

# Build Instructions

1. Login to AWS Console > EC2
2. Launch a t3.micro Spot instance with an Ubuntu AMI - Ubuntu 22.04 LTS

### Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

#### ▼ Name and tags Info

Key Info

Value Info

Resource types Info

Select resource types

Instances

Volumes

Show all selected (+1)

Select resource types

Instances

Volumes

Show all selected (+1)

Add tag

48 remaining (Up to 50 tags maximum)

#### ▼ Summary

Number of instances Info

Software Image (AMI)  
Canonical, Ubuntu, 22.04 LTS, ...[read more](#)  
ami-02ee763250491e04a

Virtual server type (instance type)  
t3.small

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 15 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier

Cancel

Launch instance

#### ▼ Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

#### Quick Start

Amazon Linux

Ubuntu

Windows

Red Hat

SUSE Linux

aws

ubuntu

Microsoft

Red Hat

SUSE

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type  
ami-02ee763250491e04a (64-bit (x86)) / ami-06ecd61e4bde3bfe (64-bit (Arm))  
Virtualization: hvm    ENA enabled: true    Root device type: ebs  
Free tier eligible

Description

Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2022-06-09

Architecture

AMI ID

64-bit (x86)

ami-02ee763250491e04a

#### ▼ Summary

Number of instances Info

Software Image (AMI)  
Canonical, Ubuntu, 22.04 LTS, ...[read more](#)  
ami-02ee763250491e04a

Virtual server type (instance type)  
t3.small

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 15 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier

Cancel

Launch instance



The screenshot shows the AWS 'Create Instance' wizard. In the 'Configure storage' section, there is 1x 15 GiB gp3 Root volume. In the 'Advanced details' section, 'Request Spot Instances' is checked. The 'Summary' section on the right shows 1 instance, Canonical Ubuntu 22.04 LTS AMI, t3.small instance type, and a new security group. A 'Launch instance' button is highlighted in red.

3. Add an entry to the ssh client config file so that it is easy to connect

`nano ~/.ssh/config`

Host springbootapp-aws

HostName 18.136.119.50

User ubuntu

Port 22

IdentityFile "G:\My Drive\vault\aws\MCV\_SINGAPORE.pem"

ServerAliveInterval 240

#### 4. Connect to the instance

`ssh springbootapp-aws`

`sudo apt update`

`sudo apt upgrade -y`

`sudo reboot`

`sudo apt install mysql-server -y`

---

Root Password: KcFmlj32nxiE7gAnQYxS

DB Name: employee\_db

DB User: springcrudapp

DB Pass: 9EN6derDK5SCWDF

---

`sudo mysql`

---

```
mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password by
'KcFmlj32nxiE7gAnQYxS';
Query OK, 0 rows affected (0.01 sec)
```

```
mysql> create database employee_db;
Query OK, 1 row affected (0.01 sec)
```

```
mysql> create user 'springcrudapp'@'localhost' identified by '9EN6derDK5SCWDF';
Query OK, 0 rows affected (0.04 sec)
```

```
mysql> grant all on employee_db.* to 'springcrudapp'@'localhost';
Query OK, 0 rows affected (0.01 sec)
```

```
mysql> \q
Bye
```

---

```
sudo mysql_secure_installation
```

```
ubuntu@ip-172-31-18-131:~$ sudo mysql_secure_installation

Securing the MySQL server deployment.

Enter password for user root:
The 'validate_password' component is installed on the server.
The subsequent steps will run with the existing configuration
of the component.
Using existing password for root.

Estimated strength of the password: 50
Change the password for root ? ((Press y|Y for Yes, any other key for No) : n

... skipping.
By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) : y
Success.

Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : y
Success.

By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : y
- Dropping test database...
Success.

- Removing privileges on test database...
Success.

Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
ubuntu@ip-172-31-18-131:~$ |
```

```
git clone https://github.com/melvincv/springboot-crud-webapp.git
cd.springboot-crud-webapp
```

```
sudo apt install openjdk-11-jdk maven -y
```

## Check status of Mysql, java and maven

sudo systemctl status mysql.service

- mysql.service - MySQL Community Server

Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)

Active: active (running) since Fri 2022-07-15 06:45:44 UTC; 8min ago

sudo systemctl is-enabled mysql.service

enabled

java -version

mvn --version

```
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp$ sudo systemctl status mysql.service
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2022-07-15 06:45:44 UTC; 8min ago
     Main PID: 1670 (mysqld)
    Status: "Server is operational"
     Tasks: 39 (limit: 2311)
    Memory: 353.9M
       CPU: 1.824s
    CGroup: /system.slice/mysql.service
            └─1670 /usr/sbin/mysqld

Jul 15 06:45:43 ip-172-31-18-131 systemd[1]: Starting MySQL Community Server...
Jul 15 06:45:44 ip-172-31-18-131 systemd[1]: Started MySQL Community Server.
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp$ sudo systemctl is-enabled mysql.service
enabled
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp$ java -version
openjdk version "11.0.15" 2022-04-19
OpenJDK Runtime Environment (build 11.0.15+10-Ubuntu-0ubuntu0.22.04.1)
OpenJDK 64-Bit Server VM (build 11.0.15+10-Ubuntu-0ubuntu0.22.04.1, mixed mode, sharing)
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp$ mvn --version
Apache Maven 3.6.3
Maven home: /usr/share/maven
Java version: 11.0.15, vendor: Private Build, runtime: /usr/lib/jvm/java-11-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "5.15.0-1015-aws", arch: "amd64", family: "unix"
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp$
```

mvn spring-boot:run

```
2022-07-15 07:00:32.271 INFO 4885 --- [ restartedMain] SpringbootThymeleafCrudWebAppApplication : Starting SpringbootThymeleafCrudWebAppApplication on ip-172-31-18-131 with PID 4885 (/home/ubuntu/springboot-crud-webapp/target/classes started by ubuntu in /home/ubuntu/springboot-crud-webapp)
2022-07-15 07:00:32.274 INFO 4885 --- [ restartedMain] SpringbootThymeleafCrudWebAppApplication : No active profile set, falling back to default profiles: default
2022-07-15 07:00:32.333 INFO 4885 --- [ restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : Devtools property defaults active! Set 'spring.devtools.add-properties' to 'false' to disable
2022-07-15 07:00:32.333 INFO 4885 --- [ restartedMain] .e.DevToolsPropertyDefaultsPostProcessor : For additional web related logging consider setting the 'logging.level.web' property to 'DEBUG'
2022-07-15 07:00:32.984 INFO 4885 --- [ restartedMain] .s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in DEFAULT mode.
2022-07-15 07:00:33.041 INFO 4885 --- [ restartedMain] .s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 58ms. Found 1 JPA repository interfaces.
2022-07-15 07:00:33.576 INFO 4885 --- [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2022-07-15 07:00:33.587 INFO 4885 --- [ restartedMain] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2022-07-15 07:00:33.587 INFO 4885 --- [ restartedMain] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.34]
2022-07-15 07:00:33.651 INFO 4885 --- [ restartedMain] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2022-07-15 07:00:33.652 INFO 4885 --- [ restartedMain] o.s.web.context.ContextLoader : Root WebApplicationContext: initialization completed in 1318 ms
2022-07-15 07:00:33.784 INFO 4885 --- [ restartedMain] o.hibernate.jpa.internal.util.LogHelper : HHH000204: Processing PersistenceUnitInfo [name: default]
2022-07-15 07:00:33.808 INFO 4885 --- [ restartedMain] org.hibernate.Version : HHH000412: Hibernate ORM core version 5.4.15.Final
2022-07-15 07:00:33.872 INFO 4885 --- [ restartedMain] o.hibernate.annotations.common.Version : HCANN000001: Hibernate Commons Annotations {5.1.0.Final}
2022-07-15 07:00:33.928 INFO 4885 --- [ restartedMain] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Starting...
2022-07-15 07:00:34.110 INFO 4885 --- [ restartedMain] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Start completed.
2022-07-15 07:00:34.120 INFO 4885 --- [ restartedMain] org.hibernate.dialect.Dialect : HHH000400: Using dialect: org.hibernate.dialect.MySQL5InnoDBDialect
2022-07-15 07:00:34.621 INFO 4885 --- [ restartedMain] o.h.e.t.j.p.i.JtaPlatformInitiator : HHH000498: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
2022-07-15 07:00:34.626 INFO 4885 --- [ restartedMain] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2022-07-15 07:00:34.642 INFO 4885 --- [ restartedMain] o.s.b.d.a.OptionalLiveReloadServer : LiveReload server is running on port 35729
2022-07-15 07:00:34.913 WARN 4885 --- [ restartedMain] JpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default. Therefore, database queries may be performed during view rendering. Explicitly configure spring.jpa.open-in-view to disable this warning
2022-07-15 07:00:35.028 INFO 4885 --- [ restartedMain] o.s.s.concurrent.ThreadPoolTaskExecutor : Initializing ExecutorService 'applicationTaskExecutor'
2022-07-15 07:00:35.086 INFO 4885 --- [ restartedMain] o.s.b.a.w.s.WelcomePageHandlerMapping : Adding welcome page template: index
2022-07-15 07:00:35.237 INFO 4885 --- [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
2022-07-15 07:00:35.289 INFO 4885 --- [ restartedMain] SpringbootThymeleafCrudWebAppApplication : Started SpringbootThymeleafCrudWebAppApplication in 3.468 seconds (JVM running for 4.191)
```



<http://18.136.119.50:8080/>

Employees List

Add Employees

Employee First Name	Employee Last Name	Employee Email	Actions
---------------------	--------------------	----------------	---------

mvn clean package

```
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-compress/1.18/commons-compress-1.18.jar (592 kB at 614 kB/s)
[INFO] Building jar: /home/ubuntu/springboot-crud-webapp/target/springboot-thymeleaf-crud-web-app-0.0.1-SNAPSHOT.jar
[INFO] --- spring-boot-maven-plugin:2.2.7.RELEASE:repackage (repackage) @.springboot-thymeleaf-crud-web-app ---
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 39.798 s
[INFO] Finished at: 2022-07-15T07:06:03Z
[INFO] -----
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp$ ls
README.md  mvnw  mvnw.cmd  pom.xml  src  target
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp$ cd target/
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp/target$ ls
classes          maven-archiver          springboot-thymeleaf-crud-web-app-0.0.1-SNAPSHOT.jar.original
generated-sources  maven-status            surefire-reports
generated-test-sources  springboot-thymeleaf-crud-web-app-0.0.1-SNAPSHOT.jar  test-classes
ubuntu@ip-172-31-18-131:~/springboot-crud-webapp/target$ java -jar springboot-thymeleaf-crud-web-app-0.0.1-SNAPSHOT.jar
```

cd target/  
java -jar springboot-thymeleaf-crud-web-app-0.0.1-SNAPSHOT.jar

```
2022-07-15 07:09:45.767 INFO 5076 --- [main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2022-07-15 07:09:46.241 WARN 5076 --- [main] JpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default. Therefore , database queries may be performed during view rendering. Explicitly configure spring.jpa.open-in-view to disable this warning
2022-07-15 07:09:46.499 INFO 5076 --- [main] o.s.s.concurrent.ThreadPoolTaskExecutor : Initializing ExecutorService 'applicationTaskExecutor'
2022-07-15 07:09:46.620 INFO 5076 --- [main] o.s.b.a.w.s.WelcomePageHandlerMapping : Adding welcome page template: index
2022-07-15 07:09:46.825 INFO 5076 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
2022-07-15 07:09:46.827 INFO 5076 --- [main] SpringBootTestThymeleafCrudWebAppApplication : Started SpringBootTestThymeleafCrudWebAppApplication in 7.25 seconds (JVM running for 8.486)
2022-07-15 07:09:58.724 INFO 5076 --- [nio-8080-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring DispatcherServlet 'dispatcherServlet'
2022-07-15 07:09:58.724 INFO 5076 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : Initializing Servlet 'dispatcherServlet'
2022-07-15 07:09:58.737 INFO 5076 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : Completed initialization in 12 ms
```

<http://18.136.119.50:8080/>

Employees List

Add Employees

Employee First Name	Employee Last Name	Employee Email	Actions
---------------------	--------------------	----------------	---------