

## **LAB-06**

# Deploy Backend Server with Spring Boot and Maven

- Spring Quick Start
- Task 1: find the version of default-jdk on apt repo
- Task 2: find available openjdk on apt repo
- Task 3: install openjdk-17-jre-headless
- Task 4: confirm that v.17 is installed

## ○ Task 5: config JAVA\_HOME

- add JAVA\_HOME="/usr/lib/jvm/java-17-openjdk-amd64/" in /etc/environment

```
sysadmin@lvmolarn:~/date-api-tmp$ java --version
openjdk 17.0.6 2023-01-17
OpenJDK Runtime Environment (build 17.0.6+10-Ubuntu-0ubuntu120.04.1)
OpenJDK 64-Bit Server VM (build 17.0.6+10-Ubuntu-0ubuntu120.04.1, mixed mode, sharing)
sysadmin@lvmolarn:~/date-api-tmp$ echo $JAVA_HOME

sysadmin@lvmolarn:~/date-api-tmp$ sudo nano /etc/environment
sysadmin@lvmolarn:~/date-api-tmp$
```

```
GNU nano 4.8 /etc/environment
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local>
JAVA_HOME="/usr/lib/jvm/java-17-openjdk-amd64/"
```

- logout and log back in

```
sysadmin@lvmolarn:~$ echo $JAVA_HOME
/usr/lib/jvm/java-17-openjdk-amd64/
sysadmin@lvmolarn:~$
```

- Task 6: View maven info on apt repo
  - Note the dependencies
  - Maven v.3.6.3 is **not compatible** with Java 17!
  - You may install later version of maven (exercise)

```
[sysadmin@lvmolarn:~/spring-hello$ mvn --version
Apache Maven 3.6.3
Maven home: /usr/share/maven
Java version: 17.0.6, vendor: Private Build, runtime: /usr/lib/jvm/java-17-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.15.0-1033-azure", arch: "amd64", family: "unix"
[sysadmin@lvmolarn:~/spring-hello$ mvn clean package
[ERROR] Error executing Maven.
[ERROR] java.lang.IllegalStateException: Unable to load cache item
[ERROR] Caused by: Unable to load cache item
[ERROR] Caused by: Could not initialize class com.google.inject.internal.cglib.core.$MethodWrapper
sysadmin@lvmolarn:~/spring-hello$
```

- Task 7: Create a demo project

- <https://start.spring.io>
- <https://docs.spring.io/initializr/docs/0.4.x/reference/html/command-line.html>
- Project: Maven Project
- Java: 17
- Dependencies: Spring Web
- Location: ~/spring-demo

```
curl -G https://start.spring.io/starter.zip -d  
dependencies=web -d type=maven-project -o demo.zip  
unzip demo.zip -d spring-demo
```

## ○ Task 8: run your project with Maven

`./mvnw spring-boot:run`

- **validate** - validate the project is correct and all necessary information is available
- **compile** - compile the source code of the project
- **test** - test the compiled source code using a suitable unit testing framework. These tests should not require the code be packaged or deployed
- **package** - take the compiled code and package it in its distributable format, such as a JAR.
- **verify** - run any checks on results of integration tests to ensure quality criteria are met
- **install** - install the package into the local repository, for use as a dependency in other projects locally
- **deploy** - done in the build environment, copies the final package to the remote repository for sharing with other developers and projects.



- If you have other versions of java installed, maven may not use the right version of java
- Config JAVA\_HOME or remove other version of java

```
sysadmin@lvmolarn:~/spring-demo$ echo $JAVA_HOME
/usr/lib/jvm/java-17-openjdk-amd64/
sysadmin@lvmolarn:~/spring-demo$ ./mvnw --version
Apache Maven 3.8.7 (b89d5959fcde851dcb1c8946a785a163f14e1e29)
Maven home: /home/sysadmin/.m2/wrapper/dists/apache-maven-3.8.7-bin/678cc9d4/apache-maven-3.8.7
Java version: 17.0.6, vendor: Private Build, runtime: /usr/lib/jvm/java-17-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.15.0-1033-azure", arch: "amd64", family: "unix"
sysadmin@lvmolarn:~/spring-demo$ unset JAVA_HOME
sysadmin@lvmolarn:~/spring-demo$ ./mvnw --version
Apache Maven 3.8.7 (b89d5959fcde851dcb1c8946a785a163f14e1e29)
Maven home: /home/sysadmin/.m2/wrapper/dists/apache-maven-3.8.7-bin/678cc9d4/apache-maven-3.8.7
Java version: 11.0.18, vendor: Ubuntu, runtime: /usr/lib/jvm/java-11-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.15.0-1033-azure", arch: "amd64", family: "unix"
sysadmin@lvmolarn:~/spring-demo$
```

```
at org.apache.maven.wrapper.MavenWrapperMain.main (MavenWrapperMain.java:76)
Caused by: java.lang.UnsupportedClassVersionError: org/springframework/boot/maven/RunMojo
has been compiled by a more recent version of the Java Runtime (class file version 61.0)
, this version of the Java Runtime only recognizes class file versions up to 55.0
at java.lang.ClassLoader.defineClass1 (Native Method)
```

- Make sure that other instance of java is not running
- Use `jobs/fg` or `kill` to stop the process

```
Web server failed to start. Port 8080 was already in use.

Action:

Identify and stop the process that's listening on port 8080 or configure this application
to listen on another port.

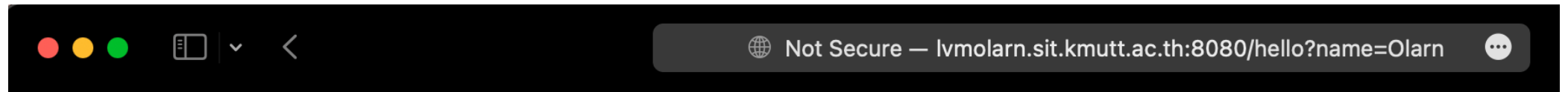
[INFO] -----
[INFO] BUILD FAILURE
[INFO] -----

sysadmin@lvmolarn:~/spring-demo$ ps -C java
  PID TTY          TIME CMD
  3200 pts/1    00:00:05 java
  3228 pts/1    00:00:02 java
sysadmin@lvmolarn:~/spring-demo$ jobs
[1]+  Running                  ./mvnw spring-boot:run &
sysadmin@lvmolarn:~/spring-demo$ fg
./mvnw spring-boot:run
^C[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 02:14 min
[INFO] Finished at: 2023-03-03T05:57:11+07:00
[INFO] -----
sysadmin@lvmolarn:~/spring-demo$ ps -C java
  PID TTY          TIME CMD
sysadmin@lvmolarn:~/spring-demo$
```



# Modify DemoApplication.java

- Task 9: modify DemoApplication.java
- Task 10: Test your app



Hello Olarn!

## ○ Task 11: build your app (.jar)

`./mvnw clean package`

```
[INFO] --- maven-jar-plugin:3.3.0:jar (default-jar) @ demo ---  
[INFO] Building jar: /home/sysadmin/spring-demo/target/demo-0.0.1-SNAPSHOT.jar  
[INFO] --- spring-boot-maven-plugin:3.0.3:repackage (repackage) @ demo ---  
[INFO] Replacing main artifact with repackaged archive  
[INFO] -----  
[INFO] BUILD SUCCESS  
[INFO] -----
```

## ○ Task 12: run your app with java

`java -jar target/demo-0.0.1-SNAPSHOT.jar`

## ○ Task 13: Test your app