## [Course Overview](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff)

### [Course Overview](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff)

[Hi everyone.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=0) [My name is Bryan Hansen.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=2.5919999999999996) [Welcome to my course, Spring Fundamentals.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=9.072) [I'm the director of software development at Software Technology Group.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=11.617) [The Spring Framework has taken the Java community by storm,](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=15.777) [making web and enterprise development much simpler than it previously was.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=18.942999999999998) [In this course,](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=23.217999999999996) [we're going to cover the fundamentals of Spring](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=24.916) [development by going through the various configuration](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=26.797833333333333) [methods that are available inside Spring.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=29.2952) [Some of the major topics that we will cover include Java configuration,](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=32.535) [autowiring, and advanced bean configuration.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=37.1835) [By the end of this course,](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=41.059) [you'll know the configuration methods available in](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=42.10100000000001) [Spring and how they'll benefit your code.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=44.36999999999999) [Before beginning the course, you should be familiar with Java,](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=47.445) [but no previous Spring experience is required.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=50.349999999999994) [From here,](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=54.205) [you should feel comfortable diving into Spring with courses on Spring MVC,](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=54.90766666666667) [Spring Data JPA, and Spring Security.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=59.41385714285714) [I hope you'll join me on this journey to learn the fundamentals of](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=63.061) [Spring development with the Spring Fundamentals course, at Pluralsight.](https://app.pluralsight.com/course-player?clipId=c54afb59-79c4-4e68-9195-761d07bee7ff&startTime=66.11779999999997)

## [What Is Spring?](https://app.pluralsight.com/course-player?clipId=9ed685e8-d286-4654-8348-606cabfead4a)

### [Version Check](https://app.pluralsight.com/course-player?clipId=9ed685e8-d286-4654-8348-606cabfead4a)

### [Introduction](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35)

[What is all the hype around the Spring Framework?](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=0) [Do you already know that you want to learn Spring,](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=3.941) [but aren't sure where to start?](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=5.911714285714286) [Hello.](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=7.938) [I'm Bryan Hansen, and welcome to my course on Spring Fundamentals on Pluralsight.](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=8.18725) [In this course, we're going to be learning about developing with Spring,](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=12.813) [and we'll use the various configuration methods to illustrate some of](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=15.610285714285716) [the common problems we often face in development.](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=19.188285714285715) [We will develop part of an application without Spring and then show how to](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=22.223) [configure that part of the application using Java configuration,](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=26.152) [XML configuration, and annotations.](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=29.675) [We will also discuss the lifecycle of Spring and how to use beans in a more appropriate fashion.](https://app.pluralsight.com/course-player?clipId=5791f49e-b50a-4bf7-8c12-b8f629f3db35&startTime=33.09)

### [What Is Spring?](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659)

[What is Spring?](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=0.961577999999994) [Well, the Spring Framework started out as just an inversion of control container.](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=2.296577999999994) [This technique is often referred to as dependency injection.](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=7.523577999999994) [It was conceived to reduce or replace some of the complex](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=11.353577999999994) [configuration of the earlier Java Enterprise Edition.](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=14.902577999999995) [Spring was later built around using Java without EJBs,](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=18.467577999999992) [so its original concept was how to work better with EJBs,](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=21.63243514285714) [and then they realized they just didn't need those for a lot of situations.](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=25.491911333333327) [So it kind of transitioned into, okay,](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=29.372720857142856) [how can I do the same development without using Enterprise JavaBeans?](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=31.85007799999999) [This course is designed to show you how to use Spring,](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=37.73757799999999) [and since Spring is a dependency injection container,](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=40.42472085714285) [we will also discuss why.](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=44.099577999999994) [Dependency injection is very simply removing hard-coded](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=46.31957799999999) [wiring in your app and using a framework to inject dependency resources where they are needed.](https://app.pluralsight.com/course-player?clipId=dada1f08-0d6e-4b14-8b33-32ae34d8b659&startTime=48.92872085714286)

### [Update](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145)

[So, again, what is Spring?](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=1.2275449999999983) [Well,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=3.1585449999999984) [it is a framework built around reducing the complexities](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=3.4084021428571414) [around enterprise Java development and later also providing](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=6.484344999999998) [enterprise development without EJBs.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=10.592544999999998) [Spring can essentially be used with or without Enterprise](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=13.990545) [JavaBeans and primarily now is used without them.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=17.239945) [This is an important point because Spring enabled us to do enterprise](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=20.596545) [development without using an application server.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=24.623211666666666) [A lot of people don't realize that Tomcat really isn't an application server,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=28.063544999999998) [and it's just a web server.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=32.352545) [This is one of the reasons that Tomcat has taken over for](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=34.075545) [Java developments as a standard container.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=37.28297357142856) [It's very easy to use, it's lightweight,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=39.423545) [and until Spring,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=42.402345000000004) [you either weren't using enterprise features or you had to use a more complex,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=43.870545) [harder-to-use application server.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=48.070544999999996) [I should also mention that it is completely POJO based.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=51.012544999999996) [Any code you write in Spring can be written without using Spring at all.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=53.869544999999995) [POJO, as you may or may not remember, stands for a plain old Java object.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=59.570544999999996) [The Spring Framework really isn't doing any magical thing behind the scene.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=64.898545) [It's just helping us write better,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=68.949545) [cleaner code and doing things POJO based and interface driven.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=71.356545) [So we've already talked about it being lightweight,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=76.160545) [but we should also point out that Spring was built](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=77.61825928571429) [out of the frustrations of JEE, so it's very unobtrusive.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=80.83854499999998) [It shouldn't be getting in your way.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=86.35854499999999) [If it is, you're using it wrong.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=88.878545) [Spring also uses AOP and proxies to apply things like transactions to your code](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=90.958545) [to get those cross cutting concerns out of your application,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=96.35168785714288) [so your code should actually be smaller and more lightweight from using Spring.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=99.70221166666667) [One of the most appealing parts of Spring to me is that](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=104.85525928571428) [it's built around best practices.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=108.156545) [We end up having design patterns in our code without us](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=111.34954499999999) [even realizing that we're using them, things like singletons,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=114.1808307142857) [factories, abstract factories.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=118.09354499999999) [All of those best practices are built into our code.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=120.832545) [Some people may argue that I should know those to get into it.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=123.735295) [That's true.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=128.120545) [Having that knowledge of patterns will only help increase](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=128.84521166666667) [your understanding of what Spring is doing,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=132.02371166666666) [but it can help make new developers or less experienced](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=134.70554499999997) [developers come up to speed and use these patterns more](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=137.51140214285712) [effectively without having that knowledge firsthand.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=141.0452116666667) [There's patterns like a singleton in there,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=144.24954499999998) [a factory, an abstract factory, the template method.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=146.787545) [Spring actually uses template method a lot,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=150.073545) [and although it's really not a pattern,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=152.64754499999998) [it's a design methodology or a best practice,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=154.565545) [there's annotation-based configuration.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=157.402795) [If all of this doesn't make much sense to you,](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=160.22954499999997) [don't be concerned because you can still learn Spring without understanding many of those details.](https://app.pluralsight.com/course-player?clipId=eb820f09-4649-4438-ac7e-503ffaa65145&startTime=161.92154499999998)

### [The Problem](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49)

[What problem is Spring trying to solve?](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=1.2949890000000015) [Whenever I'm going to introduce another framework or tool into my code base,](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=3.8879890000000015) [I want to look and see what it's actually buying me.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=8.205989) [These are the big questions I ask, what is this trying to solve for me?](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=10.279239) [Well, Spring brings to the table quite a few things.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=15.329989000000001) [It increases our testability.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=18.690322333333338) [It increases our maintainability or the ability to maintain our code.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=21.502989000000003) [It also helps us with scalability.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=26.255989000000003) [I call these the ables, the testable, maintainable,](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=29.031989000000003) [scalable-type properties of our code.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=32.151489) [It decouples things and makes it so that we can add caching layers,](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=34.424239) [things like that in there.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=38.695989000000004) [There's a little bit beyond the scope of what we're](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=40.774989) [going to cover in this class,](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=43.165488999999994) [but these are all focused at Spring and the principles](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=44.528989) [behind Spring help us deliver on.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=48.705989) [It also helps us reduce code complexity.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=51.369989000000004) [And lastly, though,](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=54.442989000000004) [and this is my biggest point that it tries to solve for us is](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=55.277364000000006) [that it puts the focus on our business.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=58.533689000000024) [The business doesn't care what framework I'm using.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=62.268989000000005) [They care about what we're getting coded done,](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=65.00856042857143) [and Spring helps us get complex code done faster,](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=67.68398900000003) [makes it more maintainable, testable, and helps remove that complexity, and just makes everything a little bit easier for us as a developer.](https://app.pluralsight.com/course-player?clipId=f5fbe426-a5f0-4807-acfa-000afc154c49&startTime=71.54513185714285)

### [Business Focus](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735)

[As I mentioned in the previous slides,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=1.1853449999999721) [that Spring helps us focus on the business need.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=3.762344999999972) [If you've ever done much database development in Java, you've used JDBC.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=8.438344999999972) [JDBC, at first glance, doesn't look that bad,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=13.187344999999972) [but then you really start picking it apart,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=15.676594999999972) [and it's really not very pretty.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=18.118487857142828) [Look at all this extra stuff we have in our code just](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=20.705344999999973) [to do a simple SELECT statement.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=23.007344999999972) [We have connections, and prepared statements,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=25.152344999999972) [and result sets, and then we have this try catch block.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=27.617344999999975) [We have a DriverManager.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=31.359344999999973) [We have all this stuff in there.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=33.046344999999974) [And look at that great big finally block or the if rs = null,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=35.509344999999975) [if statement = null, and if connection = null.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=40.72967833333329) [Then we had this empty curly brace catching exceptions.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=44.91634499999997) [There's a big bunch of just code in here when really all our business cares](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=48.82134499999997) [about is this line here where we say select whatever our fields are from](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=53.05309499999998) [the CAR table where this ID equals whatever,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=58.71784499999998) [and then the only other line that our business really](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=62.41134499999996) [cares about is where we grab that actual string and store](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=65.65063071428571) [it in an object and return it.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=70.19367833333332) [Now this may look like a great selling point for Hibernate instead of Spring,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=73.32034499999997) [but actually I'm going to show you a few things that](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=77.96534499999997) [Spring does to make this easier.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=80.45084499999996) [So, all these places where we're assigning things,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=82.82834499999997) [and handling, and closing,](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=85.90014499999998) [and all that type of stuff can easily be contained by Spring for us. We should handle this by using Spring to inject these resources into our code.](https://app.pluralsight.com/course-player?clipId=644287f1-37c1-443f-8c60-34cccf6f1735&startTime=87.85934499999998)

### [The Solution](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223)

[The solution we're looking to get from Spring or from using the Spring](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=1.3480009999999312) [Framework is that we can remove configuration code or lookup code,](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=5.005143857142787) [and developers can focus on the business needs.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=10.214000999999932) [Like I said, that's a big one for me,](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=13.638000999999933) [and it's the business that doesn't care that I have a try](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=15.967000999999936) [catch block or how I handle this exception.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=18.74411211111104) [They care that when we ask for a car, we get that car back.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=21.72100099999993) [Our code can also focus on testing.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=25.98300099999993) [So in that previous slide,](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=28.92400099999993) [it really wasn't that testable as far as things were hard coded in there.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=30.220875999999926) [I have a DriverManager that I'm getting a connection.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=34.63757242857137) [Where's that connection coming from?](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=37.16600099999993) [That type of stuff.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=38.71200099999993) [Spring also helps us with doing annotation or XML-based development,](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=40.27700099999993) [as well as the Java configuration that we're going to mainly focus on.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=45.0641676666666) [If we want to annotate our code rather than having so](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=48.25577877777771) [much configuration code in there, Spring can help us with all of that as well.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=52.31800099999993) [To achieve all of this, Spring encourages development through interfaces.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=56.75622322222214) [We will dive into this concept deeper in the implementation of our code,](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=62.03400099999993) [but interface-driven development really changes the](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=65.66900099999994) [approach we take with our code.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=68.74175099999994) [So it makes things easier to test,](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=70.87100099999994) [makes things more focused on what the business needs,](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=73.20500099999992) [and removes that configuration lookup code through doing annotations or Java-based configuration or even the XML-based approach as well.](https://app.pluralsight.com/course-player?clipId=30610e74-2f2e-4606-ae48-c501f8339223&startTime=75.86380099999992)

### [Business Focus Revisited](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677)

[Let's look at that business focus slide again,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=1.1547119999999413) [the JDBC code that we had looked at earlier,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=3.217267555555497) [and show what it could look like by using the Spring Framework.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=6.050336999999941) [This was our code before with all of the getConnection,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=10.561711999999941) [DriverManager, prepareStatement stuff,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=13.935211999999941) [that huge finally block that essentially does](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=16.708311999999943) [nothing but close connections for us.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=20.05137866666661) [And then let's see what that code could look like while utilizing Spring.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=22.92271199999994) [Now I will say that this one particular library in Spring,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=28.20871199999994) [not necessarily Spring core, that this is the Spring JDBC template code,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=31.58021199999994) [but it's the same concept that we're trying to drive in Spring.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=35.79558699999994) [Notice that nowhere in here has it mentioned a connection result set,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=40.40671199999994) [a prepared statement, a DriverManager.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=45.10971199999994) [It doesn't talk about closing any of that stuff off.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=48.50271199999994) [In fact, there's not even a try catch finally statement in here at all.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=50.750711999999936) [We have our find by and our return statement,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=56.164711999999945) [and this is using the EntityManager stuff in there,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=59.014711999999946) [but this example of a template method pattern is just being done for us.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=62.61871199999994) [This is one of those cases where Spring is using a template method pattern,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=68.03771199999994) [and we don't really have to know how or what it's doing behind the scenes.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=71.29871199999994) [Now this may scare some of you that there is this huge black box with Spring,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=76.02371199999995) [and I hope to alleviate those concerns for you throughout this course,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=80.76571199999994) [but look at how much smaller and more condensed this code is,](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=84.59571199999992) [and it's really just doing what we want it to do.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=88.2703786666666) [There's no reason we should have to write what's on the left for every query we need to make inside of our application.](https://app.pluralsight.com/course-player?clipId=755c7758-02da-4ba5-bd17-b319a7b66677&startTime=91.28204533333329)

### [How It Works](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511)

[How does this all work?](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=1.2450899999999674) [Great, we've seen that it can reduce business focus for us,](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=2.4860899999999675) [but how does it do this?](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=5.8254899999999665) [Well, as I mentioned earlier, everything in Spring is a simple POJO,](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=7.527089999999967) [a plain old Java object.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=11.531089999999967) [Spring itself can be thought of as a glorified HashMap.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=13.604089999999967) [It's actually called the application context.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=16.45408999999997) [The application context is the configured Spring container](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=19.905089999999966) [with all of the dependencies wired up in it.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=23.2634233333333) [Now I don't want to simplify it too much.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=27.194089999999967) [It's doing more than just creating a HashMap and shoving objects in there,](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=29.27108999999997) [but I also don't want people to be afraid of it because](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=33.314089999999965) [there's too much going on behind the scenes.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=36.21858999999996) [There's too much magic happening with Spring because there's really not.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=38.465232857142816) [Spring can also be used as a registry and that's how I'm going to](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=42.358867777777746) [show you to start with because we're just going to use a little](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=47.701714999999986) [main method and an application to run it.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=50.200089999999975) [But to really get all the benefit of Spring, we'll go through its wiring constructs and use it to autowire our application.](https://app.pluralsight.com/course-player?clipId=3775f3b5-afd8-421b-9904-b908d15dc511&startTime=52.430089999999964)

### [Demo: What We Are Building](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874)

[Since this is an update for this course,](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=1.1847679999999237) [we're trying to standardize the application that we](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=4.207767999999923) [used to build across multiple courses.](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=7.495517999999923) [And we've opted to do a conference registration app,](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=10.353767999999924) [and we're going to specifically focus on the model](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=13.507434666666589) [and wiring of this application.](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=17.302053714285638) [We're going to be looking at a conference application and the](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=20.724767999999923) [configuration that we do throughout that.](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=23.904767999999926) [We'll focus primarily on the model of that wiring so the session objects for](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=26.28776799999992) [the conference session and the speakers for those sessions,](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=31.142910857142784) [and we may add attendees in there as well to demonstrate all of the characteristics that we want to for wiring up this application.](https://app.pluralsight.com/course-player?clipId=3ac86b96-9191-439b-9038-bcae2c2c2874&startTime=34.96876799999992)

### [Summary](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600)

[Now that we've spoken a little bit about what Spring is,](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=1.1978349999999627) [the problems that we're trying to solve with Spring,](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=4.017692142857106) [and what the solution is,](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=6.732709999999964) [we can now appreciate what that problem is and how](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=8.042120714285677) [Spring can be a solution for it.](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=11.39783499999996) [The business focus is what you're going to see me drive towards](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=14.152120714285674) [in all of our examples that we do and how this enables us to get](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=17.841834999999964) [what the business wants done faster. Let's get our project set up and dive into the architecture of our app now.](https://app.pluralsight.com/course-player?clipId=b5389b55-5baa-40e4-9e89-41a1992a4600&startTime=21.468959999999967)

## [Architecture and Project Setup](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b)

### [Sample App Intro](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b)

[Let's dive into a little bit of the architecture of Spring and the](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b&startTime=0) [application that we're going to build throughout this course.](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b&startTime=4.944166666666666) [We'll walk through the basic project set up and a historical](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b&startTime=8.069) [approach to what Spring solves for us.](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b&startTime=11.47514285714286) [We're also going to build a small sample application in this module that](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b&startTime=13.638333333333334) [will show you the concepts that Spring will help us with,](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b&startTime=17.543125) [and we're going to use that demo in all of the subsequent demos in the rest of this course.](https://app.pluralsight.com/course-player?clipId=522ffd33-bcbe-4c8e-82f6-ba0f35722c1b&startTime=20.432777777777773)

### [Architecture](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f)

[I'm not going to take you through a huge architecture discussion and show](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=1.3583780000000005) [you a bunch of class diagrams or anything like that,](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=4.601711333333334) [but I want to take a minute to talk about why Spring](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=7.392878000000001) [was developed the way that it is.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=10.145753000000001) [Spring was developed to make existing tasks easier.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=12.349520857142856) [Before Spring came around,](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=16.981378) [we used some design patterns from the JEE blueprints to help](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=18.024235142857144) [establish better code and repeatable processes.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=22.544949428571428) [These blueprints helped to establish a consistent way of doing things,](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=25.818378) [but often still made code brittle and untestable.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=30.038378) [If you've ever had to, say,](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=33.601378) [recompile code because you were moving to a different](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=35.048378) [environment or change things like URLs or connection](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=37.52221133333333) [strings because of your environment,](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=40.99794942857143) [then you realize these are the things that we are trying to fix.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=42.890235142857144) [This problem is referred to as write once,](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=47.408378) [run anywhere and is often abbreviated with WORA or pronounced WORA.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=50.970378) [These are the problems that we are faced with.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=59.194378) [It can be a lot simpler than this too.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=61.483377999999995) [You just may want the actual implementation not hard](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=63.667378) [coded inside your application. This is what Spring's architecture is going to help us with.](https://app.pluralsight.com/course-player?clipId=a71de5f3-b60c-462d-bef2-a554428f194f&startTime=67.47204466666668)

### [Prerequisites](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4)

[There are a few prerequisites you'll need to do the examples in this course.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=1.2331450000000042) [I'm using Java 11, and I'm assuming that you already know how to install Java,](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=5.635145000000004) [so we won't be covering that in this course.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=10.484145000000003) [I'm also going to use Maven.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=13.501145000000005) [I do have a module at the end where I'm going to show you](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=16.014145000000003) [how I would use Spring Boot to do this,](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=18.605144999999997) [but people have requested to have just Spring stand alone by itself.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=20.674644999999998) [Spring no longer offers up a way to just download the \_\_\_\_\_ jars,](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=25.719145000000005) [and you're forced to use Maven or Gradle to download those dependencies.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=29.925573571428572) [There is a Pluralsight course on Maven.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=35.076145000000004) [If you have more questions about that, you can research that and follow it.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=36.969145000000005) [The next thing you'll need is an IDE.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=41.668145) [This is an updated version of the previous course,](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=43.988145) [and I have chosen to use IntelliJ.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=46.836145) [We got feedback that a majority of our users wanted to see](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=49.741145) [and use the examples within IntelliJ, so we have changed the course to use it.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=53.02314500000001) [And, finally, Tomcat.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=57.84857357142857) [You won't need this for any of the examples that we're](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=59.417145000000005) [going to do walking through this course,](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=61.93389500000001) [but the sample app that I use at the end,](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=63.62803388888889) [and if you follow along with that, uses Spring Boot.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=65.94847833333334) [I will deploy that app to Tomcat as well.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=68.89176999999998) [So if you have it, great, if you don't, don't sweat it. Mainly, Java 11 and the latest version of IntelliJ will work.](https://app.pluralsight.com/course-player?clipId=18120043-179d-4e21-9b23-864e16190df4&startTime=72.0903672222222)

### [Sample App Setup](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce)

[To begin setting up our application to show you the capabilities of Spring,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=0.8327229999999981) [I'm going to start off with opening up my IDE.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=6.092722999999999) [I'm using IntelliJ for this course,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=10.123722999999998) [as I had mentioned in the prerequisite section.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=11.839722999999998) [You can see the version I'm using here,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=14.826722999999998) [but I don't think that would really matter to you.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=16.486722999999998) [Any recent version should work for what we're going to do inside of this course.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=18.757973) [I'm going to click Create New Project, and inside of here,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=23.265722999999998) [I'm going to select the project SDK as Java 11.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=26.934500777777778) [I am not going to choose create from archetype because that'll walk us through a](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=32.012723) [bunch of dialogs that we don't care about for this course,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=36.218723) [and I'm going to select Maven over here on the left.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=39.22484799999999) [Then I'm going to click Next.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=43.157723) [For our GroupId, I'm going to put in com.pluralsight,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=45.944722999999996) [and for the ArtifactId, I just want to enter conference,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=48.341323) [and click Next.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=56.99105633333332) [And then for our workspace I like to just have something simple in](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=59.110723) [here as workspace and the project name of conference.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=64.89115157142857) [So I have dev/workspace/conference.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=71.19672299999999) [I'm going to click Finish.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=75.231723) [It will ask me if I want to create that directory.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=77.224723) [Yes, I do, and then it will launch my application.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=80.910723) [So as you can see inside of here now, we have a basic POM file,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=89.412723) [and it's created our folder structure for us containing the source,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=92.98772300000002) [main, java directory, and resources directory,](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=98.189723) [as well as the source, test, java directory.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=100.82286585714287) [We're going to break down each of these in subsequent examples, so let's stop here as we have our base project set up for us now.](https://app.pluralsight.com/course-player?clipId=2bb860ad-969e-4e9b-a9be-e74eba0552ce&startTime=105.615723)

### [Demo: Sample App pom.xml](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a)

[Before we go any further inside of our application,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=1.220222999999998) [there is actually one thing we need to fix inside of our pom.xml,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=3.0696515714285693) [and this has been the case for every IDE I have ever used.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=8.099222999999999) [We need to add a specific build version for our app.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=12.422222999999997) [Now you can go look in the Maven course and see why and what.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=18.286223) [Suffice it to say that we want to go below the last line of version,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=22.98077855555555) [but before we have closed off our project.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=27.63533411111111) [So you can see in my example here, after line 9,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=30.372222999999998) [I've added some whitespace, so on line 11,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=33.326365857142854) [I'm going to add this build section,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=35.810023) [and I'm just going to paste it in and walk you through it.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=37.564445222222226) [You can add it on your own.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=40.003223) [So I have added in here a build section,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=41.910222999999995) [and inside of that, there is a plugins section,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=46.364222999999996) [plural, and then an individual configured plugin.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=48.63238966666666) [And in here,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=52.012722999999994) [we have a groupId of org.apache .maven .plugins and an](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=53.57947299999999) [artifactId of maven-compiler-plugin.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=58.785222999999995) [The version is 3.8 .1,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=62.871223) [and the configuration is where we specify that we want](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=65.97122300000001) [Java 11 and a target of Java 11, so the source Java 11 and the target Java 11.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=69.80522299999997) [If you don't do this the first time you go to run your application,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=75.962223) [it will come back and tell you that it doesn't support Java 5.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=79.580723) [Now one thing that I think IntelliJ doesn't do a very](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=84.070223) [good job of is warning you of that.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=87.25604118181816) [Some of the other IDs will tell you that this is](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=89.50622299999999) [compiling it down to a Java 5 version,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=91.47177855555556) [and that's because IntelliJ will compile code as you go using their](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=94.078223) [internal IDE compiler and not the Maven compiler.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=98.06284800000003) [So they're going through and checking code as you go,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=103.596223) [and it's compiling it to Java 11, but when you go to run the application,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=106.90855633333334) [it will run it with what the default is in Maven,](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=110.510223) [which, by default, is Java 5.](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=113.16950871428571) [So this is how you override to tell it to use Java 11. Now that we have our Maven](https://app.pluralsight.com/course-player?clipId=1cb422dd-30cf-4fe3-80ae-d3f2bc41102a&startTime=116.309223)

### [Demo: Sample App Add Model](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf)

[project structure in place,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=2.2152789999999802) [we can go ahead and get started adding Java code to our application.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=3.5802789999999804) [To do this, it's quite easy.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=8.69027899999998) [All we want to do is navigate down to our source,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=9.994278999999981) [main, java folder that Maven created for us when we created our project,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=12.810612333333314) [and right-click and select New, Java Class.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=18.55927899999998) [And at first use,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=23.50327899999998) [you may not be aware that you can add a package in here](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=24.714478999999987) [at the time of creating your class.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=28.269378999999983) [You do that by fully qualifying the name of the package structure you want.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=30.02927899999998) [So I'm going to type in here com.pluralsight .model .Speaker,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=34.67227899999998) [and Speaker is a capital S signifying the class name.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=40.96827899999998) [When I hit Enter, it'll go ahead and create this object structure for me,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=45.81894566666664) [and if you look at your project navigator on the left,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=52.32161233333332) [you can see that it created that folder structure modeling the](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=56.04615399999998) [package structure and the object class name correctly,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=59.83794566666664) [and it's also indicated up here on line 1 of our code](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=63.12413614285714) [with package com.pluralsight .model.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=66.78527899999997) [Now we can enter in a couple of member variables in here.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=69.91127899999998) [I'm just going to do a private String firstName and a private String lastName.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=73.41794566666664) [And once I have those in here,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=80.21852899999999) [I'm going to give myself a little extra space and right-click and say Generate,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=83.97665399999998) [Getter and Setter, select both of them, and hit OK.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=90.0858504285714) [Once I save this, it will compile it into our application, and that's really it.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=96.536779) [That's all you need to do to add the model object to your code.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=102.53427899999998) [Quite simple.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=106.40527899999998) [Again, navigate to source, main, java, right-click,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=107.19894566666665) [fully qualify the package name and the class name.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=109.98177899999997) [It'll create our speaker object for us,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=113.47227899999999) [and then we'll enter our member variables and generate our getters and setters.](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=115.97227899999999) [Now that this is in place,](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=119.91427899999998) [let's go ahead and add our repository object to our class structure as well. The next piece of the](https://app.pluralsight.com/course-player?clipId=a93ef48e-f755-4d7e-8885-e57743c550bf&startTime=120.86961233333334)

### [Demo: Sample App Add Repository](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd)

[application that we're going to add,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=1.9375899999999675) [and it's arguably the most complex piece of the](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=3.7625899999999675) [small app that we're going to do, is the repository tier.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=6.825589999999968) [I'm going to exit out of fullscreen mode here,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=10.302589999999967) [and you want to navigate down to your source,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=12.189367777777745) [main, java directory.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=14.653089999999969) [Right-click and say New, Java Class.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=16.67358999999997) [And just like before,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=19.76958999999997) [we're going to enter in our package structure here of com.pluralsight,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=20.477589999999967) [but this time we're going to do a repository.HibernateSpeakerRepositoryImpl,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=23.524256666666634) [and click Enter, and that should've created another package.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=37.28958999999997) [As you can see over here on the left,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=39.98933999999996) [I now have the model and repository package,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=41.861256666666634) [and then the class would've been named HibernateSpeakerRepositoyImpl,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=44.03858999999997) [so make sure yours looks like mine does here.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=47.638839999999966) [And you may argue that I don't like having the implementation in the class name,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=51.598589999999966) [and I actually agree with you.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=57.178589999999964) [The implementation in the class name can sometimes](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=59.379589999999965) [be thought of as a code smell,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=62.42683999999997) [but the beauty of Spring is is that we code to an interface,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=64.71758999999997) [so when this is all done, we're going to have a speaker repository interface,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=67.49525666666662) [and that's all our app cares about.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=71.69321499999997) [We can swap out these back implementations based upon](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=74.21758999999997) [what stage of development we're in.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=77.53058999999998) [In fact,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=79.46258999999996) [this is a good practice to do if I have a database team that I'm](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=79.96058999999995) [waiting for tables or views or those types of things for.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=84.18308999999999) [I can create a speaker repository stub and extract](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=88.25158999999996) [my interface out against that, and my contract will stay the same.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=92.02575666666664) [So let's go ahead and add a method inside of here.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=96.40758999999997) [We're going to do a public List of Speakers,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=98.52025666666663) [and we want to name this method findAll.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=103.31008999999997) [And inside of here,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=109.54358999999997) [we just want to create a basic list and return some stuff from that,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=112.52158999999996) [so we'll say that we have our Speaker,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=116.55608999999995) [and this is going to just be speakers = new ArrayList.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=119.53581222222216) [And inside of here, we want to create an instance of a speaker,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=131.43458999999996) [so we'll say Speaker speaker = new Speaker.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=135.48608999999993) [And I'm going to just use my name.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=140.91258999999997) [Go ahead and customize it to yours if you want,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=144.57358999999997) [say speaker.setFirstName, and I'll put Bryan inside of here,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=147.79225666666662) [and speaker.setLastName.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=157.4934788888888) [And here we have our basic speaker object,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=159.21458999999996) [and we want to add that to our speakers list,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=163.27758999999998) [so we'll say speakers.add (speaker), and then,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=166.08025666666663) [lastly, return our speakers, and save that.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=172.89925666666662) [There are a couple ways we can extract an interface](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=176.94292333333325) [or create an interface for this.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=181.11787571428565) [One is I could navigate over to my source,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=183.46473285714282) [main,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=186.27108999999993) [java directory again and go into my com.pluralsight](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=186.56458999999998) [repository package and create a new interface,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=189.80433999999997) [but the easier approach is to just right-click inside of my](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=193.3367328571428) [class and say Refactor and Extract Interface.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=197.45983999999996) [It's going to bring up a dialog,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=202.36858999999995) [and it's going to ask me what I want for the class to](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=204.01458999999997) [extract from and the interface name.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=208.08959) [I'm going to change this to SpeakerRepository.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=209.98158999999995) [And the package is correct and the target is correct,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=215.84558999999996) [and I want to choose the findAll():List Speaker](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=218.65158999999997) [members to make an interface force,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=222.4229233333333) [so it's going to extract those method names out into the interface for me.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=226.60130428571426) [I'm going to click Refactor, and if this is the first time that you've done this,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=231.99758999999995) [it will show you that it's made changes,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=236.76603444444441) [and you say, Yes, I want to proceed.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=238.37025666666665) [And we haven't used this anywhere else, so we're good to proceed with that.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=241.44758999999996) [And we can open this up and see our SpeakerRepository](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=245.63058999999996) [with our findAll method inside of here.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=249.02078999999995) [So it's just gone ahead and changed our implements SpeakerRepository](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=252.243465) [signature on our class name and created the interface for it.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=257.30638999999996) [Now when we're utilizing this inside of our code,](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=262.40558999999996) [we can just go ahead and reference it by SpeakerRepository rather than that implementation with hibernate in the name.](https://app.pluralsight.com/course-player?clipId=99f141a3-7623-4367-8558-f039a791d1bd&startTime=264.7700344444444)

### [Demo: Sample App Add Service](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845)

[The next piece we're going to add to our application is the service tier.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=1.135500999999931) [Now we're not talking about web services,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=5.552500999999931) [but more so services as in the business logic tier.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=7.688500999999931) [So similar to the repository, we're going to go ahead and click on source,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=11.429929571428502) [main, java.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=16.919834333333267) [Right-click and say New, Class and enter in our package of com.pluralsight.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=17.862500999999934) [And this time, we're going to add service on the end of it.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=25.006500999999933) [And for a class name, we're going to say SpeakerServiceImpl, and click Enter.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=28.644500999999924) [Verify that you have the service package on the left or at the](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=37.62750099999993) [top of your code and that the name is correct.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=41.32016766666657) [And then inside of here, we're going to do a couple of things.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=45.40250099999993) [We're going to add a finder method as well in here and say public List Speakers,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=49.87994544444439) [and it's going to be a very similar signature to what we](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=56.298375999999934) [did for the finder in our repository,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=63.121278777777704) [but this would enable us to do other things such as swap out](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=67.68050099999994) [our repository tier and that type of stuff,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=72.14850099999992) [so you may be looking at this going,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=74.38638988888884) [this seems like a lot of overkill for a basic example,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=75.69183433333328) [which it is.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=78.85862599999994) [And we want to do our findAll here,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=80.20150099999994) [and we're going to utilize the repository that we just created,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=86.43050099999994) [but we haven't imported that yet, so for now,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=93.01692957142849) [we're going to hard code this,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=95.41250099999993) [and this is part of the problem that we're going to solve with Spring.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=97.07783433333324) [So we're going to say private,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=100.80675099999992) [and we're going to do SpeakerRepository repository =](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=102.4226676666666) [new HibernateSpeakerRepositoryImpl.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=112.58175099999993) [Now this is what your code would like without Spring in it.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=120.03550099999993) [We haven't added Spring to our application yet,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=122.97850099999994) [so this is pretty accurate, and we would say return repository.findAll.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=125.0261676666666) [Now just like we had with the repository,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=136.58050099999994) [we don't have an interface for our service yet either.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=140.42950099999993) [So let's do the same thing and say right-click,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=143.60138988888883) [Refactor, Extract, Interface, and we want to call this the SpeakerService,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=149.0650009999999) [and click the Member findAll, and Refactor,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=156.5137009999999) [and it will do the same thing.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=161.58275099999997) [And you can uncheck these if you don't like the dialogs asking you to](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=165.07950099999994) [make sure that you're not changing this elsewhere.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=168.10250099999993) [We say OK, and we should see our interface here of SpeakerService.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=171.82650099999992) [Now we can move on to creating a simple,](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=178.62350099999992) [main method that will test out all the pieces of the application that we have just written to be used together.](https://app.pluralsight.com/course-player?clipId=a8d7a2fe-3c54-4a19-aa18-9ffe44c03845&startTime=181.00350099999994)

### [Demo: Sample App Run Application](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd)

[We now have all the pieces of our application built to where we can wire it up,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=1.010089999999851) [so let's go ahead and right-click on source,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=4.942964999999851) [main, java, and say New, Java Class.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=7.751839999999851) [And I am going to use the default package for this.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=11.544089999999851) [I just want to enter in here Application and click Enter.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=15.04986777777763) [And we're going to create a public static void main in](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=20.292089999999853) [this file and pass in our String args,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=26.364089999999848) [our basic Java signature for a main method.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=30.667089999999853) [To demonstrate this, we're going to wire up our SpeakerService.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=34.699289999999856) [Just call it an instance of service = new SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=43.06608999999985) [and we will just do a System.out .println,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=49.76808999999985) [a basic happy path testing if you've never heard that term before.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=57.193756666666516) [We're going to just test that our application works](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=61.41608999999985) [exactly how we think it should,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=63.40551857142842) [and we'll say service.findAll .get (0) .getFirstName now.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=64.94808999999985) [In my instance, I used my name, so this should, when we run it, print out Bryan.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=74.96908999999985) [I'm going to go ahead and right-click on main and say Run Application.main.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=81.65808999999985) [You'll see it compile here in our build window,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=86.71108999999986) [and you'll see that it printed out Bryan down below here.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=89.97008999999984) [Now if you get an error here saying that it was compiled with Java 11,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=94.49708999999986) [but ran with Java 5, and that's not supported,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=98.89921499999983) [it's because you need to go back into the POM and add that](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=103.11808999999985) [build section that we talked about earlier.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=107.53158999999988) [I've seen a lot of people miss that step,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=110.03808999999985) [so make sure you've added that in there.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=112.05208999999985) [Let's walk through everything that we did here really](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=113.93908999999985) [quick and what our application did.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=115.47933999999984) [So we create an instance of SpeakerService,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=117.19008999999986) [it goes to our SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=119.90808999999985) [so our interface is going to our implementation.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=121.83708999999985) [This is going to load our repository tier,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=125.83408999999985) [or, in this instance, our fake Hibernate instance,](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=129.64808999999985) [and go through our SpeakerRepository to that RepositoryImpl where it would](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=132.10448999999986) [simulate us calling a database and returning a list of speakers.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=139.6345185714284) [In this instance, we had Bryan and added that to our list and returned it out. Let's go see how we would now configure all of that using Spring.](https://app.pluralsight.com/course-player?clipId=43f5d03f-50de-4cbb-aed7-79bd990404fd&startTime=145.29808999999986)

### [Configuration](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e)

[Spring is all about removing configuration code from your application.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=1.0901339999998454) [Why is configuration code such a bad thing in your app?](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=5.396133999999845) [Well, it makes things brittle, and by brittle,](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=8.570991142856988) [I mean hard to move to different environments.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=10.903633999999848) [You maybe haven't experienced this yet in your career,](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=14.025133999999845) [but have you ever had to recompile your code because you were](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=16.400383999999843) [deploying it to a different server environment?](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=19.453133999999846) [What about testing?](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=22.321133999999844) [One of the things I hear as I'm coaching people](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=23.06325899999985) [through agile development is that, well,](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=25.650848285714137) [we don't do unit tests because it's really hard to test our code.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=27.607633999999845) [We have really complex code.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=31.188133999999845) [And I'll tell you right now that it's not the complexity](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=33.970133999999845) [of the code that makes it hard to test, it's the way the code was written.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=36.000133999999846) [It's just a perfect example if you opt to not test code because it was too hard.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=40.43513399999985) [It's not the testing that's hard, it's the configuration of that that's hard.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=44.751133999999844) [Maybe it has a reference to JNDI or a database or some other things like that.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=49.07213399999984) [More often than not,](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=53.38713399999985) [there is configuration code or code that doesn't have to deal with](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=54.39284828571412) [the normal flow of business logic that muddies up what you're](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=56.95313399999984) [trying to accomplish in your application.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=59.89770542857128) [We've already developed part of the application without Spring,](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=62.821133999999844) [and now I'll show you how to configure that using](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=64.88013399999984) [the Java configuration approach, then we'll move onto annotations,](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=67.73088399999983) [and, lastly, we'll briefly show the XML configuration method.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=71.98296733333319) [Let's examine some of those pain points a little closer, though, before we dive in.](https://app.pluralsight.com/course-player?clipId=00480c44-33e9-415a-8f55-f3fe19bc438e&startTime=76.65713399999984)

### [Demo: Pain Points Walkthrough](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68)

[So to specifically call out some of the pain points we're going to address,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=1.0722339999999386) [notice here in this code on line 7,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=5.209233999999938) [I have the keyword new and I'm referencing the SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=7.9362339999999385) [So already,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=12.778233999999939) [my application knows and has a hard-coded reference](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=13.585233999999938) [to this SpeakerServiceImpl object.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=17.217233999999937) [These are the types of things that we're going to use](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=21.08523399999994) [Spring to eliminate from our code.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=23.62590066666661) [I could create some instance of a factory or an abstract](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=26.55523399999994) [factory to go ahead and load this code in there,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=29.56056733333327) [but Spring already does all this for us.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=32.13823399999994) [Likewise, if you go into our SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=34.20034511111106) [you'll notice here on line 11, again,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=37.00343399999994) [we have the keyword new referencing this HibernateSpeakerRepositoryImpl.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=40.54090066666661) [If I ever want to change this,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=45.37323399999994) [even though I have the interface and I've coded my application to the interface,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=47.05923399999994) [I have to rebuild my entire application based off of this configuration.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=50.68023399999994) [Also, if you go into our HibernateSpeakerRepository,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=56.02223399999994) [and I alluded to this in our example,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=58.37273399999994) [I have code inside of here that stubbed out until we](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=61.98945622222215) [have our database instance ready to go.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=65.91823399999996) [There's no reason why we couldn't just use a stub here and](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=68.92223399999993) [use Spring to load into our ServiceImpl,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=72.38903399999995) [that stubbed out class,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=75.38163399999993) [that we could then swap out when the actual](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=78.29923399999994) [configuration for our database is done,](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=81.05823399999994) [and our application doesn't need to change.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=84.26523399999994) [We don't need to go recompile code or introduce](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=86.61123399999994) [other changes into our source code, rather just change configuration.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=88.9219006666666) [Let's look at how we can now bring Spring into our application to help us with those pain points.](https://app.pluralsight.com/course-player?clipId=73257dcf-954f-4a31-9e0b-aa9864a02a68&startTime=93.81323399999994)

### [Spring Download](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298)

[One of the reasons I originally updated this course was because Spring](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=1.008311999999918) [quit offering a direct download for the compile jars.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=4.872311999999917) [Sure there were ways to obtain it,](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=9.514311999999919) [but nothing as simple as just clicking a link on their project page.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=10.987311999999918) [With some of my other courses,](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=15.167311999999917) [people had asked that it just focus on one technology and](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=16.292311999999917) [not use supporting tools such as Maven.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=19.192978666666583) [Well, like it or not, Spring wants you to download their tools using Maven.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=21.51556199999992) [It will be simple for this course though and candidly any](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=25.874811999999917) [project of moderate complexity should be using Maven or](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=29.683597714285625) [Gradle anyway to manage dependencies.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=33.09264533333325) [The Maven repo has the source, Javadocs,](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=36.15431199999992) [and the binaries all available for download.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=39.58631199999992) [And one of the main reason Spring wants you to use Maven is because of their](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=42.137311999999916) [transitive dependencies that are required to run the projects.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=46.56081199999992) [Spring Boot could be used to set up your application as well,](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=51.378311999999916) [but it's much too complex and a black box for trying to](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=54.272883428571355) [show you just the basic fundamentals of what Spring needs](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=58.530534222222144) [to run in order how to set it up.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=61.17240290909082) [We will set up a Spring Boot application later](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=64.00331199999992) [though and compare the differences,](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=65.81331199999991) [but let's get our app configured and use Maven to download those dependencies and wire up our app.](https://app.pluralsight.com/course-player?clipId=c244e469-2eda-471e-bcab-5de5cf22d298&startTime=67.53331199999992)

### [Demo: Spring Download Maven](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989)

[Getting Spring inside of our application is actually quite easy.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=0.6445119999998715) [All we have to do is open up our POM,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=4.0265119999998715) [and I'm going to give myself some whitespace in between our version from our](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=6.633511999999872) [POM to our build section and add a dependency section.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=11.354511999999872) [Inside of here, I'm going to add a dependency,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=15.266511999999873) [and the group ID is org.springframework,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=19.727511999999873) [and the artifactId is spring-context.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=23.39351199999987) [From here, all we have to do is add a version,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=31.17051199999987) [and you can look on their website to see what the current version is.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=33.624511999999875) [At the time of doing this course, it was 5.2 .0 .RELEASE, and save that.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=37.64351199999987) [And you can tell that you've done it right inside of your application if you](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=46.90751199999987) [look at your external libraries and see that it's imported all of the Spring](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=50.40276199999985) [libraries with their transitive dependencies.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=55.944083428571304) [So you can see there's the spring-context 5.2 .0 that we asked for](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=58.90151199999987) [directly to be inserted into our application,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=64.46751199999989) [but there's the transitive dependencies of Spring AOP,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=67.62051199999988) [Spring beans, Spring core, Expression,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=70.44517866666652) [and JCL that it pulled in as transitive dependencies.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=72.53213699999988) [Now if that doesn't make sense to you,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=76.36551199999987) [you may want to go refresh yourself on the Maven](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=77.61051199999987) [course like I mentioned earlier,](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=80.84601199999986) [but this should get you up and running for Spring inside of your application. That's really all we had to do to download it and get it into our app.](https://app.pluralsight.com/course-player?clipId=e803f658-1cda-444b-a4cf-757f2d2aa989&startTime=82.74351199999987)

### [Summary](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9)

[Let's recap quickly what we learned in this module.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=0.9795679999999702) [We covered quite a few things, and it was a fairly large module,](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=3.4465679999999703) [and it set up for us all of the upcoming modules that we're going to go through.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=5.812901333333303) [We discussed why we'd want to use Spring and what it's](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=11.17856799999997) [buying us inside of our application.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=14.903567999999972) [We went through and looked at the prerequisites that we](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=17.16356799999997) [had for our application and set those up for what we're](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=18.809067999999975) [going to do in future modules.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=21.84756799999997) [We built a demo app and went through the details of that demo app and](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=23.62556799999997) [discussed the pain points inside of our demo app and why we want to](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=27.425817999999975) [use Spring to remove some of these critical pieces that are hard](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=31.214567999999968) [coded inside of our application.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=34.760567999999964) [Then we went ahead and downloaded Spring and](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=37.23056799999997) [incorporated that inside of our application,](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=39.10590133333331) [and you saw how quickly and easily it was done using Maven.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=40.6771394285714) [The next module that we're going to do is the Java configuration module.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=45.42256799999997) [Now I want to caution you.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=49.61056799999997) [A lot of people are real quick to want to skip the XML](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=50.72256799999997) [portion of the configuration of this course,](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=54.08442514285711) [and we have even restructured it so that you go the Java section first.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=57.12571085714282) [I do strongly feel that the XML section,](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=60.95281799999997) [though,](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=64.11256799999997) [helps people understand the separation of concerns somewhat](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=64.52356799999997) [better than doing it in just plain Java,](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=67.6261394285714) [so let's go through Java first because that's the most popular, and then the XML section might help solidify any questions you may still have.](https://app.pluralsight.com/course-player?clipId=610401a7-d1b6-4b96-9268-801b12d87ad9&startTime=70.31281799999998)

## [Spring Configuration Using Java](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02)

### [Java Configuration Introduction](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02)

[In this module,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=0) [we will walk through the configuration of your Spring app using just Java.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=1.08675) [We're going to take that sample application that we created in](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=6.696) [the previous module and wire it up using the Java annotations](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=9.695499999999997) [and Java configuration loader.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=13.296624999999997) [Java configuration is the latest and most preferred method available](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=15.805) [now in Spring for wiring up your applications.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=20.305999999999997) [It was introduced simply because some people don't like mixing XML](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=24.013) [and source code together for a configuration.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=27.296142857142865) [We're going to take that sample project,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=30.318) [wire it up with Java and a few basic annotations](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=31.78) [just to show you how this works.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=33.826750000000004) [So let's talk about the key point of the Java configuration.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=36.394) [Well, the first thing you'll notice about it is there's no XML.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=41.939) [There's no applicationContext file.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=46.219) [If you've done any Spring development in earlier versions,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=49.023) [you'll have an XML file that contains all of your configuration.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=52.91571428571429) [With that Java configuration, we have no [00:00:59] applicationContext.xml.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=57.24) [We still have a context, it's just not configured in XML.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=63.133) [Earlier Spring development got pushed back for having too much XML,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=66.38340000000001) [and all of a sudden people were making jokes about being an](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=70.15166666666666) [XML developer rather than a Java developer.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=73.89742857142855) [Later versions of Spring included namespaces to aid in development,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=77.106) [but developers still wanted less or no XML,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=81.324) [so enter Java configuration.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=85.297) [Almost everything in Spring can now be configured](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=88.129) [with just pure Java configuration.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=90.51866666666666) [This was not necessarily the case when we first started this course,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=93.082) [but since this is an update,](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=97.92800000000001) [we've moved to showing Java configuration first because everything is available to be configured this way now.](https://app.pluralsight.com/course-player?clipId=07068cc4-42f8-4720-bb4e-56faa5734a02&startTime=100.242125)

### [Demo: Copy Project](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196)

[To get our project ready to copy for the next demo,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=1.3734109999999928) [I've gone ahead and closed any of the open files we had from the previous demo.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=4.963160999999992) [To copy a project inside of IntelliJ,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=9.710410999999993) [you actually don't do it inside of the IDE itself.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=12.621410999999993) [You do it at the filesystem, so I'm going to switch over to my finder window,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=15.915410999999994) [and you want to right-click on your folder,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=20.187410999999994) [and just say Copy, and actually Paste.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=23.363410999999992) [That's it.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=27.164410999999994) [Just a simple copy/paste.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=27.56541099999999) [You can do it from the command line,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=28.367410999999993) [you can do it from your Windows Explorer window.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=29.314410999999993) [I'm on a Mac.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=31.24341099999999) [I can do it in my finder window.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=32.05707766666666) [And you want to go ahead and change the name of this](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=33.68441099999999) [folder to whatever you'd like it to be.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=36.450786) [So I'm going to name mine conference-java,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=38.28974433333332) [and then you want to switch back to your IDE.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=39.86007766666666) [Once in my IDE, I want to go ahead and go to File,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=44.72041099999999) [Open, and navigate down to that project,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=48.39241099999999) [and select it, and you have a choice of New Window or This Window.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=52.71053599999999) [I'm going to choose This Window.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=58.86941099999999) [It actually replaces the existing contents we have with our new project,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=59.88141099999999) [just so we're not confused about which one we're doing,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=63.61674433333334) [any edits or anything like that.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=66.026411) [And then I've got to do a couple of things before we](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=69.91541099999999) [just get going and dive right in.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=72.77774433333332) [First off, I want to make sure that the project was renamed,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=75.18341099999999) [but it never actually renames the conference.iml.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=80.21826814285713) [To rename that, we want to right-click on it and say Refactor,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=83.64441099999999) [Rename, and change that to whatever our project name is,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=88.474211) [so mine was conference-java.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=91.59307766666667) [If you did something else, you will want to name it that,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=93.27841099999999) [obviously, and click Refactor.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=95.90583957142857) [And then I'm going to open up my pom.xml and change](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=97.97441099999999) [the artifactId to conference-java.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=101.78707766666666) [I'm going to do this just so that there isn't any](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=104.482411) [conflicting Maven artifacts out there.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=106.68983957142855) [If we did a Maven install or a publish, they wouldn't clash with one another.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=109.05841099999999) [Now, we've got those changes made.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=114.103411) [I'm going to go ahead and navigate to my source, main, java, Application file.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=116.55241099999999) [And you can open it up or you can right- click on it and run it from there.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=122.499411) [If I right-click on the main method and say Run,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=125.752411) [the first time we do this, it's going to pull up this Edit configuration dialog.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=127.84498242857143) [The Edit configuration dialog wants us to change two specific things.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=133.872411) [The use of the classpath module,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=137.859411) [you'll see right now it says that no module is selected,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=139.671411) [and that's because we moved it and renamed it.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=141.983911) [So I want to choose conference-java, again,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=143.789911) [if you renamed yours something else,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=146.195611) [you'll want to choose that classpath module name.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=148.75426814285714) [And you want to make sure you have the JRE installed.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=152.35641099999998) [So,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=155.287411) [you have a default option if you've configured that inside of](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=155.69891099999998) [your IDE or you can choose a specific version.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=159.766911) [I'm going to go ahead and choose Java 11.0 .2 to make sure that](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=162.581411) [that's the one that I always want this to run with,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=166.7350776666666) [and I want to click Run.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=169.455411) [Then our application will build for a second and open up and run,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=171.75041099999999) [and you should see the output from our previous demo the](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=174.49574433333336) [same as in our new copied project.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=179.593411) [So we should see that Bryan, or if you used your name there,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=181.80941099999998) [output, and it finishes with an exit code of 0.](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=184.32341099999996) [If you get anything but this,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=187.467411) [you have something not copied correctly or configured right,](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=190.33341099999998) [so make sure you fix that before you move on. To begin configuring](https://app.pluralsight.com/course-player?clipId=320ceb74-ec74-4c09-b0c8-6588e96c9196&startTime=193.033661)

### [Demo: App Config](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7)

[our application, we want to create a file where we can Bootstrap everything at.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=2.0915999999999766) [I'm going to close our build section here and navigate over to our source,](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=8.110599999999977) [main, java directory again, and right-click and do a New Java Class.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=13.244599999999975) [This is a very simple class to start with.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=18.68759999999998) [We're just going to call this AppConfig.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=21.622599999999977) [Now it doesn't need to be named this.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=24.798599999999976) [This is kind of a default standard or a norm.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=26.666599999999978) [You could call it whatever you like,](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=30.376599999999975) [but we're going to choose AppConfig just to stay](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=32.093599999999974) [consistent with what we're doing, and click Enter.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=34.77126666666665) [This is it.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=39.06659999999998) [This is all we need to start Bootstrapping our application.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=40.44859999999998) [If you've used any other versions of Spring where you did XML configuration,](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=44.17731428571426) [this would be the start of your application context,](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=49.80402857142855) [so this is where you start configuring the context of your application.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=52.85759999999998) [All of your configuration starts at this point and](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=58.72259999999998) [trickles throughout your application here.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=63.00839999999998) [So there's nothing special about it.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=65.62419999999999) [You'll notice it's a default public class.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=67.88945714285711) [There's no methods.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=71.73559999999998) [It's a plain POJO.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=72.9861714285714) [We'll go ahead and start adding annotation to this,](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=74.65359999999998) [but before we do, let's go ahead and talk about what those configured annotations are.](https://app.pluralsight.com/course-player?clipId=5d8471d5-4d19-43b0-9680-2266392d40e7&startTime=77.68748888888885)

### [Demo: @Configuration](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9)

[To start the configuration of our application,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=1.2865219999999973) [we're going to use an @ configuration annotation.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=3.622521999999997) [The Java files that have the configuration annotation replace any](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=8.450521999999998) [XML files that we could've used historically.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=13.814664857142857) [Configuration is a class-level annotation and looks something](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=18.249522) [like the annotation in the snippet above.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=22.399664857142856) [In that AppConfig file that we just created in our demo,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=25.44280771428571) [we now put an @Configuration annotation at the top of that class.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=29.520521999999996) [Methods used in conjunction with the bean annotation are](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=34.699521999999995) [used to get instances of Spring beans.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=38.002379142857144) [Now, we're throwing a couple of topics at you here really quickly,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=41.006093428571425) [and there's a short, but steep learning curve.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=46.358522) [We're going to explain what a bean is and what a configuration file is as we go.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=48.796521999999996) [We just have to show you these two concepts as we dive into it.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=53.682522) [We add an @ method level annotation for Bean,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=56.95352199999998) [and it looks similar to this where we're saying that what this](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=60.69480771428571) [method returns is an instance of a bean and that the bean is now](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=65.181522) [registered inside of Spring and available for us to use inside of](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=69.05496644444442) [our Spring application.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=73.36002200000001) [Classes and method names can be anything.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=74.80152199999999) [Spring really doesn't care.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=77.579522) [It doesn't have to be named getCustomerRepository or anything specific.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=79.626522) [We can call our methods \_\_\_\_\_ foo just as long as](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=85.27152199999999) [when it goes to create these beans,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=87.78685533333332) [we have them marked as a bean and in a configuration file.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=89.877522) [Let's begin by starting to add some of this configuration to](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=93.96712199999999) [that AppConfig file that we just created.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=98.167147) [I've switched back over to our IDE.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=101.244522) [I want to go ahead at the class level and say @Configuration.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=104.30452199999999) [And you can see that as we're typing it,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=107.59609342857142) [it wants to go ahead and suggest what it should be.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=111.05718866666668) [We want to choose that second one, the configuration,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=113.868522) [not configurable, configuration, and choose it,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=116.392022) [and it will automatically import that annotation for us.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=118.98137914285712) [Now this signifies that this file is to be used for configuration purposes.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=124.44152199999999) [To add a bean, a Spring component down here,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=129.61252199999998) [we can start off by just creating a method,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=132.8384108888889) [so I want to call this public,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=135.649272) [and I want to return an instance of the SpeakerService.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=139.259522) [And I'm going to just call this getSpeakerService.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=144.649522) [I'm going to use a no arguments method signature.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=149.663522) [And I want to return inside of here just a new](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=155.133522) [instance of that SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=158.344322) [So I'm going to say return new SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=160.787522) [And it's even suggesting to return the implementation of it.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=165.608522) [So I can save that, and now we have our method signature and structure complete,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=169.897522) [but we still need to tell it that this is a bean.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=176.754522) [So we want to say @Bean.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=180.180522) [And we can optionally, we don't have to, optionally give this a name.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=183.598522) [And I'd like to, and I want to call this the speakerService,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=188.643522) [and I'm going to do this camel case, just like we would a variable name.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=191.473522) [This is it.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=198.73872199999997) [We've literally Spring enabled our application.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=200.666522) [We've told it to configure this as a Spring app,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=204.086522) [and we've created a bean, our speakerService,](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=206.64785533333333) [and we're going to show you how we transform that out of the application to be in this registry or this configuration that's now a bean.](https://app.pluralsight.com/course-player?clipId=b785c658-e524-481d-bf8e-0074ef7baaa9&startTime=209.57937914285716)

### [Setter Injection](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2)

[Setter injection using the Java configuration approach](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=1.2945549999999348) [is really as simple as a method call.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=4.503888333333268) [A lot of the mystery of injection just goes away.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=7.880554999999934) [A lot of developers I talk to are concerned with the black box fill](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=12.274554999999935) [of dependency injection or inversion of control.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=15.937412142857074) [And with the Java configuration approach,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=18.847554999999936) [it's more visible as to what's actually going on.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=20.920554999999936) [With XML, there's a lot of wondering what's wired up and what's calling in,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=23.713804999999937) [who and how this autowiring is all taking place,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=28.79605499999994) [and that just kind of goes away with the Java configuration.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=31.530554999999936) [Setter injection is simply a matter of calling a setter on a bean.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=35.64155499999993) [We're going to define a bean using the bean annotation](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=41.10555499999993) [like we did in the previous demo,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=43.52784071428565) [and you can see here that we've got our getCustomerService](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=45.09944388888883) [method that returns a bean of type customerService or a](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=48.44735499999993) [bean named customerService, and notice, though,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=52.88992999999994) [that we have a setter injection in here.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=56.277554999999936) [As we're building our beans,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=58.49555499999993) [we're going to call this setCustomerRepository method](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=59.946804999999934) [on our customerService instance.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=63.41595499999993) [To do that,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=67.19955499999993) [we need to have a method called getCustomerRepository in our](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=68.01675499999995) [configuration that returns the customerRepository bean.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=72.53355499999995) [This is going to wire the CustomerRepository inside of our CustomerService.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=77.23555499999993) [Let me say that again.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=83.05255499999994) [We're not just going to call an instance we create.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=84.49855499999994) [We're going to call and get an instance of the bean](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=87.66555499999994) [from the Spring configuration file.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=91.44126928571423) [So when we define a bean such as our CustomerRepository here](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=94.77055499999993) [that returns an instance of CustomerRepository,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=98.40175499999992) [you can see that those methods now line up.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=101.53205499999993) [I'm going to call getCustomerRepository that's registered as a Spring bean,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=105.82355499999993) [and that's going to return an instance for our](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=110.41455499999994) [setCustomerRepository instance on our service instance.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=113.26915499999994) [Take note,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=117.71855499999992) [Spring is still doing a lot of magic behind the scenes when a](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=119.62155499999993) [bean is registered such as these beans are all,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=123.65305499999991) [by default,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=126.78112642857135) [a singleton and will only execute the method the first time it's called.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=127.49255499999994) [That's very key point because if I didn't have this set up this way,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=132.83355499999993) [it would create a new bean every time we called this.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=136.73355499999994) [Since it is in Spring,](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=139.84055499999994) [it's going to register this as a singleton and only return one instance. Let's implement this in our code now.](https://app.pluralsight.com/course-player?clipId=58a23dfd-b35e-4e5f-b069-1382f967adb2&startTime=140.49805499999988)

### [Demo: Setter Injection](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72)

[To add setter injection to our project,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=1.3645219999998808) [we actually have to change a couple of things that we have](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=3.942521999999881) [hard coded inside of our previous demo.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=7.117521999999882) [That's the whole reason we're actually using Spring,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=9.096236285714166) [so let's go ahead and open up our service,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=11.829950571428451) [and specifically our SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=17.42352199999988) [and see how we have this new HibernateRepositoryImpl in here?](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=20.514521999999882) [Let's go ahead and get rid of that hard- coded instance,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=25.92552199999988) [and we want to create a setter in here where we](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=29.69252199999988) [actually wire up this configuration.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=35.610271999999895) [So we're going to right-click and say Generate,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=37.16918866666655) [and we want to do Setter, and specifically the SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=40.751093428571295) [and click OK.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=47.32702199999988) [And now we've converted our SpeakerServiceImpl to be injected rather](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=49.66252199999988) [than have hard-coded configured instances in here.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=55.37152199999988) [We can save this.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=59.13018866666654) [Then we want to go back to our AppConfig.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=61.02552199999988) [Now inside of our AppConfig, we can do a couple things here.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=64.16252199999988) [We want to start off by creating a new bean for our SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=67.32639699999989) [so we want to say Bean.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=73.37809342857132) [I want to give this a name = speakerRepository.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=75.86552199999988) [And if you are wondering why I am kind of fanatic about the names of](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=82.71552199999988) [our beans is because when we go to do autowiring,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=87.71252199999986) [which is coming up here very quickly,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=90.95652199999988) [we're going to use it to autowire by name to our variable name,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=93.30452199999988) [so these match up and it automatically happens for us.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=98.59163311111098) [Let's go ahead and finish out our method signature here,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=102.93252199999988) [so we'll say SpeakerRepository, and we'll do getSpeakerRepository.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=105.86572199999989) [[00:14: 37.473 ] Take any no arguments method parameter as well here.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=111.56493376470574) [And inside of here, we want to return our new HibernateRepositoryImpl.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=123.24129977777766) [And now I want to go back up to our SpeakerService that we](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=134.83252199999987) [created earlier and reconfigure this a little bit.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=138.12452199999987) [So I'm going to just delete this line, and we want to do SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=141.1995219999999) [not the interface.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=148.93352199999987) [We want to do the actual implementation.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=149.68014699999986) [We call this service = new SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=152.91652199999987) [And inside of here,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=164.34152199999988) [we want to actually call that getSpeakerRepository bean that we just created,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=165.91402199999987) [so we'll say service.setRepository,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=171.94072199999985) [and we can call the getter inside of here where we do the getSpeakerRepository.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=173.72302199999987) [And we've now configured our service with that repository,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=183.1815219999999) [and now we can return our service that we just created.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=187.41277199999988) [So now we changed our repository to be injected through](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=194.69752199999988) [setter injection into our SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=200.43095057142844) [Now a couple of questions before we proceed just to clear anything up](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=204.6295219999999) [that you may be a little bit confused on right now.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=207.58852199999984) [Why didn't we just create a new instance of the](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=210.45252199999987) [HibernateSpeakerRepositoryImpl like we did on line 20 on line 14?](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=214.3120219999999) [Why did we call this getSpeakerRepository?](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=220.5215219999999) [Because SpeakerRepository is now created as a bean,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=223.43352199999987) [and I mentioned this in the previous slides,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=226.41827199999986) [but to kind of reiterate that pointer, make it really stick,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=228.55566485714272) [the bean is a singleton.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=234.25052199999988) [Only 1 of them will get created.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=236.32352199999988) [We can call this getSpeakerService method 50 times now,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=237.86852199999987) [and only 1 of the SpeakerRepositoryImpls will get created.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=241.85414699999987) [So it's implemented as a singleton, and that's a good thing.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=247.57352199999988) [That sometimes confuses or concerns people to start with.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=250.6395219999999) [This is actually a good thing for us.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=253.43452199999987) [So now we've got this configured to use beans.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=255.38902199999987) [They're singletons.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=257.8055219999999) [It's all wired up.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=258.55618866666657) [It's using setter injection.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=260.0575219999999) [Let's go to our application now and switch our application to use Spring](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=261.72252199999986) [because right now we have all this configuration stuff going on,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=268.378522) [but we aren't actually doing anything with it yet.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=272.44309342857133) [So let's go inside of our main method, and we want to say ApplicationContext,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=275.1495219999999) [and we'll call this instance appContext = new](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=283.93152199999986) [AnnotationConfigApplicationContext.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=293.8665219999999) [Let me make this fullscreen so you can see a little](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=296.7115219999999) [bit more of what's going on here.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=299.0337442222221) [And inside of here, we want to pass in the AppConfig.class.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=300.76352199999985) [Now this is our AppConfig that we just created,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=307.1915219999999) [this file up here where we configured our beans and it's](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=310.4868077142856) [annotated with configuration on line 8.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=314.55102199999993) [This file is what we're passing into our AnnotationConfigApplicationContext.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=317.45752199999987) [What this is is this is loading Spring and it's loading the configuration](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=323.9645219999999) [files that we have out there into our ApplicationContext.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=327.5955219999998) [So when line 9 is ran,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=331.6515219999999) [it's going to go out and create a basic registry with 2 beans in it,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=333.08388563636345) [the speakerService bean and the speakerRepository bean.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=338.59452199999987) [As we just changed on line 13 and 14,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=343.4205219999999) [it now injects the speakerRepository bean into the speakerService bean,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=346.3655219999999) [and then we'll return that back to our application when we call it.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=352.7735219999999) [Now to change that, I'm going to change one more line here,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=356.4475219999999) [and I wanted to comment out that old one so that you can](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=359.9025219999999) [see it and kind of compare the two,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=363.68212200000005) [so we'll call this SpeakerService service = appContext.getBean.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=365.49141088888865) [And we want to use the version that does type casting,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=378.4105219999999) [so we want to go in here and, first of all,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=380.91812199999987) [we're going to call it by name and say that we want the speakerService](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=383.31285533333323) [and pass in the class instance of SpeakerService.class.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=389.3521886666665) [And save that instance, and we're ready to run our application.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=401.61652199999986) [We have Spring enabled it.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=406.9635219999999) [We have gone ahead and done the setter injection of our](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=409.2495219999999) [speakerRepository and our speakerService.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=413.48909342857127) [Let's run this now.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=415.5005219999999) [When we fire this up, it'll go ahead and compile it,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=417.6200775555554) [and you'll see that it actually returns our instance just like we had before.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=421.57352199999985) [I've commented out line 11 so you can see what we](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=425.6155219999999) [had before that was hard coded.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=428.03327199999984) [Now nothing inside of our application is actually hard coded.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=429.5145219999999) [It's done through our configuration instances.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=432.9405219999999) [Just to recap that,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=436.5045219999999) [we added the configuration inside of our AppConfig that now signified](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=437.7142362857141) [a speakerRepository bean that wasn't there before,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=445.3255219999999) [and it is setter injected into our SpeakerService.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=448.16366485714275) [Our SpeakerService,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=451.77252199999987) [we got rid of the hard- coded configuration inside of](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=452.1940219999999) [here and just added a setter for it,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=455.01966485714274) [and then we converted our application to use Spring.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=457.4880219999999) [And from this point forward,](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=461.8195219999999) [we can now inject all sorts of beans and pieces in our application](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=463.36639699999984) [wherever we would like to do that and not have it hard coded. Let's look at what this would look like using constructor injection now.](https://app.pluralsight.com/course-player?clipId=4fb96d2d-dc84-416d-91d1-020d37f55c72&startTime=467.276379142857)

### [Constructor Injection](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8)

[Constructor injection is just like setter injection.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=1.26158899999992) [We go through and create our bean instance just like we had before.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=4.31658899999992) [Instead of calling the setter, we call the defined constructor.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=8.13058899999992) [Our bean that we had written before where we would call](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=12.450588999999919) [the getCustomerRepository instance would now be used in](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=16.02798899999992) [the constructor of that bean.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=18.73273185714277) [Very simple.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=20.64058899999992) [And, again, like setter injection,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=21.311088999999924) [some of the mystery of what Spring is doing behind the scenes is removed](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=22.822446142857064) [using the Java configuration because it looks just like the Java code that](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=26.697922333333253) [you would do normally inside of an application.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=30.622144555555476) [The one difference being that now we have this stored in the container,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=33.49858899999992) [and we're not passing objects around.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=37.08908899999991) [We can pull them from the framework using the bean,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=39.04058899999992) [the get bean aliases, with these bean names that we have defined in our objects.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=42.07858899999992) [Moving back to our IDE,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=46.981713999999926) [it's really easy to now switch this over to using constructor injection.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=49.04858899999992) [I'm going to open up our SpeakerServiceImpl and add](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=53.85758899999992) [a constructor inside of here.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=57.38387471428563) [So I'm going to go ahead and say public SpeakerServiceImpl and pass in a](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=59.32958899999992) [constructor that takes an instance of a SpeakerRepository and give that the](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=68.78158899999993) [camel case naming convention of that instance.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=75.40758899999992) [And I'm going to assign this to repository = speakerRepository, and save this.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=80.60158899999992) [Now we have our instance stored inside of here that is going](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=93.07758899999992) [to be injected using setter injection.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=97.81358899999991) [We can go over to our AppConfig, and you'll notice that on line 13,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=99.71708899999993) [we broke our configuration down.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=105.29475566666659) [That's fine because we're going to go ahead and fix](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=108.16058899999992) [that to use that correct injection.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=110.19158899999994) [I'm going to comment out line 14, and I'm going to comment it out,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=112.07258899999992) [not delete it so that you can see it for a reference compared](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=114.64458899999993) [to what we did with the setter injection.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=117.60633899999992) [I want to just go ahead and call getSpeakerRepository right here and save it.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=120.82858899999991) [So now as we create this bean,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=128.62958899999992) [we're going to call the getSpeakerRepository bean and inject that in](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=130.6417556666666) [through constructor injection into our SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=136.4623032857142) [Let's go ahead and run our application again.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=139.64058899999992) [I'm going to switch over to Application and right-click on our main and say Run.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=141.73258899999993) [And you should see it now export out Bryan, which it does.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=147.72358899999992) [You may be thinking this is magic and it didn't run.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=152.30858899999996) [You're more than welcome to go ahead and add some](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=155.3045889999999) [system.outprintlns or debug and step through it,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=157.61058899999992) [but it's going through and using this constructor injection.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=160.49258899999995) [One of the biggest mistakes I see people make is in this code for our injection,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=164.62758899999992) [they start trying to do crafty things and go ahead and create](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=170.38558899999992) [some variables and hang onto some stuff here.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=174.67608899999993) [That's what Spring does for you.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=177.7875889999999) [Whenever I see new people doing stuff with Spring,](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=180.3405889999999) [they try to be smarter than the framework and create some](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=182.2143389999999) [instances here and pass some stuff in.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=185.72792233333328) [One of the guys I recently taught about Spring was trying to create his own](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=187.4055889999999) [singleton when Spring did these singleton services for you.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=191.8995889999999) [Don't do anything magical.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=195.54601757142845) [Just wire up the beans how you would use them and let the framework do that for you.](https://app.pluralsight.com/course-player?clipId=9ac67f3d-678b-4e6b-96ed-4849b95f19c8&startTime=197.31858899999992)

### [Summary](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0)

[To recap what we did in this module,](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=1.2570669999998063) [we learned that instead of an application context that we could](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=3.502066999999806) [configure our code using the Java AppConfig file.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=6.86035271428552) [We use an @Configuration annotation to define files](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=12.036066999999806) [that contain configuration code.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=15.788733666666474) [We can have multiple files that are containing configuration information.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=17.946066999999807) [They just need to have that annotation at the top,](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=23.532066999999806) [and then when we wire up our application wherever](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=25.50240033333314) [our main method's contained at, pass in those config classes.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=28.049466999999808) [We can just define a bean using the bean annotation.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=32.920066999999804) [After setting up the configuration of the beans,](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=37.12906699999981) [we walked through setter and constructor injection](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=39.1905669999998) [using these configuration types.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=41.87456699999981) [I like this approach a lot since, as we mentioned before,](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=44.23906699999981) [it seems to remove some of the mystery of what's](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=47.313566999999814) [going on behind the scenes in Spring.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=49.2835669999998) [It's literally just writing Java code and wiring those](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=51.64706699999981) [beans up in that configuration up,](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=54.92106699999981) [which can sometimes seem like a mystery with some of the other concepts.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=56.86194199999981) [We started to dig into some of the more wiring concepts that](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=61.844066999999804) [are a little bit advanced with Spring,](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=65.25149557142839) [but let's dive deeper into those because we really](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=67.94692414285694) [just scratched the surface on those,](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=70.23235271428551) [and let's go into autowiring deeper in this next module and focus on autowiring and component scanning inside of Spring.](https://app.pluralsight.com/course-player?clipId=415f0112-a3f1-4b46-b0e1-d5e91af096d0&startTime=71.8140669999998)

## [Spring Scopes and Autowiring](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9)

### [Bean Scope Introduction](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9)

[Now that we've seen some of the basic Spring configuration and overall just](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=0) [how to create and implement beans inside of our application,](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=4.818) [let's go a little deeper and look at Spring scopes and autowiring,](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=8.700428571428573) [specifically scopes of beans inside of our application.](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=13.67) [They're a very important part of the bean lifecycle and will show](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=17.483) [us how to use different things inside of our application and](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=20.14) [implement behaviors regarding beans.](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=24.1186) [The scopes inside of our application usually are associated with patterns,](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=27.241) [but they're not really the same thing.](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=33.013) [They go hand in hand, but a scope does not equal a pattern.](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=34.246) [Spring implements a lot of patterns for you,](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=38.27085714285714) [which is good because it helps you avoid a lot of the common mistakes and](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=40.910999999999994) [pitfalls made when implementing patterns on your own.](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=44.4394) [And if you aren't familiar with design patterns,](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=47.491) [I really recommend watching my design pattern series on](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=49.186) [the Java design patterns of behavioral, creational,](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=52.94500000000001) [and structural patterns here on Pluralsight.](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=56.315) [Let's dive a little deeper on the scopes and talk about which scopes are available to your application and which scenarios they tie into.](https://app.pluralsight.com/course-player?clipId=aa21da33-4c28-4393-a740-1191928d5cc9&startTime=59.919)

### [Scopes](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23)

[There are five scopes available inside of Spring for us to](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=1.3706330000000015) [configure a bean inside of our application.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=6.205633000000003) [Valid in any configuration is a singleton, which is actually the default.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=8.647233000000002) [You've most likely heard of a singleton before,](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=15.235633000000002) [but we're going to explain that a little bit more in detail and what that](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=17.291758) [means in regards to a Spring application in our next demo.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=21.535633) [The other scope, though, is a prototype scope.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=25.019775857142857) [Prototype is actually a new bean per request.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=29.981633000000002) [You typically do want the singleton over the prototype.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=34.664633) [The other configurations that are available for beans that are only](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=38.46123300000001) [valid in web-aware Spring projects are request,](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=42.069633) [session, and global.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=47.901383) [So if you're implementing Spring MVC or even doing a single-page model](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=50.669633000000005) [application to where you're doing microservices to your front end,](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=55.392132999999994) [those scopes are only available in that context. Let's look a little bit more at the singleton pattern.](https://app.pluralsight.com/course-player?clipId=215c1346-decb-4a50-9352-f64fffdbad23&startTime=58.92906157142857)

### [Singleton Java Config](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8)

[The singleton design pattern restricts the](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=0.927966000000015) [instantiation of a class to just one object.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=3.589966000000015) [A singleton is the default bean scope inside of Spring.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=7.939966000000015) [So if you don't give it a scope,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=11.88529933333335) [it will automatically be assigned the default scope of singleton,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=14.364823142857158) [which means that there is one instance per Spring container or context.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=18.614966000000013) [A lot of people say that means one instance per JVM,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=24.752966000000015) [which is technically true,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=28.756632666666682) [but you could possibly have more than one Spring container spun up in your JVM.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=30.831966000000016) [So, really,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=37.014966000000015) [the correct term is one instance per Spring container or application context.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=37.47696600000002) [The configuration for adding scope using Java configuration is quite simple.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=42.80896600000001) [We simply add the @Scope annotation to our code as you](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=48.328966000000015) [can see here in our code sample.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=52.773866000000005) [And in the previous release of this course,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=55.30996600000002) [we weren't using Maven, so you were required to add the AOP jar separately.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=56.64396600000001) [Since we are using Maven, this is just a transitive dependency,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=62.11096600000001) [and it's already available in our project.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=65.00996600000002) [Let's add that scope to our project now and show you how](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=67.94996600000002) [you can configure that for your beans.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=71.51921600000003) [To add scope to our already configured application,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=74.58096600000002) [I've gone ahead and opened up our AppConfig.java file.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=77.92782314285715) [I'm going to go below our bean definition for our](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=82.58596600000001) [speakerService and add an @Scope annotation.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=86.025216) [Now by default, I did mention earlier that it is a singleton,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=90.46896600000001) [and that's implied, but we can explicitly set it,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=95.15753742857143) [and there's a couple ways we can do this.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=97.78629933333335) [First off, we want to go in here and type value,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=99.96696600000001) [and we can type inside of here singleton.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=103.05563266666668) [Now I do not like using my own typed out strings for these](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=108.26096600000001) [values because I could easily forget that n off the end of](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=114.50010885714286) [there so it's a singleto not a singleton.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=118.8971882222222) [So we can use some strings that they have already set up for us inside](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=121.84296600000002) [of Spring by saying BeanDefinition.SCOPE\_SINGLETON.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=127.23129933333334) [You can tell by this context-sensitive help tip that](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=133.09396600000002) [it's just a sting equal to singleton,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=137.06721600000003) [but that's what we want and we don't have to define our own.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=139.94646600000002) [So a lot of people go ahead and create their own utils.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=142.686966) [We'll just go ahead and select value= BeanDefinition.SCOPE\_SINGLETON,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=144.60909100000003) [and we can save this.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=152.358966) [Now to test this, let's go back to our application,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=153.91496600000002) [and, right here, we have this SpeakerService service = appContext.getBean.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=157.06910885714285) [So we have an instance of this bean where it's going to go](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=164.10996600000001) [ahead and tell us what object we have.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=167.5294104444445) [I'm going to add another System.out .println here,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=169.89121600000004) [and this is a very simple way to just see what's](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=172.30884100000003) [going on behind the scenes here.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=175.74071599999996) [And I want to actually just print out service,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=178.60696600000003) [and it's going to be the object address for service,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=182.71509100000003) [and I want to grab another instance of that bean.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=185.603466) [So I'm going to copy this line here, and go down below,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=189.83796600000002) [and we'll call this service2,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=194.44096600000006) [and I'm going to copy that System.out .println again.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=196.63696600000003) [Make sure you change the variable to be the second one.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=202.560966) [And this should print out these two different object address instances for us.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=207.2303945714286) [So, let's go ahead and run this.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=214.38959100000005) [I'm going to right-click on our main method and say Run Application.main.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=217.61521600000003) [And when this runs,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=225.583966) [you'll notice that it prints out the exact same object address instance.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=226.66346600000006) [So down here in our console output,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=230.62896600000002) [you can see that com.pluralsight .service .SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=233.75396600000002) [and your object address will be different just because it's](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=238.08096600000002) [unique every time you run this through the JVM.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=241.09259100000003) [Then it prints out my name,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=243.33096600000002) [and it prints out that same object address instance again.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=244.37563266666663) [So our singleton is in fact a singleton.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=247.918966) [Each time we ask for an instance of that bean from the application context,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=250.48596600000002) [it's returning the same bean for us.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=255.21796600000002) [Now,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=258.567966) [this is the behavior we want because we shouldn't be storing any](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=258.908966) [state that is unique to that user inside that object.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=263.5940910000001) [You can store state unique to that application in there,](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=267.831966) [but you don't want to store state unique to that user inside that object.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=269.814841) [So, this is working as we planned. Let's look at what it means to be a prototype now.](https://app.pluralsight.com/course-player?clipId=cb4c4bfc-60e0-42e8-8605-8ac41622a4a8&startTime=276.84096600000004)

### [Prototype Java Config](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead)

[The prototype design pattern guarantees a unique instance per request,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=1.2650439999999945) [and, thus, the scope inside of a Spring container mimics that design pattern.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=6.1237106666666605) [Each time you request a bean from the container,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=11.667043999999994) [you're guaranteed a unique instance.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=14.362543999999994) [It is essentially the opposite of a singleton.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=16.785043999999996) [The configuration of a prototype is nearly identical to a singleton,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=20.496043999999994) [so let's look at a small code snippet of how that's](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=24.542043999999997) [configured and then integrate that into our code.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=27.672043999999996) [The configuration is very simple.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=31.298043999999994) [You just set that to a string of type prototype.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=35.490044) [We'll go ahead and use the bean definition just like we did for the singleton,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=39.90104399999999) [and everything's already configured in our application to](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=44.195043999999996) [show us that this sample is going to work.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=46.92904399999999) [Let's take a look at that code now.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=49.125044) [I've opened up the AppConfig back where we had it before](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=51.52561542857143) [with the BeanDefinition.SCOPE\_SINGLETON,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=56.31354399999998) [and I want to replace that with SCOPE\_PROTOTYPE.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=57.922543999999995) [We've already configured our Application.java to show the object](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=66.166044) [address to see that it's unique per request.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=71.42987733333331) [So let's now run this and see if our object address has changed per request.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=75.07204399999999) [When we run this,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=84.70004399999999) [you'll notice now there is a unique instance every time we](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=86.32154400000002) [ask for that bean from the container.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=90.31759955555553) [So our object address before was 73700b80.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=93.21204399999999) [Yours will be different because of your instance,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=99.192044) [printed out the name, and then it has the new object address of 10d307f1.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=100.73904399999999) [Again, yours will be different,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=109.538044) [but now you can see that since changing that to a prototype instance,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=110.748669) [it is now giving us a unique bean per request,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=114.87429399999999) [now, per request of the bean from the context.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=121.03364399999997) [If you hang onto that bean and do stuff with it for the next 10 minutes,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=124.897044) [it will still be the same bean,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=128.767044) [but every time we ask for a new one for the container,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=130.809044) [it's going to give us a unique one back.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=133.046419) [Just so we don't mess up any future demos,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=135.33004400000002) [let's go ahead and change that back to SINGLETON.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=137.83490114285712) [I'm going to select SCOPE\_SINGLETON, save that,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=141.218044) [switch back to our application, run it again and make sure that it's ran,](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=144.76832971428573) [and everything look correct. We've got the same object address as before and after.](https://app.pluralsight.com/course-player?clipId=4f21a7ef-6866-4d33-a022-20cea9cc3ead&startTime=150.196044)

### [Web Scopes](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed)

[Web scopes are beyond what we're going to cover in this course](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=1.1621879999999656) [since it's just a basic Spring fundamentals course.](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=4.046687999999966) [They are covered more in the Introduction to Spring MVC](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=7.880187999999966) [course that's available here on Pluralsight,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=10.946330857142822) [and that's simply because we have to set up an entire web application](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=12.839521333333298) [for you to see how they interact with an object.](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=17.079187999999967) [The three other scopes that are available are the request scope,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=20.270187999999965) [which returns a bean per HTTP request,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=24.24768799999996) [which sounds a lot like prototype except it's for](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=27.477437999999967) [the lifecycle of a bean request, which is fairly short,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=31.40690228571425) [but longer than prototype where it's one instance per](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=34.98918799999996) [every time I ask the container for a bean.](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=37.84268799999997) [The session just returns a single bean per HTTP session,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=41.036937999999964) [and that will live as long as that user session is alive,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=45.60693799999998) [so 10 minutes, 20 minutes, 30 minutes,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=49.592187999999965) [however long they're alive on that website a bean of](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=52.38318799999997) [scope session will stick around.](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=56.17831299999996) [And then there is globalSession, which will return a single bean per application,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=58.28518799999996) [so once I access it, it's alive for the duration of that application,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=62.282687999999965) [not just my visit to that application.](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=67.46306299999996) [You could think of it as singleton,](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=70.91318799999996) [but it's really the entire life of that application on the server until it gets undeployed or the server gets rebooted.](https://app.pluralsight.com/course-player?clipId=e14ab924-ba3b-4010-b5f1-24fed8f95fed&startTime=73.14118799999997)

### [Autowired](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4)

[Autowired.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=1.3070439999999943) [Autowiring is where I would say that most people start to think that](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=1.758615428571423) [there is some magic that's taking place inside of Spring.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=5.921418999999996) [Autowiring is a great technique used to reduce the](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=10.556043999999995) [wiring up and configuration of code.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=14.090543999999994) [If you've ever heard the term convention over configuration, this is it.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=17.311043999999995) [To autowire our applications using the Java configuration,](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=23.394043999999994) [we just simply need to add a component scan to our configuration file](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=26.271043999999996) [with an annotation that looks something like this.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=31.915043999999995) [The text inside of the annotation, com.pluralsight,](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=33.93018685714286) [just says that this is where I should begin looking for autowired annotations.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=37.481843999999995) [To use autowiring, you just mark whatever bean you want as autowired.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=44.356044) [You can choose by name, and that uses the @Bean name or by type,](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=50.222044) [and that uses the instance type.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=54.57893288888887) [One thing I like about the Java configuration over XML](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=56.671293999999996) [configuration for autowiring is that using Java,](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=61.309443999999985) [I can mix pieces that I want and it feels more natural,](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=64.32204399999999) [so I can have a bean that I defined as autowired with another bean into it,](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=67.56264399999999) [and it makes more sense where those beans are coming from. We'll show you how that configuration plays out in this next demo.](https://app.pluralsight.com/course-player?clipId=e3e71c50-7283-4788-a62f-392a5ef9dfb4&startTime=73.26204399999999)

### [Demo: Autowired](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f)

[We need to do a handful of things to get our application](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=1.2137439999999478) [set up to use autowiring correctly,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=3.4851725714285196) [and that has more to do with just how we're doing the demos than you](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=5.7374939999999475) [need to do this in every application you've done.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=10.085743999999949) [We're trying to show a bunch of different techniques,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=13.083743999999948) [and this makes it a little bit more interesting showing some of those.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=14.740618999999947) [To start with, let's open up our SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=19.44374399999995) [and inside of here,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=22.320743999999948) [we had gotten rid of our default no args](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=25.480743999999948) [constructor in one of the previous demos.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=28.346743999999948) [Let's add that back in because we're going to need that for our setter](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=30.97574399999995) [injection demo that we're going to use autowiring on.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=35.85399399999994) [And I want to add a couple of log statements just](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=40.59674399999995) [using simple System.out .println, so we'll say System.out .println,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=44.82274399999995) [and inside of here,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=50.06207733333328) [we'll say that we are in the SpeakerServiceImpl no args constructor,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=53.638743999999946) [and I'm going to go ahead and copy this because we're going to add](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=67.52674399999995) [some of these to a few different methods here.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=69.98896622222216) [Let's go to the next one, and we'll say that this is the repository constructor,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=73.05174399999994) [SpeakerServiceImpl repository constructor.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=80.20774399999995) [And the last log statement that we'll add is one in the](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=84.42974399999994) [setter for the SpeakerServiceImpl, and we'll say that we are in the setter,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=87.4951725714285) [and just save that, now, pretty straightforward.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=93.66929955555548) [All we did was add a no arguments constructor and the](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=96.92274399999995) [SpeakerServiceImpl log statements and setter log statements.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=101.00374399999993) [Let's go back to our AppConfig.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=104.99074399999995) [As of right now,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=106.90474399999995) [we are still using the constructor injection that we've wired up.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=108.80829955555551) [It's really actually not injecting.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=114.28274399999995) [It is configuring the bean, but we are just adding that in there.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=116.51974399999995) [Let's comment this out,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=120.82974399999995) [and I'm going to leave these in here just so you can see as we go](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=123.14174399999996) [through each instance of these what the configuration was from the](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=128.12949399999994) [previous to the next and say new SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=132.53117257142847) [And if we ran this right now, we are not wiring in the repository anywhere.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=140.26474399999995) [Since we want to use setter injection to begin with,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=147.10574399999996) [let's go back to our SpeakerServiceImpl and go to that](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=149.94145828571422) [setRepository and say @Autowired.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=153.67674399999996) [When I save this,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=159.04474399999995) [it's going to automatically inject that SpeakerRepository bean into this setter.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=160.75217257142847) [So when we run this code, we should see the no arguments constructor get ran,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=167.83974399999994) [and then we should see the log statement for this](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=172.59474399999993) [SpeakerServiceImpl setter also get ran.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=176.46602971428564) [Let's go back to our application code and run this.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=179.60174399999994) [And you'll see that we were in the no args constructor,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=184.1700773333333) [and then the setter was called,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=191.3460297142857) [and then our other log statements from the other stuff we were](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=193.85161899999994) [doing with our singleton scopes are dumped out.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=196.66774399999994) [So, very simply,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=199.93574399999994) [our code was changed to do the no arguments constructor](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=202.26774399999994) [and setter injection inside of here, and then we went to our SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=208.14907733333325) [added that no args constructor in here,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=214.87774399999998) [and just specified that we wanted this method to be](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=217.74174399999995) [autowired and injected this way.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=222.27686899999998) [What if we want to do constructor injection though?](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=225.03374399999996) [We were using that before, and we have our constructor still in here.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=227.44274399999995) [I'm going to show you how to do this where your beans are fully autowired,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=231.84974399999996) [not just individual methods because it shows that demonstration,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=237.23574399999995) [that example a little bit more concrete.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=240.49324399999995) [You'll also notice that we talked about the component scanner before,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=243.70574399999995) [but we haven't configured that yet,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=246.75074399999997) [and that's because we haven't configured our beans to be fully autowired,](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=248.50274399999992) [just on individual methods.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=252.75634399999996) [Let's talk about a technique called stereotype annotations first so that we can fully autowire our beans up.](https://app.pluralsight.com/course-player?clipId=aa960afc-3bf1-4ed8-bcab-d7f9ab52500f&startTime=255.01474399999995)

### [Stereotype Annotations](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3)

[To fully autowire our applications and not just do a](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=1.2171329999999143) [hybrid like we did in the previous demo,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=4.4267996666665805) [we need to talk about stereotype annotations.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=6.194704428571343) [Our last example we had beans still configured in the](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=9.772132999999915) [AppConfig file and then had some things autowired.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=12.927847285714199) [To remove the need for those bean definitions in the AppConfig,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=16.298132999999915) [let's discuss the stereotypes.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=19.675132999999914) [The first one is @Component.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=22.018132999999914) [It is actually the same thing as @Bean.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=25.009132999999913) [I referenced component here just so that if you saw it in another example,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=27.610132999999916) [you wouldn't wonder what it was and why we hadn't covered it.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=31.865132999999915) [We'd already used @Bean, and they are basically the same thing.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=34.49313299999992) [The next one is @Repository, and as you might guess,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=38.85813299999992) [it's used to denote a class that's being used as a repository object.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=42.62038299999991) [Nothing else changes with these.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=47.33613299999991) [[00:17: 27.398 ] They're just nice to label beans as such.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=48.687975105263064) [You could technically just label everything as a bean or a component,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=52.47313299999991) [but you could use a filter to look for specific types of annotations.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=56.2441329999999) [That's beyond the scope of what we're going to talk about here.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=60.377132999999915) [The last one is @Service.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=63.878910777777705) [This is often confusing to people because a service does](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=66.62613299999991) [not mean a web service or a microservice.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=70.75833299999992) [It rather means where you would put your business logic.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=73.26313299999991) [There is actually a fourth annotation that we will cover in the](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=76.28327585714278) [Spring MVC intro course named controller.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=79.94613299999989) [It's out of the scope of what we're covering here,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=83.13013299999992) [so I didn't use any real estate to show it,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=85.1576329999999) [but this is where you would create web or microservices for your application.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=87.57591077777771) [Now that we've seen our stereotype annotations,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=92.70513299999992) [let's go ahead and finish wiring up our application the whole way.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=94.13846633333326) [In our AppConfig, we want to add our component scanner.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=98.67013299999991) [So we're going to import @ComponentScan.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=102.0757996666666) [Inside of here,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=106.67813299999992) [we want to give it the string syntax for an array of the](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=107.37246633333326) [package structures that we want to scan,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=114.38038299999994) [so we want to do com.pluralsight inside of here.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=116.14246633333323) [And this just tells it that this is where we want you to](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=120.26413299999992) [start scanning for beans to autowire.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=123.78093299999989) [Now the other thing we have inside of here is we](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=126.48213299999992) [still have this hybrid approach.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=128.2011329999999) [On line 15, we have a bean defined.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=129.3061329999999) [On line 24, we have bean defined.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=131.93613299999993) [To fully autowire our application,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=134.4741329999999) [we can get rid of these bean definitions inside of here.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=137.59713299999993) [Now one thing I didn't mention to you when discussing the](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=140.6793829999999) [stereotype annotations is that the bean annotation is only](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=143.50513299999992) [applicable at a method level.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=147.63600799999992) [So we've got a method defined on line 17 and a method defined on line 25.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=150.4841329999999) [I can use the @Bean annotation here.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=154.8181329999999) [I cannot use the bean annotation at a class level.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=157.9621329999999) [So to demonstrate this, I'm going to open up our SpeakerService,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=161.93513299999992) [and if I come out here and type @Bean, you'll see that I get an error,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=165.5917579999999) [and if you hover over the error,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=171.67691077777766) [it'll actually tell you that that is not available for that specified type,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=173.3071329999999) [where I can come in here and say that we want a component,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=177.20213299999992) [and that will work.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=181.5354187142856) [That is applicable, but since we're in a service,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=184.5691329999999) [I'm going to use the service stereotype annotation,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=186.83570442857135) [and I'm going to go ahead and name this here.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=190.92141871428564) [So we'll give us our speakerService name that we had before, and save this.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=197.2121329999999) [Now the other thing I want to do is I want to autowire this bean,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=204.9851329999999) [and right now it's set up for setter injection.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=208.58913299999995) [Let's go ahead and leave it that way.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=211.78113299999993) [I am going to go back to my AppConfig,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=213.6871329999999) [and now I can actually comment out all of this code](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=216.51313299999993) [for this speakerService bean.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=222.24346633333326) [We're actually going to do the same thing for that](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=225.7881329999999) [speakerRepository here in just a second,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=227.79841871428565) [but let's not get ahead of ourselves just yet.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=229.78156157142848) [I'll open up my HibernateSpeakerRepository,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=233.09399014285702) [and I will note that we are doing this on the implementation,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=236.35013299999991) [not on the interface.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=242.2201329999999) [Don't make that mistake and open up the interface and try](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=244.0921329999999) [to do it on there because it won't work.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=245.9301329999999) [At the top of our HibernateSpeakerRepositoryImpl,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=248.7447579999999) [let's do @Repository, and we'll give this a name as well,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=254.5631329999999) [and this will be our speakerRepository, and save that.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=261.5825079999999) [So now this bean is set up as a repository using the](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=270.9231329999999) [repository stereotype annotation.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=275.9775329999999) [Our speakerService is set up as a service with the name speakerService,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=277.7061329999999) [and then our AppConfig, we can go ahead and finish commenting out all of this.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=282.40927585714286) [And right now,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=289.1061329999999) [speakerService is set up with that setter injection](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=290.6382758571428) [for the repository to go into it.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=294.7164663333332) [Let's make sure we've done everything right here and go](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=298.1501329999999) [ahead and try and run our application.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=300.00593299999986) [I want to open up our application, right-click on main,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=302.1731329999999) [say Run, and you'll see that it called the no arguments constructor.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=307.6889329999999) [The setter ran through our code that showed that we had those objects,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=313.5421329999999) [printed out the name, and we had the same address.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=319.2403829999999) [So we've actually kept that scope the same.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=321.9201329999999) [Now, let's not move too fast here.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=324.7471329999999) [Let's show you a couple things inside of here really quick.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=327.8351329999999) [We just got rid of this bean definition that we had](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=330.691133) [to go type all that code out for, wire up the whole thing.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=335.15591077777765) [This @Scope, if we still want that scope,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=339.6991329999999) [I can go back to anywhere we define a bean at the top of the code and say,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=342.3751329999999) [well, let's throw Scope in here.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=348.3654663333333) [So I can go in my app and still define Scope here if I want.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=350.28213299999993) [By default, it's singleton, so there's no reason for me to do that,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=353.8191329999999) [but I can define that at the class level.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=356.6807329999998) [And we have our autowired setter injection taking place.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=359.65913299999994) [If we want to change this to constructor injection,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=363.8544663333332) [we can go ahead and move that up to the constructor and autowire it that way,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=366.8249901428571) [and let's run our application again and see what it does.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=375.33663299999984) [We go inside of our app here, go ahead and click Run,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=380.5841329999999) [you'll see that we have now switched over in our log statement to](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=383.26063299999987) [using the repository constructor injection,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=387.88113299999975) [and it's still autowired up.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=391.2751329999999) [So I've effectively removed all of this configuration code](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=393.5481329999999) [inside of AppConfig by just having the component scanner and](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=398.1051329999999) [defining our beans the right way.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=402.5401329999999) [This may not seem like a big thing to you except for I've worked in](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=404.8601329999999) [applications that have had hundreds of beans,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=409.4261329999998) [2, 3, 400 beans.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=412.1135774444443) [If I have to go through and define 8 lines of code to](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=413.80113299999994) [define each bean and then troubleshoot that,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=418.2583829999999) [you're talking with 300 beans,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=421.5581329999999) [a couple hundred lines of code to get that set up for that application,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=424.2613829999999) [and trying to stay on top of that and maintain that,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=429.7921329999999) [this really saves you a lot of time and effort,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=432.01963299999994) [and it's really actually quite nice in how it wires those things up.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=435.46870442857124) [So it's really simple.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=440.6667996666665) [You just define the stereotype.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=442.5501329999999) [You can still define the scope if you want,](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=444.3501329999999) [and you can move around the autowiring from constructor to setter if you want to do it based off of which contract you want to enforce.](https://app.pluralsight.com/course-player?clipId=453f4f80-c51e-4ebc-bbdf-a54a54580ab3&startTime=446.2761329999999)

### [Summary](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89)

[In this module,](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=1.1161999999999535) [we discussed the various scopes that are available inside the Spring container,](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=2.0333428571428103) [namely singleton and prototype.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=6.796799999999953) [We showed examples of how to configure both of](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=10.227199999999954) [those using the Java configuration.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=12.80286666666662) [We then mentioned the web scopes that are available,](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=15.691199999999954) [but they are outside the scope of this module and of this](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=18.061628571428525) [course really because we have to set up an entire web](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=21.619949999999957) [application just to demonstrate them.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=23.89419999999995) [Those three scopes are request, session, and globalSession.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=26.794199999999954) [We then discussed autowiring.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=30.828533333333286) [We showed an example using setter injection and constructor](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=33.413199999999954) [injection and showed that you can use the component scanner to](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=36.80786666666662) [wire those apps up or you can do a hybrid.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=42.09544999999996) [Our first example we had with this was just a hybrid of](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=46.233199999999954) [some of the methods being autowired,](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=49.15382499999996) [but still having our beans defined in that AppConfig.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=50.992866666666615) [If that makes you feel more comfortable in using it,](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=54.82919999999995) [use it that way,](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=57.07619999999996) [but I will say the more convenient way is to go with full autowiring](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=58.38619999999996) [using those stereotype annotations that we discussed.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=62.12869999999995) [Let's look at what we can do with the XML configuration,](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=66.07019999999996) [and we're going to run through some smaller examples because it's very similar to Java now.](https://app.pluralsight.com/course-player?clipId=012a08d3-245d-4844-ba57-477db400fc89&startTime=68.72586666666662)

## [Spring Configuration Using XML](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6)

### [XML Config Introduction](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6)

[Now that we've gone through the Java configuration for Spring,](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=0) [let's talk about configuring your application using XML.](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=3.9765) [We're going to take that sample application that we built in the previous](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=8.188) [modules and wire it up with XML using the Spring Framework,](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=11.115250000000001) [but just so you don't think that we are done with Java configuration,](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=14.36175) [we are going to compare and contrast the XML](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=18.337) [configuration with the Java configuration,](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=21.398400000000002) [and we're going to show a couple more techniques on how to autowire your app up.](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=23.813714285714287) [So why would you still use XML?](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=29.718) [XML configuration was the first method available in Spring,](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=32.002) [and although it has declined in popularity over the years,](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=35.31142857142858) [some things, in my opinion, are still just simpler with XML.](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=39.234) [There is a natural separation of concerns that organically happens when](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=42.65042857142858) [configuration code is removed and replaced in a separate file.](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=47.70133333333333) [We're going to copy that sample application that we created](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=51.889) [in the first module and create a file called an](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=54.695875) [applicationContext to wire up our app.](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=58.321499999999986) [Our file doesn't need to be named the appContext,](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=60.269999999999996) [it's just a standard that's kind of become associated with Spring.](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=63.04000000000001) [We're going to go through and wire it up in XML to help you](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=66.06949999999999) [better understand some of those concepts and configurations that we showed with the Java configuration.](https://app.pluralsight.com/course-player?clipId=f59af70a-fd22-4be6-99ef-e97ad73e19e6&startTime=68.8921111111111)

### [Demo: Copy Project](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd)

[Just like we did when we were configuring our Spring](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=1.3935889999999926) [Java configured enable application, I went ahead and closed everything,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=4.526788999999993) [and I actually opened up our original conference app just](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=8.928017571428564) [so can look at it and reference it, although,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=12.506088999999992) [that really doesn't matter because we're going to copy this](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=15.553588999999993) [and open up the XML- configured app anyway.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=17.53192233333332) [So I've closed all the files down, got it down to just the basic desktop,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=20.356588999999992) [and I'm going to switch over to my workspace.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=25.29758899999999) [Now I'm going to take our conference app,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=28.342588999999993) [not our conference-java, but our conference app,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=30.679588999999993) [Copy, and Paste that, and I'm going to call mine conference-xml,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=33.68258899999999) [and enter that.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=42.744589) [I'm going to switch back to my IDE, and now I want to go to File,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=46.742588999999995) [Open, and I want to navigate down to my workspace,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=54.58736677777775) [and open up the conference-xml project.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=58.80573185714285) [And I'm going to choose this window to replace the contents that we had there.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=67.14058899999999) [And now we have our basic project structure up and ready to go.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=73.19358899999999) [We'll go ahead and run it, making sure that everything is set up the right way.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=76.79058900000001) [I want to navigate down to my source, main,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=83.02025566666667) [java, Application, and right-click, and say Run Application.main.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=89.96418899999999) [Let's make sure that everything still finishes and](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=98.847589) [completes exactly how we expect it to, and it does.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=100.86425566666666) [Now this, again,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=104.570589) [should be the basic project that didn't have any of](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=106.02987471428573) [your Java configuration in there.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=109.623339) [I can't stress that enough.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=111.10158899999999) [We don't want to try and mix the Java configuration with the XML configuration.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=111.966589) [So our Application.java file should be just this hard-coded SpeakerService,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=116.599589) [creating a new SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=124.47658899999999) [It has the System.out .println in there for just the original find.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=126.63758899999999) [Our model and service are all pretty basic,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=130.602589) [a repository, in fact,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=134.536589) [our SpeakerServiceImpl should have that hard-coded](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=136.11058899999998) [HibernateSpeakerRepositoryImpl in here.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=139.43158899999997) [That's what we're going to do with the XML configuration now](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=141.37383899999995) [just like we did with the Java configuration.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=144.56771399999994) [Now I can't stress enough,](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=147.15158899999997) [I am going to show you a couple techniques with XML and](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=148.42936677777777) [their equivalent in the Java configuration as we do this to](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=151.97858899999997) [help compare and contrast it.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=155.45608899999996) [So if you think we're just going to cover XML, we're not.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=157.095589) [We're going to go through some Java configuration techniques](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=159.01008900000002) [as well to show you how they compare to one another and the power of one over the other.](https://app.pluralsight.com/course-player?clipId=6595e3a3-861b-488c-b77f-3c61d490dfcd&startTime=161.50292233333334)

### [applicationContext.xml](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71)

[The applicationContext really is the root of an](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=1.425911000000022) [application configured with Spring.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=4.828244333333355) [And just like we had in our Java configured Spring app,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=6.756911000000022) [the AppConfig is this same thing.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=9.978661000000024) [They are synonymous.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=12.041911000000022) [It doesn't have to be named the applicationContext.xml just like our](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=13.580911000000022) [AppConfig.java file doesn't need to be named that,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=17.898911000000023) [but it's more of a loose standard.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=21.316799888888912) [I've seen people abbreviate it appContext or App-Context,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=23.482911000000023) [and this is just kind of a default that you see people](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=26.716244333333353) [do inside of their applications.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=30.16216100000002) [By default, though,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=31.93631100000002) [Spring will look for a file named](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=33.673911000000025) [applicationContext.xml without any extra configuration.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=36.08491100000002) [A simple view of Spring is that it's just a HashMap of objects,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=40.93391100000002) [and we define that HashMap inside of our](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=43.823625285714314) [applicationContext.xml or our AppConfig.java.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=46.789911000000025) [The objects that we have inside of here are pretty much just name value pairs.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=51.35191100000002) [Although it's not the intention of Spring,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=56.17291100000002) [it can be used as a simple registry,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=59.31691100000002) [and we can look up those beans out of our context.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=62.006911000000024) [All of our XML configurations begin here,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=65.41391100000003) [and for our sample, we're going to call ours applicationContext.xml.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=68.51691100000002) [You can have other files that will reference this and look up and pull it in.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=73.32091100000002) [It's a little bit more of an advanced topic,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=77.08691100000001) [but we can import those things in there.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=78.91679988888892) [There are some namespaces that the Spring developers have put](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=82.17991100000002) [together that help us in our configuration and validation of our](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=85.16033957142858) [files and really make things a lot easier.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=88.68591100000002) [We'll look at adding a namespace to the top of our application,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=91.83691100000001) [but in our example here,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=94.89876814285716) [we're basically going to put an XML snippet at the](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=96.48078600000002) [top of our application context,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=98.65391100000004) [and you'll know what it means in our bean namespace,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=99.75016100000002) [and it helps us configure our files.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=102.34891100000003) [Let's do that to our application now.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=104.92091100000002) [Adding the applicationConfig.xml to our application is actually quite easy.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=107.83791100000002) [You want to navigate down to source, main,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=112.98391100000002) [but alongside of Java,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=115.39491100000002) [there's another folder that was created when we created](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=116.86991100000002) [our Maven project called resources.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=120.25266100000003) [And if you open yours up, there's nothing underneath yours.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=122.74891100000002) [I have a notes.txt in here just so I don't have to type in a bunch](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=125.94691100000003) [of the XML configuration that we're going to do.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=130.8672443333333) [This is one of the drawbacks to the Community Edition to IntelliJ.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=133.544911) [The ultimate paid edition actually has a dialog to](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=137.907911) [help you create this XML file.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=141.53416100000004) [The free version does not.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=143.53591100000003) [So I want to right-click on source, main,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=145.71991100000002) [resources and say New, File, and I want to name this applicationContext.xml,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=147.35591100000002) [and click OK.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=156.999911) [And it will just give us a blank file.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=161.311911) [Now I've gone ahead and searched through the Spring documentation to copy](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=163.722911) [this XML snippet that I'm about to paste in here in.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=169.6721967142858) [You can do the same or you can pull this out of the](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=176.88891100000004) [resource files for the project, so if you navigate to our course description,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=179.32853599999999) [there is a resource download section to where you can pull the](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=184.22191100000003) [files down if you don't want to go searching the internet for the](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=189.06178599999998) [Spring XML configuration namespaces, but here it is.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=192.680911) [So now we have our file.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=196.79091100000002) [It's our beans namespace already defined in this,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=200.424911) [and this is the root namespace that you typically will](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=204.099161) [use for a Spring configuration file.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=206.4191967142857) [What this does as we're going through and doing help and](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=208.37591100000003) [context-sensitive help inside of our XML file,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=213.69091100000003) [when we start doing a bean definition by typing a left angle bracket,](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=216.17441100000002) [you'll see that it pops up the helper context for the different](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=222.21891100000002) [things that we can put in this namespace.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=225.59491100000002) [And that's all done by just including this XML schema](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=228.32691100000002) [definition at the top of our file.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=232.94735544444447) [Let's go through and look at what the namespace is now by us](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=235.90991100000002) [and how that kind of helps out in us developing the XML configuration a little bit better.](https://app.pluralsight.com/course-player?clipId=e6412721-2c7e-4b4a-ae99-be893ef2eb71&startTime=239.06741100000008)

### [Bean Definition](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1)

[Here is a snippet of just the beans namespace definition that](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=1.232689000000013) [I just copied to the top of our XML file.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=4.113117571428584) [I believe that the misunderstanding of namespaces is one of the reasons](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=7.4866890000000135) [that people are afraid of XML and using XML configuration.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=10.74468900000001) [Spring has created this namespace that simply acts like a](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=14.907689000000014) [dictionary for the properties that we can use to create a](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=18.62926042857145) [bean inside of our application.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=22.32768900000002) [Let's talk a little bit more about these properties.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=24.402689000000013) [So our XML declaration allows us to define a bean in XML.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=27.628689000000012) [This bean is called a CustomerServiceImpl bean,](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=32.87702233333335) [and it represents where we want to put our business](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=36.16268900000001) [logic inside of our application.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=38.716314000000025) [There's a few other properties to find in this example as well](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=41.37968900000001) [that we're going to walk through more in detail,](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=43.282189000000024) [but you can see the pieces that we are creating here.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=45.24743900000001) [The beans are essentially just classes.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=49.470689000000014) [The XML configuration is composed of beans just like our AppConfig was as well,](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=53.918689000000015) [and they're just POJOs that we use inside of our application context.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=58.63968900000001) [Defining beans can be thought of as replacing the keyword new.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=62.32168900000001) [So whether you are in your application or you're saying something](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=66.55068900000002) [like your \_\_\_\_\_ CustomerService = CustomerServiceMy,](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=70.191289) [CustomerService = new ServiceImpl, wherever we're using that keyword new,](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=73.31968900000001) [that's something that should be thought about being put](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=80.14368900000001) [in your XML or Java configuration.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=83.33535566666666) [Lastly, we always want to define the class,](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=86.42068900000001) [but use the interface, and I'll show you what I mean by that in our demo that's following this.](https://app.pluralsight.com/course-player?clipId=4e5109f2-b4bd-466e-abdb-c09e70aaffe1&startTime=90.16668900000002)

### [Demo: Add Bean](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6)

[Adding a bean inside of our applicationContext is very similar to](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=1.3056999999999535) [adding it to the AppConfig that we had before.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=4.571699999999954) [We want to do an open angle bracket and use the bean alias.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=8.064699999999954) [And inside of here,](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=12.728128571428526) [it gives us a bunch of different properties that we can use for this.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=14.236699999999953) [I'm going to start by choosing name as the first one,](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=18.464699999999954) [and the name that we want to do for this is the speakerRepository.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=22.293099999999953) [The next thing that we want to do is add the class.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=30.033699999999953) [And the class that we're going to do for this is com.pluralsight.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=32.09469999999995) [And we want to specifically choose our repository.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=39.981699999999954) [And we want this to be an instance of the HibernateSpeakerRepositoryImpl.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=45.37269999999995) [Now in our code, we are going to reference this using the interface,](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=51.37569999999995) [but we'll create the bean with the implementation.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=56.09284285714282) [I'll show you more what I mean by that here in a second.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=59.61069999999995) [But this is actually all we needed to do to create our bean definition.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=62.31303333333329) [Now we're not injecting anything in this,](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=67.83569999999996) [in fact, that's why I started with this bean is because if you remember,](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=69.87269999999995) [our SpeakerRepositoryImpl has no other dependencies in it.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=73.11969999999995) [I'm going to open that up so you can take a look at it.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=77.16482499999994) [It was just a very simple hard-coded one method list of speakers that](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=81.61869999999995) [gets returned from what would be a mock database,](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=86.92341428571427) [so there's nothing being injected in this yet.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=91.24669999999995) [We're going to go through and look at setter injection a little bit](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=93.59669999999996) [and actually reference our Java configuration that we did to show](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=96.04984285714279) [you the two and come back and wire this up to be setter injected](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=99.45029999999996) [for the SpeakerService with this bean that we just created in the SpeakerRepository.](https://app.pluralsight.com/course-player?clipId=b4188559-a5f2-4dbd-8b91-5a774d72f2e6&startTime=104.90858888888883)

### [Demo: Setter Injection](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c)

[To set our application up for setter injection,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=1.252399999999907) [we're going to have to define another bean inside of here](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=4.2841142857141925) [just like we did for the SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=6.914399999999907) [but before we do that, I want to open up our SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=9.336399999999907) [And inside of our SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=13.633399999999908) [we're going to get rid of this hard-coded HibernateSpeakerRepository](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=15.464399999999907) [reference just like we did for our Java configuration.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=19.137399999999907) [Then I'm going to go down and give myself a little](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=24.407399999999907) [extra space and click Generate, Setter, choose SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=27.072066666666572) [and click OK.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=34.138399999999905) [Before I move on though,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=37.156399999999906) [I do want to change the name of this from setRepository to setSpeakerRepository.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=37.98195555555545) [The name isn't essential,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=44.54239999999991) [but it does make it easier especially for autowiring by name,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=45.815899999999914) [which we're going to show a demonstration of that later in this course.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=49.43939999999991) [I'm going to click save.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=53.281399999999906) [And I do like to clean up my imports.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=55.63439999999991) [You can see up here on line 4 that we have an unused import.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=57.443399999999905) [That's why it's highlighted in gray.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=60.019399999999905) [I'm going to do Ctrl+Shift+O on my Mac and remove that import.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=62.25339999999991) [You can also do Ctrl+Shift+O on a Windows machine rather than \_\_\_\_\_ Ctrl option,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=66.5978285714285) [and it should clean up those imports for you.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=72.59789999999991) [You can also just delete it manually.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=75.55039999999991) [I'm going to save this and go back to my applicationContext,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=77.7333999999999) [and let's create another bean inside of here.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=80.2176499999999) [As I mentioned before, to do this,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=84.0403999999999) [we just want to create a bean just like we did for the SpeakerRepository.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=85.9483999999999) [So I'm going to give myself a little extra space there.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=90.0283999999999) [Make sure you stay inside that closing bean element that](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=92.3963999999999) [I have on line 12 of my application.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=94.97014999999989) [And we'll say bean and give it a name of speakerService.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=98.1463999999999) [And notice I'm doing this as variable names exactly like](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=104.43139999999991) [we would do in the Java configuration.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=108.5643999999999) [And I want to define a class,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=111.47639999999991) [and the class is going to be com.pluralsight .service .SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=112.49979999999987) [And instead of doing the forward slash and closing element,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=121.20239999999991) [I just want to do a right angle bracket,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=124.46484444444437) [and it'll give me that closing bean element separate.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=128.0383999999999) [And the reason we want to do this is because we're going to](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=131.8343999999999) [create a property inside of here now.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=133.81782857142846) [And the property name is going to be speakerRepository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=136.03389999999987) [and there's two options inside of here of reference or value.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=145.1513999999999) [Since we're referring to another bean, we want to do reference.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=149.6818999999999) [If we were just putting a value in there,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=154.3453999999999) [say some string or some numerical value,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=156.1263999999999) [we would use value.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=158.53939999999992) [So we want to do a reference,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=159.16859999999988) [and that reference is going to be to the speakerRepository bean.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=160.46654285714274) [And then we can close that off with a forward slash,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=169.5663999999999) [right angle bracket, and save this.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=172.6277999999999) [Now our beans have been defined,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=174.85327499999988) [and we can see that we have our SpeakerServiceImpl created with a](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=177.156511111111) [property that we're setting from the reference to the bean](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=182.26699999999985) [speakerRepository that we've defined on line 7.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=187.33319999999992) [So we're going to take that bean and inject it in there,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=189.49973333333324) [and it's calling the setter on our SpeakerServiceImpl](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=192.7053999999999) [that we created inside of here.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=195.0271999999999) [That's why I wanted to name it setSpeakerRepository.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=197.62499999999991) [If we had left it as setRepository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=200.61139999999992) [then our property name would just be lowercase repository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=202.7103999999999) [so it uses the bean naming convention.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=206.26611428571422) [Now let's make the changes we need to to our Application.java to load this.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=208.9403999999999) [Switching to our Application.java,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=214.19489999999993) [we have to do the same thing that we had done](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=215.82782857142848) [before with our Java configuration,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=220.64206666666664) [and that is to create an instance of the](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=223.19268571428563) [ApplicationContext to Bootstrap our application.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=226.56519999999995) [So we'll say ApplicationContext appContext = new ClassPathXmlApplicationContext.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=228.9003999999999) [Inside of here, we will give it the name applicationContext.xml,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=240.3543999999999) [and then save that.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=246.4449999999999) [Now from here,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=254.5793999999999) [I'm going to comment this out just so you can see that it was hard coded](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=255.13777499999992) [before and we've switched it over to our newer style.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=257.94252499999993) [We'll say SpeakerService service = appContext.getBean,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=262.85089999999985) [and we want to pass in here the name of speakerService,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=271.86589999999995) [and we'll pass in the class type so that it can do this without casting.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=283.5993999999999) [So we'll say SpeakerService.class, and save this.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=287.5703999999999) [And now our application is set up to run.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=293.6243999999999) [I'm going to exit fullscreen so I that I can see the build console.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=295.8913999999999) [And right-click on main, say Run Application.main.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=300.2483999999999) [And you can see that our application loaded.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=306.5163999999999) [So let's walk through what just happened here.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=308.81139999999994) [In our Application.java, we Bootstrapped our application on line 9,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=312.1893999999999) [as you can see here, by loading that applicationContext.xml that we created.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=316.7263999999999) [Our applicationContext here is created inside of our source,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=321.7713999999999) [main, resources folder, and so that means that Maven,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=328.0868) [when compiling, will actually compile it out to our classes directory,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=331.5420666666666) [so under target classes, you can see our applicationContext.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=336.7033999999999) [So when it goes to run our application,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=341.2863999999999) [it's actually copied that down to our target classes directory,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=342.6463999999999) [and that's just where our classpath launches from.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=345.90689999999984) [And then we created beans inside of here.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=349.5703999999999) [We started off with a speakerRepository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=351.9373999999999) [and then we created the speakerService and did a reference to that](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=354.3443999999999) [speakerRepository into our speakerService that did setter injection,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=360.3700666666665) [then we changed our speakerService to accept that setter injection.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=363.4749999999999) [And remember, on line 16, we changed that name to setSpeakerRepository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=369.0873999999999) [and that referenced back to our applicationContext where on line 11,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=373.9493999999999) [we said that the property name was speakerRepository.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=378.4803999999999) [If we hadn't changed that and just left that as repository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=381.7963999999999) [it would've just been property name repository,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=383.9775428571428) [lowercase.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=387.49939999999987) [And our application is actually all configured now.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=388.3603999999999) [The only thing we really had to any different was create this](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=391.011257142857) [applicationContext where we had a namespace in here.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=395.0113999999999) [We start defining our beans,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=397.6988285714285) [and our beans actually look quite similar to what we](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=399.2423999999999) [did in the Java configuration.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=402.0646499999999) [It just may seem a little bit more second nature to do](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=403.6033999999999) [you to do it in the Java configuration,](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=406.4606999999999) [but you can see how we are now wiring up our application the same way. We have that same setter injection inside of our application now.](https://app.pluralsight.com/course-player?clipId=d459885a-1479-4073-a8be-b0011803600c&startTime=407.8392749999999)

### [Constructor Injection](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a)

[So we already defined our bean to use setter injection.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=1.1296329999999144) [There's two types of injection just as we did inside](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=5.35329966666658) [of the Java configuration module.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=8.481966333333245) [There's setter and constructor injection.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=11.334632999999915) [Setter injection is using exactly what it sounds like,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=13.729632999999914) [the getters and setters of our bean,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=16.754882999999918) [and constructor injection uses the defined constructors.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=18.708799666666582) [Something to keep in mind though is that you can use both](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=23.218632999999915) [setter and constructor injection together.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=26.599918714285636) [We're going to now show you how to use a constructor injection example,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=28.968966333333245) [but I just want to point out that I feel that setter](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=34.63196633333325) [injection is often better for existing code.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=38.26777585714277) [We've seen our simple setter injection and what it's like to use that.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=42.63363299999991) [Constructor injection guarantees a contract for us.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=46.54463299999991) [There's a few nice things about doing that,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=50.78938299999991) [but namely it's that we have our code and our contract defined when we](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=52.77213299999992) [create that object instance because of the constructor.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=57.955632999999914) [A positive and a negative though is that I need to have a constructor](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=61.79263299999992) [defined for each situation that I want to guarantee.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=66.2103829999999) [I should also note that you can use constructor and setter injection together.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=69.75763299999991) [One other slight difference is that constructor injection is index](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=74.07263299999991) [based and not named based like setter injection is.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=77.67796633333323) [Let's go ahead and add an injection-based example for our](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=82.04163299999992) [constructor inside of our application now.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=86.67849014285706) [Changing our application over to be a constructor injection](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=89.40323299999991) [example verses setter is actually pretty quite easy.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=93.51006157142847) [So I'm going to go into our applicationContext on line 11](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=95.97463299999991) [and change that to constructor-arg, and instead of name,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=99.44963299999989) [constructor arguments are index based, so I want to do index= 0.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=103.69823299999992) [They're 0 based, meaning if I have multiple arguments I'm going to pass in,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=110.05563299999992) [I have 0, 1, 2, 3, and so on.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=113.91263299999989) [So we start with 0.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=116.00017845454538) [So I'm going to say constructor-arg index= 0.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=117.32063299999992) [Then I need to go to my SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=120.98163299999992) [If I try to run this right now, it's going to break.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=123.66863299999991) [I want to add two constructors inside of here.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=126.0172996666666) [I want to add a public SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=128.6836329999999) [and I'm going to give this the no arguments constructor,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=135.3626329999999) [just the default no argument so we don't break any other](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=138.4377996666666) [examples we're going to do in the future.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=140.87238299999984) [Then I'm going to add a second one inside of here](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=142.47363299999992) [that is public SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=145.57563299999993) [I'm going to make this one take in an instance of our SpeakerRepository.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=149.2136329999999) [And honestly,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=153.6956329999999) [I'm just going to go down here and copy this code that we already have created](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=153.9773829999999) [for our setter because it's going to be very similar to that.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=157.71134728571423) [So, paste that in there and save it.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=161.9536329999999) [So our two constructors, one on line 12,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=166.3996329999999) [the default no arguments,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=168.5606329999999) [one on line 16 that is the SpeakerServiceImpl taking an](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=170.1716329999999) [instance of the SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=174.0606329999999) [and it's just going to assign those variables to one another,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=176.8566329999999) [so we have our this.repository is equal to our repository we're passing in,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=179.86713299999988) [and we'll save that.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=184.4176329999999) [That's it.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=186.0136329999999) [That's all we have to do.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=186.4616329999999) [Since we only have one argument, the index for this one is 0.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=187.80563299999992) [If we had multiple arguments in there, it would be 0,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=191.14563299999992) [1, 2, 3, 4 like in our applicationContext where we just have index 0 on line 11.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=194.86208754545447) [Let's go back to our Application.java and run this](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=199.90074411111107) [now and see what that looks like.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=202.42306157142843) [So if we right-click on our main, and say Run Application,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=204.6076329999999) [it'll run just like we expected it to almost like we didn't change anything,](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=212.4782044285713) [although we did.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=217.6076329999999) [So now it's constructor injection verses the setter injection.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=218.73663299999993) [You can see the code for both there.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=222.8626329999999) [All it took to change that in our applicationContext was changing](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=224.9276329999999) [that one property on line 11 to constructor-arg, and we have it constructor injection based.](https://app.pluralsight.com/course-player?clipId=6fdd19d1-cb41-406b-98bd-b978d39fba7a&startTime=227.2314329999999)

### [Autowiring](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb)

[Early on, Spring got a bad reputation for having a lot of XML configuration,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=1.1437889999998734) [and people just didn't care for going through and wiring up every bean and](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=5.3397889999998736) [all the references and everything that went with it.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=9.360413999999874) [To counter this,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=11.886188999999872) [they introduced a mechanism called autowiring for](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=12.927788999999873) [you to autowire beans together.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=15.868217571428445) [There are four types of autowiring that you can do on a bean.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=18.441788999999872) [The first type is byType,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=23.1600112222221) [and this allows a property to be autowired if exactly one bean of](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=25.261163999999873) [that property type exists within a container.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=30.045360428571296) [So let's say I have a car object that we're injecting in.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=33.034788999999876) [If there's only one car object of that type of that class,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=36.45678899999988) [then we can inject it in.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=41.013788999999875) [But if I have two types of cars, so two car objects with different names,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=42.992788999999874) [I'll get a fatal exception because it can't choose which one of those](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=46.93950328571415) [two because it's just looking at the class type.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=50.98928899999988) [The second option is byName,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=53.88478899999987) [and that's why you've seen in every example I've named my beans.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=55.57103899999986) [We could actually go through without naming them,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=59.778788999999875) [and it would've chose byType by default.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=61.77953899999987) [ByName fixes that problem of byType.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=65.08178899999987) [They're both good to have, though,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=67.93778899999987) [because byType will allow us to only create one instance of a class](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=69.24278899999987) [in our container or in our applicationContext.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=73.26412233333322) [ByName allows us to choose specifically by the name of](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=76.91278899999988) [the object that we're wiring up, so if I have a car and it's of type car,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=81.07916399999988) [but byName is Honda, it's only going to inject Honda.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=85.82153899999987) [If I have a Toyota, it's not going to choose that one,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=89.28491399999986) [and I won't get an exception based off of that.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=92.57978899999988) [The next option is by constructor, and constructor is analogous to byType,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=95.74578899999987) [but it applies to constructor arguments.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=101.35678899999988) [Now it has a little bit of a flavor of byName in there too because arguments can](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=104.34778899999988) [be indexed or named and injected into our object that way.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=107.99278899999987) [You do have to, obviously,](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=111.52407471428558) [have a matching constructor for arguments that you're trying to pass](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=113.24028899999988) [into it where the other two are kind of setter based.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=116.10878899999986) [They need a default no arguments constructor.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=119.89478899999988) [And the last option is no or none for autowiring.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=123.02578899999988) [So if I specify no, it means that, no, it can't be autowired at all.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=127.36278899999988) [Now a lot of people early on tried autowiring for just testing because they](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=132.23678899999987) [were concerned about it and how it performed in production.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=136.12478899999988) [I've used lots of applications with autowiring in](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=139.54978899999986) [production and never ran into a problem with it.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=142.76778899999985) [I probably have over 100 applications today deployed into](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=145.38528899999986) [production all configured with autowiring, and I've never seen a hiccup with it.](https://app.pluralsight.com/course-player?clipId=f626c775-b88b-4d9f-ab82-a367fbc4cccb&startTime=148.56278899999987)

### [Demo: Autowired](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a)

[To switch our application over to being autowired by constructor,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=1.1166329999999143) [I'm going to go ahead and comment out this constructor argument that we have on](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=4.442490142857057) [line 11 and go to our bean definition and just say autowire,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=10.953632999999918) [and I can now choose constructor inside of here.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=19.260632999999913) [If I save this, our application is now set up to be autowired by a constructor.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=23.476632999999914) [Let's switch over to our Application.java and run this again.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=29.665632999999914) [And it should perform just like we expect it to and it does.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=35.01213299999991) [You can put a log statement in there if you want to](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=39.12763299999992) [inspect it a little bit further,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=41.63563299999992) [but all we had to was change our applicationContext to now](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=43.44163299999992) [specify that it was autowire by constructor.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=47.898132999999916) [Let's look at what that looks like in the Java code.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=51.93563299999992) [So we had done this in our other application.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=53.88885522222214) [I've gone ahead and opened it up a new window.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=55.86229966666658) [To put that @Autowired on there, we do the same thing on line 22.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=59.36563299999992) [Now because of its location, it's saying that,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=63.97163299999991) [by default,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=67.2722996666666) [it has to be done as constructor based because that's the](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=67.80741077777772) [only way it can do that on that constructor.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=72.45983299999992) [If we move it down to that setter, then we can choose the different types.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=74.68463299999992) [Likewise, we can do the same thing in our XML application.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=79.74463299999991) [Let's look at what that looks like now in our code.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=82.18006157142848) [Switching this to use the setter,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=86.86663299999991) [I'm just going to go ahead and change this to byType and](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=88.56563299999992) [go over to our SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=92.99400799999992) [Everything's already set up here.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=98.05963299999992) [We have a default no argument constructor on line 12.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=99.45763299999992) [If we didn't have that, it would fail.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=101.9985079999999) [And we already have our setter defined on line 24.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=103.9853829999999) [And since we're doing this byType, the name on line number 24 doesn't matter.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=107.79963299999991) [So let's go back to our code and run this,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=113.49663299999992) [right-click main, Run, and you'll see our application runs.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=117.74963299999992) [We've got it set up to do byType.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=122.6253829999999) [We can actually even change it to byName and save that.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=125.3241329999999) [Because we are referring to the SpeakerService,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=132.7026329999999) [and we have a bean named speakerRepository,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=135.02963299999993) [it's going to do setSpeakerRepository,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=137.97963299999992) [which is the method name inside of our SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=140.7584329999999) [Let's run it again.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=146.5546329999999) [Should work for us as well.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=148.30663299999986) [Right-click and say Run Application.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=150.9346329999999) [It succeeds.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=155.52163299999992) [Let's show it to you failing.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=156.3081329999999) [If you remember when we first created our SpeakerServiceImpl,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=158.6676329999999) [this was called setRepository.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=161.1752329999999) [So I'm going to save that.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=165.7696329999999) [I'm going to go back to my applicationContext and make sure it's byName.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=166.80763299999992) [It is.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=170.10363299999992) [There is not a setter named setSpeakerRepository.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=171.28429966666656) [We have our setter defined on line 24 as setRepository.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=175.4166329999999) [I just changed that.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=178.9876329999999) [I'm going to save all of this, go back to my applicationContext,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=180.4356329999999) [and this should fail.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=184.11896633333325) [Right-click and say Run Application.main,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=186.15963299999993) [and it fails, and the reason it fails is that it can't wire that up.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=190.3516329999999) [It's not been wired correctly.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=196.1786329999999) [You'll notice it's a runtime exception,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=198.6546329999999) [so that can be a little bit cryptic to debug is that it's just telling](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=200.88463299999992) [us on SpeakerServiceImpl line 21 that it's null.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=204.74513299999987) [Well, it's null because it was never injected correctly.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=209.24063299999992) [It didn't wire those beans up.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=211.4306329999999) [It just failed and went ahead and proceeded on running.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=213.18163299999992) [To change that to where it would work,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=217.4276329999999) [we can go back to our applicationContext and change this to byType,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=219.8566329999999) [and save this,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=225.2061329999999) [and when I run our application because it's looking](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=227.2866329999999) [for the type not by the name, it will succeed.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=229.14700799999991) [There you go.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=233.7026329999999) [ByType will look at the class type,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=235.93163299999992) [which our SpeakerServiceImpl did have a method that took a SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=237.92463299999991) [and we had defined a bean of speakerRepository on line 7.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=243.81263299999992) [Those lined up, but if I had the names wrong,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=248.7506329999999) [it can be a little bit more brittle.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=251.5635218888888) [I liked names because I like to name all of my beans and I think it's a cleaner,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=254.1146329999999) [better example of doing it.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=259.2726329999999) [If you have an error, you should know pretty quickly.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=260.5616329999999) [Even though it can be a little bit cryptic to debug,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=261.9393829999999) [I think it's a better choice for you,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=264.39752188888895) [but you see how byType will go through and wire those beans up for you,](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=266.55013299999985) [and you're guaranteed to only have one instance.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=270.740508) [I can't have multiple SpeakerRepositoryImpls in here or it wouldn't inject it correctly.](https://app.pluralsight.com/course-player?clipId=eedd2cec-1a81-4b86-b55c-edfa345e2d6a&startTime=273.2244901428571)

### [Summary](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541)

[In this module,](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=1.0304219999997877) [we showed how to do the similar configuration we had done in the](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=1.7687553333331212) [Java application using the XML configuration.](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=5.3684219999997875) [We created the applicationContext, which was just like our AppConfig.java file.](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=9.464421999999788) [We showed what a bean definition looked like,](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=15.278421999999788) [and the bean definition code is very similar to the](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=17.19654699999979) [@Bean annotations that we used.](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=21.291296999999787) [We then demonstrated setter injection and constructor injection.](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=23.564421999999787) [Then we looked at autowiring and actually compared that to the](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=28.302421999999787) [autowiring that we did in our Java configuration app.](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=31.851921999999785) [We showed the various autowiring methods as well by constructor,](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=35.159421999999786) [byType, and byName,](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=39.82242199999979) [and showed you how your application can break using one](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=42.300421999999784) [approach and succeed using another.](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=45.753171999999786) [Let's look at some of the more advanced Spring configuration concepts in this next module.](https://app.pluralsight.com/course-player?clipId=35eb546f-6205-4a41-883f-b9364fb28541&startTime=48.25942199999979)

## [Advanced Bean Configuration](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63)

### [Advanced Bean Configuration Introduction](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63)

[Even though this is an update for this course,](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=0) [we've decided to add this additional module on Advanced Bean](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=3.3016666666666667) [Configuration to address some questions that people have had](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=8.175) [over the lifespan of this course.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=11.3285) [This also came at a request from Spring themselves as it's](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=13.196499999999999) [helping people that are trying to achieve some of the](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=18.7655) [various Spring certifications.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=21.987000000000002) [These are some of the topics that they go over in there and want](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=23.292) [to help people by exposing them to them here.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=26.743555555555556) [We're going to dive into some of the more edge cases.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=30.406) [We're going to talk specifically about advanced bean](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=32.07333333333333) [configuration using these various techniques.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=35.638) [First off,](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=39.761) [we're going to look at BeanPostProcessors and init methods and how that](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=40.040714285714294) [ties into the creation of beans and having a hook to have an additional](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=45.045249999999996) [method that acts kind of as a callback.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=50.61199999999998) [Then we're going to look at FactoryBeans.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=53.742) [FactoryBeans are a great way to create a Spring bean](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=56.181) [that has static methods inside of it.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=60.48742857142857) [We're also going to look at SpEL, or the Spring Expression Language,](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=62.776666666666664) [and then we'll look at proxies and, finally,](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=68.452) [bean profiles.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=71.38933333333334) [They're typically used in a DevOps or configuration per](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=72.666) [specific environment-type scenario.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=77.8618) [Let's start out by looking at BeanPostProcessors and how they can aid us in that callback with building out beans.](https://app.pluralsight.com/course-player?clipId=8795f65c-9428-492f-8e90-e08b54b84b63&startTime=80.443)

### [Bean Lifecycle](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f)

[The bean lifecycle is a more advanced topic,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=1.3520109999999985) [but it is worth showing to you even in a fundamentals course.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=4.02412211111111) [It starts off with instantiation and then it moves onto populate properties.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=8.436010999999999) [These are read from either a properties file or](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=15.131010999999999) [injected in from other resources.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=17.922582428571424) [Then the framework sets the bean name and makes it aware to other resources.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=20.439010999999997) [We can then set that as a BeanFactoryAware context.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=27.426011) [Next, we do pre initialization utilizing BeanPostProcessors.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=33.406011) [From here, we can initialize the bean utilizing properties that were just set.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=39.680011) [Now we can call an init method,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=45.514010999999996) [and this is actually the piece that we're going to demonstrate](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=48.61011100000002) [that's very useful even in this fundamentals course,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=52.32143957142857) [and then you wrap up that entire initialization process](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=55.37086814285715) [with another set of BeanPostProcessors.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=59.333811) [We're going to look at a more common use and that is the](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=64.286011) [configuration of an init method on a bean,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=66.98001099999999) [and let's do that demo now.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=69.20541099999998) [Adding an init method is actually quite easy to do in our application.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=71.483011) [I've gone ahead and opened up our conference-java app.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=75.421011) [I'm going to navigate to our pom.xml.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=79.65901099999999) [We need to add a dependency inside of here because Java EE has now](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=82.124011) [assumed an annotation for post construct API calls.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=88.53586814285715) [So I've added this javax.annotation javax.annotation -api version 1.3 .2.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=94.325011) [That was the most current version at the time of recording this course,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=102.119011) [dependency inside the dependency section of our pom.xml.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=105.416011) [I'm going to save this.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=109.81186814285715) [When I do,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=112.139011) [it will automatically import those dependencies inside of our application.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=113.10972528571428) [You can check that by looking in your external libraries](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=118.38801099999999) [and see if it's pulled that in there,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=120.4297252857143) [and you can see we have our javax.annotation library that](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=122.77391100000001) [it's pulled in as a dependency there.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=125.94561099999999) [I'm going to navigate down to my service and](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=129.020011) [specifically the SpeakerServiceImpl.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=133.152761) [And you can do this in any bean that is configured by Spring.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=135.132011) [I want to navigate below the constructors that we have implemented in here.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=139.899011) [We have a no arguments constructor and a constructor](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=145.431011) [that took a SpeakerRepository in.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=148.054011) [The beauty of this is it doesn't matter which constructor we're calling.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=150.379011) [It's still going to be called after those have ran.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=154.018011) [So I want to add in a private void method.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=159.00861100000003) [I'm going to call mine initialize and no arguments in there.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=162.92729671428572) [I'm going to add a System.out .println in here that I'm](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=169.689011) [just going to dump out a statement that says that were](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=172.43867766666668) [called after the constructors.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=178.2411538571429) [Put a semicolon on the end, and now the last thing that makes the magic happen.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=181.45343957142856) [We're going to put in a @PostConstruct annotation, and that's it.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=189.180511) [So created a private void method, no arguments,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=197.441011) [tagged that with a @PostConstruct annotation,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=201.48301100000003) [added that library inside of our dependencies,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=206.587011) [and now I can run our application.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=210.055886) [When this runs,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=214.612011) [you'll see that it called the SpeakerServiceImpl no args constructor,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=215.75201099999998) [and then it's called that method where we're called after the](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=221.109011) [constructors and before anything else is ran.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=225.31434433333334) [So if you remember from our application,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=227.794011) [we have this debug statement that's dumping out for each one of these](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=231.060011) [services just showing that they were singletons from the previous](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=235.65076099999993) [example and then the name that we're calling.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=238.3764395714286) [You can see how we can hook that in there.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=240.9627887777778) [And the nice thing about this is we can have just a simple post](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=243.35613599999996) [construct method that gets called for any type of logging or](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=247.151011) [configuration things that you want to put in there.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=251.87967766666662) [Now one thing I would caution here is I personally would not put things](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=254.042011) [like obtaining connections to a database in here.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=260.3038443333333) [I see people want to go through and add things inside of](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=263.401011) [here that I don't believe fit here.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=268.22051099999993) [Closing and opening connections,](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=270.7736776666667) [they should be handled by Spring not by you programmatically in](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=272.505011) [this post construct or a pre-destroy annotation.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=276.38967766666667) [That's another one that's available.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=279.895011) [You get the idea of these being aware annotations in your code.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=281.903011) [They should be used for configuration things that you just](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=286.852011) [want to run after all of your constructors.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=291.35212211111104) [Don't be opening and closing connections. Just a word of caution.](https://app.pluralsight.com/course-player?clipId=5cecb98c-16d5-4f0d-b6f0-e63742a0724f&startTime=294.904011)

### [FactoryBean](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3)

[FactoryBean configuration is very similar to the init](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=1.400100000000035) [method configuration we just did.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=4.927850000000035) [It actually builds on the factory method design pattern,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=7.054100000000035) [and at least its functionality is built to work the same way.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=10.479100000000036) [It's actually one of the strengths of doing this with Spring.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=15.012100000000036) [The code doesn't actually have to be written as a factory](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=17.704600000000035) [to be utilized in Spring as a factory.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=21.58432222222226) [It's also a great way to integrate legacy code into your application.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=24.932100000000034) [You can actually enforce a contract in how your code is configured](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=29.205100000000034) [without creating a specific constructor for it.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=33.26024285714289) [Typically, creational contracts are implemented in a constructor,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=36.67110000000004) [but with legacy code,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=40.60110000000004) [we often don't have the ability to modify it due to existing commitments.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=42.690600000000025) [Using this pattern enables us to establish a](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=49.44210000000003) [contract without modifying that code.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=52.59260000000004) [Lastly, it's how you can also work with static methods inside of a class.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=55.660100000000035) [Let's look at implementing a simple demo of a](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=60.456100000000035) [FactoryBean inside of our code now.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=63.25024285714289) [For our demo, I've opened up our conference-java project,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=66.28710000000004) [and I'm going to navigate down to my source,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=69.12943333333337) [main, java directory and specifically my com.pluralsight package,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=72.63443333333339) [and right-click, and say New, Java Class.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=76.81660000000004) [And in here, I want to type util.CalendarFactory.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=81.28810000000003) [And for our demo,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=88.73410000000004) [we're actually going to wrap a calendar instance in a factory so that we can](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=89.87410000000003) [manipulate some things and show you some examples with it.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=95.00510000000001) [So now that we have this in here, we want to type implements FactoryBean,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=98.19910000000003) [and FactoryBean is typed,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=104.23610000000004) [so we want to pass in or type it with a Calendar object.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=105.38310000000003) [And you'll have a red squiggly line underneath the code,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=114.76910000000004) [and it's because we need to implement the methods that the FactoryBean](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=118.28110000000002) [interface is telling us we need inside of our application.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=121.54752857142861) [So if I hover over that and choose Implement methods,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=124.94410000000003) [and I want getObject and getObjectType, click OK,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=128.24881428571433) [it'll out those default implementations in there for me.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=131.9396) [Now before we get into editing those,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=137.00110000000004) [let's start off by saying private Calendar instance = Calendar.getInstance.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=139.80210000000002) [And then in our getObject, we want to return that instance,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=151.56210000000004) [and for our getObjectType, we want to do Calendar.class.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=157.10210000000006) [Now we have the contract for our factory setup.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=165.31110000000004) [The next thing that we want to do is add some value to our factory wrapped bean,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=168.35010000000003) [so we're going to add a public void addDays method inside of here,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=174.15110000000004) [and this is just a simple example to show that we can take this](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=178.42754444444446) [static instance and add some functionality around it that we can then](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=183.09160000000003) [utilize inside the rest of our application.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=187.81210000000004) [So we're going to take and say instance.add ( Calendar.DAY\_OF\_YEAR, num).](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=190.76310000000004) [So what this will do is just take and add the number of days to](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=199.54210000000003) [our instance that we pass into this method.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=202.05698888888895) [So we'll save this, and it's a little bit of a contrived example,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=204.69910000000004) [but it gets the point across.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=206.9776) [Now we have our FactoryBean implemented, and yours should look similar to mine.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=209.1069571428572) [We have our imports and package structure all the same at the top.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=214.36285000000004) [We have our factory that implements the FactoryBean](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=219.17910000000003) [and it's typed with Calendar.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=222.0427666666667) [We have our instance.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=224.72610000000003) [We get our object back, our contract with our Calendar.class,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=226.95910000000003) [and our method to add some days to that instance.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=231.30581428571432) [So now we can go ahead and configure this,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=234.44510000000002) [and we're going to do this a little bit different than you might expect.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=236.44110000000003) [We're going to open our AppConfig that we had before,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=238.54710000000003) [and we want to create two beans inside of here.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=240.95876666666672) [We're going to create one for our actual bean instance and one for our factory.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=243.95035000000001) [We're going to start off with the first one,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=248.33585000000005) [and this is an @Bean, and we're going to give this a name = cal,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=250.57085000000004) [and then we want to create a method that is public CalendarFactory,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=257.83810000000005) [and we'll call this the calFactory.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=262.13710000000003) [And it will have an instance of our CalendarFactory](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=266.93852857142866) [factory = new CalendarFactory.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=275.72476666666677) [And this is where we can say factory.addDays.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=279.7029571428572) [We're going to pass in just the number 2 here and return our factory instance.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=288.81210000000004) [So there's our first bean.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=296.44410000000005) [The second bean we're going to do as @Bean,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=299.0631) [and we'll do public Calendar, and this will be our actual calendar instance,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=304.13910000000004) [cal, and this throws Exception.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=311.7509333333334) [And inside of here, we'll return calFactory.getObject.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=319.98810000000003) [So this is where we're actually getting the instance from our factory itself.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=329.21810000000005) [Now, we need to add all of our imports, save this,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=334.18010000000004) [and our bean's configured to use.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=338.1761) [Now you're wondering, what did we just configure?](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=340.3301) [Well, let's implement this into our code and actually see how it's used now.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=342.42810000000003) [You actually don't need to worry about line 12,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=346.2841) [that method for the calFactory because we're just setting that up to use.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=348.2096714285715) [We're actually going to look like we're using it from](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=351.94710000000003) [inside of our code as an autowired bean.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=354.60343333333344) [I'm going to open up my HibernateSpeakerRepository.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=356.63985) [And inside of here, now I can just say @Autowired and do private Calendar cal.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=362.4501) [And inside of my code, to make this a full- fledged example,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=374.6161) [I'd go ahead and add a date or something like that to my speaker object.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=379.0308500000001) [I'll just put a System.out .println here where you can](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=383.4501) [see what this instance actually is.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=388.5233857142858) [And we'll say cal, and we'll do cal.getTime,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=392.3507666666667) [and save this, and now we can run our application.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=401.8186714285715) [So all I did was autowire this bean in, and as you can maybe guess,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=407.1281) [it's going to have been called from the FactoryBean of our calendar object.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=410.9514333333332) [We have our static code that was called from that calendar object,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=415.96310000000005) [added days to it, worked with it, manipulated things,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=419.3982428571429) [and now we can reference it inside of our code.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=422.5461) [Before this,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=424.54110000000003) [there was not a way for us to really reference a](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=424.8135000000001) [calendar object and pass it in this way.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=426.8249571428573) [Let me run our application, right-click on our main method, and say Run.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=429.1286) [And you'll see when this runs down below that we have our no args constructor,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=438.23810000000003) [we have our post construct still in there from our previous example,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=445.0341) [our service instance,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=447.71810000000005) [but you can see I have a calendar object and it's added 2 days to](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=448.3046) [my object and printed that out to the screen.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=452.48032222222224) [Then I have our name and that other object address.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=455.5883222222222) [So you can see right here that we have our cal: Fri Nov.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=459.26910000000004) [That came from our SpeakerRepository instance,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=463.4126714285714) [and that's hinged on the day that I ran this where](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=466.54110000000003) [it's printing this out to the screen.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=469.11065555555564) [So I have my calendar that's dumped out,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=471.38410000000005) [and it's going to head through that CalendarFactory,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=474.17010000000005) [added those days to our years from our configuration.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=477.06343333333336) [So we added two days to it.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=480.8111) [This is a great way if you had to pass in a bunch of dates,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=482.32710000000003) [or times,](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=485.74834999999996) [or objects of that nature into your application for you to utilize a](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=486.2598499999999) [static instance like this and be able to manipulate that and then](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=490.74160000000006) [inject that wherever you want in your code.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=494.38835000000006) [Maybe you have audit columns on your database tables.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=496.39110000000005) [There's other ways to do that, but just shows you a good example of how you can utilize this.](https://app.pluralsight.com/course-player?clipId=c3b4a39f-2135-40e5-ab51-f4a1924145f3&startTime=499.23652857142866)

### [SpEL](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b)

[Spring Expression Language, or SpEL as it's often abbreviated,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=1.3925220000001137) [is a powerful expression language from the Spring Framework.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=4.551855333333447) [From my experience, it's typically used in libraries,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=8.758522000000113) [but it can also be used to do some convenient changes to your code.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=10.734633111111226) [Using it, you can manipulate the object graph.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=15.216522000000113) [This simply means that once an object is created,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=18.189522000000114) [you can use the expression language to manipulate that object.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=20.295855333333446) [You can also use it to evaluate values at runtime and change](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=24.897522000000112) [the behavior of your code accordingly.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=28.658664857142966) [It can also be used to evaluate and manipulate your configuration.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=30.94052200000011) [Let's look at how we can inject some values at runtime into our application.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=36.74752200000011) [Without building a more complex application,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=42.78052200000011) [let's add a seed value to our model object.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=45.08639700000011) [I'm going to open up our Speaker.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=49.67618866666678) [And a lot of times as we are doing security and other things like that,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=52.80752200000011) [we'll have values that get seeded at runtime.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=57.120522000000115) [I'm going to add a private double, and I'll call this the seedNum.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=60.422522000000114) [And then I'm going to come down below and just generate](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=66.89952200000012) [some getters and setters for this object.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=69.77809342857155) [So I'll right-click, say Generate, and we'll do the Getter and Setter.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=73.00412200000012) [Click OK and save this code.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=79.90452200000011) [And now I want to go up to my](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=82.8525220000001) [HibernateSpeakerRepositoryImpl where I create this.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=84.65152200000011) [And inside of here,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=88.18052200000012) [I'm going to actually use the Spring Expression Language to grab](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=89.87252200000012) [a value out of the java.lang .Math library.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=94.58552200000014) [So I'm going to type in here the annotation @Value,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=98.46352200000011) [and inside of here, I want to do the pound sign,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=100.52152200000012) [the open curly brace, and say T( java.lang .Math ),](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=106.36752200000012) [and I'm basically grabbing the math object here and](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=118.80852200000011) [saying .random for a random number, and this gives me a very small decimal,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=121.46495057142867) [so I'm going to times that by 100, and then close that curly brace off.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=126.90707755555567) [And now I want to go ahead and put that in an object,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=134.03352200000012) [so I'm going to say private double seedNum and save that.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=139.5245220000001) [And now I can, at compilation time,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=146.9425220000001) [take that value that's added at runtime and inject it into my code.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=149.97452200000012) [So, I'm going to go ahead and say speaker.setSeedNum,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=154.6025220000001) [and I'll pass in seedNum and save this.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=157.7207220000001) [So now this object's been initialized on line 19,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=165.98752200000013) [and we can store that value inside of our speaker object.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=169.75129977777786) [And a use case for this is, like I mentioned before,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=175.56852200000012) [when you're doing security and you create passwords,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=178.38709342857152) [a lot of times those are salted or seeded with a value that you pass in,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=180.22064700000007) [and they'll often times use a calendar day or some random number,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=185.7082720000001) [so that's what we're going to do here.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=190.8945220000001) [We'll save this, open up my Application to run this,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=193.11852200000013) [and I'm just going to grab this line.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=197.4271220000001) [And since we're getting a lot of stuff in here,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=201.7335220000001) [I'm going to comment out these two System.out .printlns.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=203.6167220000001) [In fact,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=207.23652200000012) [I'll even comment out this SpeakerService where I'm getting the second instance,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=207.9845220000001) [and we'll do getSeedNum here.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=212.58552200000014) [And let's run our application and see what it generates.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=219.32552200000012) [Now that we've got everything compiled,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=222.06785533333345) [you can see here where we've still used our no arguments constructor.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=225.249664857143) [We have our post construct in there.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=230.86852200000013) [We have our name and our calendar instance that we're grabbing](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=233.0375220000001) [from up above and the value of our seeded values.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=236.97214700000012) [We have 94.888, and it continues on.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=242.6565220000001) [That's a seeded value that we passed into our application,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=245.9785220000001) [using the Spring Expression Language.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=248.92472200000014) [So a very powerful way to grab a random number,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=251.46185533333346) [and you can do a lot of stuff with this.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=255.6499220000001) [We can manipulate stuff out of a list or pull specific things,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=258.1395220000001) [we can evaluate something to false or true at a runtime value,](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=261.0105220000001) [but just as a basic example of how easy it is to get this inside of your application using this expression language.](https://app.pluralsight.com/course-player?clipId=e7511249-1f0b-404e-adb7-cd3c2972074b&startTime=264.6161886666668)

### [Proxies](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367)

[Spring often utilizes AOP proxies for its code base.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=1.2963330000001005) [Proxies are a great way to inject behavior into the code](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=5.160833000000101) [base without modifying the underlying code.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=9.43276157142867) [In the code snippet that you see on the slide,](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=12.958333000000101) [this simple POJO is the class that we want to proxy to,](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=15.0159580000001) [and the POJO is the interface that we will make calls on through](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=18.573833000000096) [the proxy and allow the calls to be intercepted.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=22.6095330000001) [To be honest,](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=26.4993330000001) [this isn't something that the average developer typically needs to work with,](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=27.360333000000097) [but it's a good thing to know.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=31.5040830000001) [When should you use this?](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=34.6173330000001) [Well, you probably shouldn't be looking for opportunities to use it.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=35.8443330000001) [It's usually when you are doing something framework or library based.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=39.1353330000001) [One of the most used cases in the code base is when dealing with](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=43.8313330000001) [databases and using the annotation @Transactional.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=47.1003330000001) [The @Transactional annotation is used to be the starting point](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=50.8733330000001) [of your code base in which you would like the following code to](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=54.339833000000105) [be surrounded with the transaction.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=57.8323330000001) [Writing one is really beyond the scope of this course,](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=60.2533330000001) [in fact,](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=63.598333000000096) [I think you could have a whole course on proxies and](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=64.1693330000001) [the best way to implement them,](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=67.22777744444457) [but I wanted to show you what they are and point out that](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=68.77799966666674) [they are used often in the Spring code base. Let's look at one last concept and that's bean profiles.](https://app.pluralsight.com/course-player?clipId=44e39d8c-8640-4c61-b105-65f33ec64367&startTime=71.93177744444458)

### [Bean Profiles](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95)

[Bean profiles were implemented later in the Spring code](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=1.1443660000001545) [base to help you adapt to environments.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=5.552810444444599) [They allow you to set up specific code that gets ran](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=8.543366000000155) [only in a specific environment, so we can swap out configurations at runtime.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=11.920794571428727) [It's a great way for us to have effective runtime configurations.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=18.714366000000155) [I'll be honest, the first time that I saw these,](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=23.715366000000156) [I wasn't really a fan of them because I don't like it when my](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=26.724116000000155) [configuration changes in environments and then it's not the same.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=30.849366000000156) [I've always worked on my code base to not have that be the case.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=34.51536600000016) [But when dealing with sensitive data or that type of](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=38.89936600000016) [information that I'm going to go pull something from a dev or](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=42.34849100000015) [sample database until I get into production,](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=45.48336600000017) [it's a great way for me to set up a profile for that.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=48.03536600000015) [Let's see how we want to implement this inside of our application.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=50.885366000000154) [Adding bean profiles is actually quite easy to do inside of our application.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=55.25836600000015) [I'm going to go ahead and open up one of our bean definitions.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=59.45036600000015) [We'll start with the speakerRepository.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=62.78336600000016) [I want to go right above the class declaration and](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=64.90336600000015) [add in an @Profile annotation.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=68.40893742857158) [And I'm going to give this a keyword of dev, and that's a word that we chose.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=71.52536600000016) [It's not a keyword specific to Spring.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=75.53136600000015) [This can be anything you want.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=77.91336600000015) [It could be staging\_42.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=79.17136600000015) [It's whatever we've chose.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=82.27536600000016) [We'll do @Profile dev for the HibernateSpeakerRepositoryImpl.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=84.83136600000016) [And we'll open up our SpeakerServiceImpl and do the same thing here.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=89.92336600000016) [So we'll say @Profile, and, again, we're going to choose dev here as well.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=94.57136600000015) [And we want to go inside of our application and edit the run configuration.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=101.17136600000015) [This is how we tell it to choose which profile we're going to run.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=106.73036600000016) [So in the VM options, I want to do a - Dspring.profiles .active =dev.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=111.71236600000016) [Now,](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=118.89136600000016) [don't make the mistake of putting it in the environment](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=119.25161600000015) [variables or in one of the other fields.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=122.45699100000014) [It will not work.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=124.39436600000018) [It needs to be a VM option.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=125.45836600000015) [Let's click Apply and hit OK.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=128.38136600000016) [And now when we run our application, it will run with a specific profile.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=131.35936600000016) [You'll see that everything runs.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=135.17936600000016) [Well, great.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=136.37236600000014) [What happens if it didn't have a profile for that?](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=137.07550885714298) [Well, that bean wouldn't be available.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=139.50636600000016) [So if we change this to prod, and save this,](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=141.45536600000017) [and run it again,](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=144.8896517142859) [we'll get a null pointer exception because it can't find that bean.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=146.71536600000016) [So you see how those beans will allow specific code to only be](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=150.58036600000017) [ran in specific environmental configurations.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=154.42849100000012) [I'm going to change this back to dev.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=157.72836600000016) [And I want to show you that this HibernateSpeakerRepository really is](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=160.12736600000017) [a good example of where you'd want this profile.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=162.63516600000017) [We have hard-coded values in here that eventually](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=165.69536600000015) [we want to pull from a database, but we don't have a database set up.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=167.65099100000015) [So, I want to set this up to only run in dev.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=171.40436600000015) [It's kind of like a to do statement if you use that in your IDE or in](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=174.23936600000016) [some of the other tools that are out there saying,](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=177.95896600000023) [hey, I want to come back and fix this.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=179.83674100000016) [Well, by marking this as dev,](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=181.57536600000014) [it's not going to get ran or accidentally deployed into production where you break things.](https://app.pluralsight.com/course-player?clipId=1658475c-6896-4e9a-bbd7-4db8a9434f95&startTime=183.52036600000017)

### [Summary](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1)

[We looked at a bunch of advanced bean configuration techniques in this module.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=1.1270330000002868) [We started off by going through the bean lifecycle,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=5.582033000000287) [and the key point with that, there were a lot of steps in there,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=8.516033000000286) [you want to pay attention to the init method step.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=12.738033000000287) [That's what allows us to hook into that post construct](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=14.900533000000289) [annotation and add that functionality to our beans.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=18.539747285714576) [Next,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=22.835033000000287) [we configured a FactoryBean from scratch and implemented](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=23.483533000000286) [some static code inside of our application,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=27.899533000000286) [and that's really one of the main takeaways there is that](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=29.968033000000286) [when you're needing to integrate some legacy code or maybe](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=33.02960442857172) [some code with a static initializer,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=37.149318714286004) [the FactoryBean and wrapping that is a great way to go](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=39.34603300000029) [about that and be able to autowire that and still inject](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=41.75803300000029) [it into your application now.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=44.00640800000029) [Then we went through Spring Expression Language and showed how you](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=45.42303300000029) [could go ahead and interface some other code and libraries and](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=49.53953300000028) [manipulate the object graph at runtime.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=53.993033000000295) [It's a very powerful way for you to go about doing that.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=56.97203300000029) [Then we talked briefly about proxies.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=59.65960442857171) [Proxies are a very advanced technique.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=62.027783000000284) [Just wanted to whet your appetite a little bit with them and show you that](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=64.61003300000029) [they're out there and make you aware that Spring uses them,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=68.80769966666692) [but they're not something that you would use on a day-to-day](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=72.32789014285744) [basis and you shouldn't be looking for opportunities to](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=75.39690800000025) [integrate them inside of your application.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=78.40603300000029) [The last thing we did was implement bean profiles inside of our app,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=81.45703300000028) [and it was a great way to show you that you may have some code in there](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=86.2468107777781) [that you want to make sure doesn't get into production.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=91.28092188888915) [If you use it just for that, it's a great tool.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=93.96203300000029) [So what's next for you?](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=98.04903300000029) [Well, this is the end of this course, and if you enjoyed it,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=99.64603300000029) [I would really appreciate if you would leave me a review.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=102.74753300000026) [If you liked my course,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=105.91403300000029) [there are a bunch of other courses that I've produced out there.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=107.18069966666694) [In fact, one of the next ones I would recommend is the Spring MVC intro course.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=110.03103300000029) [There is also a great course on Spring Boot fundamentals that Dan](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=114.67203300000028) [Bunker has put together that is a great course as well.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=118.86203300000028) [I've taken it myself,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=122.31303300000029) [and I would recommend both of those to you as a next step in your journey](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=123.71253300000028) [and continue to follow along the learning path for Spring,](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=127.37546157142886) [on Pluralsight. Thank you.](https://app.pluralsight.com/course-player?clipId=238a62e3-4b3e-412f-b64f-b1b401d0b9b1&startTime=131.61603300000027)