

# Azure Spring Project Deployment Guide

## Overview

In this document, we will cover the required to deploy a Springboot project on Azure Cloud.

Section	Description
Section A	Getting an Azure Student Account
Section B	Creating Azure Spring Cloud
Section C	Creating MySQL Database
Section D	Preparing Springboot project for deployment
Section E	Deploy Springboot project
Section F	Deleting Resources

Note that a limitation of deploying to Azure is that the Springboot project must be compiled on either **Java version 8 or 11** only.

It is important to stop your resources when not in use, or delete them when you no longer need them, as Microsoft will continue to bill you if the resources are still running or taking up space. Refer to **Section F**.

## Java Version

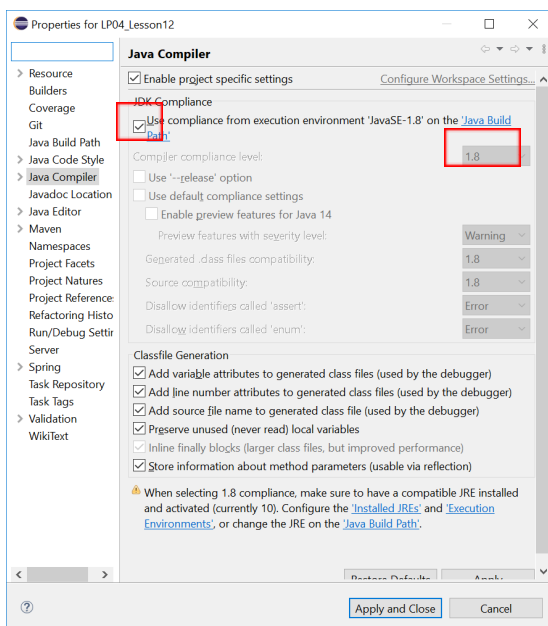
The JRE of the Springboot needs to be either **Java version 8 or 11**. To check what version you have installed, go to **C:\Program Files\Java**.

You can download either version here if you do not have it installed:

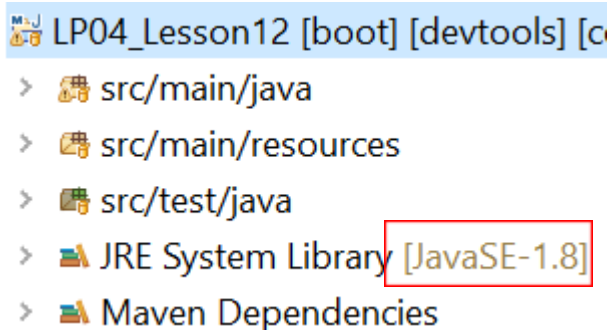
<https://www.oracle.com/java/technologies/downloads/archive/>

To change the Java version, see steps below:


- Right-click on the project, select **Properties**
- In the panel that appears, select **Java Compiler**



- c) If the Java version is NOT 1.8(This is the same as Java 8) or 11, then uncheck the **Use compliance....**
- d) Select either Java 1.8 or 11
- e) Click Apply and Close.
- f) Check that the project JRE has changed to the appropriate version



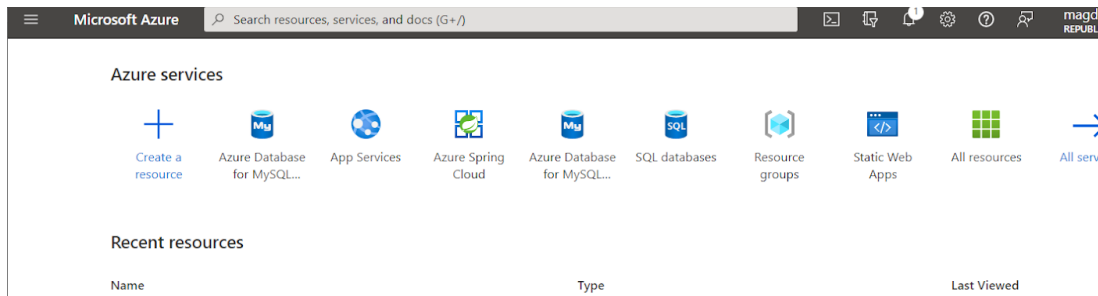
## Section A - Getting an Azure Student Account

1. Visit <https://azure.microsoft.com/en-us/free/students/> and click the button [ **Activate Now >** ].
2. Sign in using your RP account [19NNNNNN@myrp.edu.sg](mailto:19NNNNNN@myrp.edu.sg) and password. You will be presented a page where you can enter your personal particulars.
3. Do the following data inputs under **About you**
  - a. **Country/Region:** Select Singapore.
  - b. **First name:**
  - c. **Last name:**
  - d. **Email address:** Enter the same RP email address in Step 2
  - e. **Phone:** Enter your 8 digit mobile phone
  - f. Click on the button [ **Next** ]
4. Do the following data inputs under Agreement
  - a. Check the two check boxes.
  - b. Click on the button [ **Sign up** ]
5. You will be redirected the Welcome to Microsoft Azure page. Click on the button [ **Maybe later** ].
6. From the menu at the top-right corner, click **Home**
7. Click  and you should see a new subscription created for you.

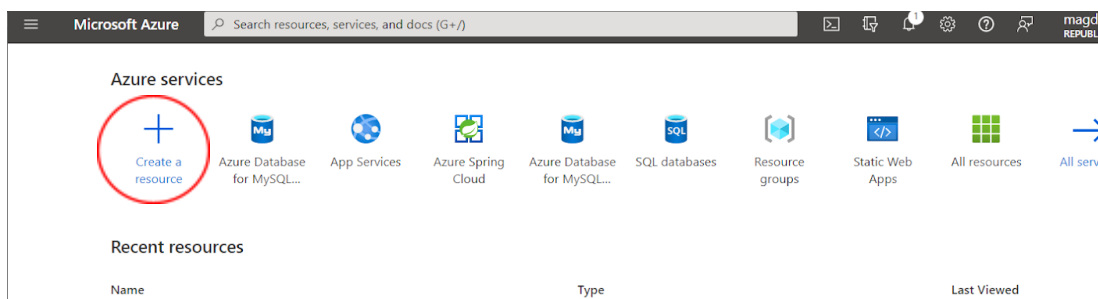
Subscription name	Subscription ID	My role	Current cost	Status
 Azure for Students	4fe5f6bd-ac88-41f6-93cc-e9c658aff96b	Account admin	Not available	 Active

## Section B - Creating Azure Spring Cloud

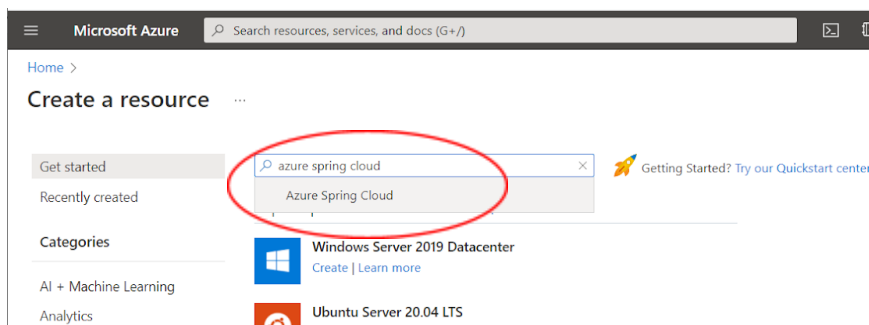
1. Once logged into Azure portal, you will see the screenshot similar to below.



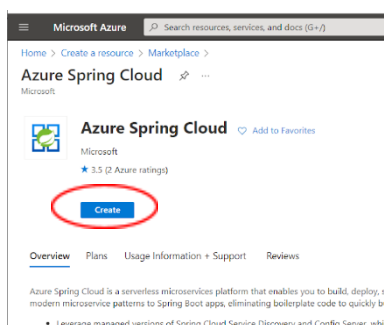
2. Click **Create a resource**



3. In the **Create a resource** page, enter **Azure Spring Cloud** in the search bar and select **Azure Spring Cloud**.



4. Click **Create**



5. In the configurations that comes up in **Project Details**,
  - a. Under **Subscription**, select **Azure for Students**
  - b. Under **Resource group**, click **Create new** and enter **c372** as the Name, click **OK**  
(If the name is not available, include your student ID)

Microsoft Azure Search resources, services, and docs (G+)

Home > Create a resource > Azure Spring Cloud >

### Azure Spring Cloud

Create

Basics Diagnostic settings Application Insights Networking Tags Review and create

Azure Spring Cloud provides managed infrastructure and application lifecycle management, with built-in capabilities to monitor and operate your Spring Boot applications.

**Project Details**

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

Resource group \*  [Create new](#)

**Service Details**

Name \*

Region \*

Zone Redundant \* ☐

Pricing \*

2 vCPUs, 4 Gi included

6. In **Service Details**,
  - a. Under **Name**, enter **c372projects**  
(If the name is not available, include your student ID)
  - b. Under **Region**, select **East US**

Microsoft Azure Search resources, services, and docs (G+)

Home > c372 > Create a resource > Marketplace > Azure Spring Cloud >

### Azure Spring Cloud

Create

Azure Spring Cloud provides managed infrastructure and application lifecycle management, with built-in capabilities to monitor and operate your Spring Boot applications.

**Project Details**

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

Resource group \*  [Create new](#)

**Service Details**

Name \*

Region \*

Zone Redundant \* ☐

Pricing \*

Basic tier  
2 vCPUs, 4 Gi included  
Starting from 170.82 USD/month, charged per second basis  
[Change](#)

## 7. Click Review and Create

The screenshot shows the 'Review and Create' page for an Azure Spring Cloud deployment. The page is titled 'Azure Spring Cloud' and includes a 'Create' button. Below this, there is a 'Project Details' section with a description: 'Azure Spring Cloud provides managed infrastructure and application lifecycle management, with built-in capabilities to monitor and operate your Spring Boot applications.' The 'Subscription' is set to 'Visual Studio Enterprise Subscription' and the 'Resource group' is 'c372'. The 'Service Details' section includes 'Name' (c372projects), 'Region' (East US), 'Zone Redundant' (unchecked), and 'Pricing' (Basic tier, 2 vCPUs, 4 Gi included, starting from 170.82 USD/month, charged per second basis). At the bottom, there are buttons for 'Review and create', '< Previous', 'Next: Diagnostic settings >', and 'Download'.

8. The resource group will take a while to be created and deployed. You will receive a notification once it is done.

The screenshot shows the 'Microsoft.AppPlatform | Overview' page. The 'Deployment' tab is active, showing a 'Deployment is in progress' status. The deployment name is 'Microsoft.AppPlatform', the subscription is 'Visual Studio Enterprise Subscription', and the resource group is 'c372'. The start time is '1/30/2022, 4:15:23 PM' and the correlation ID is '6dcb7cd2-1081-4d27-84af-61f...'. A table shows the deployment details with one resource, 'insight20202123', of type 'microsoft.insights/components' and status 'OK'. A 'Notifications' panel on the right shows a 'Deployment in progress...' notification with the text 'Deployment to resource group 'c372' is in progress.' and a 'Dismiss all' button.

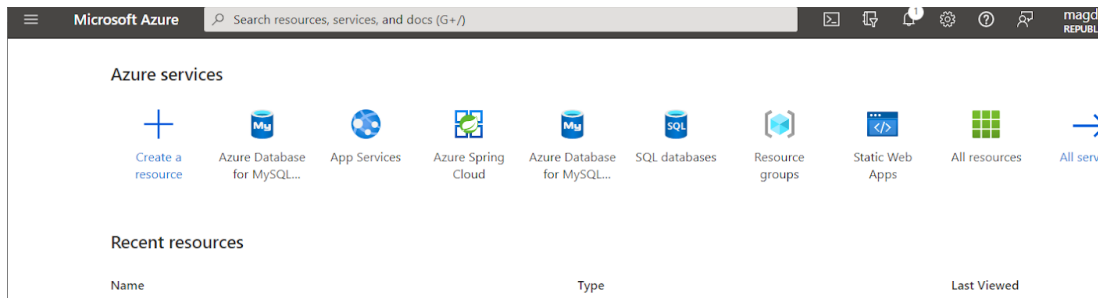
9. Once completed, you should see this a similar screen to below.

The screenshot shows the 'Microsoft.AppPlatform | Overview' page. The 'Deployment' tab is active, showing a 'Your deployment is complete' status. The deployment name is 'Microsoft.AppPlatform', the subscription is 'Visual Studio Enterprise Subscription', and the resource group is 'c372'. The start time is '1/30/2022, 4:15:23 PM' and the correlation ID is '6dcb7cd2-1081-4d27-84af-61f...'. A table shows the deployment details with one resource, 'insight20202123', of type 'microsoft.insights/components' and status 'OK'. A 'Notifications' panel on the right shows a 'Deployment succeeded' notification with the text 'Deployment 'Microsoft.AppPlatform' to resource group 'c372' was successful.' and buttons for 'Go to resource' and 'Pin to dashboard'.

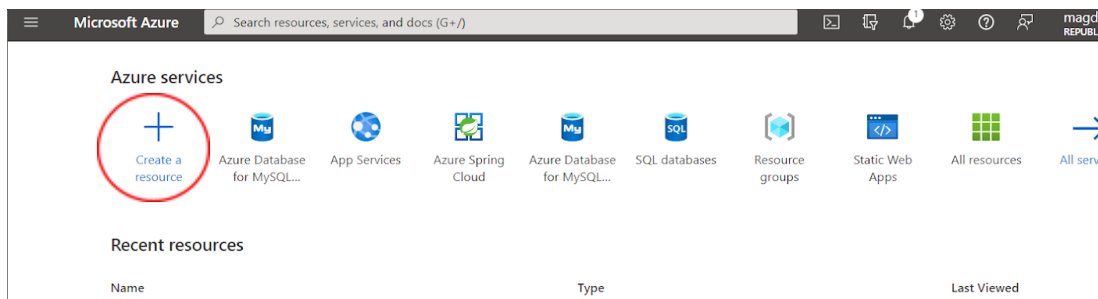
Note: In this page, you can also delete the instance when not in use.

## Section C - Creating MySQL Database

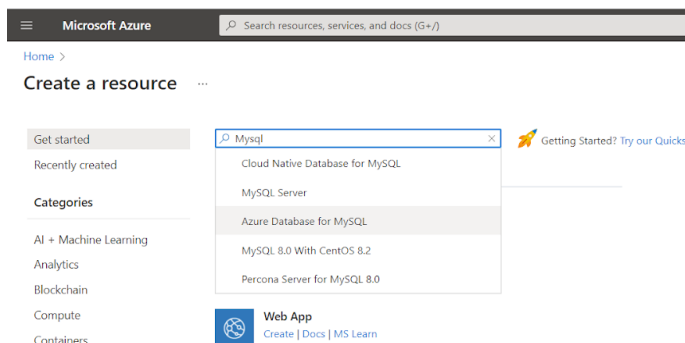
1. Go back to Azure portal homepage.



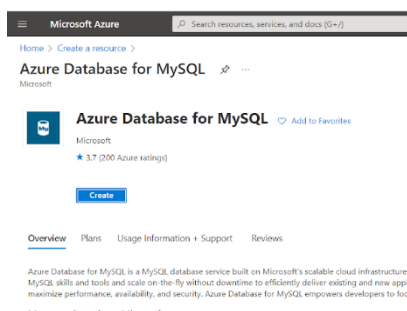
2. Click **Create a resource**



3. In the **Create a resource** page, enter **Mysql** in the search bar and select **Azure Database for MySQL**



4. Click **Create**




5. In the page below, select **Create** for the **Flexible server**

Home > Create a resource > Azure Database for MySQL >

## Select Azure Database for MySQL deployment option


Microsoft

How do you plan to use the service?

**Flexible server**

Best for production workloads that require zone resiliency, predictable performance, maximum control with IOPs scaling, custom maintenance window, cost optimization controls and simplified developer experience.

[Create](#) [Learn More](#)

**Single server**

Best for existing applications already leveraging single server. Designed for basic database management functions, such as patching, backups and zonal high availability with minimal user configuration.

[Create](#) [Learn More](#)

6. In the **Basics** tab, in **Project Details**,
- Under **Subscription**, select **Azure for Students**
  - Under **Resource group**, select **c372**

Home > Azure Database for MySQL > Select Azure Database for MySQL deployment option >

## Flexible server

Microsoft

⚠ Server names, networking connectivity method, zone redundant HA and backup redundancy cannot be changed after server is created. Review these options carefully before provisioning.


Basics Networking Tags Review + create


Create an Azure Database for MySQL flexible server. [Learn more](#)

**Did you know** that new users in Azure can use MySQL - Flexible Server free for up to 750 hours using Azure free account? [Learn more](#)

**Project details**

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*  Visual Studio Enterprise Subscription

Resource group \*  c372 [Create new](#)

**Estimated costs**

**Compute Sku** USD 12.41/month

Standard\_B1ms (1 vCores, USD 12.41 per vCore) 1 x 12.41

**Storage** USD 2.4/month

Storage selected 20 GiB (USD 0.12 per GiB) 20 x 0.12

**Backup Retention**

Backup retention is billed based on additional storage used for retaining backups. [Learn more](#)

**Bandwidth**

7. In the **Basics** tab, in **Server Details**,
- Under **Server name**, enter **c372mysql**  
(If the name is not available, include your student ID)
  - Under **Region**, select **East US**
  - Under **Workload type**, select **Development**
  - Under **Compute + storage**, leave it if it is similar to the screenshot. Otherwise, click on **configure server** to select the lowest setting.
  - Under **Availability**, leave it as **No preference**

- f. Under **MySQL version**, select **5.7** (Note, we are not using version 8 as workbench will only work with version 5)

Microsoft Azure

Home > Azure Database for MySQL flexible servers > Select Azure Database for MySQL deployment option >

## Flexible server

Microsoft

⚠ Server names, networking connectivity method, zone redundant HA and backup redundancy cannot be changed after server is created. R

Resource group \*  [Create new](#)

### Server details

Enter required settings for this server, including picking a location and configuring the compute and storage resources.

Server name \*

Region \*

Workload type

☐ Production (Small / Medium-size)

☐ Production (Large-size)

☒ Development

*Suitable for small databases or personal projects with few user connections requirements.*

Compute + storage

1 vCores, 2 GiB RAM, 20 GiB storage, 360 IOPS

[Configure server](#)

*Geo-redundant backup storage is available in all Azure paired regions. Enabling Geo-Redundancy is currently surfaced as a create time operation only.*

Availability zone

MySQL version \*

8. In the **Basics** tab, in **High Availability** and **Administrator** account:
  - a. Do not check **Enable high availability**
  - b. Create an admin username and password. (Note this down)

### High availability

Same zone and zone redundant high availability provide additional server resilience in the event of a failure. You can also specify high availability options in 'Compute + storage'.

Enable high availability ☐

### Administrator account

Admin username \*  ✓

Password \*  ✓

Confirm password \*



9. In the **Networking** tab,
  - a. Under **Network connectivity**, select **Public access**
  - b. Under **Firewall rules**, check **Allow public access ....**
  - c. Under **Firewall rules**, click **Add current client IP**

Microsoft Azure

Search resources, services, and docs (G+/)

[Home](#) > [Azure Database for MySQL flexible servers](#) > [Select Azure Database for MySQL deployment option](#) >

Flexible server

Microsoft

Basics

Networking

Tags

Review + create

Configure networking access and security for your server.

Network connectivity

You can connect to your server by specifying a public IP address specified below or from within a selected virtual network.

Connectivity method ⓘ

☒ Public access (allowed IP addresses)
 ☐ Private access (VNet Integration)

Connections from the IP addresses configured in the Firewall rules section below will have access to this server. By default, no public IP addresses are allowed. [Learn more](#)

Firewall rules

Inbound connections from the IP addresses specified below will be allowed to port 3306 on this server. [Learn more](#)

☒ Allow public access from any Azure service within Azure to this server ⓘ

+ Add current client IP address ( 202.21.159.251 )    + Add 0.0.0.0 - 255.255.255.255

Firewall rule name	Start IP address	End IP address
ClientIPAddress_2022-1-31_10-23-48	202.21.159.251	202.21.159.251
<input type="text" value="Firewall rule name"/>	<input type="text" value="Start IP address"/>	<input type="text" value="End IP address"/>

Encrypted connections

This server supports encrypted connections using Transport Layer Security (TLS 1.2). For information on downloading the certificate, refer to connecting with TLS/SSL. [Learn more](#)

Estimated costs

^ Compute Sku

USD 12.41/month

Standard\_B1ms (1 vCores, USD 12.41 per vCore)    1 x 12.41

^ Storage

USD 2.4/month

Storage selected 20 GiB (USD 0.12 per GiB)    20 x 0.12

^ Backup Retention

Backup retention is billed based on additional storage used for retaining backups. [Learn more](#)

^ Bandwidth

For outbound data transfer across services in different regions will incur additional charges. Any inbound data transfer is free. [Learn more](#)

Estimated total

USD 14.81/month

Prices reflects an estimates only. [View Azure pricing calculator.](#)  
 Final charges will appear in your local currency in cost analysis and billing views.

10. Click **Review and create**
11. After the settings are validated, click **Create**
12. Creation and Deployment of the database will take a while. You will receive a notification once deployed.

Azure Spring Project Deployment Guide

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13. Once deployed, go to the database resource to get the server name. Do make a note of it as you will need to use it later.

The screenshot shows the Azure portal interface for a resource named 'c372mysql', which is an 'Azure Database for MySQL flexible server'. The top navigation bar includes the Microsoft Azure logo, a search bar, and various utility icons. Below the resource name, there are action buttons: Delete, Reset password, Restore, Restart, Stop, Refresh, and Feedback. The 'Essentials' section displays key information in two columns:

Subscription	: <a href="#">Visual Studio Enterprise Subscription</a>	Server name	: c372mysql.mysql.database.azure.com
Subscription ID	: 36931816-7508-43ae-9363-6b67265802ef	Server admin login name	: c372admin
Resource group	: <a href="#">c372</a>	Configuration	: <a href="#">Burstable, B1ms, 1 vCores, 2 GiB RAM, 20480 storage</a>
Status	: Available	MySQL version	: 5.7
Location	: East US	Availability zone	: 1

Below this, there is a 'Tags (edit)' section with a link to 'Click here to add tags'. A navigation bar at the bottom of the Essentials section includes 'Getting started' (active), 'Properties', 'Monitoring', and 'Tutorials'. At the very bottom, there is a section titled 'Start your project'.

Note: In this page you can stop or delete the database when not in use

14. Start MySQL Workbench, click on the + symbol to create a new connection

The screenshot shows the MySQL Workbench application window. The title bar reads 'Localhost - Warning ...'. The menu bar includes 'File', 'Edit', 'View', 'Database', 'Tools', 'Scripting', and 'Help'. On the left is a dark sidebar with icons for a database, a server, and a connection. The main area features a large 'Welcome' message and the text 'MySQL Workbench is create and browse design and run SQL qu'. Below this is a link 'Browse Documentation >'. At the bottom, the 'MySQL Connections' panel is visible, with a red square highlighting a '+' icon used to add a new connection.

15. Enter connection details similar as shown.
  - a. Under **Hostname**, use the database hostname from step 13
  - b. Under **username**, use the username that you set.
  - c. The password will be prompted

**Setup New Connection**

Connection Name:  Type a name for the connection

Connection Method:  Method to use to connect to the RDBMS

Parameters SSL Advanced

Hostname:  Port:  Name or IP address of the server host - and TCP/IP port.

Username:  Name of the user to connect with.

Password:   The user's password. Will be requested later if it's not set.

Default Schema:  The schema to use as default schema. Leave blank to select it later.

16. Click **Test Connection** to check that the connection works. (Note, this may not work if using RP network)
17. Click **OK**
18. You can use workbench as per how you normally do it.
19. Create a database named **c372** (Or the same name as you use in the local MySQL)

## Section D - Preparing Springboot project for deployment

In pom.xml, you should remove dependencies that are not required when deploying to reduce the size of the upload. For e.g. spring-boot-devtools is only helpful during development.

1. In **application.properties**, you will need to update the mysql database host.
2. Comment the existing configurations for mysql.

Note:

- When you are working on localhost, you will need to switch back to this
- **Use the database hostname, username and password from the previous section**

```
#spring.datasource.url=jdbc:mysql://${MYSQL_HOST:localhost}:3306/c372?serverTimezone=UTC
#spring.datasource.username=root
#spring.datasource.password=
spring.datasource.url=jdbc:mysql://c372mysql.mysql.database.azure.com:3306/c372?serverTimezone=UTC
spring.datasource.username=C372admin
spring.datasource.password=password
```

## Section E - Deploy Springboot project

Before you start this section, you will need to:

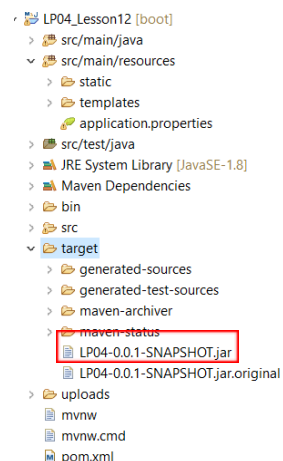
- Install Azure CLI, get it here:  
<https://docs.microsoft.com/en-us/cli/azure/install-azure-cli-windows?tabs=azure-cli>
- Ensure that Azure MySQL is started

1. Start Windows PowerShell and change directory to your project folder.
  - a. To find your project folder, in Eclipse, right click on the project, select Properties
  - b. You will see the location of your code, copy that location
  - c. Use the cd command in PowerShell to change directory to that folder
2. In PowerShell, ensure that you are inside the project folder and type the following command to package the project into a JAR file:

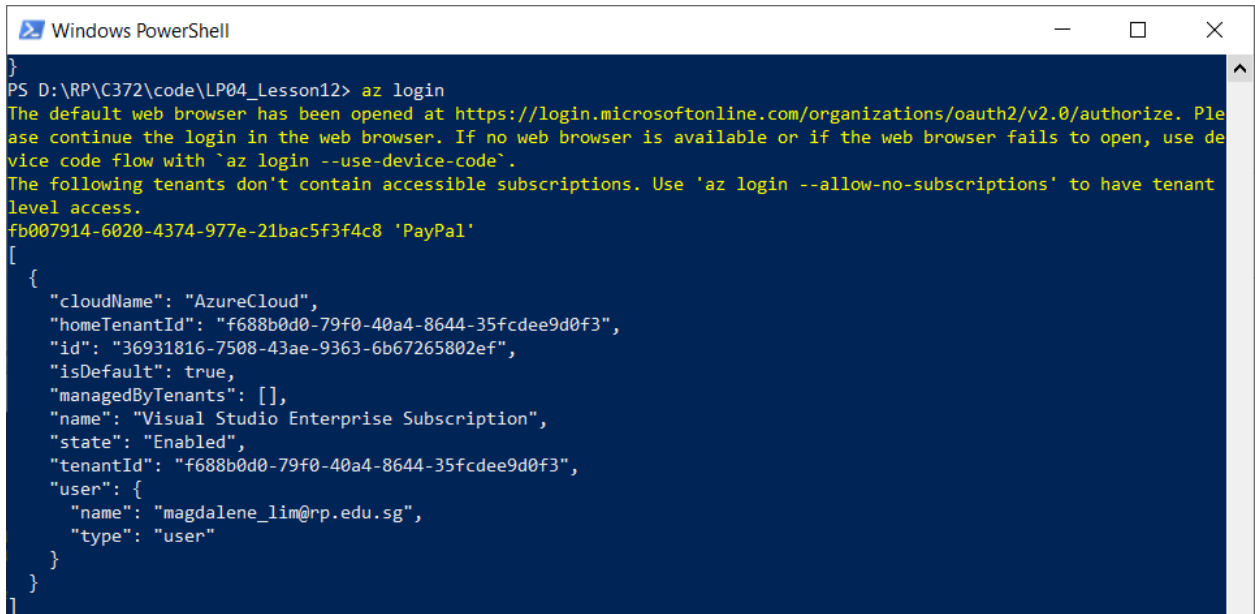
```
mvn clean package -DskipTests
```

3. In Eclipse, refresh your project, you should see the JAR file created.

Note the name of the JAR file as you will need to use it later.



4. In Powershell, login to azure by executing the command:  
`az login`
5. You will be prompted to login on a web browser, use the same login details as you do for the Azure Portal.
6. Once logged in, you will see the output similar to below:



```

PS D:\RP\C372\code\LP04_Lesson12> az login
The default web browser has been opened at https://login.microsoftonline.com/organizations/oauth2/v2.0/authorize. Please continue the login in the web browser. If no web browser is available or if the web browser fails to open, use device code flow with `az login --use-device-code`.
The following tenants don't contain accessible subscriptions. Use 'az login --allow-no-subscriptions' to have tenant level access.
fb007914-6020-4374-977e-21bac5f3f4c8 'PayPal'
[
  {
    "cloudName": "AzureCloud",
    "homeTenantId": "f688b0d0-79f0-40a4-8644-35fcdee9d0f3",
    "id": "36931816-7508-43ae-9363-6b67265802ef",
    "isDefault": true,
    "managedByTenants": [],
    "name": "Visual Studio Enterprise Subscription",
    "state": "Enabled",
    "tenantId": "f688b0d0-79f0-40a4-8644-35fcdee9d0f3",
    "user": {
      "name": "magdalene_lim@rp.edu.sg",
      "type": "user"
    }
  }
]

```

7. To create an app, use the command below:  
`az spring-cloud app create -n <app name> -s <service name> -g <resource group name> --assign-endpoint true --runtime-version=Java_11`

Note:

- Replace <app name> with something suitable such as lesson12
- Replace <service name> with the name of the Azure Spring Cloud created earlier in **Section B**. In this document, we called it c372projects.
- Replace <resource group name> with the resource group created earlier in **Section B** In this document, we called it c372.
- If your project is compiled with Java 8, then omit `--runtime-version=Java_11`

8. To deploy the app, use the command below:  
`az spring-cloud app deploy -n <app name> -s <service name> -g <resource group name> --artifact-path target/<JAR file name> --verbose`

Note:

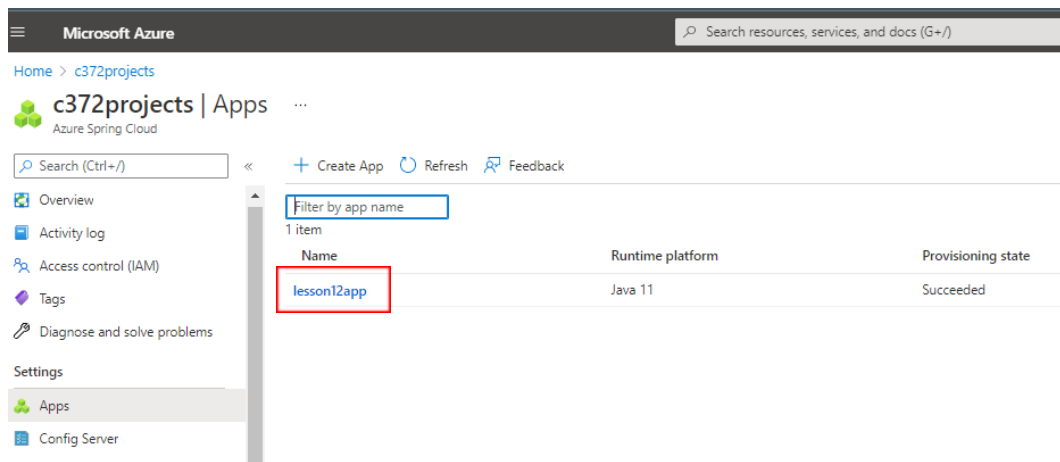
- Replace <app name> with the name of the app
- Replace <service name> with the name of the Azure Spring Cloud created earlier in **Section B**. In this document, we called it c372projects.
- Replace <resource group name> with the resource group created earlier in **Section B** In this document, we called it c372.
- Replace JAR file name with the actual JAR name found in the project target folder in Eclipse. E.g. LP04-0.0.1-SNAPSHOT.jar

9. To check the logs in case of any issue, use the command:
- ```
az spring-cloud app logs -<app name> -s <service name> -g <resource group name>
```

Note:

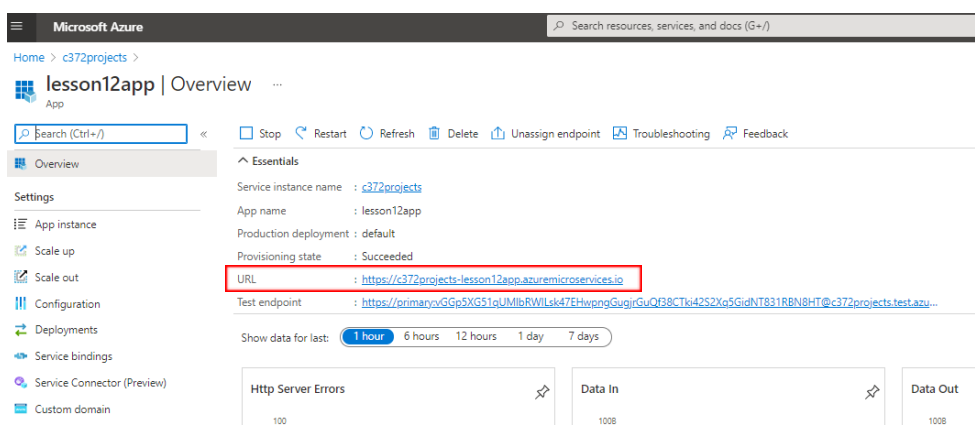
- Replace <app name> with the name of the app
- Replace <service name> with the name of the Azure Spring Cloud created earlier in **Section B**. In this document, we called it c372projects.
- Replace <resource group name> with the resource group created earlier in **Section B**. In this document, we called it c372.

10. Once deployed, go to the Azure spring cloud service you created, select **Apps**. You should see the app you created there.



11. Click on the app you created

12. Click on the URL generated



Note: In this page, you can also stop or delete the instance when not in use.

## Section F – Deleting Resources

It is important to stop your resources when not in use, or delete them when you no longer need them, as Microsoft will continue to bill you if the resources are still running or taking up space.

To easily delete everything, you can go to the resource group that you have grouped your resources under, and click Delete resource group. All related resources will be deleted.

The screenshot shows the Microsoft Azure portal interface. At the top, there's a search bar and navigation links. The left sidebar contains a menu with categories like Overview, Settings, Security, and Cost Management. The main content area displays the 'c372' resource group. A red box highlights the 'Delete resource group' button in the top toolbar. Below this, the 'Essentials' section shows subscription details and a list of resources. The resources table includes columns for Name, Type, and a checkbox for selection.

| Name                                                           | Type                                 |
|----------------------------------------------------------------|--------------------------------------|
| c372                                                           | Azure Database for MySQL flexible se |
| c372demo                                                       | Azure Spring Cloud                   |
| c372lesson11                                                   | Azure Spring Cloud                   |
| c372mysql                                                      | Azure Database for MySQL flexible se |
| c372projects                                                   | Azure Spring Cloud                   |
| DefaultWorkspace-36931816-7508-43ae-9363-6b67265802ef-kyr2qrm7 | Log Analytics workspace              |
| insight20220123                                                | Application Insights                 |