docs/current/reference/html/using-spring-boot.html#using-boot-devtools-globalsettings> in the `$HOME/.config/spring-boot` directory when devtools is active.

1、外部配置源

常用：**Java属性文件、YAML文件、环境变量、命令行参数**；

2、配置文件查找位置

(1) classpath 根路径

(2) classpath 根路径下config目录

(3) jar包当前目录

(4) jar包当前目录的config目录

(5) /config子目录的直接子目录

3、配置文件加载顺序：

1. 当前jar包内部的application.properties和application.yml
2. 当前jar包内部的application-{profile}.properties 和 application-{profile}.yml
3. 引用的外部jar包的application.properties和application.yml
4. 引用的外部jar包的application-{profile}.properties 和 application-{profile}.yml

4、指定环境优先，外部优先，后面的可以覆盖前面的同名配置项

3、自定义starter

1、starter启动原理

- starter-pom引入 autoconfigurer 包

- autoconfigure包中配置使用 **META-INF/spring.factories** 中 **EnableAutoConfiguration 的值，使得项目启动加载指定的自动配置类**
- **编写自动配置类 xxxAutoConfiguration -> xxxxProperties**
  - **@Configuration**
  - **@Conditional**
  - **@EnableConfigurationProperties**
  - **@Bean**
  - ……

引入starter --- xxxAutoConfiguration --- 容器中放入组件 ---- 绑定xxxProperties ---- 配置项

2、自定义starter

atguigu-hello-spring-boot-starter（启动器）

atguigu-hello-spring-boot-starter-autoconfigure（自动配置包）

4、SpringBoot原理

Spring原理【Spring注解 <https://www.bilibili.com/video/BV1gW411W7wy?p=1> 】、**SpringMVC**原理、**自动配置原理**、SpringBoot原理

1、SpringBoot启动过程

- 创建 **SpringApplication**
  - 保存一些信息。
  - 判定当前应用的类型。ClassUtils。Servlet
  - **bootstrappers：初始启动引导器（**List<Bootstrapper>**）：去spring.factories文件中找** org.springframework.boot.**Bootstrapper**
  - 找 **ApplicationContextInitializer**；去**spring.factories找 ApplicationContextInitializer**
    - List<ApplicationContextInitializer<?>> **initializers**
  - **找 ApplicationListener ；应用监听器。去spring.factories找 ApplicationListener**
    - List<ApplicationListener<?>> **listeners**
- 运行 **SpringApplication**
  - **StopWatch**
  - **记录应用的启动时间**
  - **创建引导上下文（Context环境）createBootstrapContext()**
    - 获取到所有之前的 **bootstrappers 挨个执行** intitialize() 来完成对引导启动器上下文环境设置
  - 让当前应用进入**headless**模式。**java.awt.headless**
  - **获取所有 RunListener（运行监听器）【为了方便所有Listener进行事件感知】**
    - getSpringFactoriesInstances 去**spring.factories找 SpringApplicationRunListener**.
  - 遍历 **SpringApplicationRunListener 调用 starting 方法；**
    - **相当于通知所有感兴趣系统正在启动过程的人，项目正在 starting。**
  - 保存命令行参数；ApplicationArguments
  - 准备环境 prepareEnvironment（）；
    - 返回或者创建基础环境信息对象。**StandardServletEnvironment**
    - **配置环境信息对象。**
      - **读取所有的配置源的配置属性值。**
    - 绑定环境信息
    - 监听器调用 listener.environmentPrepared()；通知所有的监听器当前环境准备完成
  - 创建IOC容器（createApplicationContext（））

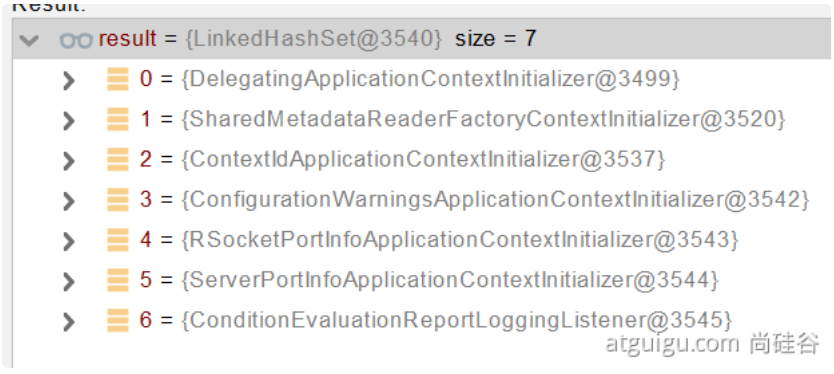
    - 根据项目类型（Servlet）创建容器，
    - 当前会创建 **AnnotationConfigServletWebServerApplicationContext**
- **准备ApplicationContext IOC容器的基本信息　prepareContext()**
    - 保存环境信息
    - IOC容器的后置处理流程。
    - 应用初始化器；applyInitializers；
        - 遍历所有的 **ApplicationContextInitializer 。调用 initialize.。来对ioc容器进行初始化扩展功能**
        - 遍历所有的 listener 调用 **contextPrepared。EventPublishRunListenr；通知所有的监听器contextPrepared**
    - **所有的监听器 调用 contextLoaded。通知所有的监听器 contextLoaded；**
- **刷新IOC容器。**refreshContext
    - 创建容器中的所有组件（Spring注解）
- 容器刷新完成后工作？afterRefresh
- 所有监听 器 调用 listeners.**started**(context); **通知所有的监听器 started**
- **调用所有runners；**callRunners()
    - **获取容器中的 ApplicationRunner**
    - **获取容器中的 CommandLineRunner**
    - **合并所有runner并且按照@Order进行排序**
    - **遍历所有的runner。调用 run 方法**
- **如果以上有异常，**
    - **调用Listener 的 failed**
- **调用所有监听器的 running 方法** listeners.running(context); **通知所有的监听器 running**
- **running如果有问题。继续通知 failed 。调用所有 Listener 的 failed；通知所有的监听器 failed**

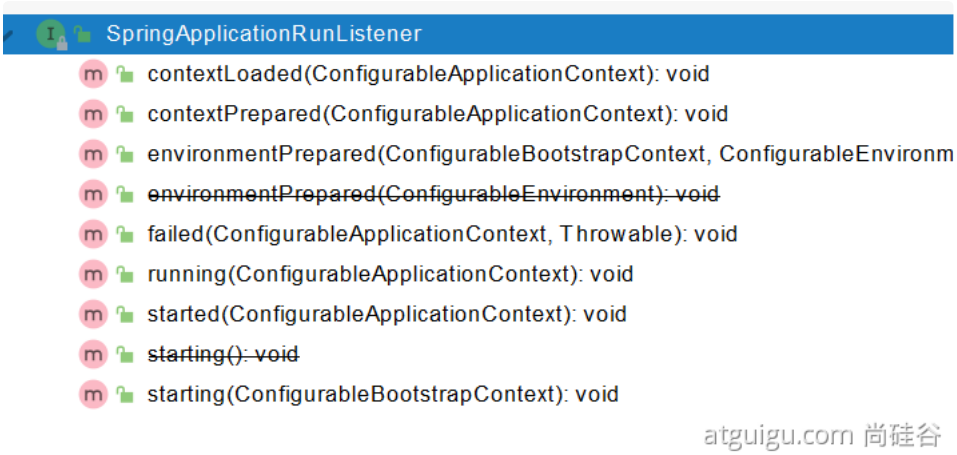
Java | Copy

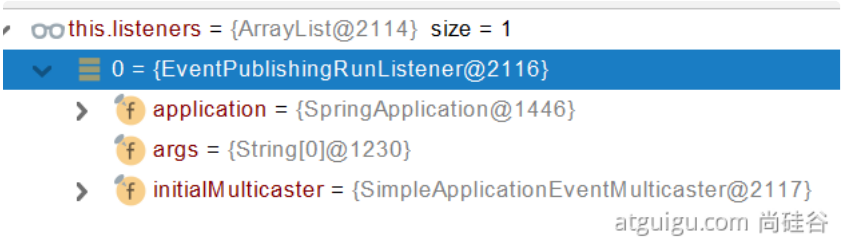
```java
public interface Bootstrapper {

    /**
     * Initialize the given {@link BootstrapRegistry} with any required registrations.
     * @param registry the registry to initialize
     */
    void intitialize(BootstrapRegistry registry);

}
```







Java | Copy

```java
@FunctionalInterface
public interface ApplicationRunner {

    /**
     * Callback used to run the bean.
     * @param args incoming application arguments
     * @throws Exception on error
     */
    void run(ApplicationArguments args) throws Exception;

}
```

Java | Copy

```java
@FunctionalInterface
public interface CommandLineRunner {

    /**
     * Callback used to run the bean.
     * @param args incoming main method arguments
     * @throws Exception on error
     */
    void run(String... args) throws Exception;

}
```

2、Application Events and Listeners

https://docs.spring.io/spring-boot/docs/current/reference/html/spring-boot-features.html#boot-features-application-events-and-listeners
<https://docs.spring.io/spring-boot/docs/current/reference/html/spring-boot-features.html#boot-features-application-events-and-listeners>

ApplicationContextInitializer

ApplicationListener

SpringApplicationRunListener

3、ApplicationRunner 与 CommandLineRunner

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