

## **Tutorial 1: Account Setup and Software installation**

### **What you are expected to learn from this tutorial**

- Installation of the required programming environments, tools and frameworks as well as IDEs to carry out the hands-on exercises and assessments of this course.
- Set up a Google Cloud account to develop applications atop the Google Cloud Platform.
- Set up your AWS Academy account to develop applications atop the AWS platform.
- Set up recommended Integrated Development Environments (IDEs).

### **1 Install Python**

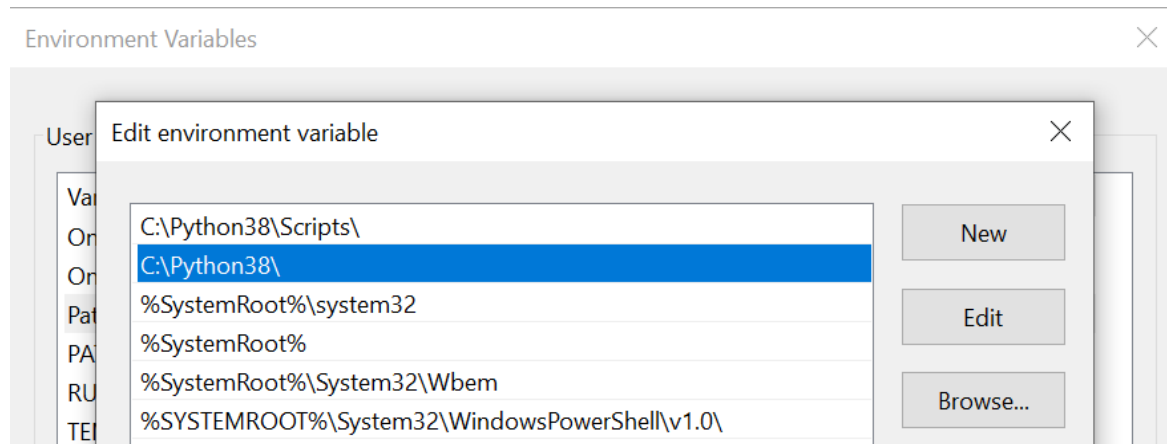
1. Download and install the latest version of Python 3.x according to the Operating System (OS) of your personal laptop or development environment from [here](#).
2. After installing, make sure that the python scripts are properly added to your PATH variable.

To verify this, open a command line/terminal and type “python --version”. If your installation was successful and Python scripts are properly added to the PATH variable, the aforementioned command should display the version of python installed in your system as shown below.

```
H:\>python --version
Python 3.8.6
H:\>_
```

If the installation of Python concluded successfully, but the system does not recognize the command, that – in most cases – is an indication that Python is not added to your PATH variable properly. To add Python to the PATH variable, refer the following steps.

**Windows:** Add python install directory into the Edit environment variables.



### MacOS:

1. Open your terminal and enter the command using your preferred text editor (e.g. nano): `sudo nano /etc/paths`. Enter the password of your logged in user account when prompted to do so.
2. A list of directories that are currently a part of the PATH variable will appear. Enter the path of the Python install directory at the end of this list.
3. Press `control + X` to quit and then `Y` to save the changes.

**[Note:]** If you intend to use different versions of Python simultaneously on MacOS, you can try `pyenv` (<https://github.com/pyenv/pyenv>).

Once your Python installation path is added to the PATH variable according to the OS, test again using the steps above. If your system still does not recognize the command, then request help from your tutor to fix it.

**[Note:]** Make sure `.py` files in your computer are associated with [Python3\_Installation Directory] or `python.exe` after the installation.

**[Note:]** If you are a Linux/MacOS user, and see the output of `python -V` command returns an older Python version, you can potentially introduce an *alias* to point to the latest Python version you've installed in your `.profile` (or `.bash_profile`), `.bashrc` or `.zprofile` (if you're using Zsh- **MacOS only**) or any other configuration file used for the same purpose), as below.

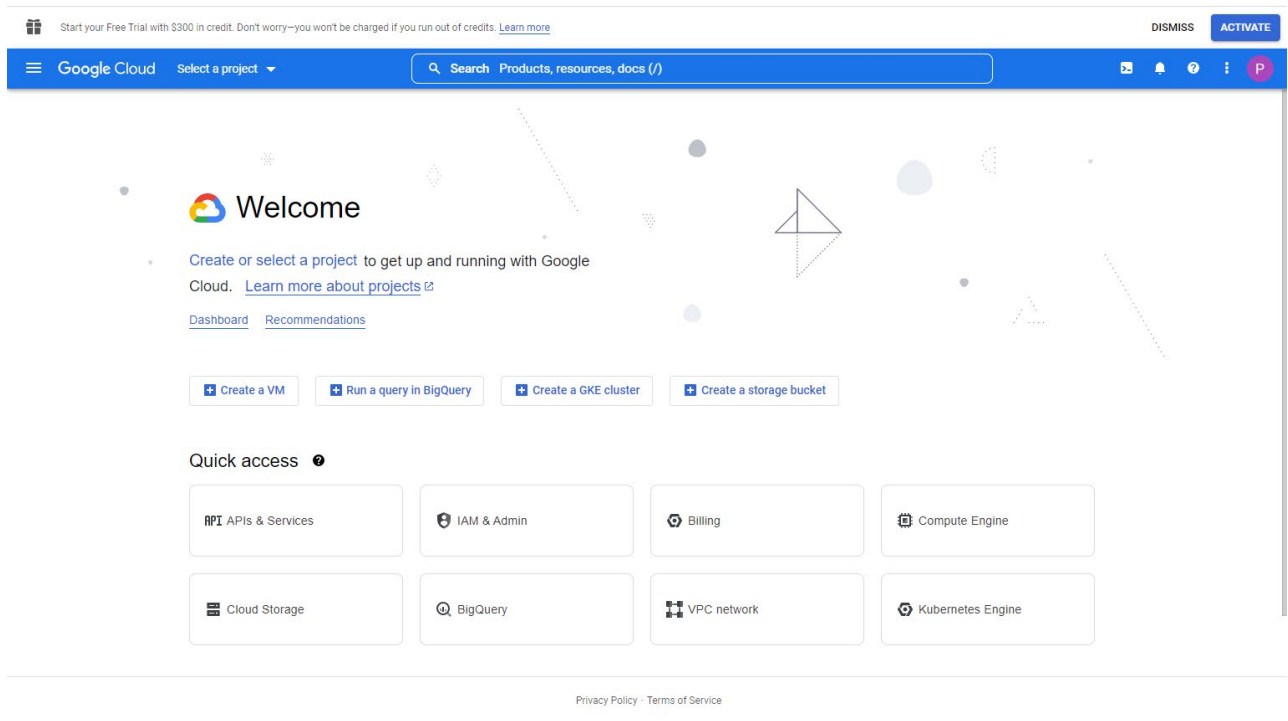
1. Open your terminal and entering the command using your preferred text editor (e.g. nano): `sudo nano ~/.profile` (or `nano ~/.zprofile` in **MacOS only**). Enter the password of your logged in user account when prompted to do so.
2. Add the following line at the bottom of the file.

```
alias python="python3"
```

3. Press `control + X` to quit and then `Y` to save the changes.
4. Either run `source ~/.profile` (or `source ~/.zprofile` in **MacOS only**) to reload the configurations into your terminal, or close and re-open a new terminal for the change to take effect.

## 2 Create and test your Google account

1. If you do not have a **Google account other than RMIT student (e.g. xxxxxxxx@student.rmit.edu.au)** account then the first step is to **create a new personal Google account** (e.g. xxxxxxxx@gmail.com). **RMIT student accounts do not have privilege to use Google cloud development tools.** So, you need to use other Google account. **If you already have a Google account, you don't need to create a new one. You can straightly use your existing one.**
2. Once you are done with account creation, you need to login to Google cloud development. Go to the link: [console.cloud.google.com](https://console.cloud.google.com). Log in if you are not already logged in. You will see the developer dashboard as follows:



3. Click on “**Activate**” at the top right corner. Complete the required information in the form. Please select **Account type** “**Individual**”.
4. To finish all the required tutorials of this course related to Google Cloud, and use all Google Cloud-provided services, you will need to enter your billing details which needs a credit card. Google also provide \$300 credit for 3 months to use all Google platform services.

**[Note:]** Your card will not be charged if you follow the tutorials, most Google services have a free quota for usage. However, be careful some services do not have a free quota so it will charge you immediately when you finish your \$300 credit. We will not use such paid service for our tutorials. To test your card Google will deduct 1 USD from credit. But don't worry they will return this back to your account.

### 3 Install Google Cloud SDK

- Create a test project on your Google Cloud account using cloud Console. Helpful link: <https://cloud.google.com/resource-manager/docs/creating-managing-projects> (use console)

- Download and Install Google Cloud SDK: <https://cloud.google.com/sdk/docs/install-sdk>.
- Configure it according to the instructions. For example for windows: <https://cloud.google.com/sdk/docs/quickstart-windows>
- Download Install Git <https://git-scm.com/downloads>
- Install App engine extension for python using the command from command line/terminal:

```
gcloud components install app-engine-python
```

- Install additional python libraries using the command

```
gcloud components install app-engine-python-extras
```

- Run the following command to update all the installed Google Cloud SDK components, including the App Engine extension for Python

```
gcloud components update
```

## 4 Create AWS Academy Account

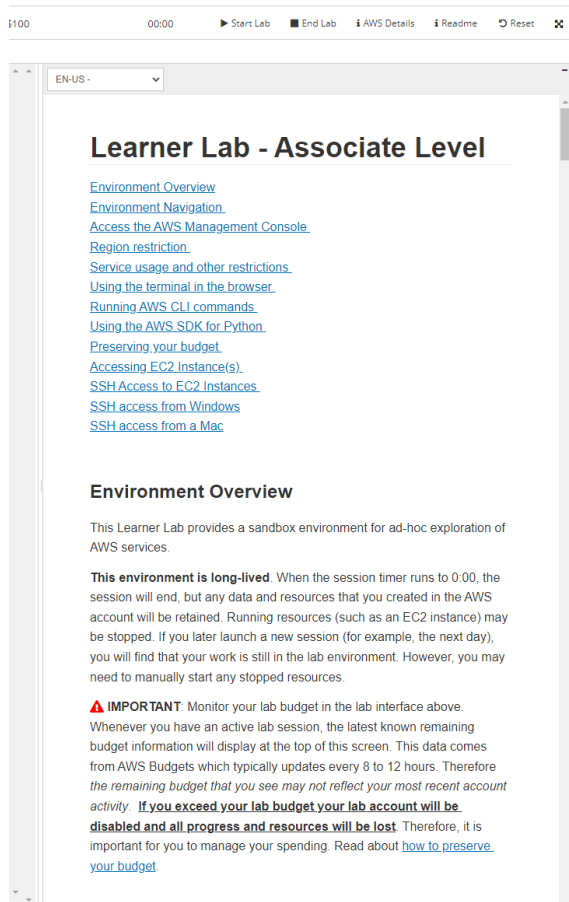
**To work on AWS as part of the learning exercises of this course, you will need to sign up for an AWS Academy account.** You will, however, first need to be nominated for an account by your educators to be able to create these accounts. If you have not yet been nominated or have trouble logging into your AWS Academy account, talk to your tutors immediately. Each one of these student accounts, by default, comes with \$100 preloaded free AWS credits to be used for the learning activities, experimentation, and assessments.

**[Note:]** Students are highly advised to carefully use the aforementioned free AWS credits as RMIT will not provide any further top-ups or extensions unless there are exceptional circumstances.

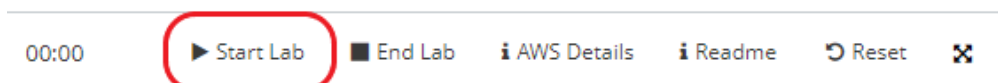
## 5 Familiarize with the AWS Academy portal

- Go to your *Modules* section in your AWS Academy Portal LMS associated with the COSC2626/2640 program and find the learning materials available.

- Download and read the “AWS Academy Learner Lab – Student Guide.pdf”, which focuses on how to navigate through your AWS Academy learning environment, start/stop an AWS lab session, etc. **Note:** Your tutor may demonstrate the important steps in this student guide.
- Locate the Learner Lab documentation (see below) and give it a good read.



- Start a lab session by clicking on the *Start Lab* option, as below.



- Find the AWS Access credentials associated with the lab session you’ve started in the previous step by clicking on *AWS Details* first, and then *AWS CLI: Show* button as below. Copy them into a notepad. You will need them later to configure your AWS Toolkit.

**Step 01:**

00:00

▶ Start Lab

■ End Lab

**i AWS Details**

i Readme

↺ Reset

✕

**Step 02:**

) 03:56

▶ Start Lab

■ End Lab

i AWS Details

i Readme

↺ Reset

✕

Cloud Access Close

**AWS CLI:** Show

**Cloud Labs**  
Remaining session time: 03:55:17(236 minutes)  
Session started at: 2022-03-05T18:38:37-0800  
Session to end at: 2022-03-05T22:38:37-0800  
  
Accumulated lab time: 13:52:17 (833 minutes)  
  
No running instance  
  
SSH key Show Download PEM Download PPK  
AWS SSO Download URL

AWSAccountid	953018004528
Region	us-east-1

**Step 03:**

;100 03:59

▶ Start Lab

■ End Lab

i AWS Details

i Readme

↺ Reset

✕

Cloud Access Close

**AWS CLI:**  
Copy and paste the following into ~/.aws/credentials

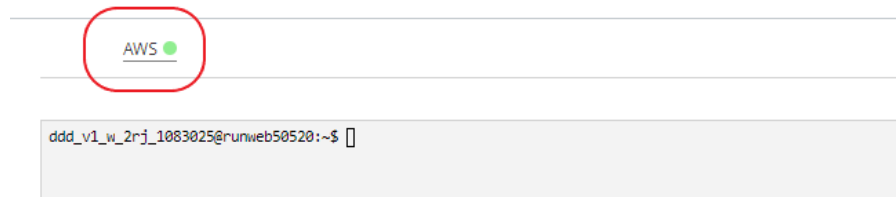
```
[default]
aws_access_key_id
aws_secret_access_key
aws_session_token
DGZR2h1hN8wFY80Vpl499cQ9YA1rnuwdrUYQvmR0m1u8cw8QYfMESd3Wo03ibDLu+S7XbexumapnISapvodw/
FLznNY08WR8Z8pTfWfB1CbNhdQL0f2W99QmzjBrakeeTV7Rf+XRkpRvA1f7a51f+GcawnVfHV40B1DHv1IE2j
aouAkIrHsDjmLa5ng9VeJFNs3JbT3pEGOkPm+aBtjE8mTFEnJ+981iuvZCRBJIt+UhxqWtmBjFz8UNb69Dv5T
gCJ15MW22kTBf1m0iCy02xekYB1tXLquT5cDA
```

**Cloud Labs**  
Remaining session time: 03:58:53(239 minutes)  
Session started at: 2022-03-05T18:38:37-0800  
Session to end at: 2022-03-05T22:38:37-0800  
  
Accumulated lab time: 13:48:41 (829 minutes)  
  
No running instance  
  
SSH key Show Download PEM Download PPK  
AWS SSO Download URL

AWSAccountid	953018004528
Region	us-east-1

- Learn how to access the AWS Management Console associated with the session you've started in a previous step. As a shortcut, click the AWS label in the top left-hand side of your Lab menu, when the indicate next to it is *green*, as below.

› Modules › Learner Lab Associate Services › Learner Lab - Associate Services



- Browse through different services available to you in the AWS Management console.

## 6 Install Java

The source code of most hands-on exercises we will **demonstrate** during the course will be based on Java although we aim to provide the same exercises in other popular programming languages/frameworks such as Python, PHP, Node.JS where appropriate. Therefore, installing Java is required to follow the learning materials more effectively.

1. Download and install the latest update of Java Development Kit 1.8 (JDK 8) runtime environment if it is not already installed on your machine, via <https://www.oracle.com/java/technologies/downloads/#java8>.

**[Note:]** If you are curious as to why we do not recommend using the latest versions of Java, some of the hands-on exercises (e.g., writing MapReduce programs on Hadoop) you will do at a later stage of this course will be heavily coupled with Java 1.8 as Hadoop does not have support for the latest versions of Java yet (see [Supported Java Versions](#)). Therefore, for consistency purposes as well as avoiding switching between different versions of Java across different learning exercises, we recommend sticking to Java 1.8. *Having said that, you are welcome to use any recent version of Java for all exercises except for those on Hadoop, if you are familiar with the Java eco-system and switching between versions.*

2. Verify that your Java installation is working properly, and that the same Java version is accessible to your IDE (by default), etc.



## 7 Install your preferred IDE

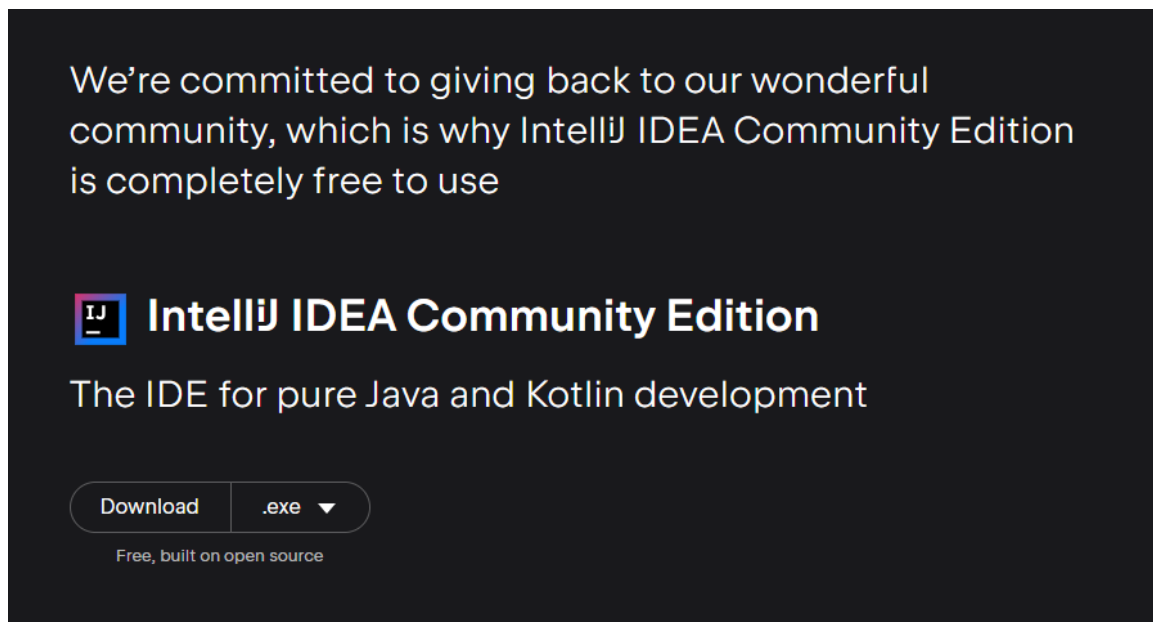
We all have our preferred IDE for software development, don't we? Given that most hands-on exercises of this course are demonstrated using Java, we recommend installing an IDE that has good support for Java-based software development, which also has **tight integration with the AWS Toolkit**. Majority of the hands-on activities you will be working on as part of the course will be based on the AWS Cloud platform, and therefore, it is important that your preferred IDE works well with the AWS Toolkit, which is a utility that allows you to perform a variety of activities via your preferred IDE.

**[Note:]** Eclipse, a great IDE for Java development, is **no longer recommended** for this course since AWS Toolkit for Eclipse is no longer supported by AWS as of 31<sup>st</sup> of May 2023.

We recommend *IntelliJ IDEA community edition* (or optionally enterprise edition, if you already have a license purchased), and Microsoft *Visual Studio Code* for all learning activities based on Java.

### IntelliJ IDEA Community Edition

- Click [here](#), and scroll down to the following section in the IntelliJ IDEA download page.

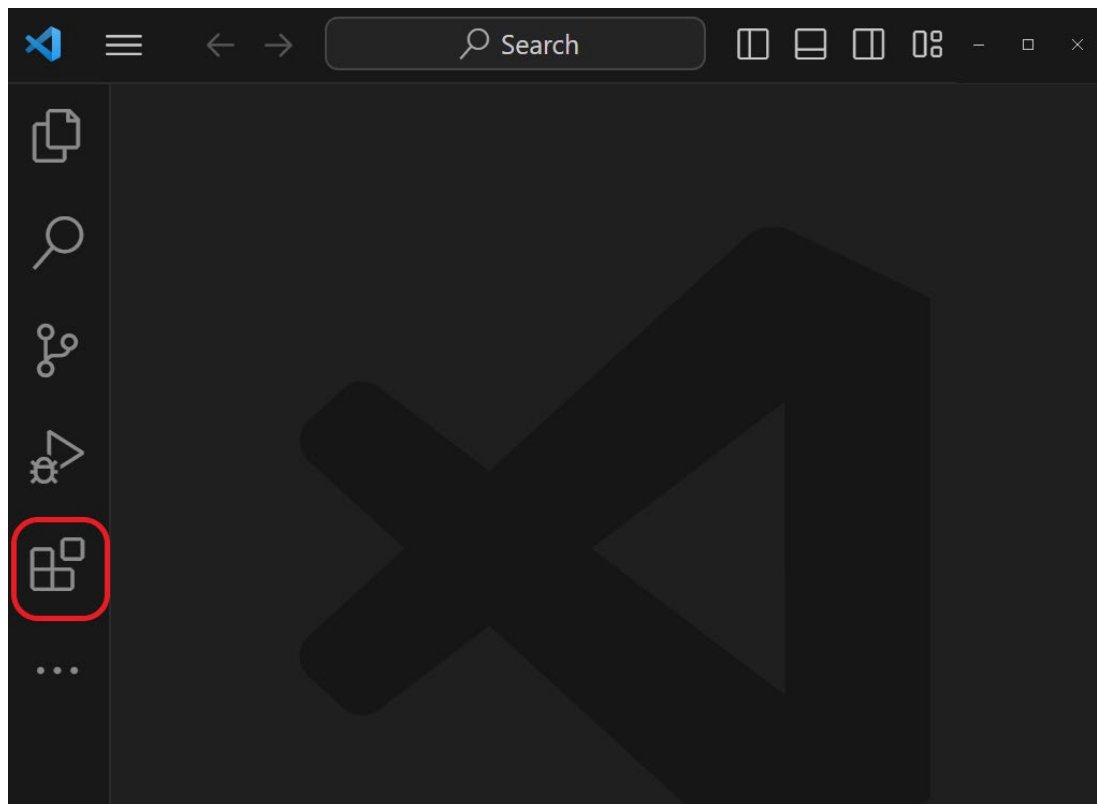


- Download and install IntelliJ IDEA community edition by following the instructions

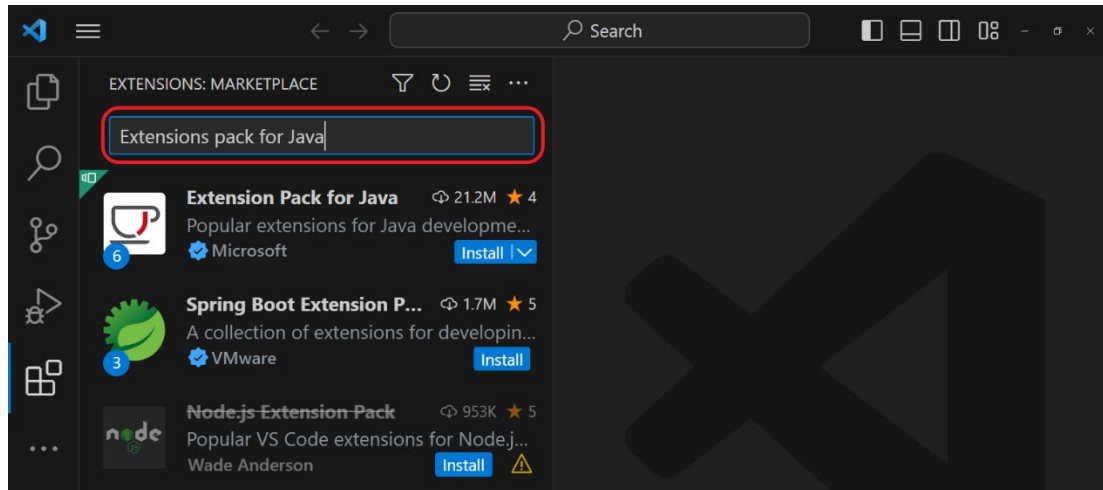
displayed by the installer.

### Microsoft Visual Studio Code (with Java extensions)

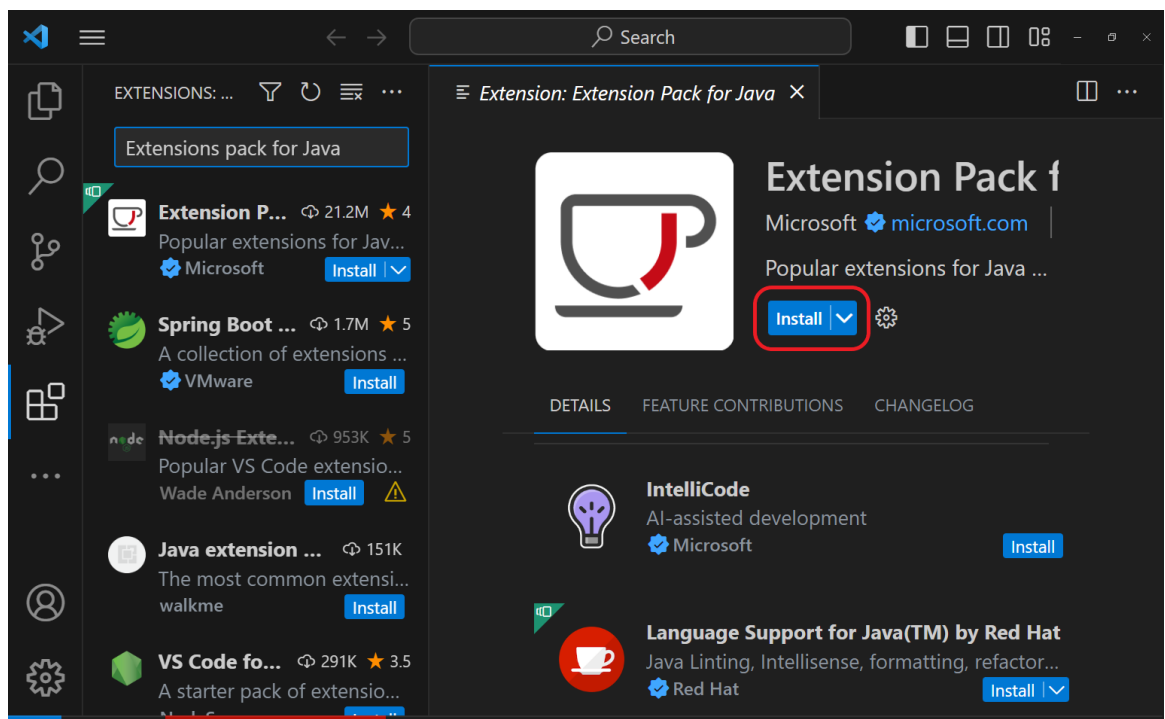
- Download and install Microsoft Visual Studio Code from [here](#).
- Install the *Extension Pack for Java* from [here](#) by following the instructions documented under the sub-section *Install Visual Studio Code for Java* or alternatively the steps below.
- Run Visual Studio Code and tap the *Extensions* icon on the left hand-side menu to go to browse Visual Studio Code *Marketplace* for extensions, as below.



- In Visual Studio Code Marketplace, search for “*Extension Pack for Java*” extension by typing its name into the search box at the top of the page, as below.



- Select “*Extension Pack for Java*” option that appears in the search results and tap the install button available in the home page of the *Extension Pack for Java* extension, to install it.

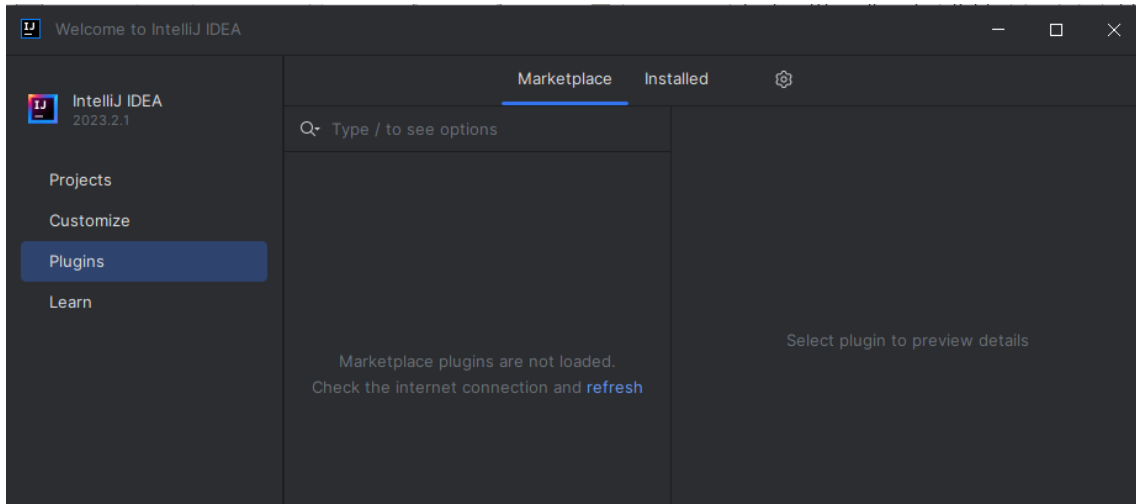


## 8 Install and Configure AWS Toolkit

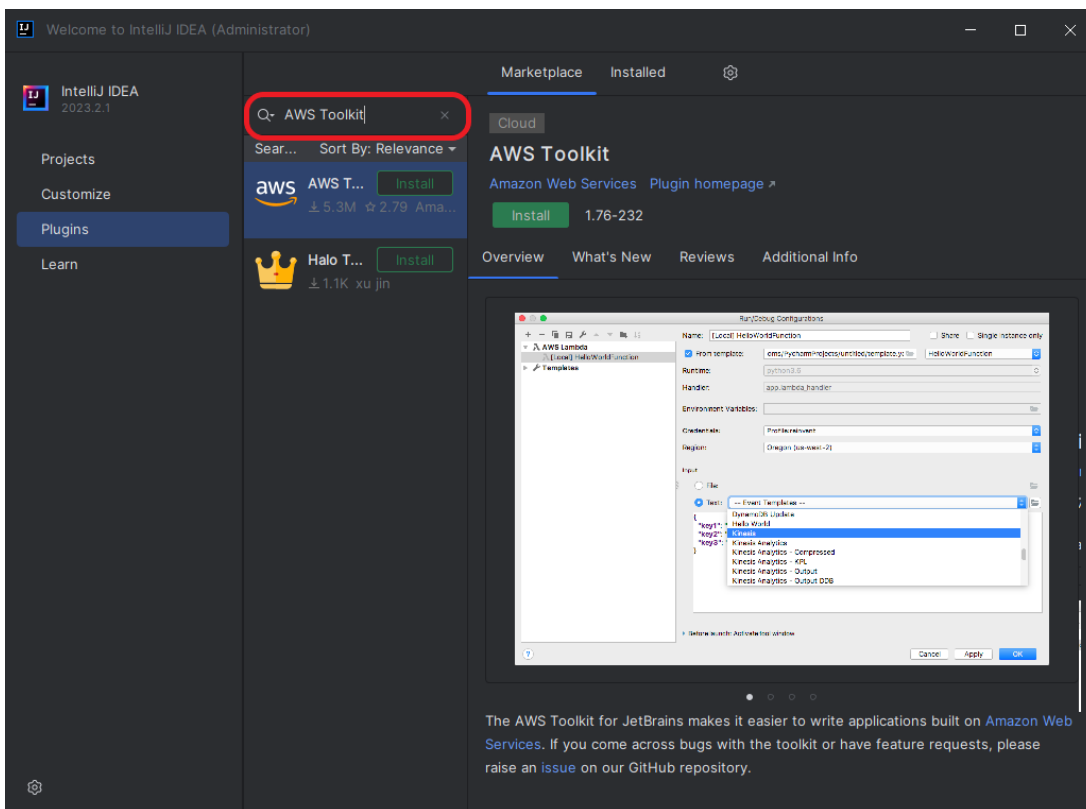
Below we show how to install the AWS Toolkit on IntelliJ IDEA and VS Code, respectively.

## IntelliJ IDEA

- Run IntelliJ idea, and select the Plugins option on the home page, as below.



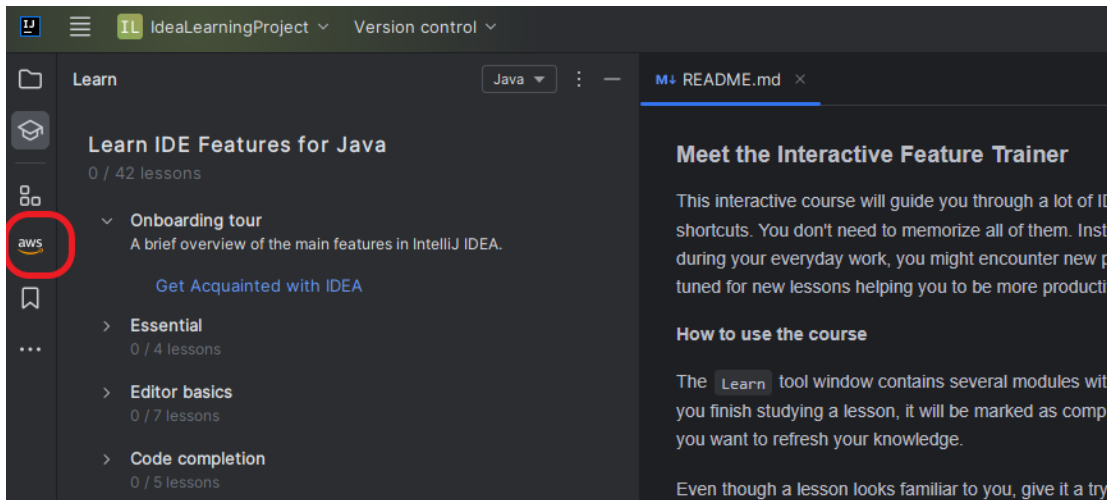
- Then, type “AWS Toolkit” in the search bar that appears under *Marketplace* and tap *Enter*. You will see then see the AWS Toolkit plugin listed under the search results, as below.



- Finally, tap the “Install” button on the AWS Toolkit plugin home page to install the toolkit.

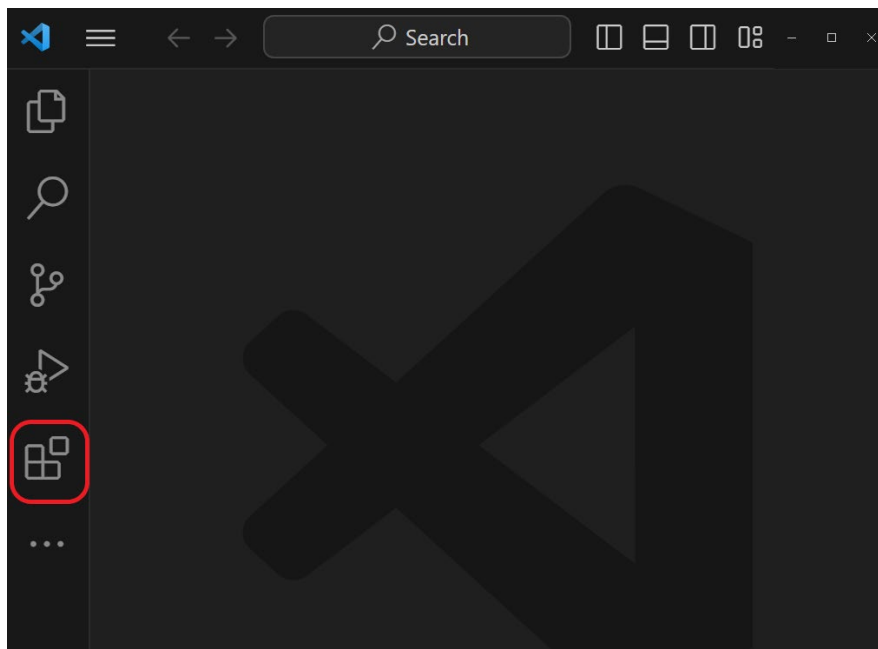
- Once the AWS Toolkit is properly installed, you should be able to access it from the left hand-side menu of the IDE.

To do this, first tap “Learn” option from the left-hand side menu, and then from the options listed, select “Start Learning”. This will open up IntelliJ IDEA code-editor with an example project, and you will now be able to view the *AWS Toolkit* icon on the left hand-side menu, as below.

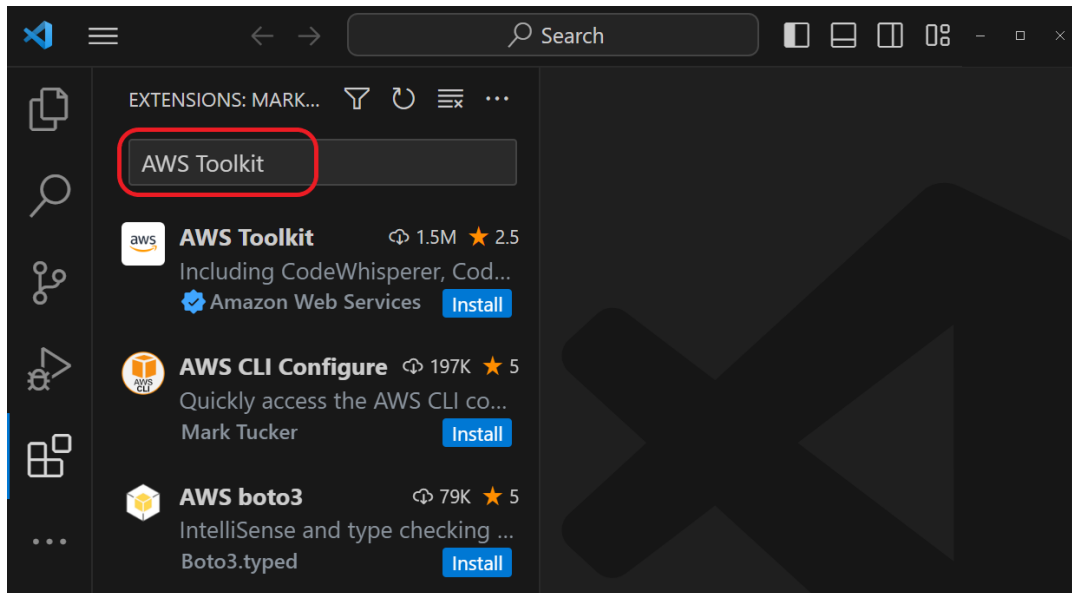


## Microsoft Visual Studio Code

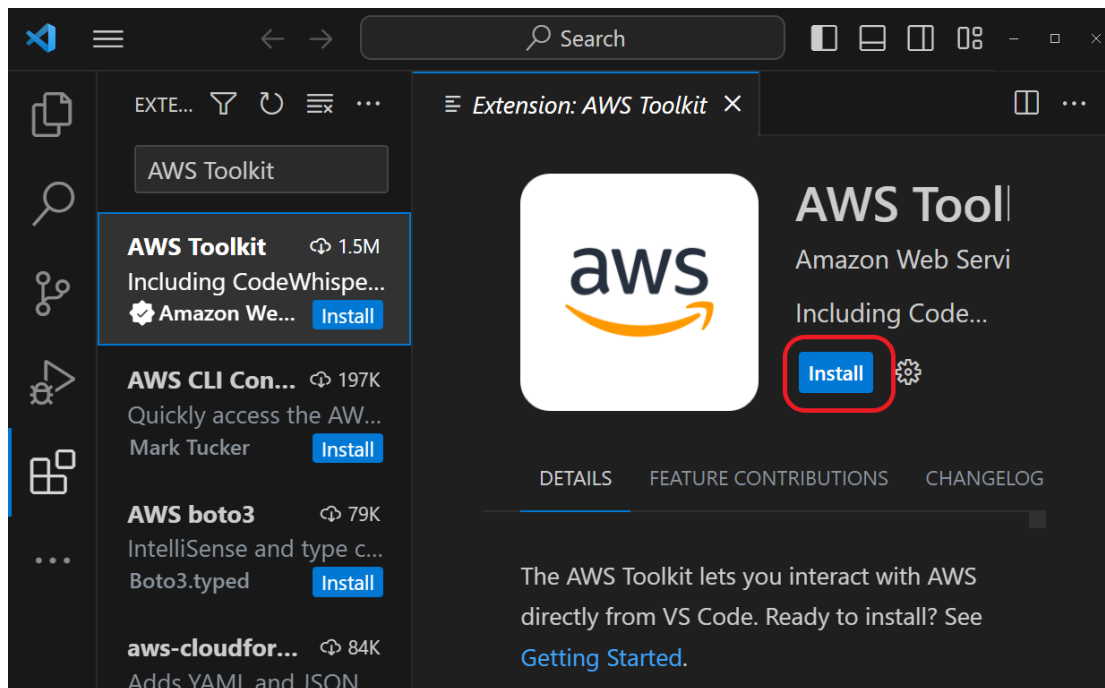
- Run Visual Studio Code and tap the *Extensions* icon on the left hand-side menu to go to browse Visual Studio Code *Marketplace* for extensions, as below.



- In Visual Studio Code Marketplace, search for “AWS Toolkit” extension by typing its name into the search box at the top of the page, as below.

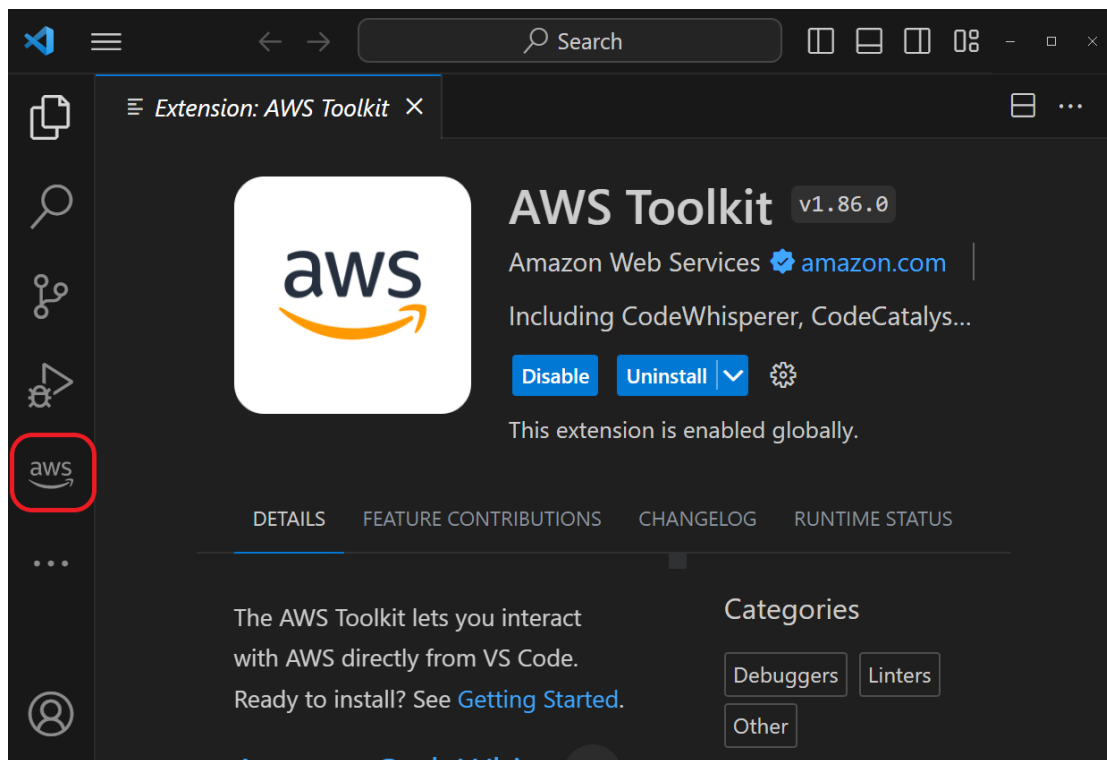


- Select “AWS Toolkit” option that appears in the search results and tap the install button available in the home page of AWS Toolkit extension, to install it.



- Once the AWS Toolkit is properly installed, you should be able to access it from the left hand-side menu of the IDE, as below.

**[Note:]** If your screen resolution is small, you might not see the AWS Toolkit icon on the left-hand side menu at first glance. To view it, tap the “...” icon (corresponding to “Additional Views”), and select “AWS” from the list, which should add the AWS Toolkit to your left-hand side menu.



## 9 Install Node.js

Later in the course, you will use Node.js to develop and run a Serverless application atop AWS Lambda. Although your application will run within the AWS Lambda platform, you will need Node.js installed in your local development environment to run and test it.

- Download and install the latest version of Node.js from [here](#).

## Wrap up

- Make sure to set up your AWS Academy accounts during the class tutorial session. These will be used for the subsequent tutorials as well as assessments.
- Make sure everything is installed and ready to use before you attend your next tutorial.