06: ♥ Debugging NoSuchBeanDefinitionException in Spring

Posted on September 7, 2015 by Arulkumaran Kumaraswamipillai

#1. Adding the @Named annotation to the interface instead of the implementation

Adding the @Named, @Component, @Repository, etc annotation on the interface as opposed to the implementation class. The code below can throw "NoSuchBeanDefinitionException"

```
1 package com.mytutorial;
2
3 @Named
4 public interface SimpleDao {
5     abstract String getNameById(int id);
6 }
```

```
1 package com.mytutorial;
2
3 import javax.inject.Named;
```

```
4
5 public class SimpleDaoImpl implements SimpleDao {
6     public String getNameById(int id) {
7          return "test"
8     }
9 }
```

FIX: The @Named annotation is now in the implementation class.

```
1 package com.mytutorial;
2
3 public interface SimpleDao {
4     abstract String getNameById(int id);
5 }
```

```
1  package com.mytutorial;
2
3  import javax.inject.Named;
4
5  @Named
6  public class SimpleDaoImpl implements SimpleDao
7      public String getNameById(int id) {
8           return "test"
9      }
10 }
```

#2. Not configuring the component-scan in the XML or JavaConfig

NOT having the “component-scan” in the XML based configuration

```
1 <context:component-scan base-package="com.mytutor
```

or NOT having the “@ComponentScan” in the Java based configuration

```
1  package com.mytutorial;
2
3  import org.springframework.context.annotation.Co
4  import org.springframework.context.annotation.Co
5
6  @Configuration
7  @ComponentScan(basePackages={"com.mytutorial"})
8  public class AppConfig {
9
10 }
```


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Even if the base package is defined incorrectly you can get this exception.

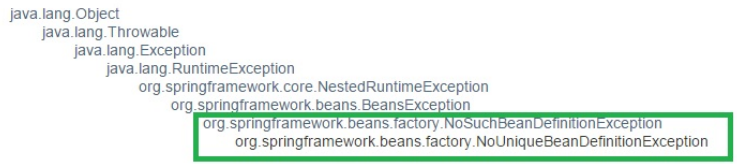
#3. Trying to @Inject or @Autowire a bean that has NOT been defined

For example, if "SimpleDaoImpl" bean was not defined with the @Commponent, @Repository or @Named annotations. Trying to inject a bean (e.g. SimpleDao) that has not been defined at all or annotated can throw this exception.

```
1  package com.mytutorial;
2
3  import javax.inject.Inject;
4  import javax.inject.Named;
5
6  @Named
7  public class SimpleServiceImpl implements Simple
8
9      @Inject
10     SimpleDao dao;
11
12     public String processUser(int id) {
13         String name = dao.getNameById(id);
14         return "Hello " + name;
15     }
16 }
```

#4. Having more than one bean being defined in the context throws "NoUniqueBeanDefinitionException"

which is a subclass of "NoSuchBeanDefinitionException". If you have more than one bean defined, then you need to use the "@Qualifier" annotation to specify which bean you need to use.



Spring NoSuchBeanDefinitionException

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FIX: Qualifying the beans with the "**@Qualifier**" annotation.

```
1  package com.mytutorial;
2
3  import javax.inject.Inject;
4  import javax.inject.Named;
5
6  import org.springframework.beans.factory.annotat
7
8  @Named
9  public class SimpleServiceImpl implements Simple
10
11     @Inject
12     @Qualifier(value="simpleDao")
13     SimpleDao dao;
14
15     public String processUser(int id) {
16         String name = dao.getNameById(id);
17         return "Hello " + name;
18     }
19 }
```

As you can see the the qualifier value is "simpleDao", and the dao beans will be defined with @Named values as shown below.

```
1  package com.mytutorial;
2
3  import javax.inject.Named;
4
5  @Named("simpleDao")
6  public class SimpleDaoImpl implements SimpleDao
7
8      public String getNameById(int id) {
9          //......
10     }
11
12 }
```

and the another one as

```
1  package com.mytutorial;
2
3  import javax.inject.Named;
4
5  @Named("anotherSimpleDao")
6  public class AnotherSimpleDaoImpl implements Sim
7
8      public String getNameById(int id) {
9          //....
10     }
11 }
```

as you can see the both implement the same type "SimpleDao", but have the different @Named values "simpleDao" and "anotherSimpleDao".

#5. Opposite of #1 when a bean in the context is proxied using the JDK Dynamic Proxy mechanism

The Spring documentation states that

"Spring recommends that you only annotate concrete classes (and methods of concrete classes) with the @Transactional annotation, as opposed to annotating interfaces. You certainly can place the @Transactional annotation on an interface (or an interface method), but this works only as you would expect it to if you are using interface-based proxies."

When you see a class with a name like **$Proxy31**, it's indicating that that Spring has auto-generated a proxy object for one of your beans say "SimpleDao". This uses java.lang.reflect.Proxy to generate the proxy objec t. This proxy object will implement the same interface(s) as the class that's being proxied, but it will not be **type compatible** with the target class itself. So, in the is scenario, if a bean is injected by an interface, it will be correctly wired in. If a bean is injected by the actual class, then Spring will not find the bean definition, and throws "NoSuchBeanDefinitionException".

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