# **Learning Julia**

### **Julia: Power like Python, speed like C**

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- [Joe] If you look at the history of programming, selecting language to use for a particular project has often required trading off performance versus flexibility. The introduction of Julia, however, just might turn that tradition on its head, at least for some scenarios like scientific and financial computing. Hi, I'm Joe Marini, and I've been building software professionally for companies like Google, Microsoft, and Adobe for more than 30 years. In this course, we're going to learn about Julia, a relatively young language that has been gaining rapid acceptance in fields like data science and financial modeling, among others. The Julia language gives you performance approaching that of statically typed, stodgy, old C while maintaining the kind of flexibility you typically get from Python. In this course, we'll get an overview of the language and some of its basic features, such as how to control program flow, organize information using the built-in data structures like sets and dictionaries, and how to use some of the standard library modules that come with Julia that enable common scenarios like generating random numbers or working with date and time information or working with the file system. Let's get started working with Julia.

### **What you should know**

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- [Instructor] There are a few things that you should already know before beginning this course. This course is intended for people who already have some fundamental knowledge of programming and want to learn the Julia language. It's not intended to be a starting point for absolute beginners. You should already be familiar with some of the main concepts of writing programs, such as writing functions, declaring variables, using control structures like loops and conditional statements, and so on. If you're just starting out learning about programming, then you should probably watch Programming Foundations: Fundamentals and you might also want to watch Programming Foundations: Algorithms. You should also be familiar with using a text editor to write code. It doesn't matter whether you want to use VS Code, or Sublime, or Atom, whatever, it doesn't really matter. We're just going to be working on text files in this course, so whatever text editor you are comfortable with that's fine with me as well. In this course, I'm going to be using Visual Studio Code because it's a great free editor from Microsoft and it has support for Julia through its extensive ecosystem of extensions. You can download it from code.visualstudio.com and it works across multiple operating systems, Mac, Windows, Linux. So it doesn't really matter what kind of computer you have. You should also be familiar with using your favorite operating system's terminal program in case you want to run your code directly from the command line. If you feel comfortable with these prerequisites, then you are ready to start the course.

### **Setting up the development environment**

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- [Instructor] To set up your Julia development environment, let's start by downloading and installing Julia itself. The Julialang.org website has a download section where you can get the latest version of Julia for your operating system. So I'll go ahead and click on the Download link and you can see that there are versions for Windows, Mac, some Linux binaries, and you can even get the source code if you want. So I'm using a Mac, so I have downloaded that particular version and when you download the installer, go ahead and run it for your operating system and that will get Julia installed. Now if you're using a different operating system than I am, just follow the instructions on the site for your OS and you can see, for example, that for Windows if you click on the Help link that will take you to a platform specific instructions page for how to get Julia installed on your computer. So, I've run the installer already and I have Julia installed, but I want to be able to run Julia from the command line, but my application folder is not a part of the path environment variable. So let me show you what I mean. I'm going to start the terminal and when I type the command Julia, you can see that I'm getting an error. It says that the command is not found and that's because my environment path does not point to the Julia application. Now there's a couple of ways you can fix this, but what I'm going to do is make a symbolic link to the Julia app and put the link file in a place where my path currently points, which in this case is going to be usr/local/bin. You can do the same thing on Linux if you need to and on Windows, the installer should take care of the path variable for you, but if it doesn't you can refer to the platform specific instructions on how to fix that. So to make the symbolic link on my Mac, here in my terminal I'm going to type sudo and then the command for making the link is ln and I'm going to make a symbolic link, so that's -s. Then I have to point to the Julia application and that is in my Applications folder and then there's the Julia app and the actual executable is inside the Contents/Resources/julia and then bin and then the app name is Julia and then I'm going to create the symbolic link inside /usr/local/bin and I'll just name the link Julia. And then I'm asked for my password so I'll put that in and now it's been created. So now watch what happens when I type the Julia command. You can see that Julia starts up and we're using Version 1.1.1 here. All right, once you've done this you need to make sure that you have your favorite text editor ready to go. So two of my favorites are Visual Studio Code and Sublime Text. Now if you're using a different editor, that's fine. It doesn't really matter since we're just going to be editing text files and we'll be executing the code from the terminal window. After you download and install Julia, put the Exercise Files somewhere on your computer where they will be easy to access. So I put the Exercise Files here on my desktop, but that's not required. You can put yours wherever you like. So once you have all these pieces in place, it's time to start the course.