

**WA2579 Technical Introduction to  
Microservices**

**Classroom Setup Guide**

**Web Age Solutions Inc.**

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## **Part 1 - AWS keys**

This course requires AWS keys for the students that will be generated before the class by Web Age Solutions. Please contact [support@webagesolutions.com](mailto:support@webagesolutions.com) to request keys generation and delivery of keys to the instructor.

## **Part 2 - Minimum Hardware Requirements to host the VMs**

- **64-bit x86 CPU that supports hardware virtualization (Intel-VT or AMD-V)**
- **Hardware virtualization enabled in the BIOS**
- **12 GB RAM, 16 GB recommended**
- **100 GB FREE IN THE HARD DISK**
- VMWare player or workstation 14

### Part 3 - Setup # 1: VM-WA2675-REL-5-0

\_\_1. Download the following Virtual Machine (this file will be provided in many zip files):

- **VM-WA2675-REL-5-0**

\_\_2. Once you get the zip files, extract the 001 zip file in your hard disk, it will extract all the files from all the zips.

\_\_3. Open the folder where the zip was extracted.

\_\_4. Right click on the \*.vmx file and select Send to → Desktop (create a shortcut) to create a shortcut in the desktop and then rename the shortcut as:

- **VM-WA2675-REL-5-0**

\_\_5. Double click on the desktop to start the VM.

\_\_6. Select **I moved it** if prompt.

\_\_7. Login using **wasadmin** for **user** and **password**.

\_\_8. Close the VM.

## Part 4 - Setup # 2: VM\_WA2919\_REL\_1\_0

\_\_1. Download the following Virtual Machine (this file will be provided in many zip files):

- **VM\_WA2919\_REL\_1\_0**

\_\_2. Once you get the zip files, extract the 001 zip file in your hard disk, it will extract all the files from all the zips.

\_\_3. Open the folder where the zip was extracted.

\_\_4. Right click on the \*.vmx file and select Send to → Desktop (create a shortcut) to create a shortcut in the desktop and then rename the shortcut as:

- **VM\_WA2919\_REL\_1\_0**

\_\_5. Double click on the desktop to start the VM.

\_\_6. Select **I moved it** if prompt.

\_\_7. Login using **wasadmin** for **user** and **password**.

\_\_8. Open a Terminal.

\_\_9. Enter the following command. [Enter the password **wasadmin**]

```
sudo -i
```

\_\_10. Enter this command:

```
ping www.google.com
```

\_\_11. Make sure you should get a response from the server that means the VM has internet connection, press CTR + c to stop it. If you don't get a successful ping then change the network connection in the VM to NAT and try again.

\_\_12. Enter the following command:

```
~/pull-images.sh
```

Wait for it to complete.

\_\_13. Close the Terminal.

## Part 5 - Creating a Docker Account and Obtain an Access Token

### This part needs to be done by the Students or by the setup person

In this part, you will create a Docker account and obtain an access token. With the free Docker account, you can pull up to 200 Docker images every 6 hours. Without the account, you will most likely run into Docker pull rate-limiting issue where anonymous users get restricted to 100 Docker image pulls every 6 hours and that can cause issues especially when multiple anonymous users connect from the same network.

\_\_1. Open a browser and navigate to the following URL:

```
https://hub.docker.com/
```

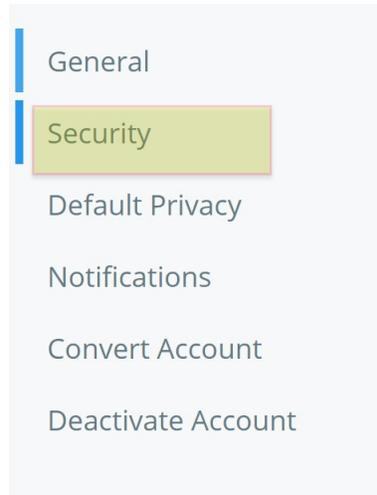
\_\_2. Click **Sign Up** and create a new account.

\_\_3. Sign in with your newly created account.

\_\_4. Click on your username in the top right corner and select Account Settings.

Alternatively, click navigate to <https://hub.docker.com/settings/general> to access Account Settings.

\_\_5. Select **Security**.



\_\_ 6. Click **New Access Token**.

\_\_ 7. Add the token description, such as *docker & Kubernetes labs*.

\_\_ 8. Keep Access permissions as default (**Read, Write, Delete**).

\_\_ 9. Click **Generate**.

Notice it shows the following information on the page:

**To use the access token from your Docker CLI client:**

1. Run `docker login -u [redacted]`
2. At the password prompt, enter the personal access token.



\_\_ 10. Make a note of both the steps displayed on the page.

\_\_ 11. In the lab environment, open a new terminal window. If you are running more than one VM you will have to repeat the following steps in all VM's.

\_\_ 12. Switch to the root user. [enter the sudo password]

```
sudo -i
```

\_\_13. Verify you are logged in as root.

```
whoami
```

It should show root.

\_\_14. Run the following command to log into Docker.

```
docker login -u {your-docker-id} -p {your-access-token}
```

\_\_15. Close the Terminal.

## **Part 6 - Setup # 3: WA2579\_REL\_4\_0**

**From here to the rest of the document you will find specific instructions to create a new Windows VM.**

**Call it as WA2579\_REL\_4\_0**

**If you are not creating a VM then you need to notify the instructor that the software will be installed directly in the computer for the student.**

## **Part 7 - Minimum Hardware Requirements**

- 64 bits OS
- 4 GB RAM minimum
- 12 GB in the hard disk
- Internet

## **Part 8 - Minimum Software Requirements**

- Windows OS: Windows 7.
- Latest Google Chrome browser
- Visual Studio Code
- Java 8 \*
- Notepad+ 6.5 \*
- Apache Maven 3.3.9 \*
- Eclipse JEE Mars SR1 \*
- Node 10.13 \*
- Nginx 1.4.3 \*
- AWS Keys \*\*

\* - indicates software provided as part of the courseware.

\*\* - indicates keys provided by Web Age.

## Part 9 - Software Provided

List of ZIP files required for this course and used in next steps on this document:

- **WA2579\_REL\_4\_0.zip**

Send an email to **support@webagesolutions.com** in order to obtain a copy of the software for this course if you haven't receive it yet.

All other software listed under Minimum Software Requirements is either commercially licensed software that you must provide or software that is freely available off the Internet.

## Part 10 - Instructions

\_\_1. Extract the **zip** file to **C:\**

\_\_2. Review that the following folders were created:

- **C:\LabFiles\**
- **C:\Software\**
- **C:\Software\apache-maven-3.3.9\**
- **C:\Software\eclipse**
- **C:\Software\nginx-1.4.3**
- **C:\Software\NotepadPlus**
- **C:\Software\putty**

\_\_3. Review that the following files were created:

- **C:\Software\jdk-8u45-windows-i586.exe**
- **C:\Software\node-v10.13.0-x64.msi**

\_\_4. Make sure the **C:\Software** and **C:\LabFiles** folders are **writable**, is they are read-only then the software won't work and students will have problems during the labs.

\_\_5. Download and install the latest Google Chrome browser from:

**<https://www.google.com/intl/en/chrome/browser>**

\_\_6. Double click on **C:\Software\NotepadPlus\notepad++.exe** to start NotepadPlus.

\_\_7. Pin this program to taskbar or add a shortcut in the desktop. The students will use this software during the Labs.

\_\_8. Create the **C:\Works** directory.

## **Part 11 - Installing JDK 8 Update 45**

\_\_1. Make sure there is no previous Java version already installed on the system. You can check this by using the Windows “Add/Remove Programs” utility. For the best compatibility with the labs it is suggested that all previous versions of Java be uninstalled before proceeding with these instructions. If this is an issue, please contact the setup support person for the course.

\_\_2. From the **C:\Software** directory run the following file:

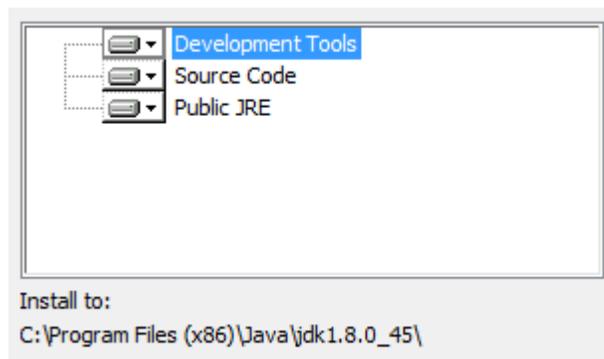
**jdk-8u45-windows-i586.exe**

<b>Note:</b> If using prompted by a security prompt allow the installation to continue.
---

\_\_3. When the initial step of the setup appears, press the **Next** button.



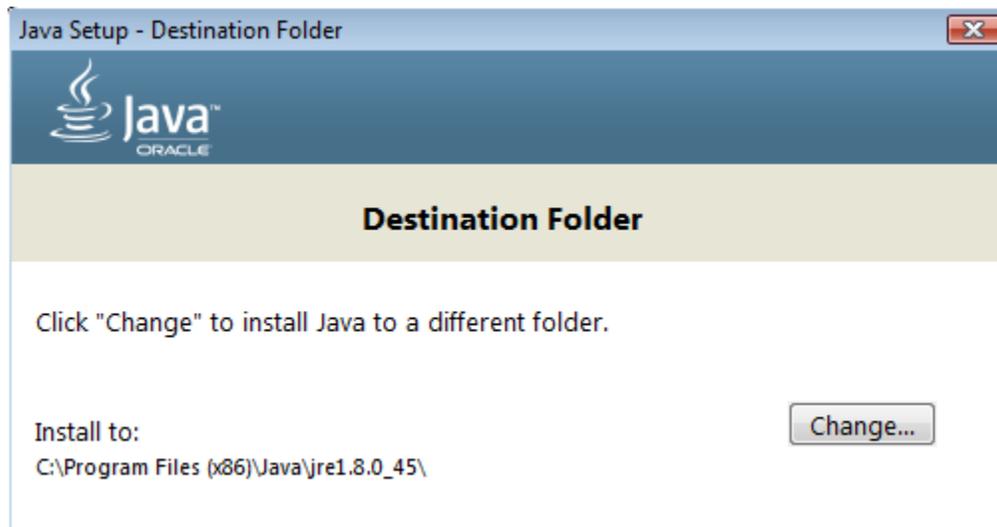
\_\_4. Leave the defaults for installation location and options, and press the **Next** button.



**Note:** The installation directory may be slightly different.

The installation will begin installing files.

\_\_5. The Destination Folder will appear, leave the default folder and click **Next**.



**Note:** The installation directory may be slightly different.

Wait until the software is completely installed.

\_\_6. Click **Close**.



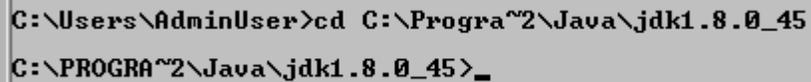
\_\_7. Close any browser that appears asking to register the JDK software.

## Set the Environment variables.

\_\_1. Open a Command Prompt. You can do this with '**Start → Programs → Accessories → Command Prompt**'.

\_\_2. Use the 'cd' command to attempt to switch to the following directory. This will verify the presence of a directory used later so make sure you do not get any errors about not being able to “find the path specified”.

```
cd C:\Progra~2\Java\jdk1.8.0_45
```



```
C:\Users\AdminUser>cd C:\Progra~2\Java\jdk1.8.0_45  
C:\PROGRA~2\Java\jdk1.8.0_45>_
```

**Note:** The installation directory may be slightly different depending your operating system. You may need to use the following directory instead of the one listed above:

**C:\Progra~1\Java\jdk1.8.0\_45**

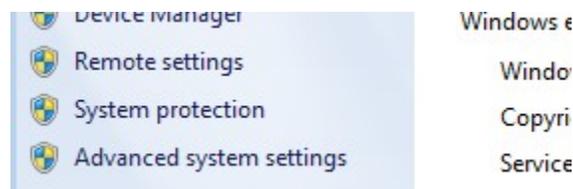
Some of the remaining steps will use the slightly different directory.

\_\_3. Make sure you can reach the java folder and remember the value entered because you will use this value in the following steps.

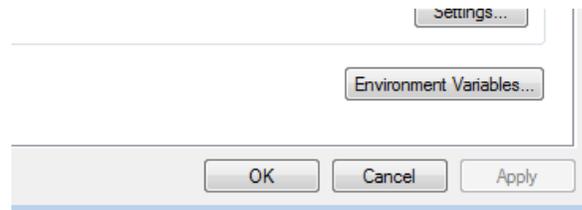
\_\_4. Close the command prompt window.

\_\_5. In the Windows Start Menu, right-click on the **Computer** link in the right-hand side of the Start panel, and then select **Properties**.

\_\_6. Click on **Advanced system settings**.



\_\_7. The system will display the **System Properties** dialog. Select the **Advanced** tab and click **Environment Variables**.



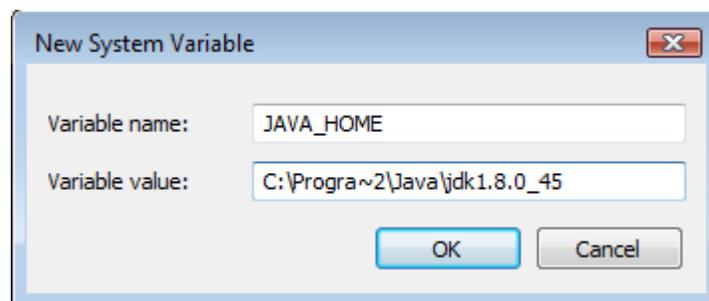
\_\_8. Under the **System Variables** list, click the **New** button.

\_\_9. Enter the following as Variable name:

**JAVA\_HOME**

\_\_10. As Variable value enter the following. This should be the value you verified in the *Set the Environment variables section - step 2*.

**C:\Progra~2\Java\jdk1.8.0\_45**



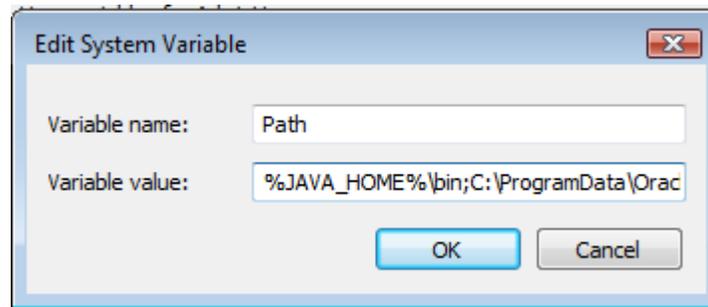
**Note:** If you are using a 32-bit OS you may have to use **C:\Progra~1\Java\jdk1.8.0\_45**

\_\_11. Click **OK** to create the variable.

\_\_12. From the *System Variables* list, select **Path** and click **Edit**.

\_\_13. At the beginning of the line enter the following. Make sure to include the semi-colon on the end:

**%JAVA\_HOME%\bin;**



\_\_14. Click **OK**.

\_\_15. Click **OK** to close the *Environment Variables* window.

\_\_16. Click **OK** to close the *System Properties* window.

## Part 12 - Verification of JDK 8 Update 45

\_\_1. Open a Windows command prompt. You can do this by selecting '**Start -> Run**', entering '**cmd**', and then pressing the **OK** button. Make sure it is a new command prompt and not one open previously.

\_\_2. Enter the following command:

```
echo %PATH%
```

Make sure you see the Java 'bin' directory listed at the beginning.

Note: You may see **C:\Progra~1\Java\jdk1.8.0\_45** or **C:\Progra~2\Java\jdk1.8.0\_45**

\_\_3. Enter the following command:

```
java -version
```

Make sure you see the response shown below.

```
C:\Users\AdminUser>java -version
java version "1.8.0_45"
Java(TM) SE Runtime Environment (build 1.8.0_45-b15)
Java HotSpot(TM) Client VM (build 25.45-b02, mixed mode)

C:\Users\AdminUser>_
```

Troubleshooting: If you get an error message means that your Environment variable was incorrectly entered, go back and fix the values.

\_\_4. Enter the following command:

```
javac
```

Verify that you get the options to run the Java compiler:

```
C:\Users\AdminUser>javac
Usage: javac <options> <source files>
where possible options include:
  -g                Generate all debugging info
  -g:none           Generate no debugging info
  -g:<lines,vars,source> Generate only some debugging info
```

\_\_5. Enter the following command:

```
java -XshowSettings:all 2>&1 | findstr /c:"sun.arch.data.model"
```

```
C:\Users\wasadmin>java -XshowSettings:all 2>&1 | findstr /c:"sun.arch.data.model"
"
    sun.arch.data.model = 32
```

Verify that it displays the correct value of 32. This indicates that it is 32-bit java that is installed.

Troubleshooting: If it displays 64 for the value, then you have 64 bit java installed and this will cause issues. Please uninstall the 64-bit java and reinstall the indicated 32-bit jdk.

\_\_6. Close the command prompt window and any extra windows that are open.

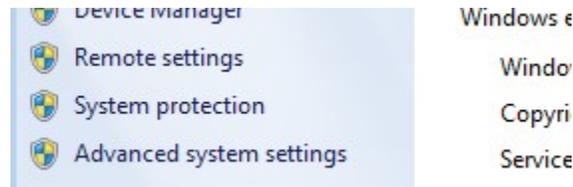
Java has been installed.

## Part 13 - Install Maven 3.3.9

The following steps are based on Windows 7, other Windows versions instructions may vary.

\_\_1. In the Windows Start Menu, right-click on the **Computer** link in the right-hand side of the Start panel, and then select **Properties**.

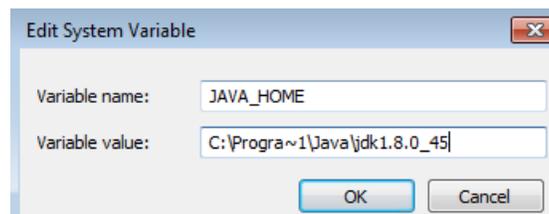
\_\_2. Click on **Advanced system settings**.



\_\_3. The system will display the **System Properties** dialog. Select the **Advanced** tab and click **Environment Variables**.



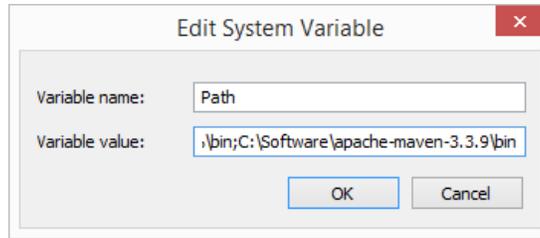
\_\_4. Verify the JAVA\_HOME variable is set to **C:\Progra~1\Java\jdk1.8.0\_45** or similar path.



\_\_5. In the 'System Variables' panel, locate the entry for 'Path' and double-click on it.

\_\_6. Add the following to the **end** of the **Variable Value** field (including the semi-colon)

```
;C:\Software\apache-maven-3.3.9\bin
```



- \_\_7. Click **OK** on the variable editor dialog.
- \_\_8. Click **OK** on the **Environment Variables** dialog.
- \_\_9. Click **OK** in the **System Properties** dialog.
- \_\_10. Open a command prompt window (in the start menu, click **All Programs --> Accessories --> DOS Prompt**).
- \_\_11. In the command window, type:

```
mvn -version
```

- \_\_12. You should see output similar to:

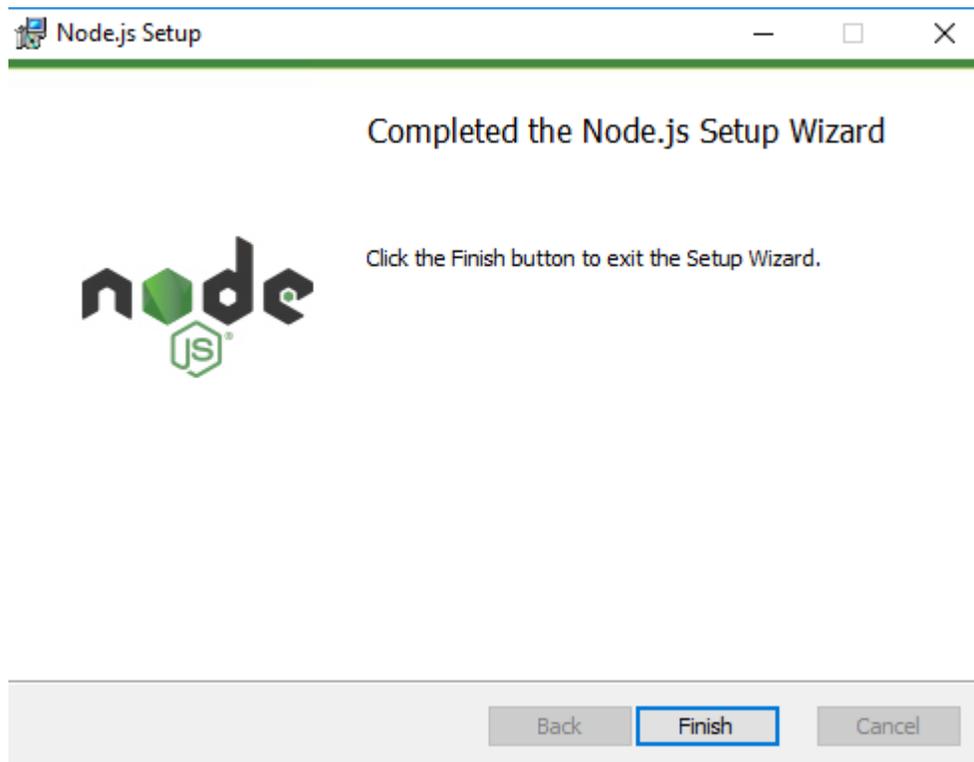
```
C:\Users\wasadmin>mvn -version
Apache Maven 3.3.9 (bb52d8502b132ec0a5a3f4c09453c07478323dc5; 2015-11-10T11:41:47-05:00)
Maven home: C:\Software\apache-maven-3.3.9\bin\..
Java version: 1.8.0_101, vendor: Oracle Corporation
Java home: C:\Program Files\Java\jdk1.8.0_101\jre
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 8.1", version: "6.3", arch: "amd64", family: "dos"
```

You have completed Apache Maven installation.

## Part 14 - Installing Node.js 10.13.0

- \_\_1. Open **C:\Software\**
- \_\_2. Double click on **node-v10.13.0-x64.msi** to begin installation.
- \_\_3. In the Welcome page, click **Next**.
- \_\_4. Check **I accept the terms...** and click **Next**.

- \_\_5. Accept default destination folder and click **Next**.
- \_\_6. Accept default Custom Setup selection and click **Next**.
- \_\_7. Do not check the check-box on the Tools for Native Modules dialog. Click **Next**.
- \_\_8. Click **Install**.
- \_\_9. A pop-up window may open asking to install the software. Click **Yes** to continue.
- \_\_10. Click **Finish**.



### Installation verification of Node.js

- \_\_1. Open a command prompt window.
- \_\_2. Enter the command:  
`node --version`
- \_\_3. Make sure that you see 10.13.0 as the output.

\_\_4. Close all.

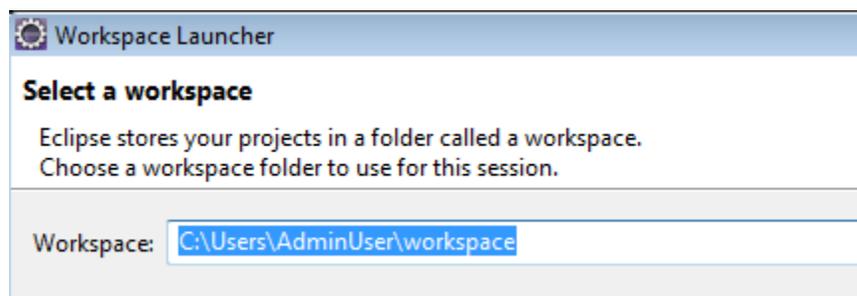
## Part 15 - Eclipse Mars 1

\_\_1. Run `C:\Software\eclipse\eclipse.exe`

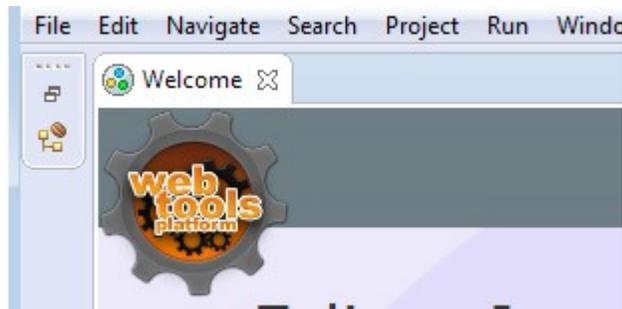
Eclipse Mars 1 will start.



\_\_2. A Workspace Launcher dialog will appear. Leave the default workspace directory and click **OK**.



Eclipse will open showing the Welcome page. (The Welcome screen may vary between versions).



3. From the menu, select **File > Exit** to close Eclipse. Confirm you want to exit Eclipse if prompted.

## Part 16 - Nginx 1.4.3

\_\_1. Disable any service using Port 80 to be able to run Nginx, if you have IIS or other service running, stop and disable them.

\_\_2. Switch to the user that the students will use during the course.

\_\_3. Open the Command Prompt window and type in the following command at the prompt and press **ENTER** (execute the command):

```
cd C:\Software\nginx-1.4.3
```

This command will change directory to where the *nginx* web server resides (represented by the *nginx.exe* file).

\_\_4. Start the nginx web server by executing the following command:

```
start nginx
```

This command will launch the *nginx* web server that starts listening on port 80. Allow access if the Firewall window appear.

\_\_5. If you are prompted for the admin password, enter it to allow the software to run.

\_\_6. Open Google Chrome browser and navigate to **http://localhost**

You should see the *nginx* welcome page.

### **Welcome to nginx!**

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](http://nginx.org).  
Commercial support is available at [nginx.com](http://nginx.com).

*Thank you for using nginx.*

\_\_7. Close Chrome browser.

\_\_8. In the Command Prompt window where you started the *nginx* web server, type in the following command at the prompt and press **ENTER**:

```
nginx -s stop
```

This command will stop the web server.

\_\_9. Switch back to the admin user.

Nginx is installed.

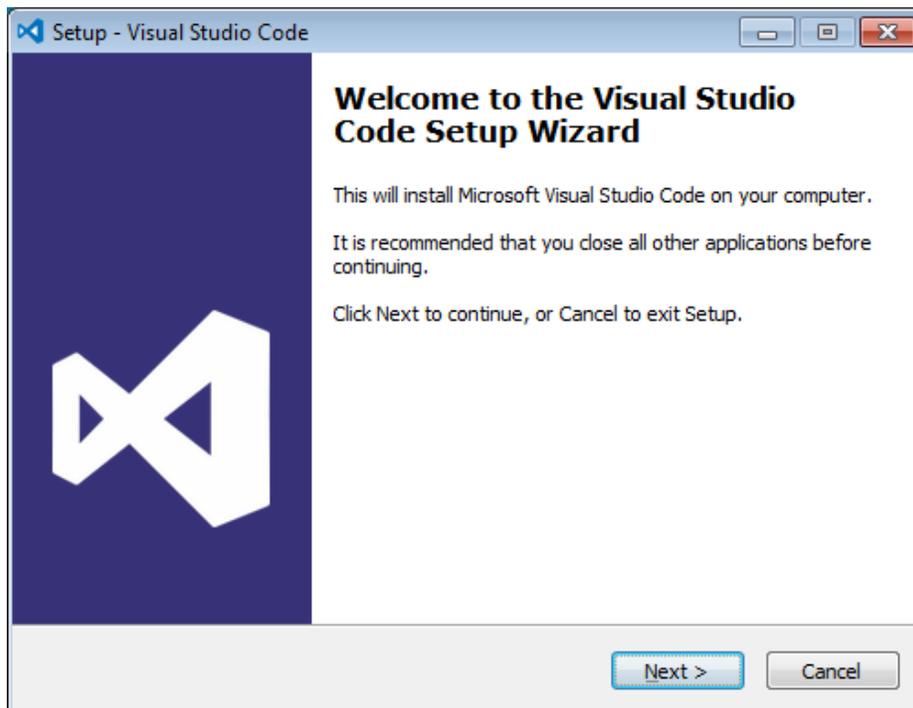
## Part 17 - Installing Visual Studio Code

\_\_1. Download the latest VScode for Windows (stable build installer) from the following site:

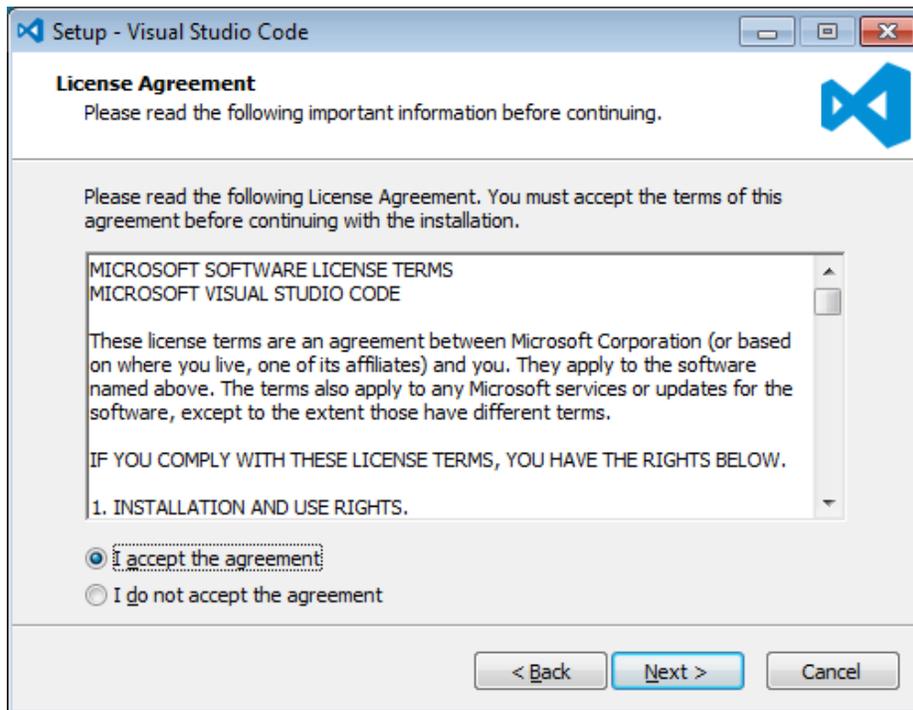
<https://code.visualstudio.com/>

\_\_2. Run the downloaded installer to begin the installation.

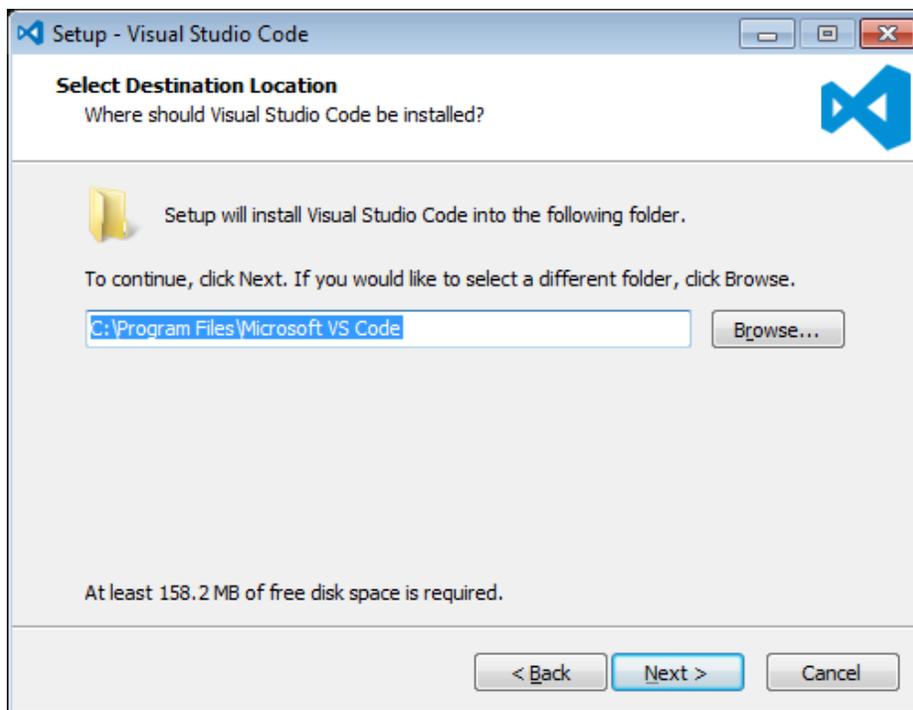
\_\_3. Click **Next** on the welcome screen.



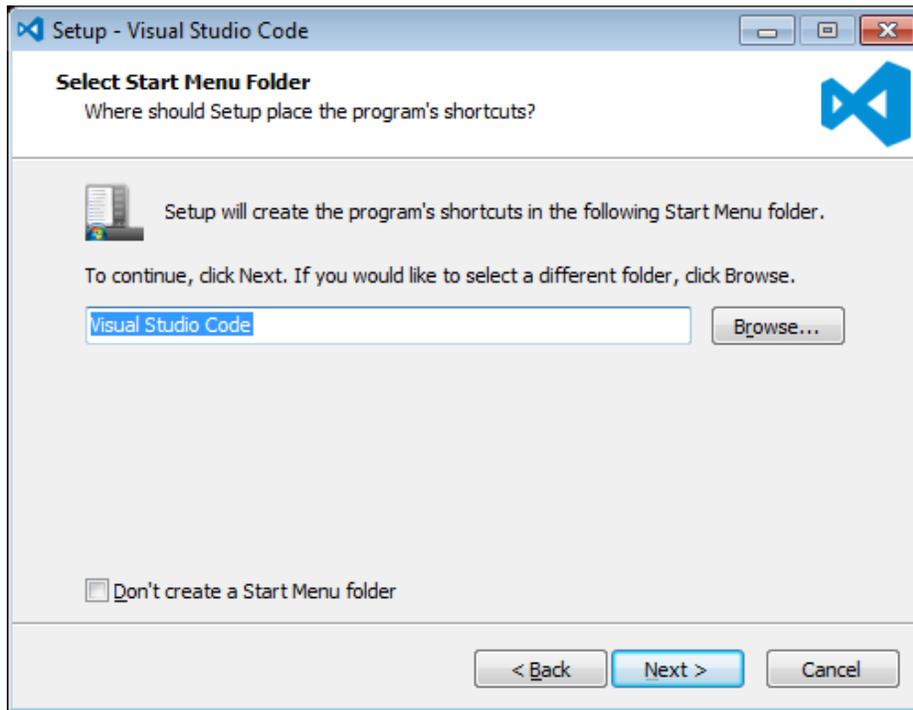
\_\_4. Check **I accept the agreement...** and click **Next**.



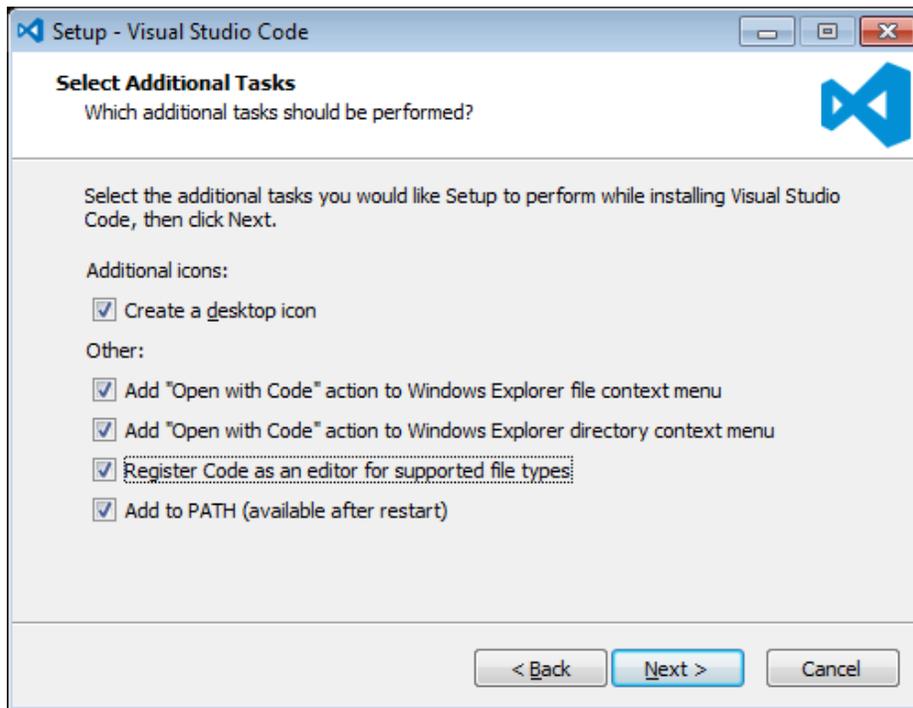
5. Leave the default installation location and click **Next**.



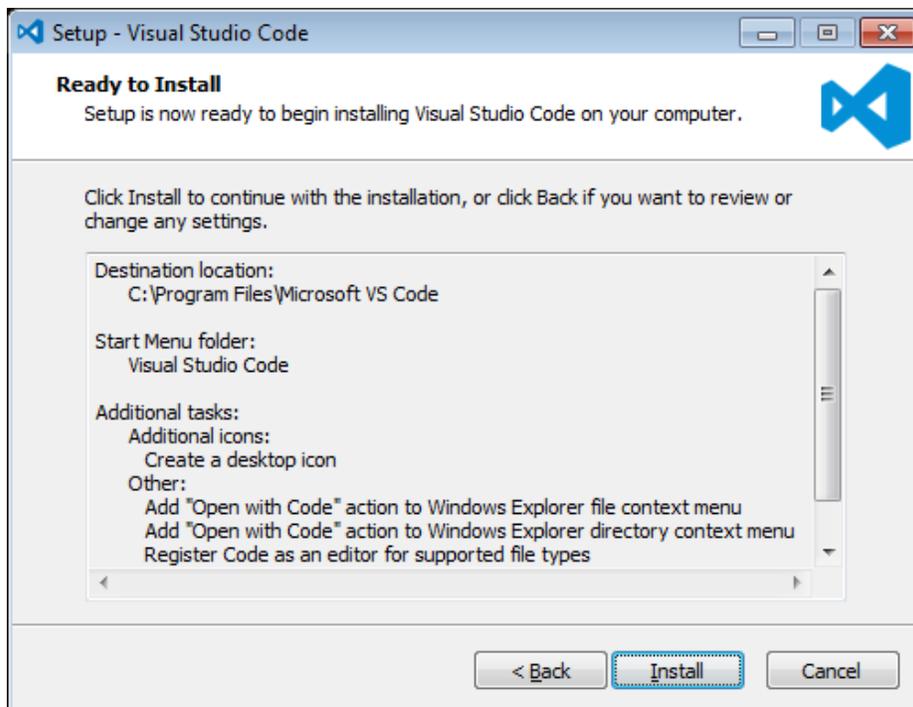
\_\_6. Leave the default start menu folder and click **Next**.



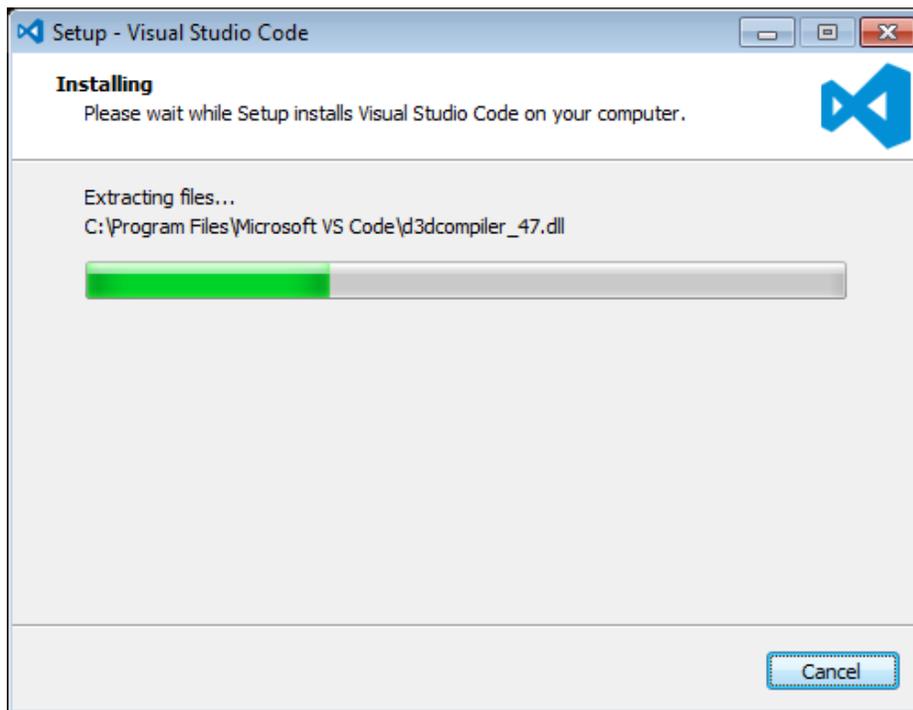
\_\_7. Put a check mark on all items under Additional Tasks and click **Next**.



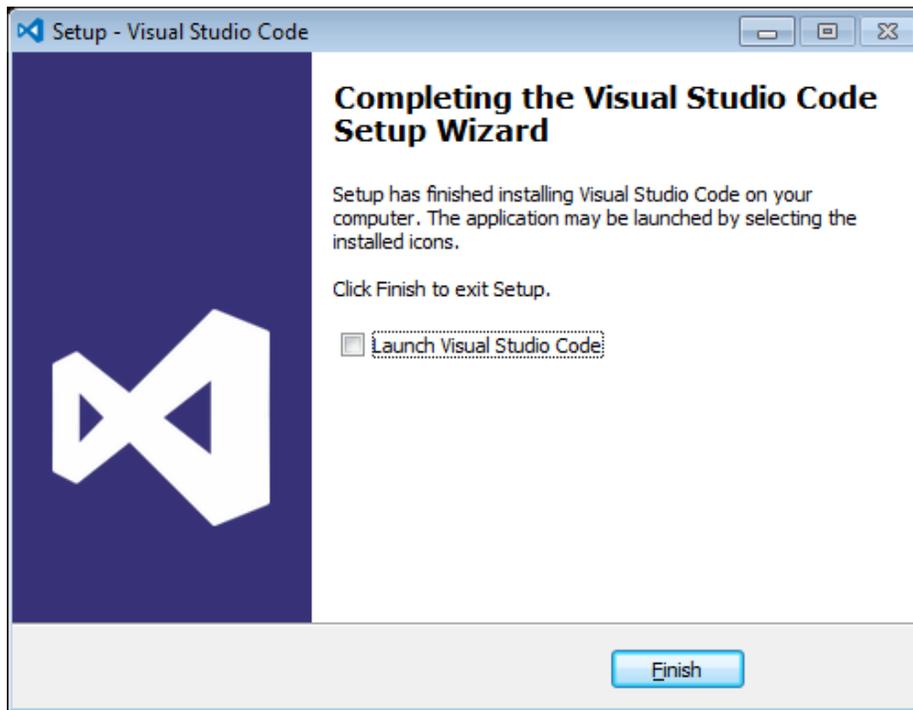
8. Now click **Install**.



\_\_9. Give it some time to install.

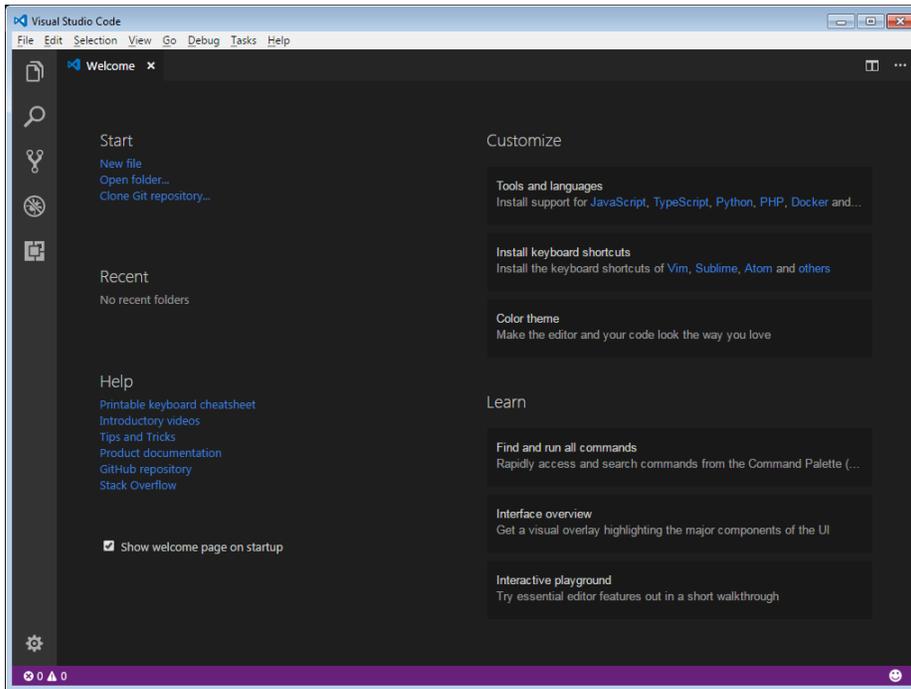


\_\_10. When it is complete, **uncheck Launch Visual Studio Code** and click **Finish**.

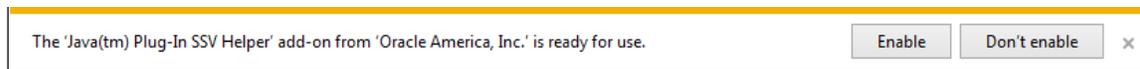


### **Installation verification of VScode.**

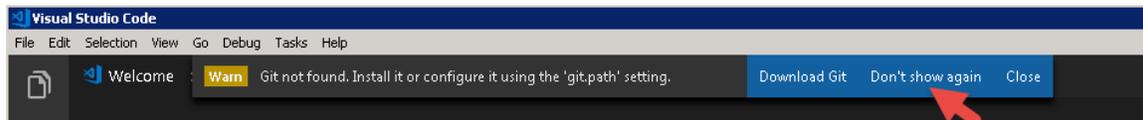
- \_\_1. Launch Visual Studio Code using the shortcut on the desktop.
- \_\_2. Verify Visual Studio Code opens and that you see the Welcome screen.



3. You may see a message to enable Java(tm) Plug-In, if so click Enable.



4. You may see a message regarding Git, if so click **Don't show again**.



5. Close all windows.

## **Part 18 - Verification**

\_\_1. Make sure the following shortcuts are located in the desktop:

- **WA2579\_REL\_4\_0**
- **VM-WA2675-REL-5-0**
- **VM\_WA2919\_REL\_1\_0**

\_\_2. Stop all VMs.

## **Part 19 - Summary**

**You have successfully installed the software for this course!**

If you have any question please contact us by email at [support@webagesolutions.com](mailto:support@webagesolutions.com)

From US and Canada call: 1-877-812-8887 ext. 26

International call: 416-406-3994 ext. 26