Spring Boot

Sure! Here is a 5-day learning plan to get you started with Spring Boot:

1. Introduction to Spring Boot

- What is Spring Boot and why it is important
- Benefits and features of Spring Boot
- Spring Boot architecture and its components
- Setting up the development environment

Tasks

1. What is Spring Boot and why it is important
    - ☐ Research and read articles on what Spring Boot is and its advantages.
    - ☐ Watch video tutorials that explain what Spring Boot is and its use cases.
    - ☐ Compare Spring Boot with other similar frameworks like Dropwizard or Micronaut to understand the differences and similarities.
2. Benefits and features of Spring Boot
    - ☐ Research and read articles on the benefits and features of Spring Boot.
    - ☐ Try to identify the most useful features of Spring Boot in your own project or use case.
    - ☐ Write a short code snippet using one of the features you find most useful.
3. Spring Boot architecture and its components
    - ☐ Research and read articles on the Spring Boot architecture and its components.
    - ☐ Draw a diagram or flowchart that shows the architecture of a Spring Boot application.
    - ☐ Identify the different components of a Spring Boot application, and explain how they interact with each other.
4. Setting up the development environment
    - ☐ Download and install the latest version of Spring Boot.
    - ☐ Install and configure a Java IDE such as Eclipse or IntelliJ IDEA.
    - ☐ Create a simple "Hello, World!" application using Spring Boot and run it on your local machine.

2. Spring Boot Basics

- Creating a simple Spring Boot application
- Understanding the basic structure of a Spring Boot project
- Building and running Spring Boot application

- Using the Spring Initializr to bootstrap your application

Tasks

1. Creating a simple Spring Boot application
    - ☐ Create a new Spring Boot project using the Spring Initializr.
    - ☐ Create a simple "Hello, World!" application using Spring Boot, and run it on your local machine.
    - ☐ Modify the application to include a basic REST endpoint that returns a simple JSON response.
2. Understanding the basic structure of a Spring Boot project
    - ☐ Explore the different files and directories in a Spring Boot project.
    - ☐ Understand the role of each file, such as application.properties, pom.xml, and Application.java.
    - ☐ Experiment with modifying the contents of each file to see how it affects the application.
3. Building and running Spring Boot application
    - ☐ Build the Spring Boot project using Maven or Gradle.
    - ☐ Run the application using the command line or from within your IDE.
    - ☐ Experiment with different command-line arguments to modify the behavior of the application.
4. Using the Spring Initializr to bootstrap your application
    - ☐ Use the Spring Initializr to create a new Spring Boot project.
    - ☐ Customize the project settings to include specific dependencies and features.
    - ☐ Understand the difference between using the Spring Initializr and manually creating a Spring Boot project.

3. Working with Spring Boot

- Introduction to Spring Boot configuration and properties
- Dependency Injection in Spring Boot
- Working with controllers and RESTful web services
- Using Spring Boot DevTools for faster development

Tasks

1. Introduction to Spring Boot configuration and properties
    - ☐ Understand how to use application.properties or application.yml to configure a Spring Boot application.
    - ☐ Experiment with different settings such as the server port or logging level, and see how they affect the application.

- ☐ Create a custom configuration file and use it to configure a component of the application.

2. Dependency Injection in Spring Boot
   - ☐ Understand the basics of dependency injection and inversion of control.
   - ☐ Use the @Autowired annotation to inject dependencies into a Spring Boot application.
   - ☐ Experiment with different types of dependency injection such as constructor injection and setter injection.
3. Working with controllers and RESTful web services
   - ☐ Create a new controller and define multiple endpoints for it.
   - ☐ Use the @RestController annotation to create a RESTful web service.
   - ☐ Define different types of request mappings such as @GetMapping, @PostMapping, and @DeleteMapping.
4. Using Spring Boot DevTools for faster development
   - ☐ Understand what Spring Boot DevTools is and how it can speed up development.
   - ☐ Experiment with the different features of DevTools such as automatic restarts and live reload.
   - ☐ Try disabling and enabling DevTools to see how it affects the development workflow.

4. Data Persistence with Spring Boot

- Introduction to data persistence with Spring Boot
- Working with Spring Data JPA for database access
- Connecting to a database using Spring Boot
- Using JdbcTemplate for accessing data

Tasks

1. Introduction to data persistence with Spring Boot
   - ☐ Understand how to configure database settings in a Spring Boot application.
   - ☐ Experiment with using different types of databases such as H2, MySQL, and PostgreSQL.
   - ☐ Create a simple CRUD (create, read, update, delete) application using Spring Data JPA.
2. Working with Spring Data JPA for database access
   - ☐ Understand what Spring Boot Actuator is and how it can help with monitoring and managing your application.
   - ☐ Experiment with different endpoints such as /health, /metrics, and /info.

- ☐ Create custom endpoints using Spring Boot Actuator.

3. Connecting to a database using Spring Boot

   - ☐ Understand the basic principles of RESTful APIs.
   - ☐ Use Spring Boot to create a simple RESTful API that performs CRUD operations on a database.
   - ☐ Test the API using a tool such as Postman or cURL.

4. Using JdbcTemplate for accessing data

   - ☐ Understand the basic principles of Spring Security.
   - ☐ Use Spring Boot to create a secure RESTful API that requires authentication.
   - ☐ Experiment with different authentication and authorization methods such as JWT or OAuth2.

5. Spring Boot Advanced Topics

- Testing Spring Boot applications
- Securing Spring Boot applications with Spring Security
- Handling exceptions in Spring Boot
- Deploying Spring Boot applications to a production environment

Tasks

1. Testing Spring Boot applications

☐ Understand the importance of testing in software development.
☐ Learn about the different types of testing such as unit testing and integration testing.
☐ Write unit and integration tests for a Spring Boot application using frameworks like JUnit and Mockito.

2. Securing Spring Boot applications with Spring Security

☐ Understand the basics of cloud computing and how it relates to deploying applications.
☐ Learn how to deploy a Spring Boot application to a cloud platform such as AWS or Google Cloud.
☐ Experiment with scaling your application and monitoring its performance.

3. Handling exceptions in Spring Boot

☐ Understand the concept of profiles in Spring Boot and how they can be used to manage application configuration.
☐ Learn how to define and activate profiles in a Spring Boot application.
☐ Experiment with using different profiles to configure your application for different environments.

4. Deploying Spring Boot applications to a production environment

- ☐ Explore more advanced topics such as Spring Boot Actuator, Spring Boot CLI, and Spring Boot Custom Starters.
- ☐ Dive deeper into topics such as Spring Boot WebFlux, reactive programming, and asynchronous programming.

Resources

Official documentation The official Spring Boot documentation is a great place to start. It covers all the basics and provides detailed explanations of each feature. You can find it at: https://docs.spring.io/spring-boot/docs/current/reference/htmlsingle/

Spring Boot Guides The Spring Boot Guides provide step-by-step instructions for creating various types of applications using Spring Boot. They are a great way to get started quickly and learn by doing. You can find them at: https://spring.io/guides

YouTube There are many YouTube channels that offer Spring Boot tutorials. Some of the most popular ones include Java Brains, Amigoscode, and Tech Primers.

Udemy Udemy offers many Spring Boot courses, some of which are free. They cover a wide range of topics and are taught by experienced instructors.

Spring Boot Reference Guide The Spring Boot Reference Guide is a comprehensive resource that covers all aspects of Spring Boot. It is available in PDF format and can be downloaded from the Spring website.

Spring Boot in Action This book by Craig Walls provides a comprehensive introduction to Spring Boot. It covers all the basics and provides detailed explanations of each feature. It is available for free online at: https://livebook.manning.com/book/spring-boot-in-action

Remember that these are just a few of the many resources available online. You may find that some resources work better for you than others, so it's worth exploring a variety of options to find what works best for you.

Projects

Here are a few project ideas that you can build to practice and demonstrate what you have learned in Spring Boot:

TODO List Application Build a simple TODO list application using Spring Boot and Thymeleaf. The application should allow users to add, edit, and delete tasks, as well as mark them as complete.

Online Bookstore Build an online bookstore application using Spring Boot and a database of your choice (such as MySQL or PostgreSQL). The application should allow users to browse books, search for books, add books to a cart, and check out.

Blogging Platform Build a blogging platform using Spring Boot and a database of your choice. The application should allow users to create and publish blog posts, as well as comment on and share other users' posts.

Recipe Sharing Site Build a recipe sharing site using Spring Boot and Thymeleaf. The application should allow users to browse recipes, search for recipes by ingredient or cuisine, and upload their own recipes.

Social Media Platform Build a social media platform using Spring Boot and a database of your choice. The application should allow users to create profiles, connect with other users, share posts, and comment on and like other users' posts.

These are just a few project ideas to get you started. Remember that you can customize and expand upon these ideas to suit your interests and skills. Good luck with your projects!