## [Course Overview](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb)

### [Course Overview](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb)

[Hello, my name is Dan Bunker, and welcome to my course,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=0) [Creating your First Spring Boot Application.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=9.29) [I've been building software applications and doing software](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=12.16) [consulting for many years now in the Salt Lake City area.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=14.847) [Many of the applications that I have built have used Spring Boot.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=18.872) [Why do I use this framework?](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=22.213) [Well, that is easy to answer.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=24.404) [Spring Boot makes building quality Java applications fast and easy.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=25.789) [In this course,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=30.694) [we're going to learn exactly what Spring Boot is and why you](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=31.265285714285717) [might want to use it on your next project.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=34.234) [Some of the major topics and exercises that we will cover](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=36.909) [include containerless architectures, customizing and configuring Spring Boot,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=40.53150000000001) [deploying Spring Boot in production environments,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=45.921) [and finally, we'll be building a Spring Boot app from scratch.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=48.901) [By the end of this course,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=53.421) [you'll know exactly how to create and work with a Spring Boot app,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=54.239) [which will give you the ability to utilize this framework on](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=57.33744444444443) [your own on your own real-world project.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=60.599) [Before beginning the course, you should be familiar with just some basic Java,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=64.383) [the Maven build tool, and web application fundamentals such as endpoints,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=68.277) [REST, and relational databases.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=72.7636) [From here,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=75.974) [you should feel comfortable diving into the Spring](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=76.52633333333334) [framework with courses on Core Spring, Spring MVC,](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=78.8423333333333) [and Spring Data JPA.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=82.805) [I hope you join me on this journey to learn Spring Boot with the](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=86.116) [Creating Your First Spring Boot Application, course at Pluralsight.](https://app.pluralsight.com/course-player?clipId=6545d23b-1849-4b00-bb81-d8703d36dccb&startTime=88.90557142857143)

## [Using Spring Boot to Create Applications](https://app.pluralsight.com/course-player?clipId=5612c21f-da91-4937-ae8f-1d28fb328814)

### [Version Check](https://app.pluralsight.com/course-player?clipId=5612c21f-da91-4937-ae8f-1d28fb328814)

### [Introduction](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937)

[Spring is quite a large framework.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=0) [There are many integrations, libraries, and options.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=3.495) [And if you're sitting down to learn Spring,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=6.22) [it can be intimidating and difficult to know just where to start.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=8.223) [If you're watching this course,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=11.902) [then you've picked the absolute best place to start learning Spring,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=13.462) [and that's with the Spring Boot framework.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=16.499) [My name is Dan Bunker,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=19.453) [and I've been building Java applications for over 20 years.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=20.389249999999993) [Spring Boot takes a lot of the complexity of building](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=24.744) [enterprise-based Spring applications and makes it easy to get](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=27.2015) [everything wired up and running in just a few minutes.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=30.831) [Before we do that, you're going to need a couple of items on your computer.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=35.288) [You'll need to have Java installed, and you can obtain this from Oracle,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=39.255) [and we'll be using at least Java version 12.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=43.45) [Once you have a Java JDK installed, we'll be doing all of our coding in IntelliJ.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=48.53) [There are other IDEs you're welcome to use,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=53.162) [but all the examples and demos will be in IntelliJ in this course.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=55.725) [If you go to the IntelliJ home page,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=60.029) [you can click on the Download area and choose the](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=62.1) [particular download that you want.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=64.98457142857143) [For this course, I'll be using the community version of this,](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=66.791) [which is the free version of IntelliJ.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=69.94357142857142) [And that's pretty much it for the tools.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=74.168) [Next, we'll talk about exactly what Spring Boot is, and then we'll get started on building an application from scratch.](https://app.pluralsight.com/course-player?clipId=3c746310-8825-452c-acdc-357f8e2ca937&startTime=76.581)

### [What Is Spring Boot?](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d)

[Spring Boot has been a game changer for the Java platform.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=1.7426670000000013) [Before Spring Boot came around,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=4.036667000000001) [it wasn't uncommon for a developer to spend a few days](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=5.921667000000001) [wiring an MVC framework to a persistence framework and](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=9.287000333333335) [getting that talking to a database.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=12.062667000000001) [Did you catch that?](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=14.534667) [Days to get the app propped up before any real coding can take place.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=15.587111444444448) [Spring Boot takes an opinionated view on how a Spring app should be constructed.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=20.243667000000002) [By doing so,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=24.605667) [you can now stand up a fully-wired application from controller](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=25.263333666666664) [to database in just a matter of seconds.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=28.479467000000007) [Spring Boot prefers Spring frameworks, like Spring MVC and Spring Data,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=32.015667) [which is one way it makes it opinionated,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=35.949667) [but this also serves another purpose.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=38.567667) [Spring Boot makes building applications very quick,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=40.751667000000005) [quick like Ruby on Rails, and Django, and Python quick.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=43.46652414285715) [Finally,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=47.018667) [Spring Boot got away from container dependence and really](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=47.35400033333333) [wants applications to be standalone Java apps.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=50.350666999999994) [This makes a lot of sense for cloud deployments.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=53.560667) [Instead of deploying a WAR file to a Tomcat container,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=56.023667) [for example,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=58.70550033333333) [Spring Boot embeds Tomcat inside of the app and produces a self-contained JAR](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=59.549167) [file that can be run on its own using the Java command.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=63.768167) [As fun as it might be to talk about how awesome Spring Boot is,](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=68.100667) [I know that you're really here to code and get your hands dirty with Spring Boot, so let's go ahead and get started.](https://app.pluralsight.com/course-player?clipId=491b5cc0-bef1-4d46-90d9-7da8e777fa6d&startTime=70.82866700000002)

### [Demo: Creating a Spring Boot App with Spring Initializr](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4)

[Spring has made creating a new Spring Boot project easier than ever.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=2.0273340000000024) [I'll be covering a couple of different ways of generating](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=5.830334000000002) [or creating a project from scratch.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=8.143334000000003) [We'll begin first by using the site Spring Initializr,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=10.486334000000003) [which you can go to at a URL, start.spring .io,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=13.405667333333335) [in your browser.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=17.144334) [Get that open and follow along.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=19.076334000000003) [We're going to be building a conference scheduling app in this course,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=21.254334000000004) [and this app will hold difference sessions and allow speakers to](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=24.150083999999996) [be assigned as the presenter of a session.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=28.089584000000002) [The speaker can present more than one session.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=30.766762571428576) [If you been to any conference,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=33.22833400000001) [think of this as the planning and organization app that builds out the](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=35.074334) [conference topics and sessions for the organizers.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=38.025334) [So to begin, any app that you create will need a few customizations,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=41.713334) [and this app will be no exception.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=44.56961971428571) [First off,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=47.841334) [we're going to be using the Maven Project type for](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=48.15608400000001) [the project rather than Gradle, next,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=50.748334) [we're going to use the preselected Java language,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=53.088709) [and we'll go ahead and select the latest Spring Boot version,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=56.38983400000001) [which at the time of this recording is 2.1 .9.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=60.804334000000004) [For the Group name, I'm going to go ahead and change that to say com.pluralsight,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=64.657334) [and I'm going to change the Artifact name to be conference-demo.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=70.328334) [Finally,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=75.57733400000001) [we need to tell the project generator which pieces of Spring we'd](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=75.75447685714286) [like to include in our Spring Boot application.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=78.61133400000004) [To keep this simple, I'm just going to select the Spring web dependency.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=81.269334) [You can do that by switching tabs from the magnifying glass to the table layout.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=85.769334) [And in here,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=89.922334) [you can see all of the different frameworks that are](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=90.59433400000002) [available for your application.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=93.08166733333331) [All I want to do is begin by using the Spring Web, so I'm going to select that.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=94.35333399999999) [Now if I go back to the magnifying glass,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=100.14903399999999) [you'll see that the Selected dependencies is simply Spring Web.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=102.04066733333333) [If you want, you could also type them in here on this text box,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=105.73533400000001) [and you could find different project or libraries that way as well.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=108.7802228888889) [Spring Web is going to pull in Spring MVC and some REST API information,](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=113.038334) [which we'll need in our application.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=117.023334) [At this point, we're now able to generate the project.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=119.489334) [So down at the bottom, we could go ahead and click on the Generate button.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=121.32019114285714) [That will download your project as a ZIP file to your computer, and that's it!](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=126.49133400000001) [We have a new Spring Boot project.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=130.028334) [If you want to know how to import it into your IntelliJ IDE so you can start coding with it, that's what's coming up next.](https://app.pluralsight.com/course-player?clipId=104fa981-df71-4342-9fd3-e748823e3ac4&startTime=132.492334)

### [Demo: Importing and Setting up a Spring Boot App](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2)

[As I mentioned previously,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=2.346000999999989) [I'll be using IntelliJ for my main IDE for this course.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=3.3357152857142744) [If you're familiar with something else, like Eclipse or a Spring Tool suite,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=7.45800099999999) [feel free to use that, but all the demos I'll be doing will be with IntelliJ.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=11.45000099999999) [In the previous clip, we generated a new Spring Boot application,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=16.425000999999988) [and that downloaded a ZIP file to our hard drive.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=19.80700099999999) [So you need to locate where that ZIP file was and go ahead and extract it.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=22.81000099999999) [Next, go ahead and open up IntelliJ,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=29.10400099999999) [and the IDE will present you with a few options to get a project up and running.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=31.75000099999999) [Since we already have our project,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=36.13100099999999) [I'm simply going to click the Import Project button](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=37.58200099999999) [and find the file we just extracted.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=40.75977877777776) [Go ahead and select the extracted folder and Click OK.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=46.14900099999999) [Next, IntelliJ asks what type of project that I'm working with.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=51.79300099999998) [I chose Maven on the project creation on the Spring initializer site,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=55.95400099999999) [so I'm simply going to select Maven and click Next.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=59.80885814285714) [This screen allows for some customization,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=65.25200099999999) [but I'm going to go ahead and just leave the default](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=67.00200099999999) [recommended settings and click Next again.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=69.64266766666665) [At this point, IntelliJ has found my project.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=72.67440099999999) [I can leave the default selected conference-demo checked and click Next.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=76.24600099999999) [In this dialog,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=83.086001) [you can choose or set up your JDK that you want to use for the project.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=83.75366766666667) [Assuming you have a JDK installed, it should find one,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=88.26200099999998) [and I'm going to go ahead and use the JDK 12 and click Next.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=91.1874454444444) [Finally, if you want to adjust the project name,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=98.46800099999999) [you can, but I'm going to go ahead and leave the recommended default here,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=100.26300099999999) [and finally, click Finish.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=104.04000099999999) [After a few seconds, IntelliJ should successfully import your conference app,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=106.70400099999999) [and you should be ready to start working with it.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=110.80375099999999) [Next up,](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=114.12000099999999) [I'm going to take a moment and go over the layout of the](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=114.450801) [Spring Boot application and the different pieces that were](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=116.94757242857143) [set up from the initializer, as well as set up a few of my own best practice pieces in the application.](https://app.pluralsight.com/course-player?clipId=b7bc9b61-098a-4bcc-84db-bee51013d9a2&startTime=119.92016766666666)

### [Demo: Overview of a Spring Boot App](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64)

[When you're working with Maven,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=1.7506680000000052) [all Maven-based apps are pretty much laid out the same way.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=2.370668000000005) [To add a little bit more room,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=5.687486181818186) [I'm simply going to toggle down this bottom pane by](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=7.573668000000005) [clicking on the Build button, and I'm going to expand open the project editor.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=10.48752514285715) [If you open up the conference-demo portion of your project editor,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=14.897668000000005) [this is where all of the contents that were generated](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=18.407168000000013) [by the Spring initializer live.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=21.208918000000004) [The firs important file worth noting is probably the pom.xml.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=23.246668000000007) [This is a Maven structure,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=27.126668000000006) [and this is where all of the dependencies live inside of your application.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=28.337918) [And in fact, you can see that the spring-boot-starter-web was added to this,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=32.452668) [which was the Spring Web dependency we checked in the Spring Initializr website.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=36.073668000000005) [We'll be covering the POM file and dependencies in more depth a little later on.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=41.631668000000005) [The next important section worth digging into is the source code of the app,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=46.89866800000001) [and that is contained in the src folder.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=49.793668000000004) [It even lays out a main and test folder,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=52.961668) [and each of these folders correspond to code that will be either](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=54.94766800000001) [for testing purposes or for the application.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=58.37052514285714) [Diving deeper into the main folder,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=61.58166800000001) [you can see that there is Java source code and resources source code.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=63.95666800000001) [Property files, XML files,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=67.82866800000001) [and any other non-Java-based file will go into the resource area,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=69.53038228571428) [and all Java code will go into the Java folder.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=73.806668) [Underneath Java,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=78.035668) [you'll notice that the package structure is set up based off of the info entered](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=78.57133466666666) [on the Spring initializer in the group and package section.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=82.96752514285714) [So for this app, the package name is com.pluralsight .conferencedemo,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=87.71266800000001) [and I can open that up,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=90.840668) [and I have a basic Java file called ConferenceDemoApplication here.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=93.45906800000002) [And if I open up the ConferenceDemoApplication,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=98.44766800000001) [this is the main entry point for your Spring Boot application.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=99.783468) [There are a few interesting pieces in this file](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=105.893668) [that I want you to take notice of.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=108.26744577777778) [First is the public void main method.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=110.273668) [That method is the main entry point into any Java application,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=113.681668) [and it's just a plain Java way to start your application,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=116.95641800000001) [and that's how your program will begin its life,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=121.37366800000001) [and this is also how your program can be run standalone](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=123.26604300000001) [rather than deployed to a container.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=127.1692394285714) [You'll also notice that there is an annotation in this](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=129.42652514285714) [class called @SpringBootApplication.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=132.35991800000005) [This tells the Spring Boot loader to run the application as a Spring](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=134.938668) [Boot app and configure it like a Spring Boot app.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=137.84816800000004) [At this point, you might be asking, where is the rest of the code,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=141.780668) [and where do I start writing code?](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=144.34356800000006) [So far, the app has just a couple lines of Java code,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=146.22066800000002) [and this gives you an idea of how powerful Spring Boot is.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=148.8515568888889) [You could run the application with just this small amount of code,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=153.147668) [and the app would fire up and run.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=156.04429299999998) [Granted,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=158.330668) [it won't do anything interesting yet because we haven't](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=158.6248346666667) [added any interesting code to it.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=161.11233466666667) [One of the first things that I like to do is to get the app set up](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=163.97666800000002) [and sectioned out into its architectural pieces.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=167.02756799999997) [I'm going to do that by adding some new packages.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=170.302668) [I'm going to select the com.pluralsight .conferencedemo package,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=173.156668) [right-click on it, and say New, Package.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=177.081668) [And I'm first going to create a controllers package](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=181.372668) [that will hold our API controllers.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=183.56323942857142) [I'm going to create another new package, and this one, I'm going to call models.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=187.400668) [This will hold our JPA entities and other persistence info.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=191.733668) [The third package I'm going to create is called repositories.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=195.69200133333334) [This will hold our JPA repositories.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=202.007668) [And finally, I'm going to create one last package called services.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=206.277668) [This package could hold service or logic-based code that](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=210.686668) [may need to go into the application.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=214.08191799999997) [These packages aren't necessary for your application,](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=216.62406800000002) [but I find that creating some best practices with a little](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=218.97652514285718) [organization like this early on really helps keep the code in the](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=222.32300133333334) [application from getting messy later on.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=225.665668) [And that's it for the basic layout.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=228.70266800000002) [If you've done any kind of MVC app before and you've used Maven, this layout shouldn't be too surprising for you.](https://app.pluralsight.com/course-player?clipId=b638e587-8ad0-475a-95b1-56f0023fcb64&startTime=230.319668)

### [Demo: Creating a Spring Boot App with IntelliJ](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c)

[For this next clip,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=1.6036680000000634) [I'm going to show you an alternative way to create a Spring Boot application.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=2.3223346666667304) [If you aren't interested in this or you don't have](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=6.363668000000064) [a licensed version of IntelliJ, you can go ahead and skip ahead to the next clip.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=8.569953714285779) [If you do happen to have an IntelliJ Ultimate edition and a paid license,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=12.998668000000063) [you can also easily create a Spring Boot project right from the IDE.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=17.319668000000064) [This time, instead of importing the project,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=21.856668000000063) [we're just going to go ahead and create a new](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=23.739668000000062) [project by clicking on that button.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=26.491953714285778) [On the left-hand-side menu,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=29.643668000000062) [find the Spring Initializr item and click on it and](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=30.757953714285776) [then select your Project SDK version.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=33.94304300000007) [I'm simply going to use the default recommendation of](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=36.92166800000006) [version 12 and then click Next.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=39.96016800000006) [At this point, IntelliJ has communicated with the Spring Initializr site,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=43.816668000000064) [and it wraps it in a nice IntelliJ dialog.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=47.49066800000006) [I can now set up the group and artifact IDs,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=50.52866800000006) [select my Maven, pom.xml, and Java version.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=53.29966800000006) [So I'll go ahead and customize those quickly.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=56.117668000000066) [I've set the Group to com.pluralsight and the artifact to conference-demo.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=60.22666800000006) [I'll leave it as a Maven project with the Java language,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=64.65866800000006) [and I'm going to bump up the Java version to something a little newer.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=67.49044577777785) [And when I'm happy with my settings, I'll go ahead and click Next.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=71.93466800000006) [At this point,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=76.16266800000007) [I can select my dependencies and integrations that I want](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=76.70754300000006) [to bring into my Spring Boot project, and I want to use the Web,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=78.99129300000007) [so I'll select that and click Next.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=83.60344577777784) [I'll leave the Project name and Project location as is and just click Finish.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=87.26366800000007) [IntelliJ will go ahead and download from the Spring](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=93.46666800000007) [Initializr site and pull that into the app,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=95.9065251428572) [and you're ready to get started.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=98.58566800000006) [I'm going to simply just rearrange some things,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=100.99966800000006) [close the Maven dialog, open up the Project tab,](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=102.70566800000006) [and this should look pretty much exactly like the](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=106.73566800000006) [community edition at this point.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=109.50823942857149) [There's one other way that you can work with Spring Boot](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=111.63966800000006) [that's a little different than any type of Java development](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=113.69423942857148) [that you might have done before.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=116.45241800000004) [Coming up next, we'll take a look at the Spring Boot CLI, command line interface.](https://app.pluralsight.com/course-player?clipId=ac40d0a9-5570-42b3-8905-21d9834a650c&startTime=118.54866800000006)

### [Demo: Using the Spring Boot CLI](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558)

[If you've ever used a command-line tool like Heroku's CLI or](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=1.5910010000000474) [used Ruby on Rails with its command-line tools,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=4.5540010000000475) [the Spring Boot CLI is very similar.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=8.101001000000048) [If you aren't a power user and don't use the command line much, don't worry.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=11.111001000000048) [You don't have to give the CLI a try.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=14.336001000000048) [You will, however,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=16.993001000000046) [be surprised what you can do without ever leaving your shell or terminal.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=17.75071528571433) [There are a couple ways of installing Spring Boot CLI,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=22.22800100000005) [and you can check out the installation options here at](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=24.32766766666671) [the Spring Boot documentation URL.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=27.493667666666713) [You can do a manual installation, or an SDKMAN,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=30.846001000000047) [or a Homebrew if you're on the macOS to get stuff installed.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=33.536001000000056) [At this time, I prefer the SDKMAN way, and you can install SDKMAN at sdkman.io,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=38.77600100000005) [and this tool is like RVM for Ruby or NVM for Node.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=45.037001000000046) [And once you have the SDK installed,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=49.18611211111116) [you simply need to open a new terminal or shell.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=51.696001000000045) [Once you have SDKMAN installed,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=55.851001000000046) [you can easily install Spring Boot by typing sdk install springboot.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=57.89500100000005) [SDKMAN will install the latest version of Spring Boot.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=67.12900100000004) [And once that is completed,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=69.7131438571429) [you can then type spring at the command line to start using Spring](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=71.01600100000005) [Boot in a more interactive mode type of way.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=74.46022322222224) [If you type spring without providing any particular subcommand,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=78.56200100000005) [it'll just show some help.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=81.13557242857146) [You can also type spring help to give you additional](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=83.33700100000004) [options to run with this tool.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=87.15985814285719) [One of the commands that you might be interested in is spring init,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=91.94100100000004) [and this is yet another way that you can create a Spring Boot project.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=94.74837600000006) [You can also run groovy-based Spring Boot application](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=99.43000100000005) [from the command line using spring run.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=102.1321676666667) [Since this course is focused on Java and Spring Boot,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=104.3031438571429) [I'm not going to go too in depth with the groovy,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=107.18988988888897) [but there are some pretty cool things that you can do in this space.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=109.94000100000005) [If you like the terminal and you're comfortable with it,](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=114.02700100000004) [you'll probably like the Spring Boot command-line install tools, and you should go back to the documentation to find out more information.](https://app.pluralsight.com/course-player?clipId=c8d2df30-bff1-402a-bf90-7548ab984558&startTime=116.50450100000003)

### [Understanding Spring Boot Starters](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731)

[Before we jump into full app building mode in the next section,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=1.6960010000000474) [I want to emphasize how amazing this Spring Boot starter concept is.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=4.925001000000049) [The starters are what really makes Spring Boot shine.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=8.393143857142904) [First,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=12.504001000000047) [a starter is a way to integrate a dependency on your project to get it all set](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=12.743445444444491) [up and ready to run by simply declaring it as a dependency.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=17.057334333333383) [Did you catch that?](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=20.805001000000047) [Declare a starter, and you're done.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=22.430001000000047) [All Spring-based apps need to specify what pieces of the](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=25.020001000000047) [Spring framework they're going to utilize.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=28.416001000000044) [If you have a really complex app, you will also have a lot of dependencies,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=29.985251000000048) [and those dependencies will have dependencies,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=34.28660100000005) [and so on.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=36.93180100000005) [This makes version mismatches and other headaches appear.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=38.09400100000005) [Spring Boot starters solve those headaches by allowing](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=41.25460100000005) [you to simply declare the starter,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=44.14328671428577) [and it will take care of getting all of the right](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=45.66328671428577) [dependencies and versions in place.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=47.78500100000005) [Let's quickly take a look at what this looks like in](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=50.20400100000005) [the application that we just created.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=53.403334333333376) [All dependencies in Maven-based Spring projects are kept in the pom.xml file.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=56.59400100000005) [That's at the root of the project,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=62.08200100000005) [so I'm going to go ahead and double-click and open it up.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=63.15800100000005) [If you jump to the dependencies section of the file,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=65.94222322222227) [you can see that we have the starter-web and the starter-test defined.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=69.92200100000005) [These starters set up Spring MVC and the Spring test frameworks respectively.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=73.74300100000005) [To get a better idea of exactly what each dependency does,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=78.48900100000004) [you can expand the Maven slider on the right-hand of the IDE.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=81.66057242857148) [Click on the app and then open the dependency section of the tree.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=87.17200100000005) [When I expand the spring-boot-starter-web, you should take notice of two things.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=92.18500100000004) [First, there is a handful of dependencies that this starter brought in.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=97.38700100000004) [All of these dependencies are necessary to make Spring MVC work correctly.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=101.01200100000004) [And second, each sub dependency has a specific version.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=105.08900100000005) [The Spring developers have spent a lot of time getting these](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=108.76080100000004) [versions to all match up so that they work together out of](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=112.25800100000005) [the box without any problems.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=115.51287600000006) [I'm going to go ahead and close the Maven tab and jump back to the pom.xml file.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=117.54600100000005) [You'll notice that when you declare a starter dependency,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=121.70900100000004) [you don't have to specify a version.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=124.1303343333334) [So how does Spring Boot know which versions to add to your project?](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=126.82675100000004) [The answer lies at the top of the file in the](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=132.45400100000003) [spring-boot-starter-parent declaration.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=135.22933433333338) [You can see we have a specific Spring Boot version declared here.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=137.34200100000004) [The starter-parent declares the version of all the possible](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=140.74700100000004) [integrations that work with this version of Spring Boot.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=143.913001) [This is sometimes referred to the BOM, or bill of materials.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=146.83700100000004) [You can see Spring Boot's bill of materials for your project by](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=151.48600100000004) [right-clicking on the pom.xml file and drill into the Maven sub](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=154.86228671428572) [menu and click Show Effective POM.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=158.95900100000006) [This command essentially flattens out the parent contents with the POM contents.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=161.88200100000006) [As you browse through this,](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=166.73300100000006) [you can see all of the frameworks that Spring has integrated and brought in.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=167.82577877777783) [This is why Spring Boot is so awesome is that you no longer need to](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=173.57400100000004) [spend time doing this because it's already done for you.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=176.92366766666672) [That's pretty much it for this section of the course. Coming up next, I'll quickly summarize everything that was covered.](https://app.pluralsight.com/course-player?clipId=90ec12ea-9d75-4acd-aa03-d879dbda8731&startTime=180.35700100000005)

### [Summary](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7)

[Hopefully at this point,](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=2.675334000000032) [you've seen how easy it is to create Spring Boot app and how powerful it](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=3.521619714285745) [is at getting frameworks integrated and set up quickly.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=7.243048285714316) [Here's what you should have gotten out of this module.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=10.240334000000031) [First, you should be able to answer the question, what is Spring Boot?](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=12.33433400000003) [It's simply an opinionated rapid application development framework.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=17.380334000000033) [Next, we covered a few ways that you can create a new Spring Boot application.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=21.973334000000033) [You can use the Spring Initializr site, the IntelliJ IDE,](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=25.318334000000032) [or the command-line interface tools.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=28.597334000000032) [In the end, each way ends up with the same thing,](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=30.595584000000034) [a ready to go Spring Boot application that you can start working with.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=33.80444511111114) [Finally,](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=37.65566733333336) [we covered the Spring Boot starters and how they magically](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=38.06683400000003) [get libraries and frameworks wired up, integrated,](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=41.48433400000003) [and ready to go.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=44.218534000000034) [Most of the magic is provided by the spring-boot-starter-parent.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=45.61933400000003) [And that's it for this section.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=49.45033400000003) [Coming up next,](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=50.75433400000003) [we're going to switch into full-time development mode and get this conference scheduling API built and running.](https://app.pluralsight.com/course-player?clipId=2e7c8e2a-6a08-41c8-a53b-aff752d920a7&startTime=51.52833400000004)

## [Building Apps with Spring Boot](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76)

### [Introduction](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76)

[We now have a basic Spring Boot app created,](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=0) [and we're ready to actually do something with it.](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=3.706) [After all,](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=6.08175) [the whole point of learning Spring Boot is to be able to build an application.](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=6.732500000000001) [In this section, that's exactly what we're going to do.](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=11.087599999999998) [I briefly mentioned that we'll be building a conference scheduling app.](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=14.789) [This app will include Spring MVC, Spring Data JPA,](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=18.749) [JPA, and a relational database, which will be Postgres,](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=22.283714285714286) [pretty much a full stack Spring API micro service app.](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=26.748) [We won't be fussing around with any UI in this course,](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=30.00542857142857) [so we can focus solely on the Spring Boot and Spring components.](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=33.18880000000001) [Coming up next, I'm going to cover the app in a little more detail about what we'll be building.](https://app.pluralsight.com/course-player?clipId=c2ec0a13-8324-466a-b309-0109a57f2c76&startTime=37.698)

### [Application Overview](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97)

[Let's take a moment and look at the Pluralsight LIVE conference site to get](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=1.4076670000000013) [an idea of some of the concepts that we'll be coding up.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=4.569809857142858) [This was the agenda for the 2019 Pluralsight LIVE](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=7.430167000000001) [conference held in Salt Lake City.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=10.416667000000002) [Towards the top, there is a general overview of the agenda with the schedule.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=14.783667000000001) [And as you scroll down, it takes us to the Breakout sessions.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=19.302667) [These sessions are essentially what we'll be creating.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=22.234267) [We'll have some data structures and endpoints around](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=25.941667000000002) [sessions and speakers for a conference.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=28.250000333333332) [An example of a session would be LESSONS LEARNED](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=30.65523842857143) [BUILDING A GLOBAL TECHNOLOGY ORGANIZATION.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=34.043667) [Sessions obviously have speakers or presenters associated with it,](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=37.730667000000004) [and in this case, you can see that there are two presenters,](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=40.99538128571429) [Shawn Malhotra and Thomson Reuters.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=45.131667) [If you expand the session title, you can also see a summary of the session.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=48.329667) [The topic in the description will be also something](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=53.027667) [that we'll include in our application.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=55.72552414285715) [There are a lot of other things like session tags and the session](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=58.400667) [schedules which we won't be building simply due to time,](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=61.16700033333333) [but that will give you something to work on on your own.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=64.660667) [The more practice you have building and working with Spring Boot and Spring,](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=67.349167) [the better you'll get.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=70.85726700000001) [So now that we have a basic general idea of what we'll be building, let's go ahead and get started.](https://app.pluralsight.com/course-player?clipId=6759e7a8-d989-49e5-905b-20872aecbf97&startTime=72.263667)

### [Setting up the Database](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761)

[The foundation for any good well-built application begins](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=1.451) [with the data and the database layout.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=4.158714285714286) [So to speed things up,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=6.561857142857144) [I'm providing a schema and some sample data that you can install so you have](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=8.259) [something local to work with as you build this application.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=12.535874999999995) [Here is a view of the ER diagram of the database.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=15.848) [There are a lot of tables I'm providing here,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=19.093) [but we're only going to be building out a certain subset.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=21.071) [We'll be focusing on speakers and sessions and their relationships.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=23.913) [Even though this subset might not look like much,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=29.165) [it's enough to cover concepts like many-to-many relationships,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=31.626) [handling binary data for images, foreign keys,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=35.052) [and all of that fun stuff that you end up dealing](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=37.8275) [with in a real-world application.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=40.35175000000001) [To help you get your database set up locally,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=44.284) [simply head over to your browser and go to the following URL,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=46.267) [github.com /dlbunker/ps-first-spring-boot-app.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=49.915) [And this repository will contain database help to get you up and running.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=58.607) [So simply jump into the database/postgres folder,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=64.77) [and you can see that there is two basic files here,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=67.693) [create\_tables and insert\_data.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=70.28720000000001) [But before you can do that, you actually need a database.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=71.87) [You have a couple of options.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=74.736) [If you have a local postgres database instance already set up,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=76.349) [you can simply log in with PSQL and perform the create database command,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=79.7815) [switch to that database,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=83.972) [and then run the create\_tables file followed by the insert\_data file.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=85.634) [If you don't have a local postgres instance available,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=90.817) [the next easiest way is to run postgres in a Docker container.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=93.444125) [I've included instructions for this,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=98.928) [and they're available in the readme file on the GitHub repo in this folder.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=101.502) [At this point, go ahead and get your database tables installed,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=105.76) [and add the data to it, and then come back to the video when you're ready.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=108.7767142857143) [I'm using a postgres database client called Postico,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=115.984) [but any database client that you are familiar with or can](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=118.51014285714285) [work with will be just fine to use.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=122.54166666666664) [Just make sure that before moving on,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=124.88999999999999) [you have your database set up and you can connect to it.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=126.5967142857143) [In this case, you can see all of my tables are listed here.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=130.027) [And if I go look at sessions, I can go into one of these,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=132.98409999999998) [and you'll see that I have some session data inside of the session table.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=136.66960000000003) [One thing that you'll want to note here is that the URL](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=140.59557142857142) [that you use to connect to your database,](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=144.61460000000002) [you're going to need that information available because coming up, we will actually use that to connect Spring to the database.](https://app.pluralsight.com/course-player?clipId=2e2b265c-fff4-497a-8d76-e5bfc0364761&startTime=147.16)

### [Demo: Connecting to the Database](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c)

[The Spring Boot app is created, we have a database in place,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=1.5883329999999842) [and we have a basic overview and understanding of](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=4.2827079999999835) [what we're going to be building.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=6.657332999999985) [So first up,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=8.422332999999984) [we need to add a starter dependency that will include the Spring](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=9.13766633333332) [Data JPA library and then connect it to Postgres.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=13.276332999999983) [If you remember, in Spring Boot,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=17.274332999999984) [all of our dependencies are managed in the Maven POM file,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=18.934332999999988) [so I'm going to go ahead and open that file up,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=21.916332999999984) [and I'll scroll down to the dependency section.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=24.341666333333322) [Underneath the spring-boot-starter-web dependency,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=27.104332999999986) [I'm going to add the new dependency like this called spring-boot-starter-jpa.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=30.248332999999985) [Since we're also using a Postgres DB for this application,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=36.79633299999998) [we need to add the Postgres JDBC driver dependency so that](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=39.745190142857126) [we can properly connect to the database.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=43.55047585714286) [We can do that by adding this dependency.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=46.807332999999986) [Go ahead and save the file,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=50.59533299999998) [and you'll notice that IntelliJ is asking you if you want to](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=51.80833299999998) [import the Maven changes that you just made.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=55.25922188888888) [We do want to bring these in,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=57.212110777777774) [so I'm going to go ahead and click on that link to have](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=58.50633299999999) [those pulled in and added to my project.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=61.29266633333333) [Once IntelliJ is done synching the dependencies,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=64.55233299999999) [we can go ahead and close that tab.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=67.06333299999999) [At this point, we're almost done with getting connected.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=69.51933299999999) [The last piece is to tell Spring Boot what the Postgres connection URL is.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=71.72347585714284) [That information will be added to our properties file,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=76.98133299999998) [which in Spring Boot, will be in src, main,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=81.44833299999999) [resources, application.properties.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=84.99066633333331) [Go ahead and open that file.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=87.66933299999998) [Currently, this file is empty.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=89.87533299999998) [I'm going to go ahead and add the following properties.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=91.60333299999998) [If you remember from the previous clip,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=94.90333299999999) [you need to know what your URL is to your database.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=96.87433299999998) [In this particular instance,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=101.09433299999998) [my URL is located here at the datasource.url property.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=102.35947585714283) [Your URL might be slightly different depending on what port you're using,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=106.85433299999998) [what you named the database, and so on.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=111.61233299999998) [I've also managed to set up my database that doesn't](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=113.97533299999998) [require a username or password.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=116.82976157142855) [Yours may need this information, especially if you're using the Docker container.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=118.39833299999998) [And the last three properties should be able to be universal,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=122.60233299999999) [and you can set those as seen here.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=126.34622188888888) [I'm going to go ahead and save the file.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=128.72033299999995) [And at this point,](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=131.18490442857146) [we're now done getting Spring Data JPA and JPA installed into our application and connected to our database.](https://app.pluralsight.com/course-player?clipId=1d370eee-b668-4cdc-abd9-1ba7f198544c&startTime=132.316333)

### [Demo: Creating JPA Models](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519)

[We could begin by creating some controllers and](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=1.6053329999999841) [working down the architectural stack,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=4.4921663333333175) [but I actually want to take a bottom-up approach in this course.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=6.311332999999984) [If you started with a good database and schema,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=9.320332999999984) [that will give you an excellent base for the rest of your app.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=11.898332999999985) [Since we just finished connecting to the database,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=14.843332999999983) [the next step is to apply some JPA entities so that we](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=17.147582999999987) [can talk to the database structures.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=20.738332999999976) [Let's start by heading over to the model package that we created earlier.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=23.395332999999983) [That's be in the java folder in the com.pluralsight .conference,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=27.558332999999983) [and you'll see that there is the models package.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=30.78553299999998) [To add a new JPA model here, I can simply right-click,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=35.65433299999999) [go to the new menu, and say Java class.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=38.63833299999998) [And we'll go ahead and begin by creating the session class,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=41.792332999999985) [which will map to the conference sessions.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=46.002332999999986) [So the name for the new Java class will be Session.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=48.70533299999998) [Hit Enter, and we have a new plain Java class.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=51.816332999999986) [Next, we need to annotate this as a JPA entity,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=54.822332999999986) [so I can do that by adding a class-level annotation at the top.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=58.16633299999999) [Anytime you bring in a new entity or object,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=62.74733299999998) [you'll also need to import that,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=65.04433299999998) [and IntelliJ can help me with that by clicking on the Import class.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=66.98033299999999) [We want to choose the javax.persistence Entity class for our import.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=70.96433299999998) [I've also given it a name of sessions because that is](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=76.35833299999999) [the name of our database table.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=79.66866633333332) [In the database, we have a plural name for our database table,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=81.95333299999999) [and the class itself is called Session singular because it](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=85.36358299999999) [will be one instance or row of that data.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=88.6701901428571) [Next thing I'm going to do is add a default constructor to all of my entities.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=92.30733299999999) [This simply helps with serialization and deserialization,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=96.47033299999998) [which will happen when we plug in the controllers later on](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=98.93349966666665) [to marshal the data into and out of JSON.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=102.54876157142853) [You could use IntelliJ to create the constructor,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=106.41133299999998) [but it's simple to just create a public session constructor.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=108.18433299999998) [I can now map the table columns to the Java attributes in the Session class.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=112.17933299999999) [I'm going to add the following class attributes](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=117.05233299999999) [with their appropriate data type.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=118.61383299999999) [A quick sidebar discussion here, I want to mention something about conventions.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=121.46133299999998) [Notice that the variable names aren't technically Java standard camelCase names.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=126.15433299999998) [I'm keeping them the exact same name, spelling,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=131.51633299999997) [and format as the database columns.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=133.52304728571428) [By doing this, JPA will auto-bind to those columns,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=136.515333) [and I don't need to annotate them.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=139.402833) [If I wanted to change them to match standard Java camelCase,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=141.751333) [I can do that by simply adding an @column annotation on each](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=144.85033299999995) [attribute and mapping it appropriately.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=149.87816633333333) [Since we're not diving too deep into JPA in this course,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=152.187333) [I'm going to leave this as is for simple speed and convenience.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=154.98044411111107) [There is one annotation that I do have to add,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=160.020333) [and that is the id annotation to specify which attribute is the primary key.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=162.370333) [So above the session\_id attribute, I'm going to add the following code.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=168.02333299999998) [I'll go ahead and import the classes as needed.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=174.009333) [For Id, we want to use the JavaX persistence Id.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=177.27833299999998) [This tells JPA that the IDE is the primary key field and that the](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=180.30404728571426) [GeneratedValue annotation specifies how the primary key field gets](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=185.906333) [populated on a new record insert.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=190.35283299999998) [By using the IDENTITY strategy,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=192.41133299999998) [JPA will utilize the Postgres created sequence for primary key values.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=194.430333) [Here's the table structure for the sessions in the Postgres database,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=202.36233299999998) [and you'll notice that the database PRIMARY KEY fields](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=205.42447585714288) [are set to the serial data type.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=208.4540472857143) [When you create a table with serial data type,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=211.330333) [it creates it as an integer and add an auto sequence to it,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=213.460333) [which you can see here, the sessions\_session\_id\_seq.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=216.89583299999998) [This means that Postgres will generate a sequenced auto-generated number](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=221.830333) [for your primary key whenever you insert a record.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=225.83413299999995) [Finally,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=231.17133299999998) [the last thing that we need to do is create getters and](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=231.38777744444442) [setters for the attributes we've added.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=233.93476157142857) [IntelliJ can do this quickly simply by right-clicking in the class,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=236.36833299999998) [clicking on the Generate menu item, selecting Getters and Setters,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=240.997333) [then you can select all of the attributes,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=245.8599044285714) [and click OK.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=249.687958) [You'll see that IntelliJ added them at the bottom of the class.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=251.19433299999997) [I can go ahead and save that file and make sure that I](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=254.61133299999997) [don't have any compiler errors anywhere,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=257.6594579999999) [and that's it!](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=259.179083) [We've created one entity already.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=260.177333) [What I'd like you to do now is build out an entity for the Speakers table.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=263.977333) [Go ahead and pause the video and build everything in that table](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=267.91133299999996) [similar to what we did for the session entity,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=270.87633300000005) [except do not add the speaker\_photo field.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=273.596333) [That's a binary field, and we'll deal with that field later in a later demo.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=276.505333) [once you're done,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=281.327333) [go ahead and restart the video and check back with how](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=281.99220800000006) [you did compared to my solution.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=284.75858300000016) [Okay, here's what I have for the Speaker class.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=288.895333) [You'll notice that I placed it in the models](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=291.630333) [package and that I called it Speaker.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=293.44345799999996) [I then added the annotation @Entity, gave it a name of speakers,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=296.279333) [which maps to the actual table name, which is plural speakers,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=300.05499966666656) [but the class is singular.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=304.311333) [I then added the attributes from that table with the](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=306.087333) [exception of the speaker image.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=309.2849044285714) [I then created a primary key by adding the @Id annotation](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=311.861333) [and the @GeneratedValue annotation.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=315.84433299999995) [I created a basic empty constructor, and I added all of the getters and setters.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=318.53833299999997) [If you didn't end up with something similar to that,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=325.000333) [go ahead and fix up your code before moving on.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=327.16233300000005) [At this point, hopefully you're asking yourself,](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=329.728333) [what about the relationship between speakers and sessions?](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=332.55733299999997) [In the database, we have a table called session\_speakers.](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=335.982333) [How does that all work? That's what we'll be covering, coming up next!](https://app.pluralsight.com/course-player?clipId=d1dea5c6-6bae-41a0-88cf-752f27dd3519&startTime=338.7734996666666)

### [Demo: Working with JPA Relationships](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc)

[Now that we have two entity models in place,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=1.7246659999999683) [we can tie them together with a JPA relationship that will](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=3.6566659999999684) [match the database table relationship.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=7.557665999999968) [Speakers and sessions are connected via a union or join table,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=9.540265999999969) [so we need to set up a many-to-many relationship in our models](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=14.399665999999968) [that will match that database relationship.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=17.793665999999963) [Let's start with the Session entity.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=21.49066599999997) [You need to pick one side of your relationship to be the owner](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=23.98566599999997) [or main definition point of the relationship.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=27.10966599999997) [I'm going to use the Session class for this.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=29.98766599999997) [I'll begin by adding a list of associated speakers by adding a new attribute,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=32.62366599999997) [like this.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=38.059665999999986) [This is pulling in a list of speakers now,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=38.96866599999997) [so you'll need to import the List class,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=41.00266599999997) [which is from java.util,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=43.784665999999966) [and this ends up just being another field on the Session entity,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=45.67116599999998) [so I need to add a getter and setter for that.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=49.684110444444414) [So I'll click down here and just go to Generate Getter and Setter.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=52.51004099999996) [I can select the new value, click OK,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=58.284665999999966) [and I now have a basic relationship on the one side of the many-to-many.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=61.217665999999966) [Next comes the hard part with defining the relationship.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=67.04866599999997) [To tell JPA how this works,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=70.45566599999997) [we'll need to add some annotations over the attribute,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=71.99566599999993) [like this.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=75.20966599999997) [We need the @ManyToMany annotation, go ahead and port that,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=76.2325231428571) [the JoinTable, the @JoinColumn, and the definition for the JoinTable.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=81.02538028571422) [Here's quickly what these annotations mean.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=86.92366599999997) [The first ManyToMany means that you're setting up a many-to-many relationship](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=89.52166599999997) [and that you have a mapping JoinTable in your database.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=92.48233266666664) [The second annotation defines that JoinTable and the foreign key columns.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=96.38466599999997) [So in this case, the table is session\_speakers,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=101.54666599999997) [which has a session\_id and a speaker\_id foreign key to the](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=104.11206599999997) [appropriate tables in the relationship.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=110.82166599999996) [Now that this is defined,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=113.30366599999996) [JPA will set up the SQL join automatically for you when you](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=114.44255488888884) [make a call to the speakers attribute.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=118.30566599999997) [Let's go ahead and jump over to the Speaker entity,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=120.89266599999996) [and the last thing that needs to happen is we need to define the](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=123.95866599999997) [many-to-many relationship on the speakers side.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=127.06249933333334) [This will make the relationship bidirectional.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=129.78866599999998) [Again,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=132.67766599999996) [I'm going to add the attribute pointing to Session and](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=132.94966599999995) [generate getters and setters for it.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=136.18899933333333) [So it will again be a List type, so we'll have to import the java.util list.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=138.40666599999994) [This time, we're pointing back to sessions,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=144.06116599999996) [and we can create some getters and setter for it,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=146.756666) [right-click and generate them, and save the file.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=150.64366599999997) [The annotation on this side of the relationship is a little easier](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=157.57466599999998) [since we simply need to specify that it is the other side of the](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=160.3913802857143) [existing many-to-many relationship.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=165.28016599999995) [We can do that by adding this annotation.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=166.86466599999997) [We'll import that class, and you'll notice that it's mapped by speakers,](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=170.41666599999996) [which is referring to the attribute on the Sessions class called the speakers.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=174.29866599999997) [And that's it for our relationships.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=179.49266599999996) [We just have one last piece to deal with on the entities, and that is the speaker photo, which we'll deal with next.](https://app.pluralsight.com/course-player?clipId=5b55594b-84fe-43fd-9bd7-8a1158b0b1bc&startTime=180.92166599999996)

### [Demo: Working with Binary Data Types](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039)

[I'm back on the Speaker entity,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=1.6949989999999524) [and I'm ready to deal with setting up the speaker photo.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=2.7659989999999524) [This ultimately means that we have binary data so that we can store the photo.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=5.38166566666662) [And working with binary data can be a pain,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=10.115998999999954) [and we need to handle a couple of gotchas to get things running correctly.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=12.25939899999995) [Let's begin by defining a class attribute for the speaker photo column.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=16.179998999999953) [That will look like this.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=20.822998999999953) [Notice its data type is a byte array,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=22.82699899999995) [which is well suited for binary data in Java.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=24.778998999999953) [Next, we'll go ahead and add the getters and setters in IntelliJ,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=28.340998999999954) [right-click, and generate those, and save the file.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=33.32179899999995) [To get JPA to stream the binary data into this field,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=40.73299899999995) [we need to add a couple more annotations.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=43.70819899999995) [Import the type class as the org.hibernate .annotations and make](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=47.29299899999995) [sure that you're Lob class is imported as well,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=50.796598999999965) [and let's quickly talk about what these annotations do.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=54.178998999999955) [The first annotation is a Lob, and it stands for large object.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=56.33024899999995) [Binary data can get really large,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=60.38699899999995) [and this annotation helps JPA deal with the larger data.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=61.97599899999995) [The second annotation is needed to help Hibernate deal with binary data.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=65.31966566666662) [In our case,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=70.37999899999996) [Hibernate is the JPA implementation that we're using under the covers.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=71.18914185714281) [Without this annotation,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=75.30699899999995) [you'd ultimately end up with an exception when JPA queries the data](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=76.50799899999996) [and tries to push it into the Session instance.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=80.00377677777776) [Finally, there's one last piece of configuration needed to get JPA,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=83.74999899999995) [Postgres, and binary data all happy.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=87.46399899999997) [I'm going to jump back to the application properties file,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=90.02899899999996) [which if you remember, is in src, main, resources.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=92.74399899999996) [Open that.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=96.75699899999995) [I'm going to add a new property that looks like this.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=97.43877677777772) [This property is needed so the Postgres JDBC driver can](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=101.57599899999995) [create a Lob correctly on the Java side.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=104.95837399999995) [Again, without this property configuration,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=107.93549899999994) [you'll get exceptions when you try to run the application.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=110.03199899999996) [A note on binary data,](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=112.92428471428566) [these little issues can be troublesome when you're working through your app](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=114.83999899999995) [from scratch and you have not encountered them before.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=118.30849899999996) [Hopefully this part of the course gives you enough of a background that](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=121.83599899999996) [you can get past these problems and have a solid app base to work on](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=125.51162399999996) [some of your own app needs going forward.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=129.20659899999993) [We're finally finished with the JPA entities. Let's go ahead and move up the architectural stack to repositories.](https://app.pluralsight.com/course-player?clipId=81f08dde-217a-45ac-80c6-a7aaf8235039&startTime=131.11699899999994)

### [Demo: Creating JPA Repositories](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395)

[Once your entities are in place,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=1.6003319999999366) [you have a couple of choices with how you want to handle your data access layer.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=2.964331999999936) [I'm a big fan of Spring Data JPA and all the](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=7.0383319999999365) [benefits it provides out of the box.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=10.265956999999936) [That's what we'll go ahead and set up now by creating](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=13.063331999999937) [some JPA repository interfaces.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=15.556665333333271) [Take a minute and jump back to the pom.xml.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=17.545331999999938) [If you remember,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=20.475331999999938) [we added the Spring Data starter into the POM as one of our dependencies.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=21.213706999999935) [This pulls in the libraries we need to work with JPA repos.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=25.998331999999937) [Since we started with the session entity first,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=28.67308199999994) [I'm going to go ahead and begin by creating the session repository.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=31.39795699999994) [This is a slightly different area of the architectural stack,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=35.01433199999994) [so I'm going to put that in the package called repositories.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=37.46147485714279) [That package is over here by the models.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=41.85333199999994) [To add this, I'm going to right-click and say New,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=44.98933199999993) [Java Class,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=48.435776444444386) [I'm going to select an interface because our JPA repositories are interfaces,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=49.37222088888883) [and I'm going to call the interface SessionRepository.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=54.66333199999994) [This created a new Java interface.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=60.66733199999994) [JPA repositories are almost too easy to set up.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=62.802331999999936) [All we have to do is add this to the interface definition.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=66.45033199999993) [We want to extend JpaRepository,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=70.85033199999994) [and we are going to use Session as our data type,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=72.39595699999991) [and Long refers to the primary key.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=76.62933199999993) [Go ahead and import the Session class,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=79.51933199999993) [and the Session class is the one that we created,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=81.64333199999993) [and we'll need to import JpaRepository as well.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=84.61833199999994) [And that's it!](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=88.23033199999993) [We now have Find, Update, Save, Delete,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=89.24245699999992) [and a bunch of other operations already set up and](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=91.3944748571428) [usable for us on our Session JPA class.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=94.30733199999992) [Go ahead and pause the video again and create a](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=98.38833199999993) [repository similar for the Speaker entity.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=100.94108199999994) [Once you're done,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=103.92233199999994) [restart this clip and compare with the solution I'm about to show.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=104.67961771428564) [Okay, here's what I've come up with.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=109.71433199999994) [I've added it to the Repositories package,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=111.51933199999993) [similar to Session, and it's really similar to Session.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=113.65733199999994) [It's just that we've typed the Speaker entity instead of the Session entity.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=117.38183199999995) [That's really the main difference other than the interface name.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=122.84733199999994) [At this point,](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=125.88333199999994) [if you are caught up and you have your entities and repositories all wired up, we're ready for the last big effort, and that is creating the API controllers.](https://app.pluralsight.com/course-player?clipId=813fea5b-eeaf-4b61-a98e-22d5a8f71395&startTime=126.34766533333328)

### [Demo: Creating Spring API REST Controllers - Part 1](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1)

[We now need to create some controllers.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=1.5763319999999366) [These controllers will handle our API endpoints,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=3.7553319999999366) [and they're going to be REST based.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=6.210331999999936) [Again, we have a package that we've defined for these called controllers,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=8.277331999999937) [so I'm going to jump over there and create a new](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=11.959617714285654) [class in the controllers package.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=15.099443111111047) [Right-click and say New, Java Class.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=17.931331999999937) [I'll again start with the Sessions section,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=21.253331999999936) [so I'll create a controller called SessionsController,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=23.596331999999936) [leave it as a class type, and hit Enter.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=26.272474857142797) [The next thing we need to do is add some annotations so that](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=29.19866533333327) [Spring MVC knows that these are controllers.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=32.90545699999994) [So I'm going to add that at the class level.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=36.119331999999936) [Import the classes for the annotation.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=41.647331999999935) [So quickly,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=44.628331999999936) [what these mean is the @RestController means that this will respond to](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=45.06318914285708) [payloads incoming and outgoing as JSON REST endpoints.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=49.75466533333327) [The @RequestMapping tells the router what the mapping URL will look like.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=54.90833199999994) [So in this case, I'm specifying the route path is /api/v1/sessions.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=60.61833199999994) [All requests to that URL will be sent to this controller.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=67.36833199999994) [The next thing I'm going to do is use Spring to inject or auto wire](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=70.30018914285709) [the sessions repository that we just created.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=75.17433199999994) [Go ahead and import the missing classes, and that's what this will look like.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=78.77433199999993) [So Spring will auto wire this when our SessionsController is built.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=83.41233199999994) [It will create an instance of the session repository and put it onto our class.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=87.07633199999994) [Next, I'm going to create a list endpoint.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=92.26633199999993) [This will return all of the sessions when called,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=94.27033199999994) [so I need to create a method that looks like this.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=97.06633199999993) [Go ahead and import the missing files.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=101.3999986666666) [Another thing to note really quick about REST](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=106.75733199999993) [controllers in Spring MVC is the return types.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=109.35890342857137) [By default,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=113.54133199999994) [the REST controller will return 200s as the response status for all the calls.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=114.19233199999994) [Even though we added the @PostMapping annotation to this endpoint,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=120.45933199999993) [it's not going to infer anything from that.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=123.82518914285707) [Because typically, when you create something or you post something,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=126.96533199999993) [you get a 201 back, but the Spring REST controllers just will return a 200.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=129.74095699999987) [So one way that you can override those would be to add the](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=135.85533199999995) [following annotation to your endpoint.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=139.77683199999993) [By including the @ResponseStatus annotation,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=141.84673199999992) [you can specify the exact response that you want to occur](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=144.74833199999992) [when the method executes and finishes.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=149.84133199999994) [So in this case, I've given it an HttpStatus of CREATED,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=152.78733199999994) [which maps to 201 in the HTTP world.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=155.79883199999998) [Since this isn't in-depth REST course,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=160.37076057142855) [I'm going to go ahead and just remove the ResponseStatus,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=163.30599866666662) [and I'm going to leave the 200 responses for all of our endpoints,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=165.88276057142852) [even though that's not typically what you would do in real life,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=170.1579986666666) [but that it could be something that you could go back in and add yourself by](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=173.696132) [thinking about what is the appropriate response for GETs,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=177.7978319999999) [CREATEs, PUTs, DELETEs, and so on,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=181.39633199999994) [and put the ResponseStatus mapping in correctly.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=184.18933199999995) [A couple of things about this method.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=189.21733199999994) [I haven't given it a specific RequestMapping.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=190.86233199999992) [That means if you were to make a call to api/v1/sessions,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=193.49533199999993) [it's going to route to this method.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=196.60483199999993) [The annotation GetMapping tells which HTTP verb to use,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=199.79473199999993) [which will be a get verb to call this endpoint.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=203.57833200000002) [Next, I've used sessionRepository, and I'm calling the findAll on it.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=208.22333199999994) [This is how powerful the JPA repositories are.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=213.25433199999995) [It built this method for us,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=216.81433199999995) [and it's going to go out and query all of the sessions in the](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=218.2036653333333) [database and return them as a list of Session objects.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=221.35688755555552) [You'll notice that our data type is returning that list of sessions,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=224.72066533333327) [and Spring MVC will then pass that over to Jackson,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=229.21933199999992) [which is a serialization library,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=233.0634986666666) [which will turn those sessions into JSON and return them back to the caller.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=235.22933199999994) [The next REST endpoint I want to add is the ability](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=240.66333199999994) [to get a specific session by ID.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=243.32608199999996) [So I'm going to add this method, I'm going to import the classes,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=246.04033199999995) [and let's talk about what this does really quick.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=252.20633199999995) [Again,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=254.73533199999994) [the @GetMapping is like the other method in that we're using](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=255.11461771428566) [the HTTP verb GET when we call this method.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=259.53783200000004) [The @RequestMapping is in addition to the class RequestMapping.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=264.30833199999995) [So in this case, our class RequestMapping is api/V1/sessions,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=269.1993319999999) [and the RequestMapping on this is adding an additional id to the URL.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=272.91733199999993) [This id is specifying a specific session, and we want to return that.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=279.12333199999995) [The parameter on the GET is pulling that off of the URL and](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=284.39433199999996) [injecting it into our method automatically.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=288.46233199999995) [Again, this is handled for us by Spring MVC.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=291.12333199999995) [We're using a PathVariable.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=294.12833199999994) [And since we have Long data types for our primary key,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=295.6173319999999) [we're going to marshal it into a Long type and set](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=299.4035819999999) [the id on the incoming parameter.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=303.25733199999985) [At this point, we can then use the Session repository,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=305.8433319999999) [and again, it's auto built this method called getOne where you can pass in an id,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=308.52233199999995) [and it returns and queries the session for that id back to the caller.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=315.0625819999999) [Once we get it back, we just return that.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=320.3433319999999) [And in our controller, we're auto marshaling the session,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=322.20733199999995) [which will return the specific session back to the caller in JSON payload.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=325.8503319999999) [For the two read portions of a CRUD, or create,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=331.79933199999994) [read, update, delete REST endpoint,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=335.80904628571426) [these two fill the listing and the specific id.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=338.32833199999993) [We'll go ahead and pause there.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=342.67133199999995) [And if you've already guessed what's going to happened next,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=343.9583319999999) [you get to build out the speakers controller.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=346.3663319999999) [So go ahead and pause the video and get the speaker list and a specific speaker](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=349.81033199999996) [controller endpoint to return a speaker back to you going.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=354.5263319999999) [Then go ahead and fire the video back up and compare to what I've built myself.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=358.6581097777778) [Okay, here's what I have for the speakers controller.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=365.33233199999995) [I added it again to the controllers package.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=367.4203319999999) [I then called the controller SpeakersController.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=370.53033199999993) [I changed the RequestMapping to take routes that](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=374.27233199999995) [are coming for /api/v1/speakers.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=377.40893199999994) [I auto wired in my SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=381.22733199999993) [which gives me CRUD access and other access to my](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=383.8843319999999) [Speakers database table and data.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=388.9197605714285) [I then created a List method, which returns all speakers if you call it.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=392.0983319999999) [That is using the GET HTTP verb.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=395.84633199999996) [And I created a GET method, which returns a specific speaker,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=398.79233199999993) [and again, we're looking for a speaker with a particular id,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=403.8293319999999) [which we'll pass in from the URL to our parameter,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=407.19483199999996) [PathVariable Long id, which we can then pass to the SpeakerRepository,](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=411.6723319999999) [and that will return our Speaker, which will return to have JSON marshaled.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=416.39333199999993) [That's it for this portion of the controller as part of the course.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=421.52733199999994) [Coming up next, we'll build out the update, delete, and insert functionality for our CRUD REST endpoints.](https://app.pluralsight.com/course-player?clipId=4715f7b8-c4f4-4854-8bac-8f427a17c8d1&startTime=424.7853319999999)

### [Demo: Creating Spring API REST Controllers - Part 2](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28)

[The next piece that we'll set up in our controllers will be the create,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=1.6599989999998361) [update, and delete API endpoints for the sessions and the speakers.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=4.622665666666502) [So I've opened up the SessionsController, and we'll go ahead and start there.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=8.847248999999834) [Let's begin by creating the create method,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=12.762713285714122) [so this will create a new session,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=15.724248999999837) [and if you pass a session info to the API endpoint,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=17.967998999999836) [it'll create a new session into the database.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=22.187856142856976) [At the bottom of the controller, I'm simply going to add this new method.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=25.412998999999836) [We'll import any missing classes, and let's take a look at what's happening.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=30.152998999999838) [So the first thing that you should notice is that we're using an @PostMapping.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=34.09499899999984) [This is saying that we're requiring the HTTP verb POST](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=38.25599899999984) [to be presented with this API call.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=41.410373999999834) [We did not give it a request mapping because,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=44.47411011111095) [essentially, we're posting to the base part of the class,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=47.74433233333317) [which is the api/v1/sessions endpoint, using the POST verb.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=51.10299899999983) [Now here's where it will get interesting.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=56.165998999999836) [In the create parameter section, we've had an @RequestBody annotation,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=57.797998999999834) [and then we have a session object that's passed in.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=62.806998999999834) [What is happening here is Spring MVC is taking in all of](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=65.37457042857126) [the attributes in a JSON payload and automatically](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=69.04162399999987) [marshaling them into a session object.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=72.73079899999983) [Once it does this, we can simply pass that to our SessionRepository,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=75.31066566666651) [which is part of Spring Data JPA, and we can save and flush that.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=79.17883233333316) [A quick note on save and flush.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=84.29899899999984) [When you're using JPA and entities,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=87.35799899999984) [you can save objects as you're working with it,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=89.57099899999983) [but it actually doesn't get committed to the database until you flush it.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=92.08085614285697) [So the SessionRepository and the JPA repositories,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=96.40799899999983) [in general,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=99.17849899999983) [provide this one method that will do the save and the flush all](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=99.96349899999983) [at once as you pass in JPA entities to it.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=103.74208990909074) [The next endpoint I'm going to create is the DELETE endpoint.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=107.59299899999984) [Here's the method implementation for that.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=111.05599899999983) [Let's talk about the annotations.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=113.18399899999983) [The @RequestMapping is specifying that you need to pass in an id similar to](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=115.13699899999983) [what we did on the GET saying that you have to have an id,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=120.71119899999981) [but we're also adding a different HTTP method to this](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=124.64024899999983) [using the request method DELETE.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=128.19885614285698) [So this requires the HTTP verb DELETE presented with this API endpoint.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=130.4164275714284) [You might ask why we don't just call @DeleteMapping,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=136.77299899999983) [and that's because Spring only provides @GetMappings and @PostMappings.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=139.51059899999984) [If you use a different verb,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=145.57799899999983) [you have to specify it in the RequestMapping attributes.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=146.94866566666653) [Again, the parameter for the DELETE takes in an id,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=150.86699899999982) [and this is pulled off of the PathVariable,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=153.8819989999998) [similar to the GET.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=156.32819899999984) [And once we have the id of the record that we're going to delete,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=158.49699899999985) [we can, again, call the Spring Data JPA repository to delete it by the id.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=161.67628471428554) [I've added a comment here,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=167.12399899999983) [and this is just applicable to anytime you're deleting records in a](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=168.73566566666656) [database with JPA that you'll have to deal with cascades.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=173.33399899999984) [So for example, if the session has children records,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=177.66799899999984) [this would not allow it to delete.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=180.25374899999986) [We'll get a foreign key constraint violation when we](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=182.50599899999983) [issue the DELETE call to the database.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=185.25462399999986) [One thing that you can do for extra credit or homework](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=187.06549899999982) [would be to put in logic that allows the deleting of the](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=190.6706239999998) [children records for sessions.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=194.98019899999983) [And there's a few ways you can do this.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=197.25299899999985) [I'm not going to give you any hints on that,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=198.85799899999984) [but it'll give you the ability to research it and try a few things on your own.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=200.76099899999983) [But just keep in mind that this will only delete session repositories](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=204.83799899999983) [without any children records at this current implementation.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=208.73759899999982) [Finally, let's look at an implementation for updating a session record.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=213.40699899999984) [So I've pasted in the actual update implementation.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=218.66199899999984) [I'm going to open the screen here so we have a little](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=222.11599899999985) [bit more room to see what's going on.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=224.42266566666652) [First, let's begin with the @RequestMapping annotation.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=226.1194275714284) [Again, we're requiring the id on the URL,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=230.61499899999984) [similar to the DELETE and the GET endpoint.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=234.35299899999984) [And at this point, we're changing the method to an HTTP verb PUT.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=237.05799899999982) [One note on REST implementations.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=242.83799899999983) [When you're updating a record, you have two verbs that you can choose from.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=244.94399899999985) [You can choose from the PUT and the PATCH verb.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=248.54199899999983) [It's kind of up to you how you want to implement them.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=251.74299899999983) [But typically,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=254.19899899999984) [the PUT will replace all of the attributes on the record that you're updating,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=254.95599899999985) [and the PATCH will allow just a portion of the attributes to be updated.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=260.63599899999986) [So this implementation will take all of the attributes in on the request body](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=266.10099899999983) [for that session and replace them all on the database record.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=270.53199899999987) [Jumping down to line 42 here, let's take a look at what's happening.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=275.54224899999986) [So in order to update a record, we first need to get the existing one.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=279.47799899999984) [So we're asking the SessionRepository to find the record by the id,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=284.44399899999985) [which is coming off of the URL parameter.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=288.38699899999995) [We're storing it in a session variable called existingSession,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=291.41299899999984) [and next, I'm using the BeanUtils object,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=294.46299899999985) [which we still need to import,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=298.72699899999986) [and the BeanUtils object takes the existingSession and](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=301.12199899999985) [copies the incoming session data onto it.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=305.5991989999998) [The third parameter on the copyProperties method allows us to](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=309.84999899999985) [ignore properties on the entities or Java object that we do not](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=313.82371328571406) [want to copy over from one to the other.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=318.34099899999984) [In this case,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=321.3369989999998) [we want to ignore the session\_id attribute because that's the primary key,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=321.9647489999998) [and we don't want to replace it.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=326.3488878888887) [If you don't ignore it, you'll essentially copy null onto the primary key.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=328.5079989999998) [And when you go to update that onto the database,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=332.89849899999984) [that will cause an exception to occur because the primary key cannot be null.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=335.8124989999998) [And finally,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=340.84219899999977) [we're using the old trusty saveAndFlush method again on the existing session,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=341.76899899999984) [which has now been updated with our attributes on our Session JPA repository.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=346.82199899999983) [I've added a couple of comments here at the top of the method](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=352.93899899999985) [implementation just to kind of keep in mind.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=357.0631418571428) [First, because this is a PUT, we're expecting all the attributes to be passed in.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=359.73199899999986) [If they're not all passed in, those attributes will be updated with null.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=363.60949899999986) [If you only need to update certain attributes of your JPA entity,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=368.3129989999998) [you should look at implementing the patch version of this update.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=372.31699899999984) [And finally, we're not doing any kind of validation.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=376.7819989999998) [And since we're requiring all the attributes,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=380.6469989999998) [it would probably make sense to check that they're all there.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=381.8709989999998) [If they're not, you could return a 400,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=384.7914989999998) [which would indicate a bad payload passed to the update API endpoint,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=387.71499899999986) [and that's it.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=391.8326239999998) [If we take a look at our actual controller now,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=392.89799899999986) [we have a full CRUD controller for the sessions.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=395.32899899999984) [We have a LIST, a GET, a CREATE, a DELETE,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=398.13399899999985) [and an UPDATE,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=402.6539989999998) [and this fills out all of our CRUD operations for a proper REST resource,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=403.7059989999998) [which in this case, is Sessions.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=410.0729989999998) [So again, it's time to pause the video.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=412.09599899999984) [I want you to update the SpeakersController with a CREATE,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=414.3439989999998) [UPDATE, and DELETE method, similar to what we've done here for the Sessions.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=417.83857042857124) [And once you're done, go ahead and turn the video back on,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=421.47799899999984) [and we can check my solution with what you've come up with.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=424.7763323333332) [Okay, here's what I have for the SpeakersController.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=430.3369989999998) [It should look very similar to the SessionsController.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=434.34799899999985) [We have a create method implemented.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=436.58299899999986) [The only difference is that we're working with Speaker](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=439.21599899999984) [objects rather than Session objects.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=441.733856142857) [The DELETE method is doing something very similar, just deleting by the id.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=444.0459989999998) [Again, note that we're using speakerRepository rather than the sessionRepository.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=449.31899899999985) [And finally,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=454.2219989999998) [the update is doing pretty much the same thing as the](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=454.900856142857) [session update with the main difference that we're using](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=458.9454989999999) [the Speaker on the RequestBody, and in the ignoreProperties,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=461.6639989999998) [we're ignoring the primary key of speaker\_id rather than session\_id.](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=465.5197489999998) [At this point,](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=473.1039989999998) [we pretty much have our micro service conference API](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=473.8434989999999) [app coded up and ready to test out. That's what we'll do, coming up next!](https://app.pluralsight.com/course-player?clipId=524195a9-b8bc-4fe9-93b0-221215cbee28&startTime=477.00285614285707)

### [Demo: Handling Serialization Issues and Running the App](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4)

[Now that our controllers are created and updated, we're ready to test this out.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=1.4853319999999366) [So I'm simply going to start up the application, and let's see what happens.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=6.549331999999937) [In IntelliJ, if you want to start the application,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=12.221331999999936) [you can find the ConferenceDemoApplication object,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=14.815331999999938) [double-click on that or just select it in the Project explorer area,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=17.715046285714223) [right-click and go to the Run menu.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=22.320331999999937) [If all is well in your application,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=27.502331999999935) [you'll get a notification that we have our application started on port 8080,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=29.269331999999938) [and it's ready to try out.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=35.19533199999994) [I've jumped over to Postman,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=39.79233199999994) [and Postman is a tool that allows you to work with API endpoints.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=41.22670699999995) [You can get it from the URL getpostman.com.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=45.607331999999936) [Once you have it installed, you can enter endpoints and URLs to test and try out.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=49.53033199999994) [If you remember, our application is running on port 8080,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=55.40833199999994) [and I'm running locally, so I'm using localhost port 8080,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=58.62404628571423) [and our session's endpoint begins with api/v1/sessions.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=62.000331999999936) [I don't need to pass in any headers or body,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=67.05833199999994) [so I'm simply just going to try this out.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=69.26533199999993) [And before I do, note that we're using the HTTP GET verb.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=71.94533199999994) [You'll notice that we'll get a payload down here,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=76.66076057142853) [and you'll see that we have a lot of information pulled back.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=80.08808199999994) [It's actually pulling back a bunch of nested data.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=84.46933199999994) [You can see this here.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=87.76333199999993) [It keeps getting deeper and deeper, and this is kind of a problem.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=89.27833199999993) [This is actually a serialization problem.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=93.72533199999994) [You can try out speakers as well.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=96.74433199999994) [And again, we get the data back,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=101.22433199999993) [but it's looping cyclically over our many-to-many relationship.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=102.72733199999993) [So let's jump back over to IntelliJ and see how we can handle this.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=109.28033199999993) [So sometimes your cyclical payload serializations will actually get so large](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=115.64433199999993) [that you'll get exceptions because it'll just go infinitely,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=120.46733199999994) [and it'll blow up the stack on your Java stack.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=123.98458199999996) [So to help with this,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=128.29733199999993) [you can jump into your models and place some annotations on there that Jackson](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=129.0595542222222) [library will look at and help to serialize your payload.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=132.59395699999993) [The other option that you could do is to create DTOs,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=136.95533199999994) [or data transfer objects, but I'm simply going to use my entities for entities,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=139.81666533333325) [as well as data transfer objects.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=145.0674748571428) [So if you remember on the session,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=148.05633199999994) [we have a many-to-many relationship set up that's going out to speakers,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=149.32433199999994) [and this is what's causing that cyclical problem.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=152.86658199999994) [Because as we go out to the speaker, the speaker is on multiple sessions,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=155.51533199999994) [and as we go into the session, the session has multiple speakers,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=159.87733199999994) [and it keeps going over and over.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=163.22533199999992) [Since we defined the session as the dominant side of](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=165.69933199999994) [the bidirectional relationship,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=169.04533199999992) [we'll go ahead and leave this alone and jump over to the](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=170.60033199999992) [speakers version of the many-to-many relationship.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=173.5688319999999) [On this one,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=176.65033199999993) [we can add a new annotation that will prevent it from](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=177.41433199999997) [back serialization back to the sessions.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=180.85899866666657) [We can do that by adding the @JsonIgnore.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=183.30633199999994) [You'll need to import that,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=186.37033199999993) [and you'll see that this comes from the Jackson library.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=188.29345699999993) [So Jackson is going to look for this and ignore that](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=191.85633199999992) [when it goes to reload the sessions.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=194.7588875555555) [I can now go ahead and restart the server and try the call again.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=198.26433199999994) [To restart the server,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=203.05933199999993) [you can just click on this encircle or recycle arrow to restart the server.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=203.90783199999998) [Once that's up, we can jump back to Postman,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=209.20283199999997) [and let's go ahead and try the sessions again.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=212.08799866666658) [At this point, you'll notice that the payload has changed.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=215.13133199999993) [The payload loads in a session.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=217.34533199999993) [It loads in the relevant speakers for that session,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=219.59333199999995) [but it does not continue to go deeper and deeper because of that](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=221.98020699999995) [JsonIgnore annotation we put on the speaker entity.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=226.90233199999994) [Let's go ahead and test a couple of the other controller endpoints.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=231.71633199999994) [So the next one is the GET where we need to pass in a specific id.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=235.25833199999994) [You can see that we have one here, session\_id of 2,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=239.83033199999994) [so I'm going to pass that in on the URL,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=241.65633199999996) [and we should just get this one session back.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=244.76673199999993) [Uh, oh!](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=248.66613199999995) [You'll notice that there is an error that's occurred on our call.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=249.75533199999992) [This is another serialization issue with Spring and Hibernate.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=254.60633199999992) [Let's jump back to IntelliJ, and we can see how to fix this particular problem.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=258.85933199999994) [You'll notice that it's complaining about the ByteBuddyInterceptor.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=263.18333199999995) [So again, we'll deal with serialization issues on our models.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=268.2043319999999) [So I'm going to go to the sessions model or entity,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=271.48833199999996) [and I'm going to add a new annotation at the top at the](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=274.0505542222222) [class level that looks like this.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=277.881332) [The @JsonIgnoreProperties, we'll go ahead and import that class.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=280.3073319999999) [This time,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=285.02933199999995) [we're ignoring a property called the](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=285.59018914285707) [hibernateLazyInitializer and the handler property.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=287.6660819999999) [When you create an entity and you have a relationship on here,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=290.4759986666666) [Hibernate adds a few stub methods to handle lazy loading](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=294.79133199999995) [and eager loading of the relational data.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=299.2071891428571) [When you go to serialize a Hibernate object,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=301.9110462857142) [you do not want to serialize this because this will try to](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=305.1238319999999) [load in all of your relational data with SQL,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=309.40633199999996) [and it can cause problems.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=312.27433199999996) [And in fact, our problem right now is we have an exception.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=314.00133199999993) [So I'll save this file, and I want to add this as well to the Speaker class.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=316.5823319999999) [Again, I'll save those files and restart the server.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=320.6543319999999) [So back in Postman,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=326.42333199999996) [let's go ahead and try to get the session with the primary key id of 2,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=327.075332) [again, by calling Send.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=331.95333199999993) [This time, you'll notice that we did not get an exception,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=334.47733199999993) [and we have a valid payload back, and it's just the one,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=336.8675819999999) [it's just the one for primary key of 2.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=340.1603319999999) [We'll go ahead and test out the Create.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=344.14533199999994) [In Postman, when you're creating something,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=346.21533199999993) [you want to set the HTTP verb to POST, and you need to pass in a body.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=348.27733199999994) [You can do that on the Body tab here.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=354.2163319999999) [I've selected the raw with the JSON payload so I can pass in a payload here,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=356.7353319999999) [and we can see that I have given my new session a name,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=363.23333199999973) [a description, and a length.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=367.26933199999996) [Down at the bottom here, you can see that we have a status of 200,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=372.4083319999999) [meaning that it succeeded, and we have a new session.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=376.40213200000005) [It's been issued an id of 94.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=380.36933199999993) [This is what the sequence on the Postgres database automatically did for us.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=383.41933199999994) [And we have all of the data that we passed in.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=388.20533199999994) [We can try an update.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=391.2253319999999) [Again, if you remember, the update takes the PUT verb,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=392.85233199999993) [and let's go ahead and update the session that I just created,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=395.8249986666666) [which was 94.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=400.9283319999999) [We'll take a look at the updated attributes.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=402.21733199999994) [Again,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=404.14233199999995) [we're requiring all three of these attributes because](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=404.43533199999996) [it is a PUT rather than a PATCH.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=406.739832) [We'll send that off to the server.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=409.1437764444443) [Again, our status is 200 OK,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=411.8193319999999) [and you can see that the data coming back was we updated](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=413.6379986666665) [session 94 with the new data we passed to it.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=417.3623319999999) [And finally, to round out our CRUD endpoints, we can try the DELETE out.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=421.069207) [Since we created a new session with id 94,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=424.91133199999996) [I'll just go ahead and delete that because I know it](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=429.02733199999994) [does not have any children data.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=431.65133199999997) [We don't need to pass anything into the body,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=433.26533199999994) [and we change the verb to DELETE, send that off,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=435.46233199999995) [and we got a 200 back.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=439.905332) [So if you got a 400, or a 404, or a 500,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=442.68333199999995) [those are all problems that have occurred.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=446.4083319999999) [Either the URL is wrong for a 404.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=449.32733199999996) [If you've got a 500, there's some kind of a exception happening on your server,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=451.88533199999995) [and that's where you'll want to go ahead and jump back to](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=455.75333199999994) [IntelliJ and look at the console output.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=458.7637764444443) [This is where all of the problems will show up,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=461.1530819999999) [and you can see anything that has happened here that might have caused an error.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=464.849332) [And that's it!](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=471.06133199999994) [I'll go ahead and let you try out the speaker endpoints.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=471.6513319999999) [Assuming everything is working for your speaker endpoints as well,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=475.22433199999995) [we have essentially built a full-blown application on the](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=478.38833199999993) [server side in the last 25-30 minutes.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=481.9910819999999) [You can see that Spring Boot is very quick at building things,](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=484.9320462857142) [especially, if you're familiar with the other Spring frameworks, like Spring MVC and Spring Data JPA, as well as JPA and entities.](https://app.pluralsight.com/course-player?clipId=63956c4e-bb7c-4975-b85e-c2a438a616b4&startTime=489.33933199999996)

### [Summary](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906)

[We've accomplished a lot in this module.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=1.7116650000000373) [We've touched and worked with a variety of Spring](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=3.709665000000037) [architectural concepts in the Spring Boot environment and](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=6.079498333333371) [have a working backend conference app.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=9.035093571428607) [Just keep in mind that we went really fast through this.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=10.916165000000039) [To get a deeper understanding,](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=14.940665000000036) [you will need to dive into each portion of Spring that we](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=16.557665000000036) [covered and worth through the details.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=19.33780785714289) [So let's recap what we've built.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=21.297415000000036) [Once we've determined what our conference app would do,](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=23.471665000000037) [we installed and got a Postgres relational database](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=25.92566500000004) [running as the foundation of our app.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=28.329665000000038) [I provided the schema and data files from a Git repo to bootstrap the database.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=31.133665000000036) [Next,](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=36.75166500000004) [we worked our way up and built out some JPA models and repositories that](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=36.95844277777782) [comprised the persistence tier of our architecture.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=41.704665000000034) [This included connecting to the database and setting up model relationships.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=44.691665000000036) [We then built out the API endpoints that would be needed for](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=49.04766500000004) [basic CRUD operations on sessions and speakers.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=52.57609357142861) [This utilized the Spring MVC framework,](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=55.11466500000004) [which relied on REST controllers and the Jackson library for JSON serialization.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=57.15966500000004) [We did deal with a few other nuances,](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=63.259665000000034) [like working binary data and serialization issues.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=65.25166500000003) [You'll always find one-offs like that when building an application](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=68.87566500000004) [that you will have to work through eventually.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=71.82980785714291) [App development tends to follow the 80/20 rule, like most things in life.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=74.70466500000003) [Eighty percent will build out easily, and 20% will give you more headache.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=79.20466500000003) [And that's it.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=84.47566500000003) [Take a break and regroup.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=85.30891500000003) [Because coming up in the next section of the course, we'll dive deep into all the ways Spring Boot can be configured and managed.](https://app.pluralsight.com/course-player?clipId=6475d1a1-b98c-47e9-a54d-7f6441ad6906&startTime=86.69766500000004)

## [Working with Spring Boot Config and Environment Needs](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641)

### [Introduction](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641)

[The last section of the course was fast and furious,](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=0) [but we managed to get a working API application up and running.](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=3.932) [Now that we have that,](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=7.348) [we can take a deeper in-depth look at how to](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=8.351999999999999) [customize our app the Spring Boot way.](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=10.987875000000003) [If you're working on an application as a team,](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=14.266) [you often run into the problems like how do you prevent coding in the](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=16.103875000000002) [production database credentials in a configuration file and then checking that](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=19.907499999999995) [into source control where everyone can have access to it,](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=23.944428571428563) [or how do I set up application configuration for different environments?](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=27.994) [In staging, you want to enable full logging,](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=32.327) [but in production, you want to only log errors and warnings.](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=34.886) [We'll answer these questions,](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=38.686) [as well as dive into a few other good to know Spring Boot configuration tips and tricks, coming up next!](https://app.pluralsight.com/course-player?clipId=59f49a40-9524-4a0a-8669-b40148107641&startTime=39.7317142857143)

### [How to Customize and Override Spring Boot](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad)

[The good news with Spring Boot is that it provides a lot of ways](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=1.3883329999999987) [to override and customize your application.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=4.146957999999998) [In fact, there is more than a dozen ways to set a property value for your app.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=6.858332999999999) [The bad news is there is an order of precedence that Spring and](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=11.263333) [Spring Boot uses to properly set your values.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=14.438666333333334) [If you're not careful,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=18.079333) [you can have a property set incorrectly if you aren't aware of this.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=18.831832999999996) [First off, there are two basic places that you can put your configuration.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=22.543333000000004) [You can use something external to the app like command-line parameters,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=26.827333) [environment variables, or JNDI stores,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=30.777333) [or you can use something internal to your application like servlet parameters,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=33.670333) [property files, and Java configuration.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=38.144332999999996) [Keep in mind that your internal configuration tools](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=41.180333) [can also point to external sources.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=43.208332999999996) [Since there are a variety of ways that you can set up your configuration,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=48.524333) [you should be aware of how Spring Boot handles reading and setting them.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=52.061333) [Here is the basic order excluding test configuration setup.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=55.843333) [The main rule of thumb is external property sources override](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=59.587333) [internal property sources with the exception of servlet config](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=62.790333000000004) [and servlet context parameters.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=66.2077615714286) [Those take precedence over JNDI, system properties, and environment variables.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=68.448333) [So here is my advice and a side note on how you should think about properties.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=74.111333) [You should pick one internal source, like property files,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=78.202333) [to set up your application defaults and then pick one](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=80.91276157142856) [external source to provide overrides.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=84.239333) [This keeps configuration in one of two places,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=87.330333) [allows for sensible defaults,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=90.448333) [and then gives you the ability to use external sources for sensitive data,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=91.705333) [like credentials and passwords.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=95.727333) [I'm going to follow my advice in this course and use OS](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=98.126333) [environment variables as the external source and application](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=101.27490442857142) [property files for the internal source.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=105.191333) [Coming up next,](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=107.495333) [we'll start working with the basic application property files as our main internal source for configuration.](https://app.pluralsight.com/course-player?clipId=7ce90886-aabf-432c-a9fc-224ef3b60cad&startTime=108.20676157142857)

### [Demo: Locating and Working with Config Files](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192)

[Apps set up with an even layout separate out Java](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=1.2613329999999843) [source files from other types of files.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=3.7249996666666507) [This means that the application property files for your](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=6.247332999999984) [Spring Boot app are located in src, main,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=9.008457999999987) [resources.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=11.885832999999984) [So I'm going to go ahead and open up that folder,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=12.419332999999984) [and you'll notice there's a file called application.properties.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=14.984332999999983) [We'll reopen that because we've already made some changes to this file.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=18.449332999999985) [When we set up the app,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=22.527332999999985) [we added the data source in jpa.properties to this file](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=23.76453299999998) [so that our app would work correctly.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=27.086190142857138) [One thing that you should know is these properties are actually](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=29.533332999999985) [overrides of Spring Boot default properties.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=32.131332999999984) [I've jumped over to a browser,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=37.52333299999999) [and I've opened up this URL to this Spring Boot Common application properties.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=38.508332999999986) [If this URL goes out of date in the future,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=43.530332999999985) [simply go to a Google search and look for Spring](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=45.597332999999985) [Boot Common application properties, and you'll be able to find this Appendix A.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=48.999732999999985) [Spring Boot and Spring Boot starters provide a setup of default properties,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=53.36933299999998) [and these properties provide sensible defaults,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=57.45833299999998) [as well as provides an application developer the ability to customize](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=59.522832999999984) [the application with having to write or change code.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=63.60899966666665) [If I take one of the properties we configured,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=67.31233299999998) [like the spring.datasource .url, and search for it,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=69.12733299999998) [you can see the default, which is null,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=73.31588855555553) [and see what starter or system the property comes from.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=75.47833299999996) [In this case, it's handled by the DataSourceProperties.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=79.15833299999998) [As I scroll up, you can see it's coming from DataSourceProperties,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=82.61733299999999) [as well as the DataSourceAutoConfiguration class that Spring](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=85.26633299999997) [Boot provides in the Spring Data JPA starter.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=90.06844411111109) [Let's try taking another default property and changing it in our application.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=93.59733299999998) [The app, by default,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=97.59133299999998) [runs on port 8080 as you've seen when you ran it after we built the app.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=98.72199966666666) [So let's go ahead and change that.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=102.95277744444444) [We want to find a property called server.port.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=105.35533299999999) [You can see that the default value is set to 8080.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=108.42833299999998) [So how do you think that we could change this to say port 5000?](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=111.12033299999999) [Well, all we need to do is simply put this in our property file and override it.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=116.95433299999999) [So I'll go ahead and copy this value and jump back to IntelliJ.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=120.45633299999999) [Back in the application.properties,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=125.72733299999999) [we can simply add that new property to the end of the file](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=127.84933299999999) [and override the value to port 5000.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=132.36288855555551) [If I save that file and restart the application,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=134.64111077777775) [come down to the Run tab to do that, and start up the application,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=137.438333) [you can see now that Tomcat is started on port 5000,](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=145.69633299999998) [and that's all it takes to override the Spring default common](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=148.45108299999995) [application properties to simply put it in your application and](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=152.556333) [provide the value that suits your needs. Next, let's take a look at overriding app properties with external configuration.](https://app.pluralsight.com/course-player?clipId=de53b447-12bf-4db3-9e7a-c4ed17960192&startTime=155.76233299999996)

### [Demo: How to Change Database Connections](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494)

[I'm back in the application.properties file,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=1.434) [and I want to adjust the database connection info.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=3.556) [Maybe I'm getting ready to deploy to production,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=5.716333333333334) [or maybe my database got moved, or something has changed,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=8.500714285714286) [and I need to deal with it.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=11.544375) [The first thing that you should take note of is that the database URL](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=13.99) [and credentials are currently hard coded into the app.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=17.1575) [This info is your production database info,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=20.492) [and you check your code into a public Git repository,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=22.846) [all of the sudden,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=25.3424) [everyone has credentials and access to your production database.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=26.756) [So the best way to solve this is to simply not hard code your](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=30.741) [database info in the application.properties file.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=34.1165) [Let's go ahead and move it to an external environment variable.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=37.467) [Spring Boot handles property placeholders in the application property file.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=41.365) [First, I'm going to copy the URL and remove it from the app properties file.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=45.995) [Next, I'm going to replace the value with this.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=51.93) [This tells Spring to look for a property called DB\_URL and](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=54.885) [set its value on the datasource.url.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=58.21412500000001) [In order to do this,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=61.07233333333333) [we need to set up an environment variable to handle that URL.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=63.529) [Once that's done, none of the info is actually \_\_\_\_\_ into the source code,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=66.86442857142855) [but I can still run my application.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=70.78900000000002) [To add an environment variable to the IntelliJ,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=73.463) [you need to click on the Run menu and go to Edit Configurations,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=75.976) [find the ConferenceDemoApplication configuration and jump](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=80.888) [down to the Environment Variables box.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=84.09599999999999) [In here, we can add the name of the environment variable,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=87.444) [which is DB\_URL,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=90.7524) [and we can paste the value that we pulled out of the](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=92.808) [application.properties file into here, click OK to save that,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=96.08471428571427) [we'll go ahead and apply this, and click OK to exit.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=99.26655555555556) [So at this point,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=103.218) [my app is now configured to read an external](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=104.07533333333332) [property value for the database URL.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=106.3445) [You'd most likely want to do the same for the username and password](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=108.326) [properties so that sensitive data isn't hard coded into the file.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=112.441) [To test this out, we can go ahead and restart or run our application,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=116.539) [and at this point, IntelliJ is saying Tomcat has started on port 5000,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=120.14899999999997) [but you can jump over to Postman really quick just to test](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=124.432) [out we can get data from our database.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=127.48766666666663) [Back in Postman, I can test my sessions out again.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=132.6) [But if you remember, we changed the port of our application to 5000,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=135.459) [so I'll need to update that as well.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=138.711) [Once I'm on the correct port, I'll go ahead and send the request to the server,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=141.758) [and you'll notice that we still got all of our data,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=145.541) [even though we pulled the database URL out of the](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=148.42142857142855) [applications file and into an environment variable.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=152.18214285714285) [At this point, if you happen to deploy your application in production,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=155.629) [you can simply provide the production credentials as an environment variable,](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=158.481) [and your app is now pointing to an appropriate data source for that environment.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=162.34785714285715) [This is one way that you can handle environment-specific configuration.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=166.817) [Spring Boot also provides another way to handle environment configuration, which we'll take a look at next.](https://app.pluralsight.com/course-player?clipId=b623b18f-3900-4cba-863a-4400271b4494&startTime=172.012)

### [Demo: How to Handle Different Environments](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103)

[Getting processes in place to be able to handle your app in](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=1.3723329999999843) [multiple environments is something most teams will end up doing](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=4.375618714285698) [over the life of any serious project.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=7.354582999999983) [At some point, you might ask,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=10.064332999999984) [how can I work with an app in development locally then](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=11.591666333333315) [deploy to a nightly test server, staging,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=14.864332999999984) [and finally, into production.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=17.506332999999984) [Spring Boot uses a combination of Spring profiles and](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=19.674332999999983) [profile-specific application property files to accomplish this.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=23.128332999999987) [Simply add any profile suffix to the application part of the file name,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=26.784332999999982) [and Spring Boot will use those properties instead of the](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=30.934332999999985) [default application.properties file.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=33.870082999999994) [To specify the profile,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=36.58633299999998) [you have to use a spring.profile .active -D parameter on](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=37.56811077777776) [your app startup with the profile name to activate](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=42.10533299999998) [whatever profile you want to run.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=45.74547585714284) [In this case, the dev profile would be activated,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=48.12233299999998) [and Spring Boot will look for an application-](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=50.932332999999986) [dev.properties file on the class path, which would be in src,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=53.69733299999998) [main, resources of our project.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=57.688957999999964) [Let's go ahead and set up a new profile configuration.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=60.23833299999998) [I'm back in IntelliJ,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=65.10333299999998) [and I'm going to go ahead and create a production-specific property file.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=65.97844411111107) [So under src, main, resources, I'm going to create a new file.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=70.41566633333332) [Since this is for prod, I'll call it application- prod.properties.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=74.43933299999999) [For production,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=79.86733299999999) [we probably want to trim down the logging to just errors or warnings.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=80.3716187142857) [We can add some properties to the file that will do just that.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=84.19233299999999) [You can adjust the logging level on your application to](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=87.33233299999998) [anything in the org package to just print out WARN or error](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=90.67433299999999) [messages by using a property like this.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=95.26183299999997) [I'm going to make sure my application-prod properties file is saved.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=97.72070799999999) [And really quickly, if I open the Run section,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=102.47033299999998) [you'll notice we have a lot of log statements when the](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=105.31433299999999) [server starts out that are INFO, or WARN,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=107.87219014285714) [or other scopes in the log file.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=111.12177744444445) [The logging level that we just set says we only want to](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=114.17033299999997) [see WARN particular log statements,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=117.66908299999997) [and so we want to remove this INFO for production.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=119.396333) [So we can test that our by setting the profile on the run configuration,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=124.19333299999998) [so we'll go ahead and reopen the Run,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=127.51433299999998) [Edit Configurations section of IntelliJ again.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=130.17833299999998) [This time, we want to utilize the VM options,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=134.73833299999998) [so I'm going to select in here, and I'm going to add the following -D parameter,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=137.24933299999998) [spring.profiles .active, and it equals prod.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=141.97633299999998) [And note,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=144.96833299999997) [prod has to match the suffix that we've given our property application file.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=145.67277744444442) [Go ahead and apply that and close this.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=151.567333) [Then we can go back to the Run tab and rerun the server and see if our log](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=153.763333) [files are reduced because now we're in production mode.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=157.2751107777777) [Okay, so the application has started, but you might be asking,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=160.73233299999998) [why am I still seeing INFO messages?](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=163.7898885555555) [I should only be seeing WARN messages.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=165.95633299999997) [Well if you remember,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=168.383333) [we only set WARN messages on any code that begins in the org package,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=169.43833299999994) [so these codes over here begin in com.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=174.099583) [It's not going to take effect.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=177.687583) [But overall,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=180.556333) [you'll notice that the log output is substantially](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=181.0091901428571) [smaller using the prod profile.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=183.626333) [Since we're still in development mode with this application,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=185.8786663333333) [we'll go ahead and remove that from the run configuration,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=190.322333) [just in case we do run into errors later,](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=192.76395799999997) [we can see them. Coming up next, we have even more configuration options with Spring Boot.](https://app.pluralsight.com/course-player?clipId=c7979996-87b0-45b8-9854-69b0ff1d6103&startTime=196.1656663333333)

### [Demo: Setting Properties with YAML](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941)

[So far, we've been talking about property files,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=1.303) [which have been a staple in Java since forever.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=3.616) [Let's see what it would take to use newer YAML-based files.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=6.276) [These files will pretty much work just like a properties files](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=11.333) [in the sense that it needs to live on the class path and it](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=13.788624999999998) [needs to be named application.yml.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=16.628) [The nice thing about Spring Boot is that you can mix and](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=20.25) [match property and YAML file types.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=23.150499999999997) [To show how that works,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=25.08328571428572) [I'm going to move the server port from the](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=26.859) [application.properties file to a new application.yml file.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=28.578) [That leaves the JDBC connection for the database in one](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=33.283) [file and the server port in another.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=36.8693) [So I'll begin by going over to application.properties and](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=39.481) [removing the server.port configuration property.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=42.4175) [Next, I'll create a new file in src, main,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=47.228) [resources, and I'll call it application.yml.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=49.105) [I can now paste the server port into the YAML file,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=53.345) [but I'll need to adjust it because YAML files are not](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=57.07750000000001) [configured like property files.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=60.82771428571429) [YAML files show hierarchy and nested properties fairly well.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=62.873) [And so if you have a lot of complex, really deep properties,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=67.3) [YAML files work well for that.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=71.24599999999998) [So I'll make sure my property files are saved,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=73.69625) [and I'll go ahead and restart the server.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=76.28300000000002) [If I go look at the output,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=80.835) [you'll notice that the Tomcat server still started on port 5000 even](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=82.088) [though I removed it out of the application.properties file.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=85.69675000000004) [Some advice for your project,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=89.605) [even though you can mix and match property file types in your application,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=90.945) [I'd recommend picking one format and sticking with it.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=95.006) [You want to try and isolate your configuration for your setup in](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=97.786) [your application and keep it as simple as possible.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=101.808875) [Last, environment profiles also work with the YAML files.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=105.21766666666667) [We could simply append a -dev or -prod to a YAML file,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=108.74375) [and it would work exactly like application property files do](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=113.54120000000002) [using a Spring profile from the command line.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=117.722) [And at this point,](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=121.229) [we know just about everything there is to know about](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=122.015) [property files in Spring Boot, so let's check out what you can do with custom properties.](https://app.pluralsight.com/course-player?clipId=4c40bb7b-4289-4bcb-964e-989e0bfa3941&startTime=124.09614285714288)

### [Demo: How to Use Spring Properties in Code](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7)

[So far, we've only modified existing Spring Boot and starter default properties.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=0.8726670000000158) [In this particular demo,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=5.805667000000016) [we're going to add a custom property called app.version and create a](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=6.767667000000015) [controller to display the app version when called.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=11.442381285714301) [I'm just going to jump back to the](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=15.281667000000017) [application.properties file and add that in there,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=16.863667000000017) [and I'll create a new property called app.version and set it to 1.0 .0.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=19.554238428571445) [This is a completely custom property that I want to use in my application,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=26.496667000000016) [and it has no correlation to anything that Spring Boot provides.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=31.058333666666687) [This custom property represents the version of our application,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=35.18166700000002) [and every release,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=37.99016700000002) [we could bump the version just so that you know which version](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=39.21166700000001) [of code is running when you access the API.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=41.94066700000001) [Adding the property is not enough.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=44.700667000000024) [We actually need to create a controller to actually spit out the](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=46.618167000000014) [property when you call the home of your application.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=50.34266700000001) [So I'll go jump back to the Java source code,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=54.12766700000002) [and I'm going to find the controllers package,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=57.01666700000001) [and let's create a new controller called the HomeController.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=59.612667000000016) [Do that by calling a new Java class, and I'll call that HomeController.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=63.22466700000002) [This is like any other controller.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=68.40166700000002) [We need to annotate is as a REST controller and import that,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=70.09666700000001) [and we can create a root or default handler for this](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=73.80800033333337) [by adding the following methods.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=78.46891700000003) [We'll make it a GET HTTP verb method.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=80.24238128571429) [We'll have that return a Map type, which is part of the java.util collections,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=84.208792) [and it will service the root or home section of your application.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=92.69266700000001) [Since Jackson is our marshaler for objects to JSON,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=98.42566700000002) [it'll take the map and its key-value pairs and just print them](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=102.34716700000001) [back out to the response as a JSON payload.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=106.03695271428572) [So before we implement the method body, now comes the cool part.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=110.42466700000001) [We can inject the app version that we just created into the](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=114.06666700000001) [controller by doing something like this.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=117.08616700000002) [I can use the @Value annotation,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=119.50966700000002) [and you'll notice that I have a dollar sign and curly brackets,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=121.81866700000002) [and I've specified my app.version.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=125.10641700000001) [This custom notation tells Spring Boot and Spring to look in the properties](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=127.32766700000002) [section of the app and find that and inject the value into the private](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=131.57316700000007) [String app.version attribute that I've created.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=136.93926700000006) [Now all I need to do is set that in a map and return it in my method.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=139.932667) [I can do that by instantiating a new HashMap,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=144.336667) [setting it to the Map interface handle, I can then do a map.put,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=146.611667) [store the app-version and the version from the properties](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=151.723667) [file into that value of the key-value pair,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=155.816667) [and then finally, return the map,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=159.12126700000005) [and Jackson will auto-marshal that into JSON for me.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=161.214667) [So now to test it out.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=165.014667) [I'm going to make sure and make sure everything saved and restart the server.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=166.02966700000002) [Once that's up, I can jump back to Postman,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=172.71666700000003) [and I can adjust my URL call to simply go to the root or home section.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=175.312667) [Again, we set that up as a GET verb,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=181.003667) [so we'll want to make sure we're using GET in the URL call,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=183.371667) [and we'll go ahead and send that to the server.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=186.20422255555553) [And you'll notice, we now have an app-version status page for our application.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=189.47666700000002) [It's returning 1.0 .0.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=195.54166700000002) [Hopefully this gives you an idea of how easy it is to set up your](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=197.80966700000002) [own custom application properties and use them anywhere in your](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=201.13177811111112) [code that is Spring context aware.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=204.38709557142857) [Simply inject it and use it.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=206.44566700000001) [Next,](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=209.367667) [we're going to look at configuration outside of property files using the 100% pure Java code to create configuration.](https://app.pluralsight.com/course-player?clipId=3ca36e80-aed3-4fde-8d4a-22c4669f34d7&startTime=209.63095271428574)

### [Demo: Overriding Spring Boot with Java Config](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab)

[Doing configuration in actual Java code has been around for a while now,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=1.2683340000000316) [but can still be a newer paradigm shift for many Java developers.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=5.192334000000031) [This concept would be equivalent to metaprogramming and many of the](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=9.755334000000031) [scripted languages today with the exception of DSL,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=12.912667333333367) [or domain-specific language customizations.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=16.124334000000033) [I like to lump all of my Java configuration together in a single package,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=20.531334000000033) [so I'm going to go ahead and create a new package next to the](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=23.602084000000026) [controllers or a sibling to the controllers called config.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=27.08208400000003) [I can now place all of my Java configuration in here and](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=34.92433400000003) [isolate it and know where it's all at.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=37.79590542857145) [So first, I'm going to create a new Java class,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=40.834334000000034) [and I'm going to call it PersistenceConfiguration.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=44.13333400000003) [This configuration class can be used to customize and create](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=48.55533400000003) [changes or configuration in our persistence tier.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=51.68213400000004) [Spring needs to know that this is a configuration class,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=55.483334000000035) [so we need to annotate it as such.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=57.76761971428575) [Naming it Configuration is not enough,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=60.602667333333365) [so we'll add an @Configuration annotation and import that.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=63.24133400000003) [Now here's kind of the strange part,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=66.57958400000001) [any methods that we define in here can return bean definitions](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=68.79683400000002) [that will get stored in the Spring context.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=72.11876257142862) [I'm going to show you how to override the data source being](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=75.01733400000003) [provided by the Spring Data JPA starter.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=77.67133400000003) [We need to first begin with a new method definition on our class,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=79.99970900000002) [and that will look like this.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=84.18633400000003) [The return type of this method will be a javax.sql data source.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=86.25333400000004) [When this method returns the DataSource object,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=90.66633400000003) [Spring looks for it and tries to see if one already](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=93.68333400000003) [exists in the Spring context.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=96.67966733333337) [If it does, it will replace its definition with the one that it found.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=99.02133400000004) [Spring will need to know that this is a Spring bean,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=104.41233400000003) [so we need to annotate the method as such.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=106.66758400000003) [We could do that by adding the @Bean annotation and importing that.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=108.82200066666668) [We can now provide any kind of Java code to build or](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=113.67733400000003) [implement this object however we want.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=117.07158400000003) [The body of the method is where the configuration](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=119.47833400000003) [actually happens in a Java Config class,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=121.6465006666667) [so I'm going to add the basic builder to the method by doing this.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=124.49944511111114) [We'll first create a DataSource builder, and I'll import that.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=129.57233400000004) [That's following the builder pattern, and it creates a new DataSourceBuilder.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=132.98533400000002) [Next, I set the URL on there, which is like this.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=137.69533400000003) [A side note,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=142.35233400000004) [that URL is the same URL that we had in our application.property file.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=143.12093400000006) [And then finally,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=147.59233400000002) [we ask the builder to go ahead and build our DataSource and return it,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=148.19100066666667) [which since we specified this is a bean,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=152.26733400000003) [Spring will look for that bean in the Spring context and replace the](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=155.56233400000002) [DataSource definition with what we've implemented here.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=159.21666733333333) [Now to prove that this is not just smoke and mirrors,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=162.77433400000004) [I'm going to add a system.out into the method so that we can](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=165.18683400000003) [look for that on application startup so that we know that our](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=168.6911117777778) [bean definition got created.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=172.89700066666668) [So before the return method, I simply have a System.out .println,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=174.80033400000002) [which says, My custom datasource bean has been initialized and set.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=178.24753400000006) [We'll want to look for this in the log startup.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=184.06433400000003) [So we'll save the file, and let's go ahead and restart our application.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=186.83033400000002) [So Tomcat has reported that it started on port 5000.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=192.97833400000002) [That means our application is running.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=195.28933400000005) [We can now scroll up and look for our message.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=197.73133400000003) [And here's the message that the app set up in the](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=200.78933400000003) [custom Java configuration class.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=204.178334) [You might be thinking, why would we want to do this?](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=206.25833400000002) [Well, if you have to do something complex,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=208.6300006666667) [like maybe you want to log something,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=210.91345900000002) [maybe you want to send an email when a transaction is committed,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=213.11233400000003) [or maybe you want to set up two-phase transactions or transactions across,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=215.52119114285716) [say, a Mongo database and a relational database,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=220.93766733333337) [you can set up anything you need to do inside of](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=224.10483399999998) [your Java Configuration classes.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=227.50688955555552) [The more you've worked with these Configuration classes,](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=229.86133400000003) [the more you'll be able to get ideas and see ways](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=231.63866733333336) [that you can utilize this feature.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=234.16203400000006) [It's certainly worth the time to get transitioned over to this paradigm.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=236.41633400000003) [We're just about done exploring the world of configuration in Spring Boot, but there is one last concept, and that is creating your own auto configuration.](https://app.pluralsight.com/course-player?clipId=da26986b-3033-4a95-98d0-c04dc3c034ab&startTime=240.82233400000004)

### [Creating Your Own Auto-configuration Class](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc)

[Creating a Spring Boot starter configuration class of your own is not that hard.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=1.200001000000164) [If you're a company that has lots of projects,](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=5.954001000000164) [you'll probably want to have some core JAR files that provides utility or](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=8.318001000000164) [helper classes that all of your other applications can use.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=12.448167666666832) [Auto-configuration classes are useful in this scenario.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=15.897401000000166) [These classes work very similar to the Java](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=19.816001000000163) [configuration class that we just built.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=21.818001000000162) [You'll need to create a basic class and annotate it](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=24.311001000000164) [with the @Configuration annotation.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=27.774001000000162) [Next,](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=29.996001000000163) [you can add methods that define beans and functionality](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=30.242876000000162) [that you want to provide for your starter.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=32.57928671428588) [Last,](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=35.049501000000156) [you'll need to add a declaration in the spring.factories file](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=35.36600100000015) [that you're registering in auto configuration.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=39.97900100000017) [Spring Boot will inspect JAR files on your class path for this](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=42.818001000000166) [spring.factories file and then bootstrap your auto-configuration files.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=46.99300100000017) [The spring.factories file typically lives in resources/META-INF.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=51.47200100000016) [Finally,](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=57.55200100000016) [there are a host of annotations that Spring Boot provides that allow](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=57.82057242857159) [you to specify conditions on your auto configuration.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=60.81050100000018) [For example,](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=64.53400100000016) [if you're building some auto configuration that is](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=65.28428671428588) [dependent on a Postgres JDBC driver, you could specify that at the class level,](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=68.07000100000015) [it's conditional on the driver being present.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=73.00300100000017) [If it's there, your auto-configuration will magically wire stuff up,](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=75.89100100000016) [and if it's not there, your configuration will simply do nothing.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=79.46150100000018) [This is one reason why starters are so powerful and do so much simply by](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=84.49100100000017) [including the dependency on your project in the class path.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=88.75850100000017) [Clever teams and developers will already have the gears turning in](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=92.93700100000017) [their heads on how they can utilize this concept in their projects and organizations for their common functionality.](https://app.pluralsight.com/course-player?clipId=c0602afd-e594-4df0-a42b-afa6e939b2fc&startTime=96.45412600000017)

### [Summary](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196)

[Spring Boot makes configuration very easy to use and work with.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=1.1836680000000632) [There are, however, a lot of options on how you can customize your application.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=5.014668000000063) [Here's what you should have learned in this section of the course.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=9.439668000000063) [First,](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=12.618668000000064) [you should know that Spring Boot looks for](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=12.86338228571435) [configuration files on the class path.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=15.036168000000062) [Your project will typically utilize the src, main, resources folder for this.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=17.149668000000062) [Spring Boot can read and work with property files and YAML files.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=22.226668000000064) [There is also an order of precedence of when and their values are](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=26.717668000000064) [configured from external to internal configuration sources.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=30.87766800000007) [Next,](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=35.06166800000006) [you need to be aware of all the common Spring Boot properties that are provided](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=35.22955688888895) [out of the box by Spring and the various Spring starters.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=38.67466800000006) [These are your first area of customization when you need to](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=42.611668000000066) [modify something in your application.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=46.96255688888895) [When it comes to your application,](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=49.01866800000006) [Spring Boot can load in specific files based off of Spring profiles that](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=50.39666800000006) [will override and customize your app per environment.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=54.72181085714293) [This is the right, or correct, way to handle moving your app from development,](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=58.04266800000006) [to test, to staging, to prod, and so on.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=62.376953714285776) [Simply provide appropriate environment files](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=66.11716800000005) [configured for each environment profile.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=68.17326800000008) [Finally, you can start to get fancy with configuration and handle it all in Java.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=71.03866800000006) [You can even create your own auto-configuration classes](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=76.12566800000006) [and starter JAR files for your apps.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=78.33646800000007) [And that's it for configuration.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=81.70466800000007) [The only thing that we have left to do is to figure out the right](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=83.70066800000006) [way to deploy our Spring Boot applications, which we'll be covering in the next section of the course.](https://app.pluralsight.com/course-player?clipId=ecba6494-2873-47de-a652-156da79f6196&startTime=86.88233466666676)

## [Deploying Spring Boot Applications](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf)

### [Introduction](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf)

[In some ways, deploying applications have gotten easier,](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=0) [and in some ways, deployments have gotten harder.](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=3.948666666666667) [You have a lot of choices you day in should I deploy to a cloud environment,](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=6.724) [should I run my app on rack servers,](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=11.687) [should my app be an executable JAR file or a WAR file,](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=13.113) [and so on?](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=16.444714285714287) [To help you pick a strategy that will work for your project,](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=17.277) [I'm going to run through these options,](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=19.322749999999996) [as well as discuss the correct way of packaging and bunding a Spring Boot](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=20.95457142857143) [application that includes the JAR option and the WAR file options.](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=25.576666666666668) [Now that we have a robust enough conference API-based application,](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=29.852) [let's take it to the last and final step, and that's getting it deployed.](https://app.pluralsight.com/course-player?clipId=4f7d04a8-6df8-47ba-9bde-99cef22c6cdf&startTime=32.28242857142857)

### [Spring Boot Containerless Architecture](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df)

[If you were a Java developer back in 2005 and you](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=1.449) [wanted to deploy your application,](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=4.16) [you'd become very familiar with containers like Tomcat,](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=5.695) [Glassfish, or Websphere.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=9.2468) [These were all containers that complied with the JEE specification at that time.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=11.153) [And when you deployed a Java application,](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=15.793) [you created a WAR file and then installed them on these containers.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=17.496) [Now with Spring Boot, apps are standalone.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=21.701) [Instead of installing your app into a container,](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=24.476) [Spring has embedded a container inside of the framework.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=27.012) [This allows you to run the app in standalone mode now.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=29.9345) [The default container Spring Boot uses is Tomcat out of the box.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=33.737) [You can switch that out to Jetty or Undertow if you](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=37.748) [prefer a different embedded container.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=40.49412500000001) [Let's see what it actually takes to switch out an embedded container for our conference application.](https://app.pluralsight.com/course-player?clipId=abcb049f-3546-42c7-b748-e93dac0ef5df&startTime=42.741)

### [Demo: Switching out the Spring Boot Embedded Container](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78)

[Switching out the default embedded container in a Spring](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=1.513) [Boot app really isn't that difficult.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=4.039) [I'm going to jump into the pom.xml file to begin this.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=5.6370000000000005) [I'm going to scroll down until I find the spring-boot-starter-web dependency.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=10.361) [This is the dependency that brings in the Tomcat embedded container.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=15.03) [So the first thing that needs to happen is we need to switch out the](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=19.412) [container by excluding Tomcat from this dependency.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=22.732250000000004) [And in Maven, you can do that by adding this to the dependency declaration.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=26.408) [Simply add an exclusions tag, and inside of there,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=30.33) [you can exclude the spring-boot-starter-tomcat artifact.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=33.8675) [This will no longer load in this dependency when you](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=37.634) [include the spring-boot-starter-web.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=41.126) [Next, we need to bring in the new container dependency.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=42.821) [Spring provides starters for Jetty and Undertow.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=45.762) [I'm going to use Jetty, so all I need to do is add the following dependency.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=49.216) [This dependency will be a sibling of the](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=55.534) [spring-boot-starter-data-jpa or the spring-boot-starter-web,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=58.204) [and it's simply including the spring-boot-starter-jetty.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=60.931000000000004) [I'm going to go ahead and save the POM file.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=66.415) [And since we've modified the POM,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=68.21) [IntelliJ is asking if we want to import and sync the changes,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=69.763) [which we do, so I'm going to go ahead and click on that.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=73.004) [And at that point, we've switched the containers.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=78.212) [So all we need to do is start up the application and test it out.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=80.566) [So I can go ahead and just start the application up here,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=84.206) [clicking on the Play button.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=87.74212500000002) [Now if we open up the server log and take a look at this after it's started,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=91.864) [you'll notice that the container is now stating that it's running with Jetty,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=95.544) [and we're started on port 5000, which is the last port we configured.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=99.978) [Even though Spring Boot provides configuration and opinionated configuration,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=104.964) [it makes it really easy to get out of the way and](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=109.49) [to customize it for your needs.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=112.10924999999999) [Most apps, however, will be fine using the default Tomcat container.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=114.093) [If, for some reason, you do need to change it,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=117.902) [Spring Boot will allow you to do that.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=119.795) [Next,](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=122.147) [let's check out what it takes to get your application packaged so that you can run it as a standalone app outside of the IDE.](https://app.pluralsight.com/course-player?clipId=0f12ee0c-ae19-4274-9a7b-11b19b000c78&startTime=122.33455555555555)

### [Demo: Creating Executable JAR Deployments](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f)

[There are two ways that you can create a basic standalone JAR](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=1.676) [file that can be used to run your application.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=3.8031249999999996) [The first is to utilize Maven to create JAR files that you](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=6.708) [can use to run with the Java command, and here's that'll work.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=10.108454545454546) [Inside of IntelliJ,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=14.461) [we can just execute a Maven command and click on the Maven](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=15.451749999999999) [pop-out in the right-hand corner here and go to this small](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=19.262) [lowercase m to execute a Maven goal.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=23.57466666666667) [The Maven goal that we want to run is the mvn package goal.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=25.79877777777778) [If you inspect the output from running that command,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=32.818) [you'll notice that it compiles, runs your test,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=34.66766666666667) [and then packages your app into a JAR file.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=36.76975) [Maven will place your artifact or your JAR file inside of this](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=39.479000000000006) [target folder that's part of your application.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=43.032) [And if you open this up,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=45.942) [you can see that there is a artifact called](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=47.05440000000001) [conference-demo- 0.0 .1 - SNAPSHOT.jar,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=51.23849999999999) [and that is the JAR file that contains your entire application.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=54.681) [To run the application with the Java command, we need to do a couple of things.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=57.95166666666666) [We first need to make sure that our application is](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=62.347) [not running inside of the IDE, so I'm going to shut that down,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=65.45271428571431) [and then I'm going to jump over to a terminal.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=69.18933333333332) [IntelliJ provides a terminal if you want to just use that.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=73.0485) [Once the terminal is open,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=77.019) [we simply just need to navigate into the target folder,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=78.13212499999997) [and we can see that we have our JAR file in here.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=83.12) [To run the JAR file, you simply need to execute the following command,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=86.172) [java -jar, and then supply the JAR file name.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=89.43066666666665) [When you run this,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=96.437) [this will look exactly like the output that you see in](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=97.17349999999998) [the IntelliJ build or run server logs, but here,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=99.39750000000004) [we're running it from the command line.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=103.90177777777778) [You can see that it started with the Jetty server on port 5000.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=105.945) [So take a moment to think about what has happened here.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=110.098) [You can now run your app anywhere that you have Java installed.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=112.71125) [This could be a server, or the cloud, or just simply, your laptop.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=117.069) [I'll go ahead and Ctrl+C this.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=120.667) [We'll jump back to the application now.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=123.236) [The second way that you can create your JAR file to run your app](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=125.727) [is to create a standalone executable JAR file.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=128.16122222222222) [And in order to do this, we need to modify Maven slightly,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=131.443) [so I'm going to jump back into the pom.xml file.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=133.89249999999998) [In the POM file, find the Spring Boot plugin section at the bottom,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=138.656) [which is part of the build area, and we're going to add the following to it.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=142.83637500000003) [We're going to add a configuration tag and specify as executable is true.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=148.835) [We'll save the file.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=153.603) [IntelliJ is wanting us to import the changes,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=155.087) [which we want to do, so we'll click on that.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=156.867) [Once that's done synching,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=159.661) [we'll want to go ahead and run the Maven package again.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=160.6375) [So we'll go back to the Maven pop-out, click on the m, and run mvn package.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=163.454) [Once that's built successfully, let's jump back to the terminal.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=172.325) [I'm going to go ahead and clear out the old output from](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=175.772) [the previous run so we can start fresh.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=177.70325000000003) [And this time,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=180.19219999999999) [you'll notice that we're not going to start the JAR file using the java -jar.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=181.517) [It's now a standalone executable JAR file.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=186.047) [So on a UNIX or a macOS system, we can execute that by doing the.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=188.939) [/ and giving it the JAR file name.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=194.9623333333334) [Now when I run it,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=199.418) [you'll see that it's running the JAR file standalone](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=200.05188888888895) [without even having to execute Java.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=202.51566666666668) [And unfortunately,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=205.737) [this particular command only works with UNIX or Linux-based systems.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=206.4782) [So if you're on Windows,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=211.186) [this obviously isn't going to work the same because it's not](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=211.946) [going to create an EXE file to execute,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=214.67599999999996) [but you still have the original way of running with a java](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=216.495) [-jar command on the original JAR file.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=220.4726250000001) [And that's all it takes to create a Spring Boot deployable app](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=223.796) [just by running it from the command line.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=227.22137500000002) [So hopefully you can start to see how powerful this is because you](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=230.03742857142856) [can now run this anywhere that you can run Java,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=233.05133333333333) [which Java runs just about anywhere.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=235.85675000000003) [So coming up next,](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=238.601) [let's look at some of the cloud platforms that we could possibly run our application in.](https://app.pluralsight.com/course-player?clipId=ee9a4fee-1ae8-46a4-b7b4-ced9f48e2c4f&startTime=239.20233333333329)

### [Common Cloud Supported Platforms](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c)

[Now that you have a self-contained JAR file that](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=1.3766670000000159) [represents your application in standalone mode,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=3.172067000000016) [you're ready to deploy it and run it on a cloud platform.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=5.159667000000016) [Common cloud platforms that Spring Boot works with are Cloud Foundry,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=8.835667000000015) [Heroku, Google Cloud, Amazon Web Services,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=13.636833666666686) [and Microsoft's Azure.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=16.641667000000016) [Each of these platforms require setting up different configuration files so the](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=18.641667000000016) [platform knows how to deploy it on its own infrastructure.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=22.751667000000015) [Even though those details might differ,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=26.385667000000016) [the standalone JAR artifact you create does not.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=28.458667000000016) [If you want to give yourself even more flexibility with deployments,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=32.02866700000001) [you can Dockerize your application.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=34.86466700000002) [Most all cloud platforms support Docker.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=37.20866700000001) [You might ask,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=40.57266700000002) [why would I Dockerize my app if the platform](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=41.48500033333335) [supports deploying a JAR file natively?](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=44.35495271428573) [There are a few reasons.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=46.46952414285716) [Clustering and portability are just simply two of them.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=48.271667000000015) [If your app is Dockerize,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=51.41991700000001) [you can spin up many instances quickly using tools](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=52.868667000000016) [like Docker Compose or Kubernetes.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=55.88566700000001) [Finally, if you do decide to use a cloud offering,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=58.43566700000002) [a few things to keep in mind, first,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=61.033417000000014) [logging can be difficult to track down and use depending on the cloud.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=63.48852414285716) [It may be a good idea to utilize a centralized logging service.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=68.53966700000002) [Connecting to your database or other cloud service,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=72.82866700000001) [like a Redis queue,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=75.08746700000002) [may require specific handling that can be different than what we covered in](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=76.85066700000002) [the Spring Boot configuration section of this course.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=80.43238128571427) [Getting all of your services to talk to one another can](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=83.41466700000002) [also be a firewall or a security headache.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=86.44916700000002) [Since you're in the cloud and things are public,](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=88.26033366666668) [you need to deal with network traffic and communication appropriately.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=90.91129199999997) [Coming up next, we'll check out how to deploy our application to the Heroku cloud.](https://app.pluralsight.com/course-player?clipId=e7eee6e1-fdc2-4e70-b232-2419387a900c&startTime=95.01066700000001)

### [Demo: Deploying Spring Boot to the Cloud](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02)

[I'm going to show you how easy it can be to deploy a Spring Boot app on Heroku.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=1.449) [I know there is a lot of cloud options out there,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=5.38) [and I chose Heroku for simplicity sake.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=7.665375) [You could easily spend some time and do the same deployment on AWS,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=10.783) [or Digital Ocean, or whatever cloud that you're familiar with.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=13.767142857142856) [Even if you haven't used Heroku before,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=17.302) [many of the steps will be the same elsewhere.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=19.754) [The takeaway should be focused on how easy the built](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=22.543) [Spring Boot JAR files are to work with.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=25.3282) [This is the main Heroku dashboard after you've created an account.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=28.601) [I'm going to go ahead and create a new app by clicking on the New button in the](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=31.89) [upper-right-hand corner and then clicking Create new app.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=35.666) [I'm going to go ahead and give the app a name on Heroku,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=39.345) [and we'll call it conference-demo-dan.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=42.635) [I'll go ahead and use the United States region and](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=46.726) [simply click the Create app button.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=49.322) [At this point,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=52.52) [Heroku is asking to connect to a Git repo so that it can find the app to deploy.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=53.310874999999996) [I've checked my app into a Git repository,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=57.75555555555556) [so I'm simply going to click on GitHub,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=60.080375000000004) [and I can search for my repository by clicking on the Search](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=62.248875) [button and then finding the appropriate repository.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=66.975625) [I can then click Connect, which will tie it to my cloud Heroku.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=70.75) [Heroku has a couple of ways of deploying apps.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=74.72988888888891) [You can auto deploy on a commit or a check-in.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=77.818) [I'm going to go ahead and use the manual way,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=81.404) [and select the master branch, and click Deploy Branch button.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=83.22333333333333) [Heroku then auto detects that it's working with a Java application.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=87.917) [And once it's done building, it will say that your app was successfully deployed.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=93.323) [You can click the View here,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=96.66) [or you can go up into the upper-right-hand corner and click on Open app.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=97.79880000000003) [Go ahead and try that.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=101.96677777777776) [And if all went well,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=103.889) [you should get the status page that we built that shows the app version number.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=104.58344444444442) [But check out what happens if we go to our api/v1/sessions endpoint.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=108.193) [We get an error rather than a payload,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=114.785) [and it says that it's unable to acquire the JDBC connection.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=116.735) [If you think about it,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=119.23957142857142) [this is expected because we haven't set up the Postgres database on](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=121.001) [Heroku so the app has no database to talk to or work with.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=124.77649999999997) [If I go back to the Heroku dashboard, I can click on the Resources tab.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=129.327) [This is where you can add additional services,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=133.276) [and you'll notice that Heroku was smart enough that it](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=135.607) [already attached a Postgres database.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=138.84537500000002) [Heroku sets up the database settings in the Settings section of the application.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=140.971) [You can look at them here with the Reveal Config Vars.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=145.661) [Set up the database URL to an environment variable](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=148.31055555555557) [called DATABASE\_URL with the data.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=152.611) [If you remember in our application though,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=156.109) [we have the DATABASE\_URL set to DB\_URL as the environment variable.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=158.181) [Before we can set up this URL in Heroku,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=164.08) [you'll actually have to remember back when we created a](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=166.881) [custom configuration class on the Java side.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=170.2147142857143) [If we go into the config folder and open up the PersistenceConfiguration,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=172.71099999999998) [you'll remember that we built out a DataSource bean,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=176.747) [and in here, we actually hard coded the URL.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=179.31539999999998) [So hard coding things into your app is not the greatest thing.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=182.672) [And in this case,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=185.99328571428572) [it's going to break our deployment on Heroku because localhost with](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=186.959) [the 5432 port for Postgres is not going to exist.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=191.9615714285714) [So I'm actually going to go ahead and just comment out this bean and save it,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=197.43) [and I'm going to check this back into the Git](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=201.544) [repository and have Heroku re-pull it.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=205.72485714285713) [Before I have Heroku re-pull that,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=209.84) [you'll notice that we need to modify this to match what we](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=211.728) [have in our application properties URL,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=215.604) [so I'm going to simply add a variable here called DB\_URL,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=217.17874999999998) [and I'm going to copy the database URL into it.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=223.222) [Now that the DB\_URL is set and the Git repo has been updated to comment](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=228.215) [out our persistence bean in the Java configuration,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=233.02071428571426) [I can come back to Deploy and simply deploy the master branch again.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=236.161) [Once that's redeployed, I can jump back over to Chrome and test it out.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=241.092) [This time, when we hit the sessions URL endpoint,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=244.983) [we get another 500 error, but it's about the result set.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=247.31566666666666) [I can check to see what the error is in my log files on](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=251.536) [Heroku by coming up to the View logs.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=254.64700000000002) [Here, our app is telling us that the table sessions does not exist,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=257.5635) [and again,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=261.693) [this makes sense because we have not loaded the data](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=262.24275) [into our production database on Heroku.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=265.38285714285706) [So I'm going to go ahead and pause the video and load that,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=267.43137500000006) [and I'll be right back, and we can test it out again with some live data.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=271.218) [Okay, I've loaded up the production database using the scripts,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=275.296) [like we did when we created our own local database with](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=277.8578571428571) [the create tables and the create data.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=280.918) [Let's go ahead and try to access our sessions endpoint again on Heroku,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=283.551) [and you'll notice that we now have all of our payloads.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=288.426) [Okay, so here's to summarize what's happened.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=292.0064285714286) [Heroku auto detected our Java Spring Boot app,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=295.36533333333335) [it ran the Maven package, it installed the Postgres database for us,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=298.85466666666673) [and it deployed it all to a URL that was accessible.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=302.928) [All that we had to do was to load the database and make sure](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=306.317) [that the app could connect to it properly.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=309.01099999999997) [If you've ever fussed with getting a Tomcat container](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=311.95) [set up and then accessible publicly, deployed your app,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=314.1357142857143) [and get your database set up,](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=317.2141428571428) [you can appreciate how easy some of this cloud stuff is making app development.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=318.96477777777784) [Now that I just put down the old way of deploying apps, let's take a look at what needs to happen to build a good old WAR file.](https://app.pluralsight.com/course-player?clipId=6080ebda-fc11-49c5-a457-4ff07ab77b02&startTime=323.691)

### [What About WAR Deployments?](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc)

[If you're working with an existing application or an infrastructure,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=1.279332999999984) [chances are you are already creating a WAR file for deployments to a container.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=4.619332999999984) [If you've created a Spring Boot app in this environment,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=9.903332999999984) [you'll need to be able to continue to support deploying to your container,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=12.34204728571427) [and that's going to require a WAR file.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=16.443332999999985) [Since our application is a Maven-based application,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=19.239332999999984) [we need to make some modifications to the pom.xml file to](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=21.597332999999985) [package the app a little differently.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=25.702332999999985) [Currently, when you build a project,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=28.077332999999985) [Maven will generate a standalone executable JAR file,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=29.702332999999985) [and this also contains the embedded container that Spring Boot uses by default,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=32.44633299999999) [which is Tomcat.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=37.134832999999986) [The first thing that will need to happen is to flag](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=39.08933299999998) [the embedded container as provided.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=41.311047285714274) [This will tell Maven to not package Tomcat or whatever embedded](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=43.66033299999999) [container that you're using in the final packaged artifact.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=47.13383299999998) [Second, we need to tell Maven to package our app as a WAR instead of a JAR file.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=51.20233299999998) [Once these two changes are done,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=56.231332999999985) [the Spring Boot Maven plugin will take care of the rest.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=58.36133299999999) [There is also one small Java coding change you'll have to make,](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=60.93866633333332) [so let's go ahead and modify the conference app to produce a WAR file instead of a JAR file.](https://app.pluralsight.com/course-player?clipId=62885da4-bc73-4d2c-9671-ee85cad6c2fc&startTime=64.55533299999999)

### [Demo: Creating a Spring Boot  WAR Deployment](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586)

[We'll start by making a couple of changes in the Maven pom.xml file,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=1.2326659999999683) [so I'll go ahead and get that open.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=4.385999333333302) [The first thing that needs to happen is we need to flag](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=7.08716599999997) [the embedded containers as provided, so I'll need to do a few things here.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=10.15233266666663) [First, we have a dependency for our spring-boot-starter-jetty.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=15.02866599999997) [I'm going to go ahead and remove that dependency.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=19.305665999999967) [And we've also excluded the spring-boot-starter-tomcat in](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=22.983665999999968) [the spring-boot-starter-web dependency,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=27.3929993333333) [so I'm going to go ahead and remove that as well.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=30.13566599999997) [Next, I'm going to re-add the spring-boot-starter-tomcat dependency,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=34.199665999999965) [but I'm going to give it a scope of provided.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=38.06266599999997) [That means that Maven won't package the Tomcat starter in the build.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=41.98466599999997) [It expects something externally to provide it.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=45.327665999999965) [With these changes in place,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=47.93666599999997) [you won't have an embedded container inside of your application anymore.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=49.18916599999998) [And the final thing that we need to do is to change the](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=53.531665999999966) [packaging type of the Maven artifact to a WAR.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=56.49991599999996) [We can do that by adding the following line.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=58.854888222222186) [I'm going to do that near the top of the file underneath the description area,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=62.260665999999965) [and that will be packaging tag with a value of war.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=67.41166599999997) [That now will produce a WAR file rather than a JAR file.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=70.5069993333333) [Go ahead and save those changes, and IntelliJ is wanting us to import those.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=74.74266599999997) [We'll do that.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=78.61666599999997) [Once that's done, we need to make one small Java change,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=79.77966599999996) [so I'm going to go ahead and close this build section,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=82.72466599999997) [and I'm going to jump back to src, main,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=85.55341599999996) [java, jump into my packages,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=88.84741599999995) [and I want to find the ConferenceDemoApplication class.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=90.99366599999996) [If you remember,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=94.54066599999997) [this is our bootstrap class that has the public static void](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=95.2049517142857) [main where everything gets kicked off.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=98.43741599999998) [The change I want to add in here is I need to have](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=101.05266599999997) [this class extend the following.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=103.94109457142852) [We want it to extend SpringBootServletInitializer.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=106.30966599999996) [We'll go ahead and import that class and save the file.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=108.78966599999997) [When you deploy a WAR file to an external container,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=112.47766599999997) [it expects a context to be available.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=115.52566599999999) [It also expects a web.xml file, which defines how the app will get deployed.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=118.13866599999997) [Since the Spring Boot does not have a web.xml file in it,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=124.95566599999997) [this class provides that value and information to the external container.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=129.3355231428571) [Without this,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=134.40666599999997) [you won't be able to access you app properly via a](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=134.95016599999997) [context when you go to access it.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=138.0384437777778) [With these changes in place,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=140.181166) [we can go ahead and open up the Maven pop-out and run mvn package again by](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=141.80866599999996) [going to the little m and running the mvn package command.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=146.167666) [At this point, you'll notice that we get an error,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=151.28366599999998) [and I wanted to point this out because this can cause people to run into a](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=152.96391599999995) [lot of issues if you're not familiar with what's happening.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=157.50866599999998) [So, ultimately,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=160.52516599999998) [what happens when the test runs is it's looking for](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=161.58966599999997) [everything to be set up correctly.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=164.01241599999994) [We're currently set up to use our database by using an environment variable.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=166.17766599999996) [So I'm going to go ahead and close this Run thing here,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=170.57066599999996) [and I want to go over to the resources, application.properties.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=172.82446599999997) [In here, the app is expecting this.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=178.64266599999996) [Well, this is not provided when we run our test.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=181.04166599999996) [And if you think about it,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=183.94666599999996) [this environment variable won't be provided when we go out to](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=184.94266599999997) [run our app inside of a Tomcat container,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=189.01912054545448) [for example.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=192.43866599999996) [We could end up setting that as a value on there,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=193.58366599999997) [but just to make things simpler, I'm going to go back into the config,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=196.53952314285712) [PersistenceConfiguration,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=201.39466599999997) [and I'm going to reenable the bean that we set up](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=201.95966599999997) [because we've hard coded our URL in here.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=206.35729099999995) [I'm going to save that file.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=209.88266599999997) [Now also, keep in mind,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=211.46666599999998) [you don't want to end up doing this for your production app.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=212.64777711111103) [You do want to end up using some kind of external configuration source,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=215.55766599999995) [and a lot of times,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=219.06880885714278) [the best way to do that in an external container is using JNDI.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=221.1158882222222) [So you could set these up as JNDI values so you don't have your URL](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=225.46366599999996) [and credentials hard coded into your application.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=229.9838088571429) [Since we don't have enough time to go into that depth,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=233.28366599999998) [we'll go ahead and just reenable this and run the mvn package again.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=235.67680885714284) [This time, the app has built successfully,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=244.00266599999998) [and if we go look in the target folder,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=246.50166599999997) [you'll now see that the artifact is a WAR file rather than a JAR file.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=248.66666599999996) [We still have our old JAR file in there from an earlier build,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=254.24166599999998) [but we also now have this conference-demo- 0.0 .1 - SNAPSHOT.war file,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=256.847666) [and this is the file that we'll go ahead and deploy to a Tomcat container.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=264.22666599999997) [So to deploy my WAR file to a Tomcat instance,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=269.54266599999994) [I need to go find that WAR file, which is in my target folder,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=271.968666) [and I'm going to copy this.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=276.2899993333334) [I'm going to go over to my apache deploy,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=278.35676599999994) [and you're going to push this into the webapps folder for apache-tomcat.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=281.3328088571429) [So we'll simply paste that WAR file in here,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=287.317666) [and then you'll notice that Tomcat will extract that](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=290.896666) [out into an expanded application.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=293.6302374285714) [By default, Tomcat runs on port 8080, so I'm here at the root of my Tomcat,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=296.711666) [and I have the Tomcat documentation.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=301.857666) [To run and access my app, I need to enter the context.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=304.83466599999997) [Now the context was the name of the folder that I just deployed.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=308.257666) [That folder name is this big, long thing here,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=314.72166599999997) [so I'm simply going to copy that and paste that in](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=316.5191659999999) [as my context for my application.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=319.83999933333325) [So that would be forward-slash and the name of my conference-demo-SNAPSHOT.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=322.9373802857143) [And when I go to that page now,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=329.26366599999994) [you'll see that my app is responding to the home or the root endpoint,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=330.20566599999995) [which is our app-version of 1.0 .0,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=334.1585409999999) [and the app is now running on a container using the external](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=336.6555548888889) [Tomcat instead of the internal embedded Tomcat.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=342.132666) [And again, we can go ahead and test out the speakers or the sessions,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=346.148666) [and I still get my sessions endpoint back.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=350.11866599999996) [So this is how you can run a Spring Boot application on an external container,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=354.23966599999994) [and there's only a few changes that you need to make](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=359.20366599999994) [to your app to get that working.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=361.8356659999999) [Finally,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=363.92866599999996) [keep in mind that the changes that we've made in this clip](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=364.12691599999994) [will prevent your app from running as a JAR file or a](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=366.6846659999999) [standalone executable JAR file.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=369.884666) [You can pick one way, or you can pick the other,](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=372.15966599999996) [but you can't have both a JAR and a WAR at the same time.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=374.086666) [If you want to go back to running your app as a standalone JAR, you'll need to revert the changes that were made in this clip.](https://app.pluralsight.com/course-player?clipId=56826080-17fc-4ee6-920d-ae8f1db98586&startTime=377.47336599999994)

### [Summary](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86)

[At this point,](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=1.160998999999836) [you should know enough about Spring Boot to take your app from creation all](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=1.7227489999998364) [the way to app deployment in a production environment.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=5.082248999999836) [Here's what we covered in this last section of the course](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=8.346998999999837) [and what some of your takeaways should be.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=10.634748999999836) [First, Spring Boot uses a containerless architecture.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=13.260998999999837) [SharePoint utilizes an embedded container under the covers,](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=16.339998999999835) [which supports Tomcat, Jetty, and Undertow servers out of the box.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=20.170498999999836) [Spring Boot provides a Maven plugin that can then package](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=24.952998999999835) [your application as a standalone executable JAR file that](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=27.70457042857127) [can be run anywhere Java runs.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=30.643284714285546) [This enables your Spring Boot app to run nicely in cloud environments,](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=33.56999899999984) [and Spring Boot and Spring supports the major cloud offerings.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=37.723998999999836) [Finally,](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=41.992998999999834) [Spring Boot provides a way to package an app as a WAR](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=42.241856142856975) [file rather than a standalone JAR file.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=45.09399899999985) [This allows you to deploy the app into an external](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=48.034998999999836) [container if your need arises.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=50.77183233333317) [And that's it!](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=53.32099899999984) [Thank you for taking the time to learn Spring Boot with me.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=54.030498999999836) [I really do appreciate the opportunity of helping others pick](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=56.79899899999984) [up new skills and techniques that can help them with their](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=59.66557042857127) [projects and software problems.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=62.556998999999834) [I encourage you to take the time to continue on the Spring framework](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=65.13499899999984) [learning path to get a deeper understanding of each of the framework pieces that we've worked with in this course.](https://app.pluralsight.com/course-player?clipId=59854961-5d29-4bb6-a57b-0aeef9178a86&startTime=67.9106656666665)