



Java Microservices MOOC: Create and Deploy a Java Microservice to Oracle Cloud

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Lesson 1-1: Introduction to Java Microservices

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Course Agenda



- Week 1
 - Microservices Introduction
 - HTTP and REST
 - Deploying to Oracle Application Container Cloud Service
- Week 2
 - Create REST App with Spring Boot
 - Building with Maven
- Week 3
 - Complete REST app
 - Deploying with CURL and the REST API
 - Automation with Developer Cloud Service

What is a Microservice?

To define microservices, it helps to compare it to applications written in a monolithic style

- Built as a single application
- Made up of components that are combined together
- Tied to a single large datastore
- Changes to one component, require a rebuild of the entire application
 - Requires the entire application to be redeployed
- Scaling must be done to the entire application rather than individual components

Comparing Microservices

A microservices application is composed of a number of smaller services.

- Services are smaller and perform more specific functions
- Can be deployed independently
- Can be scaled independently
- Provide better fault tolerance capabilities
- Each server can have its own datastore
- Each service can be written using different programming languages and data storage options



Reviewing Java REST Frameworks

- Development frameworks provide:
 - A tool set for creating applications
 - A way of abstracting plumbing related tasks
 - Making REST calls or providing responses
 - Developer productivity enhancements
- Java REST Frameworks include:
 - Jersey: Apache Foundation REST implementation (CDDL and GNU 2)
 - Spark: Inspired by Sinatra (Apache 2)
 - Spring Boot: Pivotal Software (Apache 2)

Developing with Spring Boot



Spring Boot is an open source Java REST framework from Pivotal Software. Spring Boot features include the ability to:

- Create stand-alone Spring applications
- Embed Tomcat, Jetty or Undertow directly (no need to deploy WAR files)
 - Creates uber JAR or fat JAR
 - Everything you need is included
- Provide 'starter' POMs to simplify your Maven configuration
- Provide production-ready features such as metrics, health checks and externalized configuration
- Absolutely **no code generation** and **no requirement for XML** configuration

Introduction to Oracle Cloud

Oracle Cloud is an enterprise cloud for business. Oracle Public Cloud consists of many different services that share some common characteristics:

- On-demand self-service
- Resource pooling
- Rapid elasticity
- Measured service
- Broad network access

www.cloud.oracle.com



Oracle Application Container Cloud Service

Oracle Application Container Cloud Service (OACCS) is a service for deploying applications to the cloud. Features include:

- Support Java, Node.js and PHP
- Quickly deploy applications to the Internet
- Supports on demand scaling of your applications
 - Can deploy multiple instances of each application
 - Can define memory size for each application
- Integration with Oracle Cloud Services
 - Oracle Database Cloud Service
 - Oracle Developer Cloud Service



Built Using Docker

Docker is an open source lightweight application deployment system

- Each application runs in its container. It has its own:
 - Memory space
 - File system
- Containers are lightweight compared to OS virtual machines
 - There is less overhead to start and stop applications.
 - Certain files can be shared between instances for more efficient use of space.
- Applications are isolated and secure from each other.
- Open source under the Apache 2.0 license



Oracle Application Container Cloud Service and Java Applications

Oracle Application Container Cloud Service provides fully functional Java containers.

- Supports latest versions of Java SE (7, 8, and later)
- Leverage any of the tens of thousands of Java libraries and frameworks
- Control size of container and the amount of memory allocated
- Complete control over JVM configuration
- Advanced Java feature support
 - Java Flight Recorder
 - Java Mission Control



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