实验1 Spring开发环境搭建

（一）实验目的

1. 通过本实验学会搭建Spring项目
2. 通过本实验掌握Spring的IoC功能

（二）实验内容

1. 新建Web工程
2. 创建applicationContext.xml 文件，引入Spring的约束
3. 将Spring的核心jar包文件导入项目
4. 分层实现service层和dao层bean
5. 在applicationContext.xml 配置每一层bean
6. 访问service层的bean对象

（三）实验要求

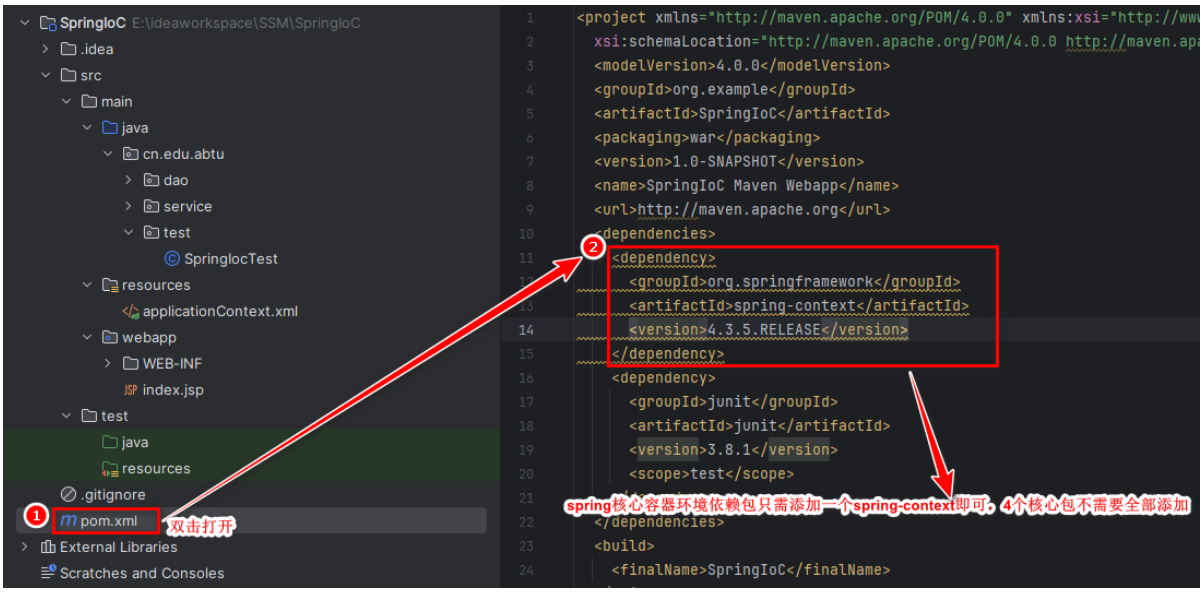
1. 实验过程要求每个同学根据实验指导书认真完成
2. 每个同学认真书写实验总结，不能有雷同

（四）实验步骤

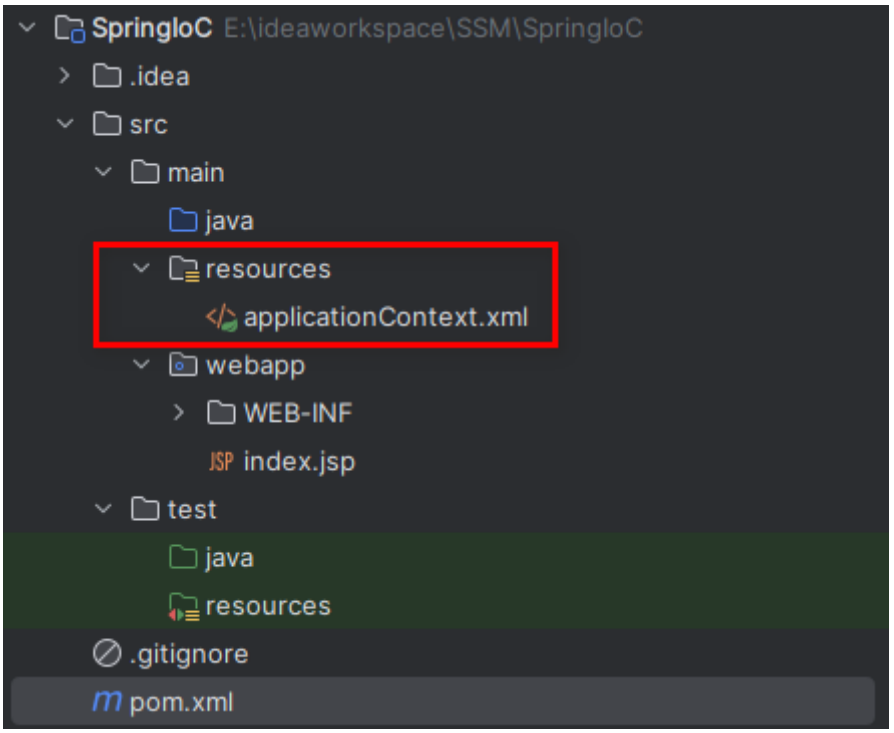
1. 在IDEA中创建一个Maven项目

此步骤略，请参考`IDEA新建Maven项目实验`.

2. 在项目pom.xml文件中引用Spring的核心jar包

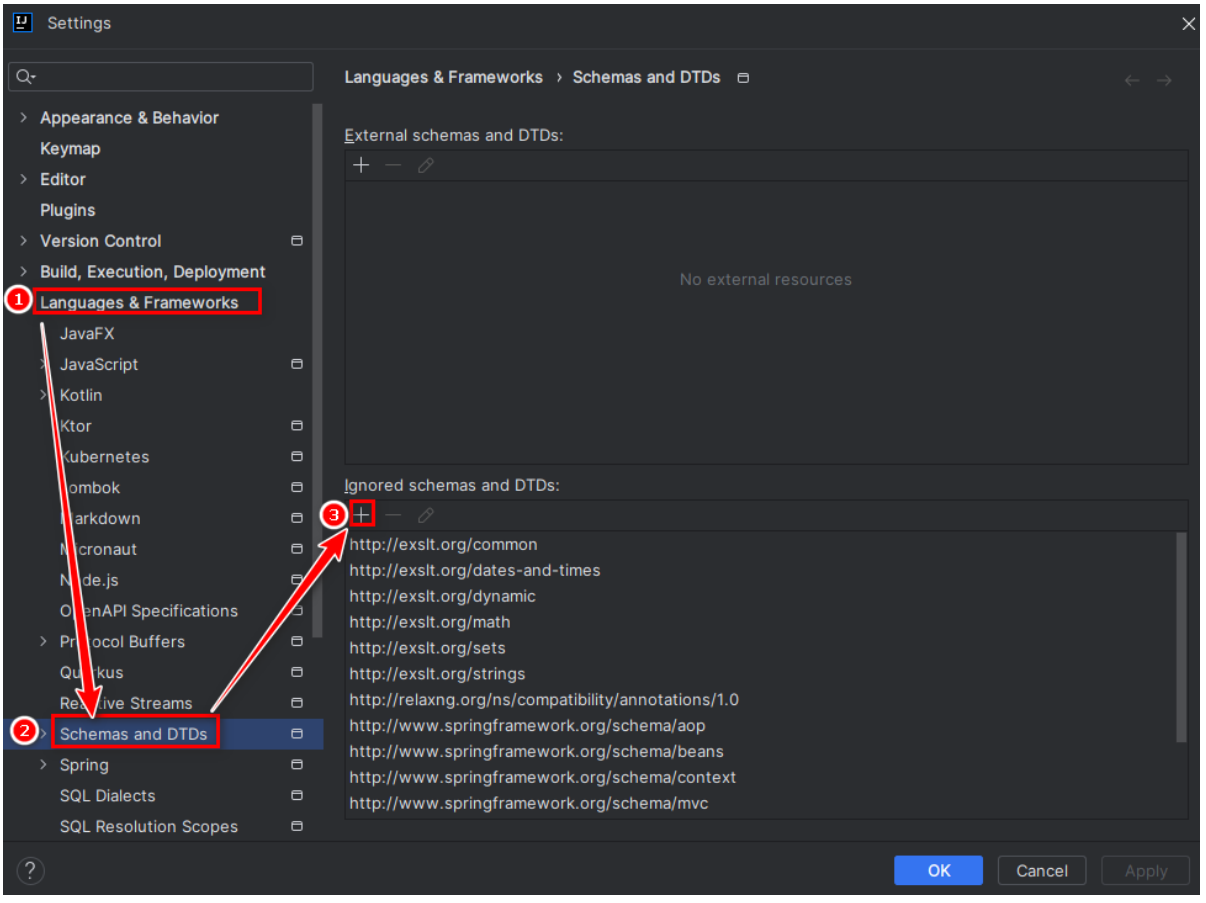


3. 将applicationContext.xml文件引入工程src->main->resources目录下

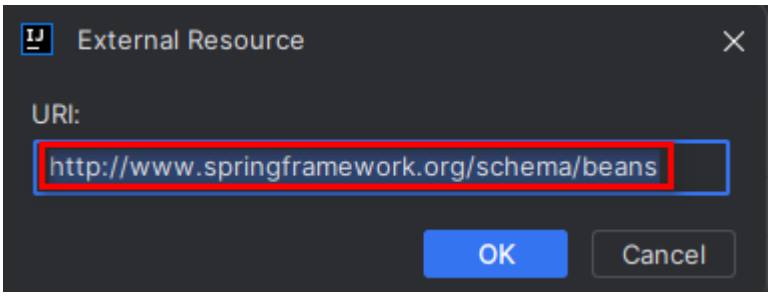


注：在拷贝applicationContext.xml文件过程中，如果applicationContext.xml文件报错，执行以下操作。

点击File->Setting，在弹出的对话框中执行：

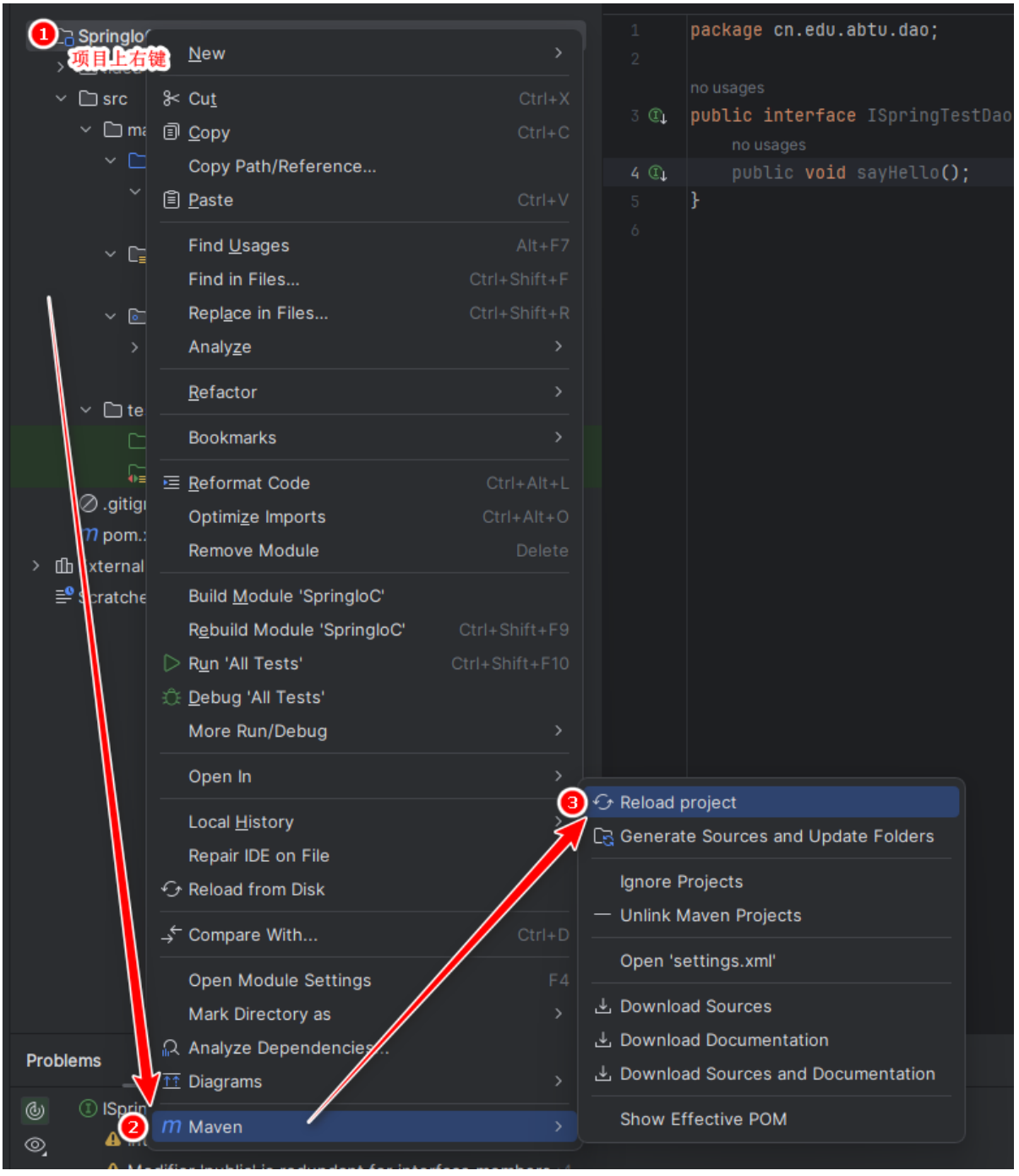


点击＋后在弹出的对话框中填入



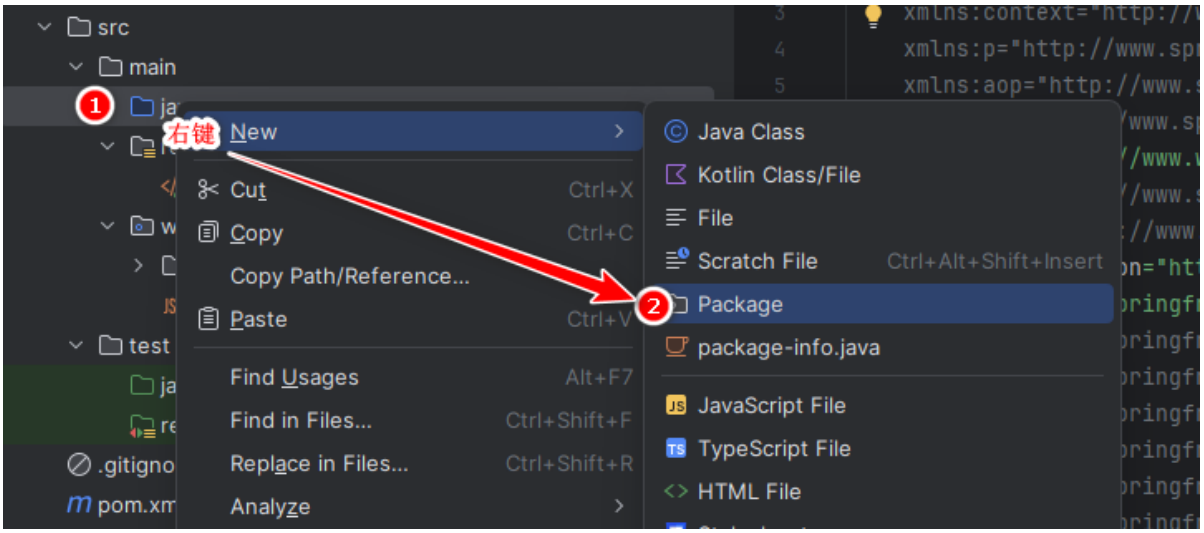
注：http://www.springframework.org/schema/beans为报错的行，哪一行报错，就把该行复制过来，添加忽略即可。**逐行操作。**

最后进行如下操作：

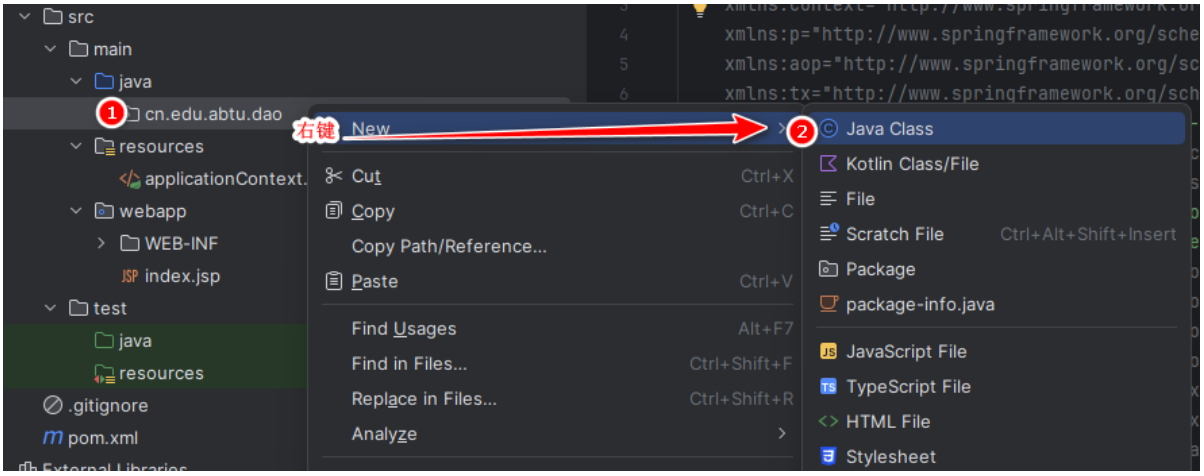


重新加载以下Maven项目即可。

4. 在src->main->java下建立cn.edu.abtu.dao包

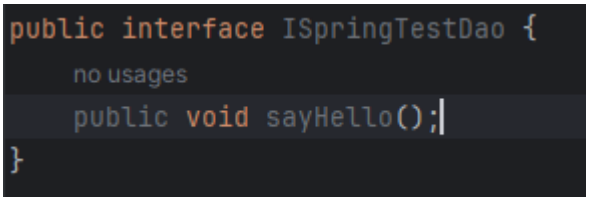


5. 在cn.edu.abtu.dao包下建ISpringTestDao接口

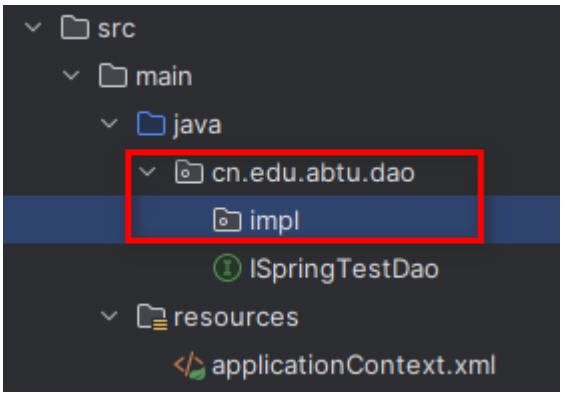


在弹出的对话框中输入接口名称ISpringTestDao

6. 在ISpringTestDao接口中定义sayHello()方法



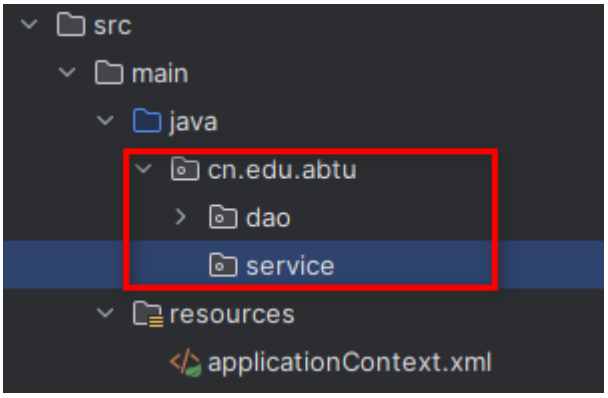
7. 在src->main->java下新建cn.edu.abtu.dao.impl包



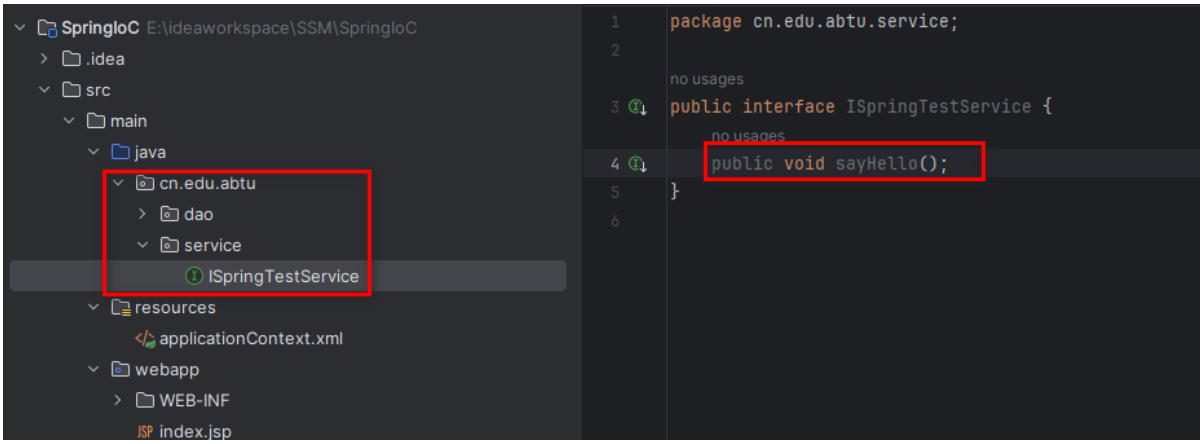
8. 在cn.edu.abtu.dao.impl下新建ISpringTestDao的实现类SpringTestDaoImpl，并实现sayHello()方法

```java
package cn.edu.abtu.dao.impl;

import cn.edu.abtu.dao.ISpringTestDao;

no usages
public class SpringTestDaoImpl implements ISpringTestDao {
    no usages
    public void sayHello() {
        System.out.println("Hello Spring!!!!!");
    }
}
```

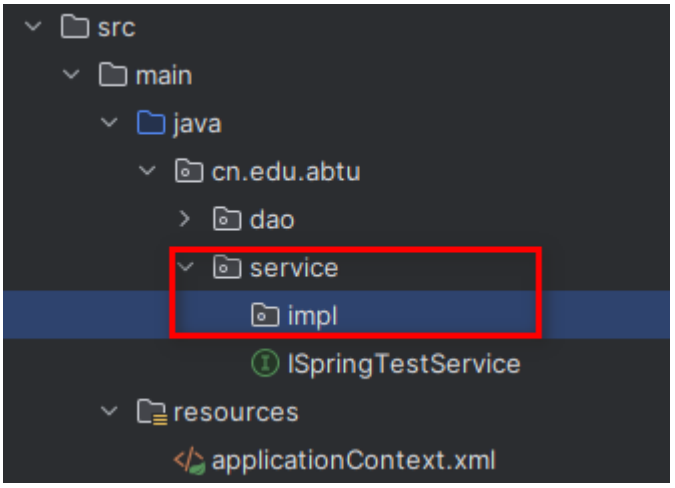
9. 在src->main->java下新建cn.edu.abtu.service包



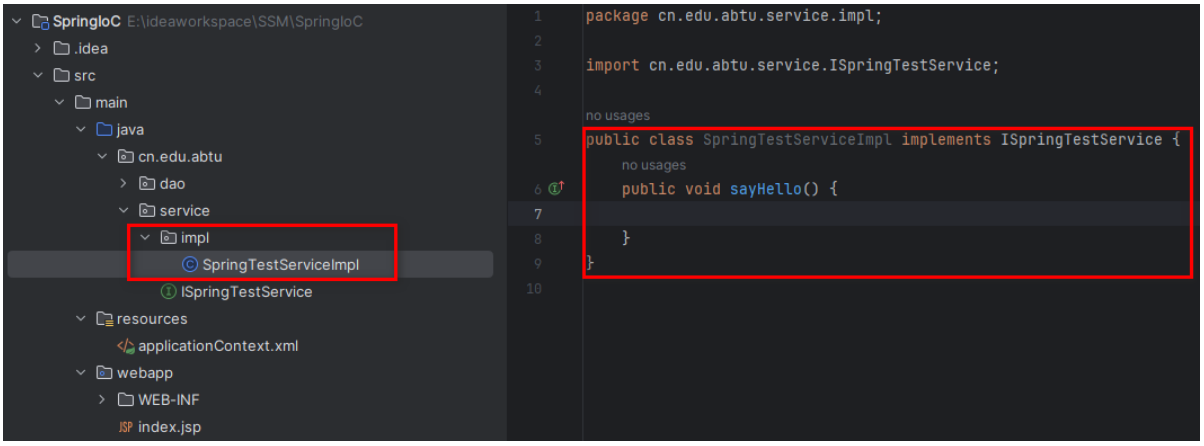
10. 在cn.edu.abtu.service包下新建ISpringTestService接口，添加sayHello()方法



11. 在src->main->java下新建cn.edu.abtu.service.impl包



12. 在cn.edu.abtu.service.impl新建SpringTestServiceImpl类，并实现ISpringTestService接口



13. 通过Service层调用Dao层。即在SpringTestServiceImpl中声明ISpringTestDao的引用，并生成set/get方法

```
no usages
public class SpringTestServiceImpl implements ISpringTestService {

    2 usages
    private ISpringTestDao springTestDao;
    no usages
    public void sayHello() {

    }

    no usages
    public ISpringTestDao getSpringTestDao() {
        return springTestDao;
    }

    no usages
    public void setSpringTestDao(ISpringTestDao springTestDao) {
        this.springTestDao = springTestDao;
    }
}
```

14. 在SpringTestServiceImpl类的sayHello()方法中调用dao层的sayHello()方法

```
public class SpringTestServiceImpl implements ISpringTestService {

    3 usages
    private ISpringTestDao springTestDao;
    no usages
    public void sayHello() {
        springTestDao.sayHello();
    }

    no usages
    public ISpringTestDao getSpringTestDao() {
        return springTestDao;
    }

    no usages
    public void setSpringTestDao(ISpringTestDao springTestDao) {
        this.springTestDao = springTestDao;
    }
}
```

15. 在applicationContext.xml中配置要实例化的bean对象

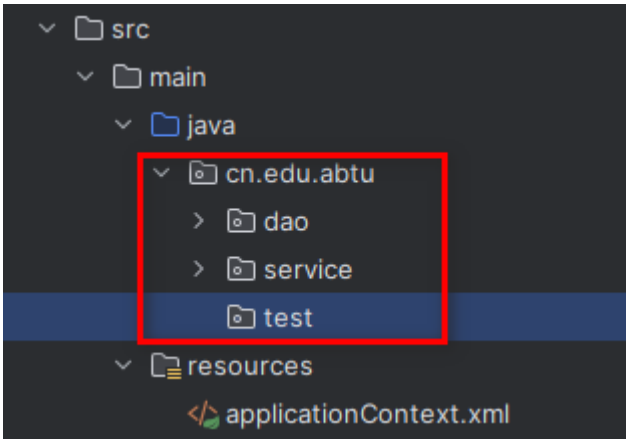
```xml
<beans xmlns="http://www.springframework.org/schema/beans"
    xmlns:context="http://www.springframework.org/schema/context"
    xmlns:p="http://www.springframework.org/schema/p"
    xmlns:aop="http://www.springframework.org/schema/aop"
    xmlns:tx="http://www.springframework.org/schema/tx"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:mvc="http://www.springframework.org/schema/mvc"
    xmlns:task="http://www.springframework.org/schema/task"
    xsi:schemaLocation="http://www.springframework.org/schema/beans
        http://www.springframework.org/schema/beans/spring-beans.xsd
        http://www.springframework.org/schema/context
        http://www.springframework.org/schema/context/spring-context.xsd
        http://www.springframework.org/schema/aop
        http://www.springframework.org/schema/aop/spring-aop.xsd
        http://www.springframework.org/schema/tx
        http://www.springframework.org/schema/tx/spring-tx.xsd
        http://www.springframework.org/schema/task
        http://www.springframework.org/schema/task/spring-task.xsd
        http://www.springframework.org/schema/mvc
        http://www.springframework.org/schema/mvc/spring-mvc.xsd
        http://www.springframework.org/schema/util
        http://www.springframework.org/schema/util/spring-util.xsd">

    <!--配置Dao层的实现类bean-->
    <bean id="springTestDao" class="cn.edu.abtu.dao.impl.SpringTestDaoImpl" />

    <!--配置service层实现类bean-->
    <bean id="springTestService" class="cn.edu.abtu.service.impl.SpringTestServiceImpl">
        <!--注入该bean对象中所依赖的dao对象实例-->
        <property name="springTestDao" ref="springTestDao" />
    </bean>
</beans>
```

每个bean的class属性填写的一定是可以被实例化的具体实现类，不能为接口

ref引用的是所依赖bean的id，一定要与所引用bean的id一样

此处要与SpringTestServiceImpl类中定义的属性（即定义的变量）一定要一样

16. 在src->main->java下新建cn.edu.abtu.test包

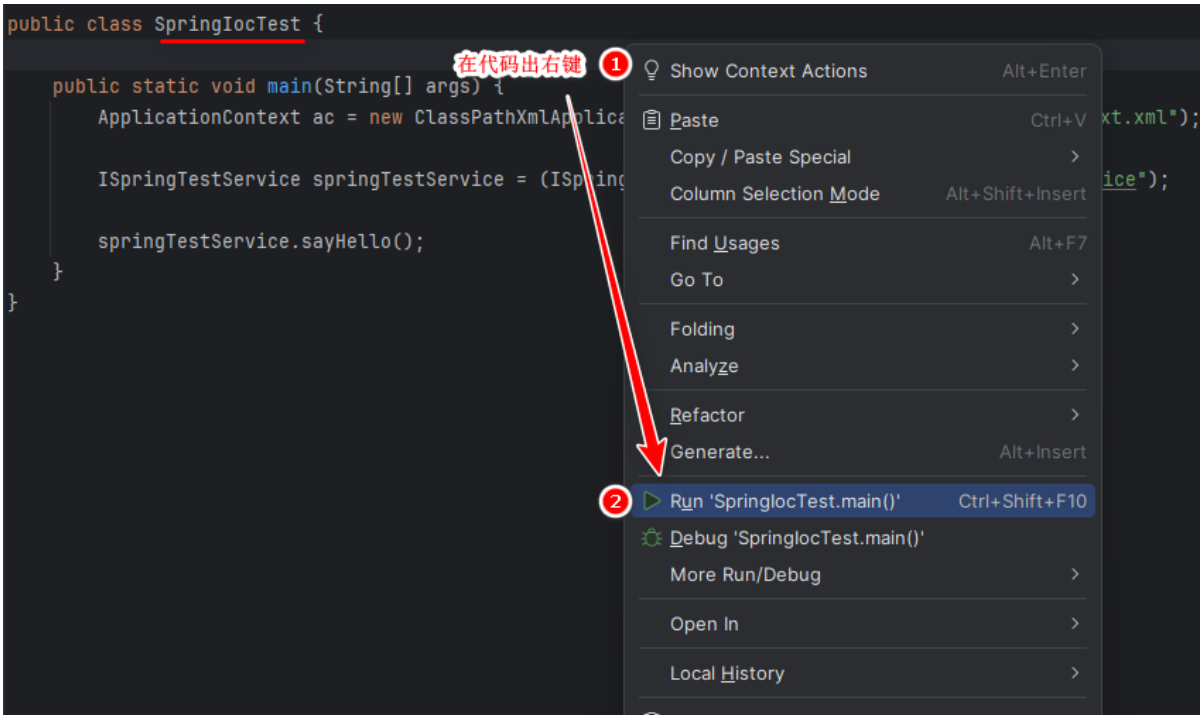


17. 在cn.edu.abtu.test包下新建SpringIocTest类

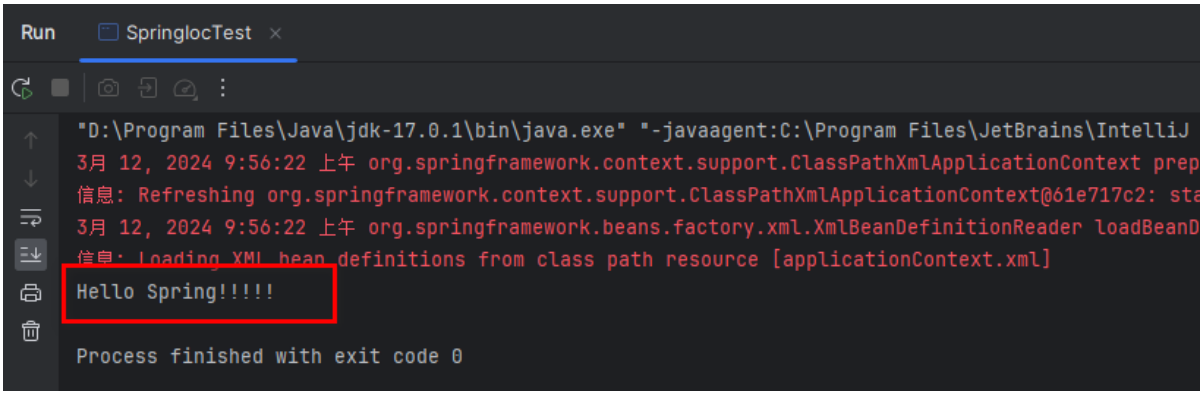
18. 在SpringIocTest中添加如下测试代码


```
public class SpringIocTest {

    public static void main(String[] args) {
        ApplicationContext ac = new ClassPathXmlApplicationContext( configLocation: "applicationContext.xml");

        ISpringTestService springTestService = (ISpringTestService) ac.getBean( s: "springTestService");

        springTestService.sayHello();
    }
}
```

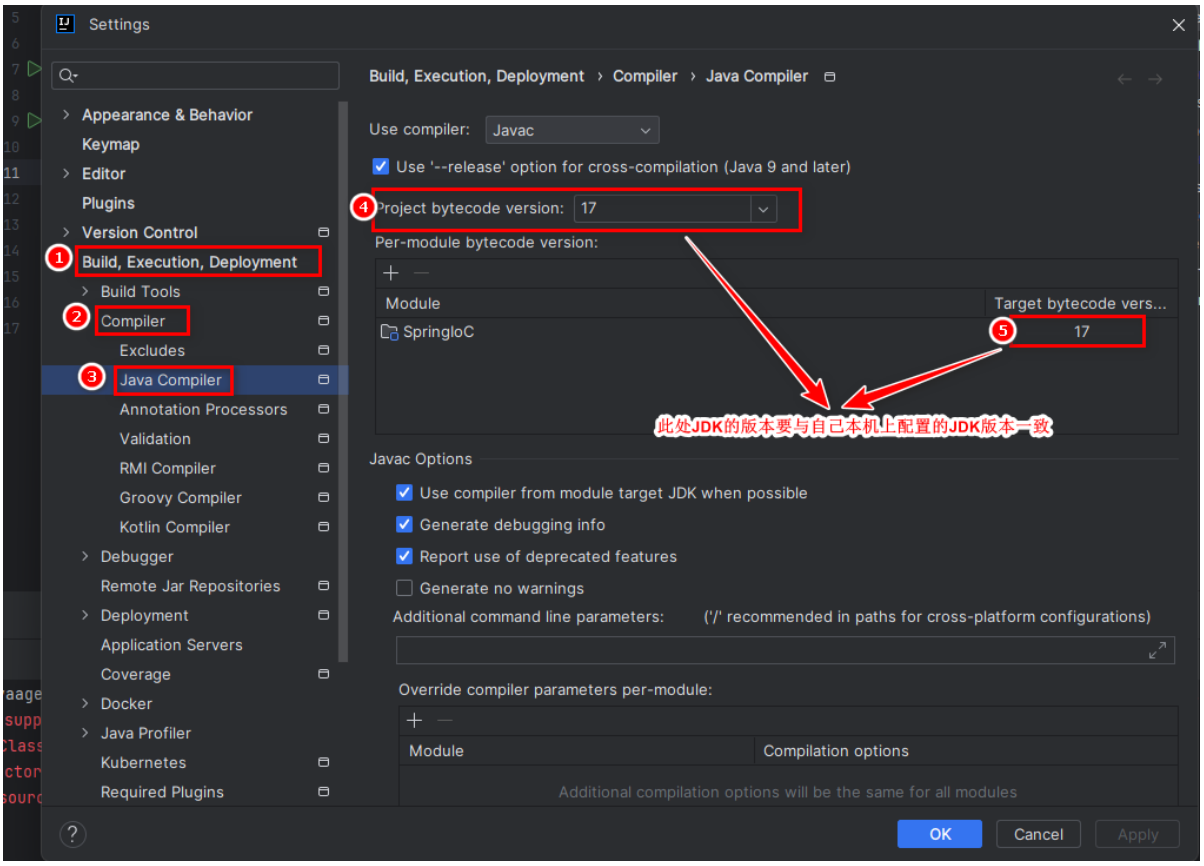
19. 运行代码



20. 在控制台出现如下结果，证明项目运行成功



如果此步出现提示jdk版本不一样的问题，点击File->Settings，在出现的对话框中做如下操作



（五）实验总结

通过观察输出结果和自己实验整个过程总结一下自己的学习所得