

Spring boot + ES编程实战

系统环境介绍：win7 + idea + es6.8.6

ES中的9200端口和9300端口

小工具nmap的使用：nmap -sV -p 9300 127.0.0.1

一、项目搭建

```
[2020-01-05T16:37:57.365][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-ilm]
[2020-01-05T16:37:57.365][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-logstash]
[2020-01-05T16:37:57.366][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-nl]
[2020-01-05T16:37:57.366][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-monitoring]
[2020-01-05T16:37:57.368][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-rollup]
[2020-01-05T16:37:57.368][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-security]
[2020-01-05T16:37:57.368][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-sql]
[2020-01-05T16:37:57.368][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-upgrade]
[2020-01-05T16:37:57.373][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded module [x-pack-watchdog]
[2020-01-05T16:37:57.375][INFO] [Io.e.p.PluginsService] [w9SPrxN] loaded plugin [analysis-ik]
[2020-01-05T16:38:05.831][INFO] [Io.e.x.s.a.s.FileRolesStore] [w9SPrxN] parsed [0] roles from file [C:\exp\elasticsearch-6.8.6\config\roles.yml]
[2020-01-05T16:38:07.664][INFO] [Io.e.x.n.p.l.CppLogMessageHandler] [w9SPrxN] [controller/4244] [Main.cc@109] controller <64 bit>: Version 6.8.6 (Build 73ed602c10c48e) Copyright (c) 2019 Elastic
[2020-01-05T16:38:08.409][DEBUG] [Io.e.a.ActionModule] [w9SPrxN] Using REST wrapper from plugin org.elasticsearch.xpack.security.Security
[2020-01-05T16:38:08.848][INFO] [Io.e.d.DiscoveryModule] [w9SPrxN] using discovery type [zen] and host providers [settings]
[2020-01-05T16:38:10.234][INFO] [Io.e.n.Node] [w9SPrxN] initialized
[2020-01-05T16:38:10.234][INFO] [Io.e.n.Node] [w9SPrxN] starting...
[2020-01-05T16:38:11.841][INFO] [Io.e.t.TransportService] [w9SPrxN] publish_address [127.0.0.1:9300], bound_addresses [127.0.0.1:9300], <[::]:9300>
[2020-01-05T16:38:15.111][INFO] [Io.e.c.s.MasterService] [w9SPrxN] zen-discv-elected-as-master [<[0] nodes-joined>], reason: new_master [w9SPrxN]<w9SPrxNnRzufticPyh6gBQ>[NmMO0U8RQz-141eFPs345Q]
[2020-01-05T16:38:15.121][INFO] [Io.e.c.s.ClusterApplierService] [w9SPrxN] new_master [w9SPrxN]<w9SPrxNnRzufticPyh6gBQ>[NmMO0U8RQz-141eFPs345Q] (127.0.0.1) (127.0.0.1:9300) [ml.machine_memory=826105]
[2020-01-05T16:38:15.348][INFO] [Io.u.a.d.Monitor] [w9SPrxN] try load config from C:\exp\elasticsearch-6.8.6\config\analysis-ik\IKAnalyzer.cfg.xml
[2020-01-05T16:38:16.597][WARN] [Io.e.x.s.a.s.n.NativeRoleMappingStore] [w9SPrxN] Failed to clear cache for realms [{}]
[2020-01-05T16:38:16.694][INFO] [Io.e.l.LicenseService] [w9SPrxN] license [de70aaf8-6635-4a3d-a536-0e9ef4318b54] mode [basic] - valid
[2020-01-05T16:38:16.745][INFO] [Io.e.g.GatewayService] [w9SPrxN] recovered [5] indices into cluster state
[2020-01-05T16:38:18.581][INFO] [Io.e.c.r.a.AllocationService] [w9SPrxN] Cluster health status changed from [RED] to [YELLOW] (reason: [shards started [[.kibana_task_manager][0], [.kibana_1][0]]
[2020-01-05T16:38:18.720][INFO] [Io.e.h.n.Netty4HttpServerTransport] [w9SPrxN] publish_address [127.0.0.1:9200], bound_addresses [127.0.0.1:9200], <[::]:9200>
[2020-01-05T16:38:18.721][INFO] [Io.e.n.Node] [w9SPrxN] started
```

二、如何查看帮助文档

1、spring官网的帮助手册

<https://docs.spring.io/spring-data/elasticsearch/docs/3.2.3.RELEASE/reference/html/#elasticsearch.operations.resttemplate>

Elasticsearch Clients

12. Transport Client
13. High Level REST Client
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 29. Using Scroll For Big Result Set
- Appendix A: Namespace reference
- Appendix B: Populators namespace

- 1 Configure the client to use. This can be done by `ReactiveRestClients` or directly `DefaultReactiveElasticsearchClient`.
- 2 Set up the `ElasticsearchConverter` used for domain type mapping utilizing metadata provided by the mapping context.
- 3 The Elasticsearch specific mapping context for domain type metadata.
- 4 The actual template based on the client and conversion infrastructure.

22.1.2. Reactive Template Usage

`ReactiveElasticsearchTemplate` lets you save, find and delete your domain objects and map those objects to documents stored in Elasticsearch.

Consider the following:

Example 69. Use the `ReactiveElasticsearchTemplate`

```

@Document(indexName = "marvel", type = "characters")
public class Person {
    private @Id String id;
    private String name;
    private int age;
    // Getter/Setter omitted...
}

template.save(new Person("Bruce Banner", 42))
    .doOnNext(System.out::println)
    .flatMap(person -> template.findById(person.id, Person.class))
    .doOnNext(System.out::println)
    .flatMap(person -> template.delete(person))
    .doOnNext(System.out::println)
    .flatMap(id -> template.count(Person.class))
    .doOnNext(System.out::println)

```

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- Appendix A: Namespace reference
- The <repositories> /> Element
- Appendix B: Populators namespace

- A rich query and criteria api.
- Resource management and Exception translation.

19. ElasticsearchTemplate

The `ElasticsearchTemplate` is an implementation of the `ElasticsearchOperations` interface using the `Transport Client`.

Example 64. ElasticsearchTemplate configuration

```

@Configuration
public class TransportClientConfig extends ElasticsearchConfigurationSupport {

    @Bean
    public Client elasticsearchClient() throws UnknownHostException {
        Settings settings = Settings.builder().put("cluster.name", "elasticsearch").build();
        TransportClient client = new PrebuiltTransportClient(settings);
        client.addTransportAddress(new TransportAddress(InetAddress.getByName("127.0.0.1"), 9300));
        return client;
    }

    @Bean(name = {"elasticsearchOperations", "elasticsearchTemplate"})
    public ElasticsearchTemplate elasticsearchTemplate() throws UnknownHostException {
        return new ElasticsearchTemplate(elasticsearchClient(), entityMapper());
    }

    // use the ElasticsearchEntityMapper
    @Bean
    @Override
    public EntityMapper entityMapper() {
        ElasticsearchEntityMapper entityMapper = new ElasticsearchEntityMapper(elasticsearchMappingContext(),
            new DefaultConversionsService());
        entityMapper.setConversions(elasticsearchCustomConversions());
        return entityMapper;
    }
}

```

- 1 Setting up the `Transport Client`.
- 2 Creating the `ElasticsearchTemplate` bean, offering both names, `elasticsearchOperations` and `elasticsearchTemplate`.

docs.spring.io/spring-data/elasticsearch/docs/3.2.3.RELEASE/reference/html/#elasticsearch.reactive.template

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As both `ElasticsearchTemplate` and `ElasticsearchRestTemplate` implement the `ElasticsearchOperations` interface, the way to use them is not different. The example shows how to use an injected `ElasticsearchOperations` instance in a Spring REST controller. The decision, if this is using the `TransportClient` or the `RestClient` is made by providing the corresponding configuration with one of the configurations shown above.

Example 66. ElasticsearchOperations usage

```
@RestController
@RequestMapping("/")
public class TestController {

    private ElasticsearchOperations elasticsearchOperations;

    public TestController(ElasticsearchOperations elasticsearchOperations) { ❶
        this.elasticsearchOperations = elasticsearchOperations;
    }

    @PostMapping("/person")
    public String save(@RequestBody Person person) { ❷

        IndexQuery indexQuery = new IndexQueryBuilder()
            .withId(person.getId().toString())
            .withObject(person)
            .build();
        String documentId = elasticsearchOperations.index(indexQuery);
        return documentId;
    }

    @GetMapping("/person/{id}")
    public Person findById(@PathVariable("id") Long id) { ❸
        Person person = elasticsearchOperations
            .queryForObject(GetQuery.getId(id.toString()), Person.class);
        return person;
    }
}
```

❶ Let Spring inject the provided `ElasticsearchOperations` bean in the constructor.

2、ES官网的帮助手册

<https://www.elastic.co/guide/en/elasticsearch/client/java-api/6.8/index.html>

三、如何开启热部署

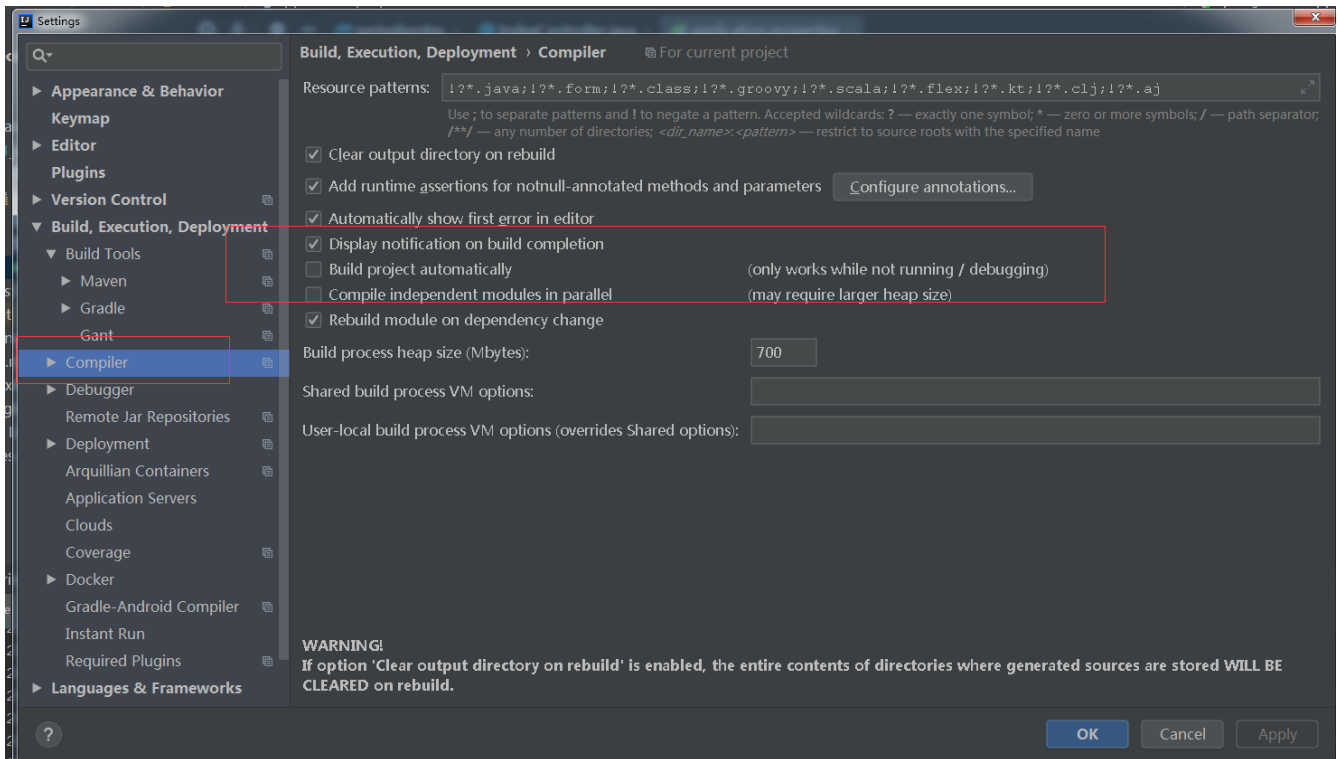
1、application.properties配置文件的修改

```
#热部署生效
spring.devtools.restart.enabled: true
#设置重启的目录
#spring.devtools.restart.additional-paths: src/main/java
#classpath目录下的WEB-INF文件夹内容修改不重启
spring.devtools.restart.exclude: WEB-INF/**
```

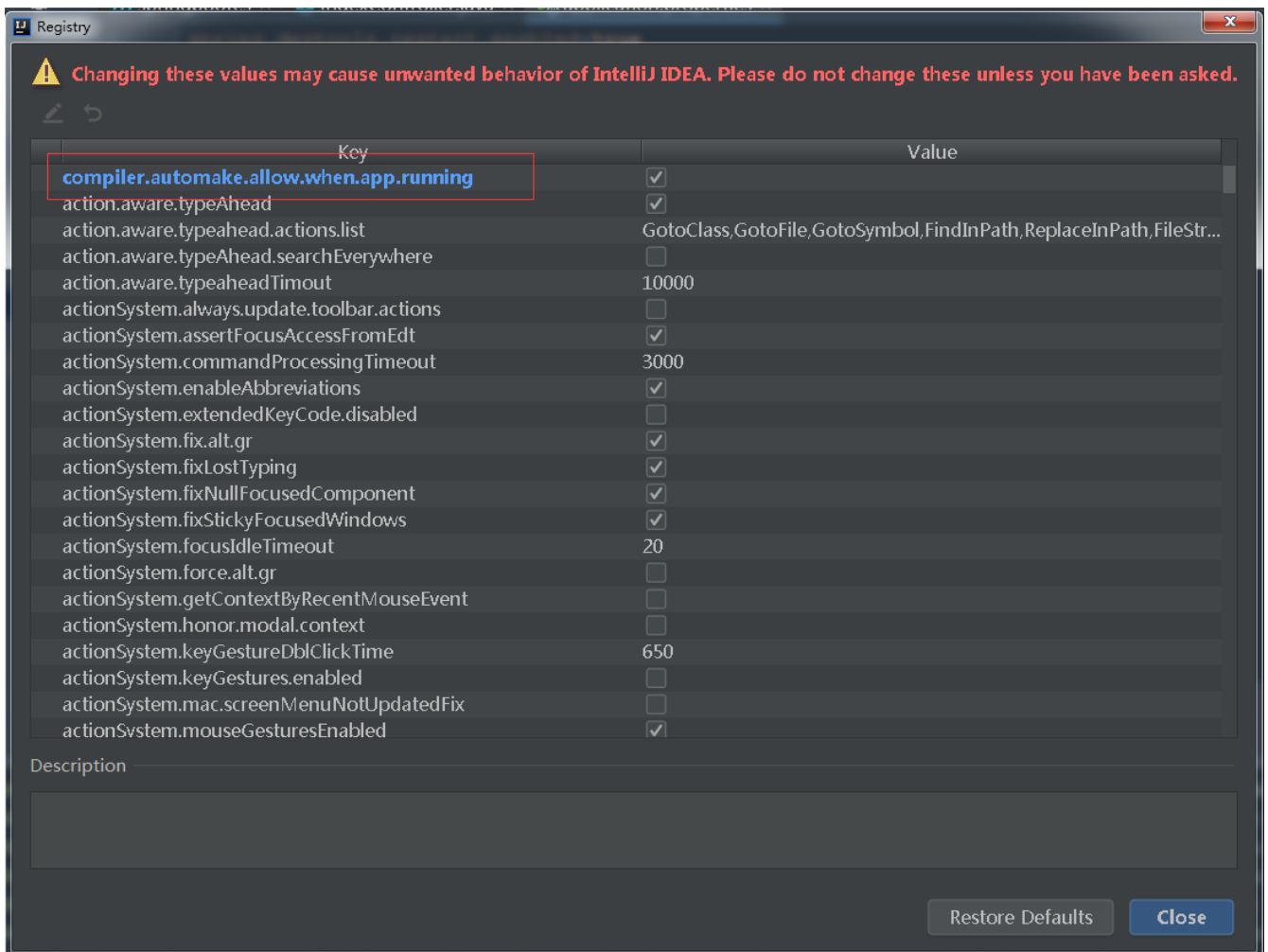
2、IDEA配置

当我们修改了Java类后，IDEA默认是不自动编译的，而spring-boot-devtools又是监测classpath下的文件发生变化才会重启应用，所以需要设置IDEA的自动编译：

(1) File--> Settings--> Compiler-Build Project automatically



(2) ctrl + shift + alt + / , 选择Registry , 勾选 Compiler autoMake allow when app running



3、pom.xml文件的修改

```
<build>
  <plugins>
    <plugin>
      <groupId>org.springframework.boot</groupId>
      <artifactId>spring-boot-maven-plugin</artifactId>
      <configuration>
        <fork>true</fork>
      </configuration>
    </plugin>
  </plugins>
</build>
```