

# **WA2451 DevOps Fundamentals**

## **Classroom Setup Guide**

**Web Age Solutions Inc.**

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## **Part 1 - Minimum Hardware Requirements**

- 64-bit x86 CPU that supports hardware virtualization (Intel-VT or AMD-V).
- 16 GB RAM
- 50 GB Hard Disk
- Access to internet

## **Part 2 - 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 3 - Software**

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

- **VM\_WA2451\_1.zip**
- **VM\_WA2451\_2.zip**
- **WA2675-REL-2-1-minikube-MASTER.zip**
- **WA2451\_REL\_6\_0.zip [windows setup]**

Send an email to [support@webagesolutions.com](mailto: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 4 - Setup # 1 and # 2 [VM\_WA2451]**

- \_\_1. Extract **VM\_WA2451\_1.zip** and **VM\_WA2451\_2.zip** directly to C:\
- \_\_2. Verify the following folders were created:
  - **C:\VMs\learning-vmware\**
  - **C:\VMs\LabServer\_C2**
- \_\_3. Open each folder and start the VM using wasadmin/wasadmin as credentials.
- \_\_4. Create a shortcut in the desktop using the folder name. These names are used during the labs.
  - **learn\_puppet\_centos-6.5**
  - **LabServer\_C2**
- \_\_5. Close the Vms.

## **Part 5 - Setup # 3 [WA2675-REL-2-1-minikube-MASTER]**

- \_\_1. Extract **WA2675-REL-2-1-minikube-MASTER.zip** directly to C:\
- \_\_2. Verify the following folder was created:
  - **C:\WA2675-REL-2-1-minikube-MASTER**

[ Make sure you are working with the minikube REL-2-1 ]
- \_\_3. Start the VM using wasadmin/wasadmin as credentials.
- \_\_4. Create a shortcut in the desktop using the folder name. This name is used during the labs.
  - **WA2675-REL-2-1-minikube-MASTER**
- \_\_5. Close the VM.

## **Part 6 - Setup # 4 [WA2451\_REL\_6\_0 - Windows Setup]**

\_\_1. Create a Windows Virtual Machine and install the software for the next steps in this VM, call the VM: **VM\_WA2451\_REL\_6\_0**

\_\_2. Create a shortcut in the desktop and rename it to **VM\_WA2451\_REL\_6\_0**

This name is used during the labs.

**If you decide to install the software directly on the machine OS then make sure that the instructor is informed.**

## **Part 7 - Minimum Software Requirements**

- Windows 7 (Professional, Enterprise, or Ultimate)
- All of the following web browsers with the latest Java Plug-in:
  - Chrome
  - Firefox
  - Internet Explorer 8 or above
- Adobe Acrobat Reader
- Zip extraction utility
- JDK 8 Update 45 \*
- Eclipse Mars 1 \*
- Jenkins 2.204.5 \*
- Apache Maven 3.6.3\*
- GIT 2.8.1\*
- PuTTY\*

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

## **Part 8 - Instructions**

\_\_1. Extract the **WA2451\_REL\_6\_0.zip** file directly to **C:\**

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

- **C:\LabFiles\**
- **C:\Software\apache-maven-3.6.3\**
- **C:\Software\eclipse\**

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

- **C:\Software\Git-2.8.1-32-bit.exe**
- **C:\Software\jdk-8u45-windows-i586.exe**
- **C:\Software\putty.exe**
- **C:\Software\jenkins-2.204.5-Windows\jenkins.msi**

\_\_4. Create the **C:\Workspace** folder.

\_\_5. Log in using an administrator user to install the software in the following steps.

\_\_6. Create a shortcut of **C:\Software\putty.exe** in the desktop.

## Part 9 - Privileges to Users

During the labs students will require privileges on several directories. They will need to be able to write, read, and modify files in these directories for the labs. Although the directions below are provided as an example, this may differ depending on Windows version. The important thing is to make sure students have full permissions on the folders below or they may not be able to accomplish some labs.

- **C:\Software**
- **C:\LabFiles**
- **C:\Workspace**

\_\_1. Create the user that the students will use during the class.

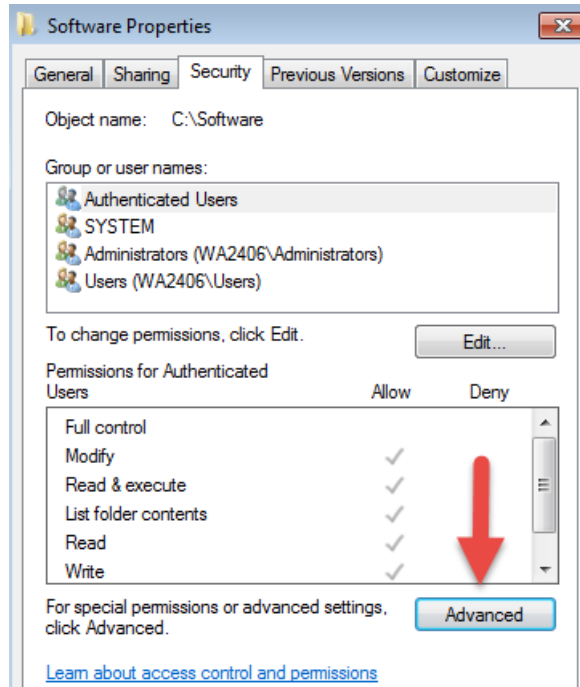
\_\_2. Give the student user account administrative rights. During the labs the student requires this to install software.

\_\_3. Open Windows Explorer.

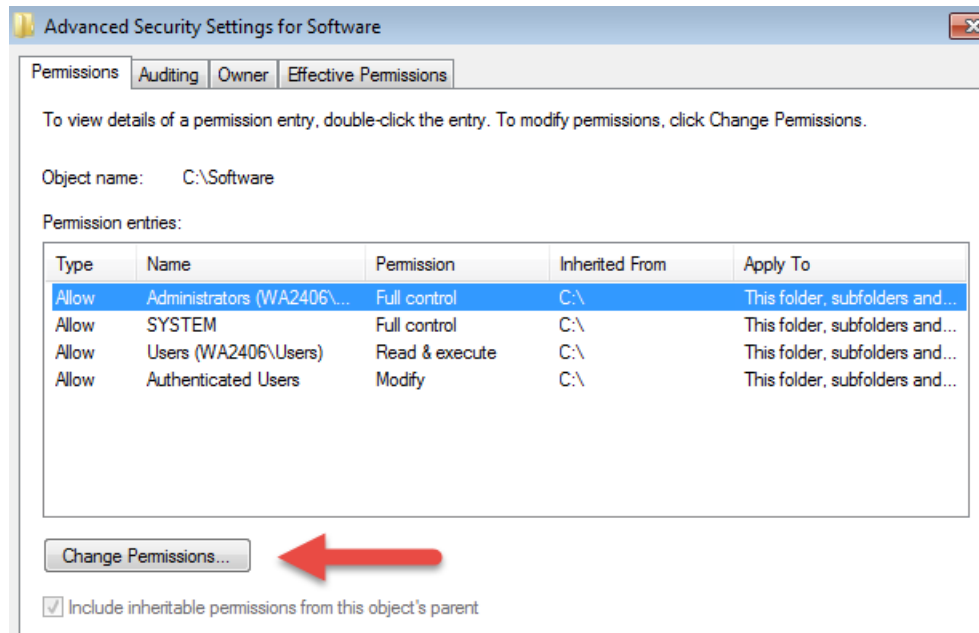
\_\_4. Right click C:\**Software** and select **Properties**.

\_\_5. Click the **Security** tab.

\_\_6. Click **Advanced**.



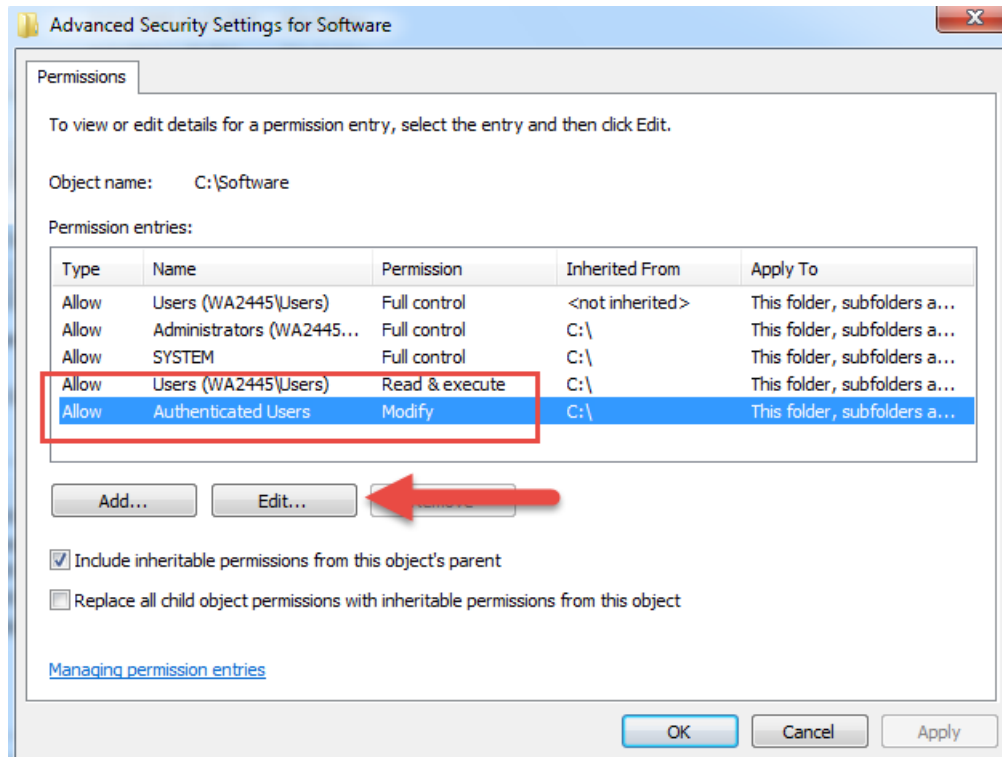
\_\_7. Click **Change Permissions**.



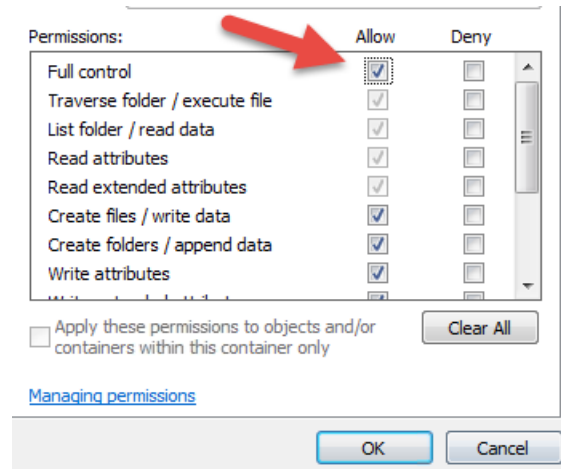
\_\_8. Select the **Authenticated Users** entry and click **Edit...**

Note. If you don't have a domain in your environment the select **Users** instead **Authenticated Users**.





\_\_9. Check the **Allow** checkbox to the right of **Full Control** and click **OK**.



\_\_10. Select the checkbox for **Replace all child permissions with inheritable permissions from this objects** and then click **OK**.



- Include inheritable permissions from this object's parent
- Replace all child object permissions with inheritable permissions from this object

- \_\_ 11. A *Windows Security* dialog will open. Click **Yes**.
- \_\_ 12. Wait until Windows finishes updating security.
- \_\_ 13. Back in the *Advanced Security Settings* dialog, click **OK**.
- \_\_ 14. Back in the *Properties* dialog, click **OK**.
- \_\_ 15. Do the same steps to the **C:\LabFiles** folder.
- \_\_ 16. Create a folder called **C:\Workspace** if its not already created.
- \_\_ 17. Do the same steps to the **C:\Workspace** folder.

## Part 10 - Installing JDK 8 Update 45

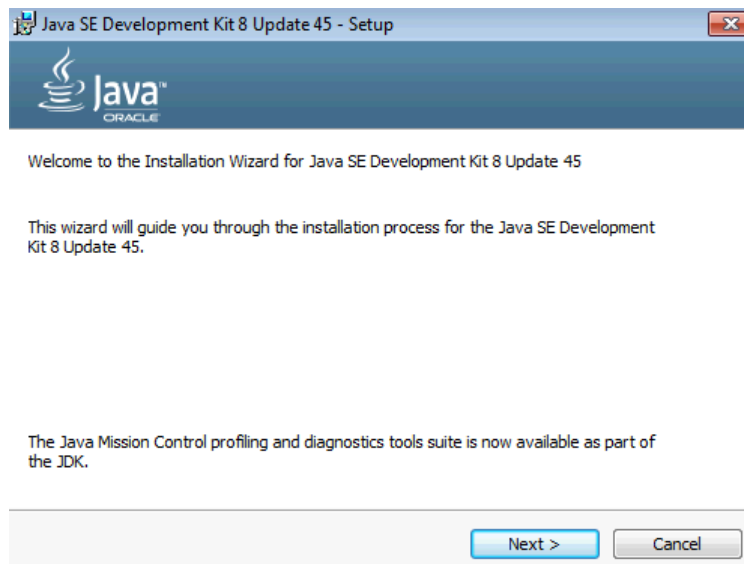
\_\_1. Make sure there is no previous Java version already installed on the system. You can check this by using the Windows “Add/Remove Programs” utility. For the best compatibility with the labs it is suggested that all previous versions of Java be uninstalled before proceeding with these instructions.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

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

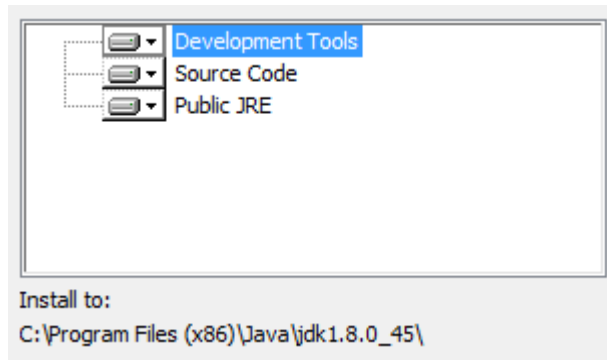
`jdk-8u45-windows-i586.exe`

**Note:** 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.

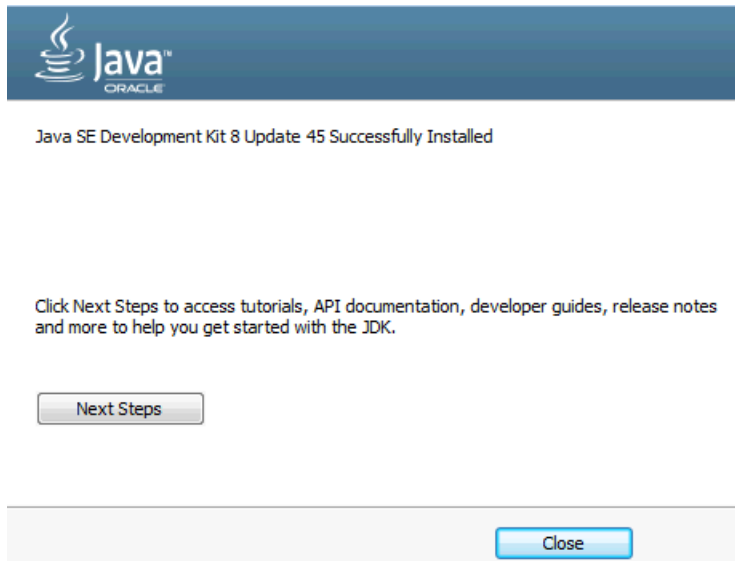
\_\_5. The Destination Folder will appear, leave the default folder and click **Next**.



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

Wait until the software is completely installed.

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



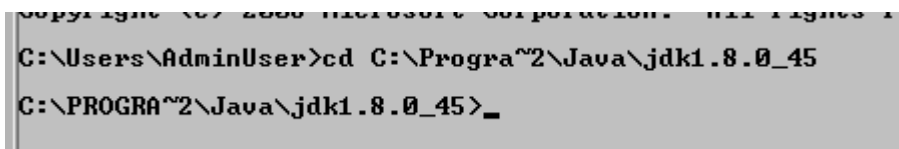
\_\_7. Close any browser that appears asking to register the JDK software.

### ***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
```



**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**

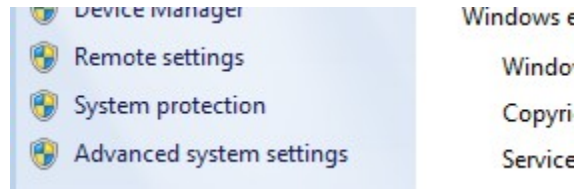
Some of the remaining steps will use the slightly different directory.

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

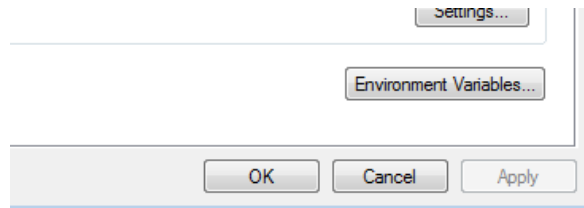
\_\_4. Close the command prompt window.

\_\_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**.



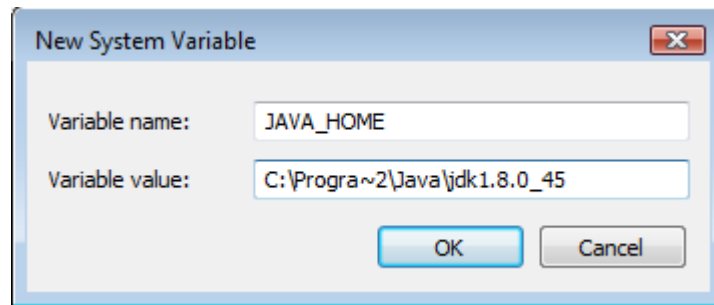
\_\_8. Under the **System Variables** list, click the **New** button.

\_\_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**



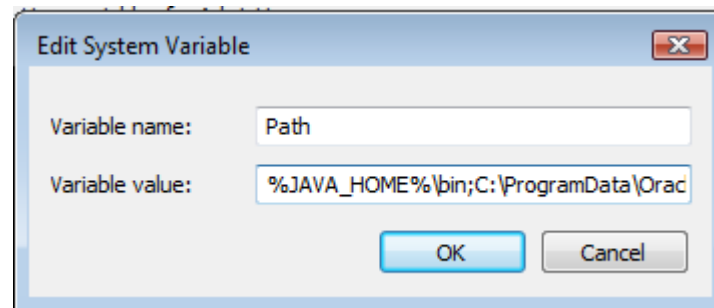
**Note:** If you are using a 32-bit OS you may have to use **C:\Progra~1\Java\jdk1.8.0\_45**

\_\_ 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 11 - 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 12 - Installing Git-2.8.1-32-bit**

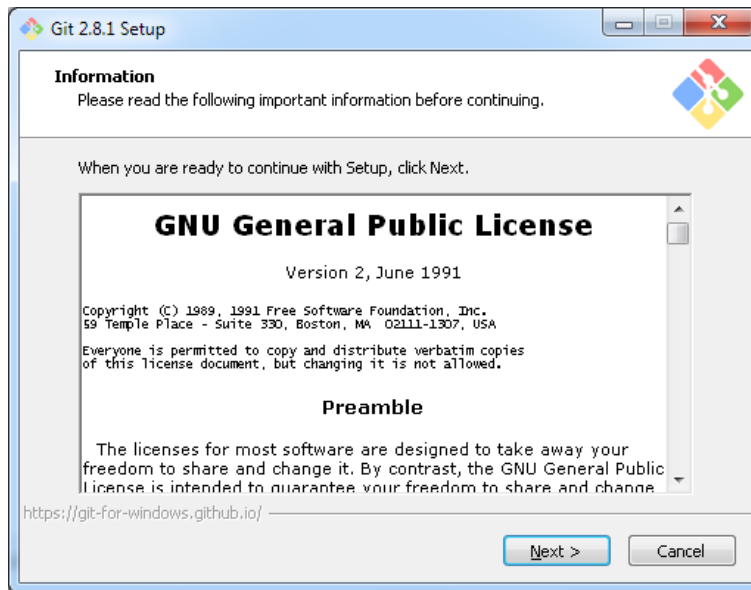
**IMPORTANT: Setup is easy but you need to make sure you do the change in Step 7.**

\_\_ 1. From the **C:\Software\** directory run the following file:

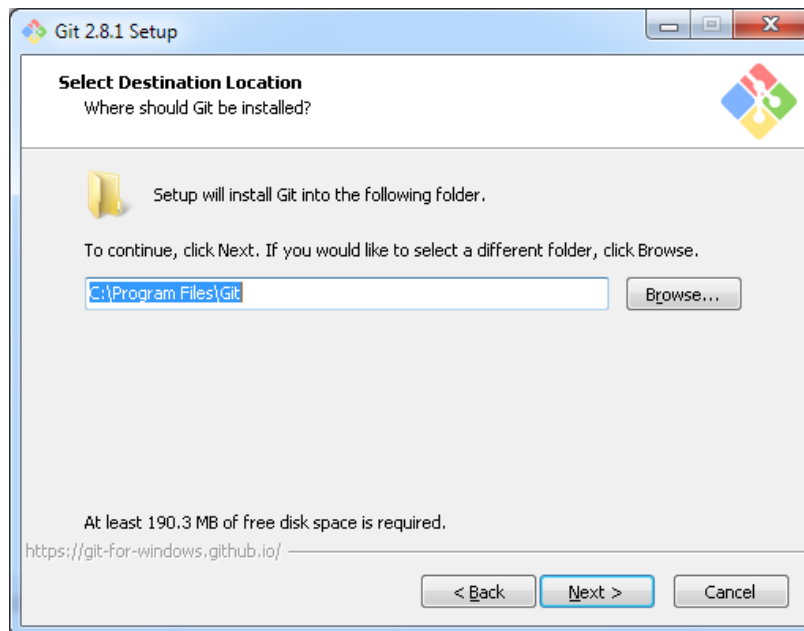
**Git-2.8.1-32-bit.exe**

\_\_ 2. You may need to allow the program to run.

\_\_ 3. Click **Next**.

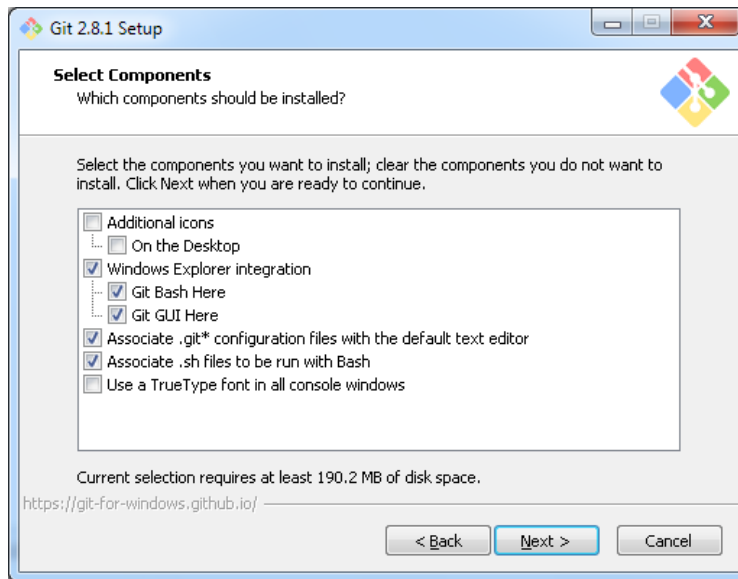


\_\_4. Click Next.

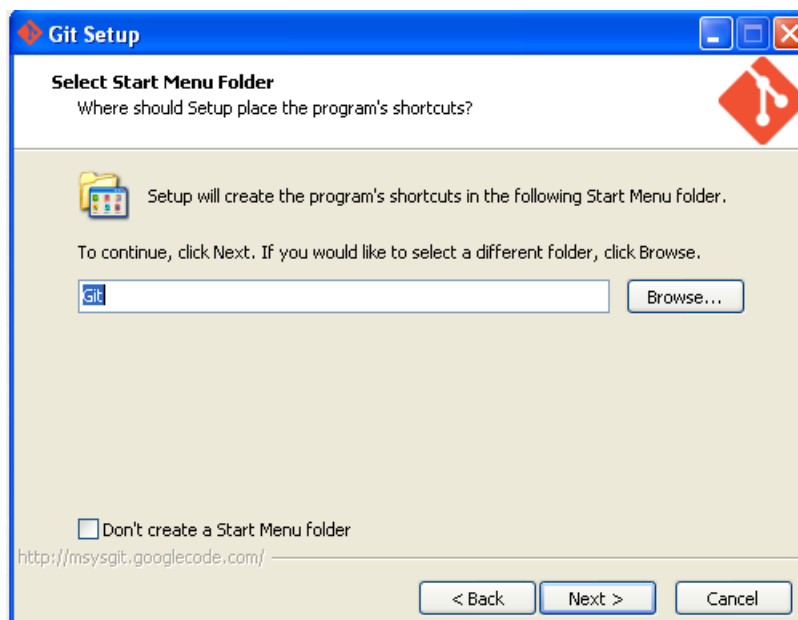


Note. Your folder may be different.

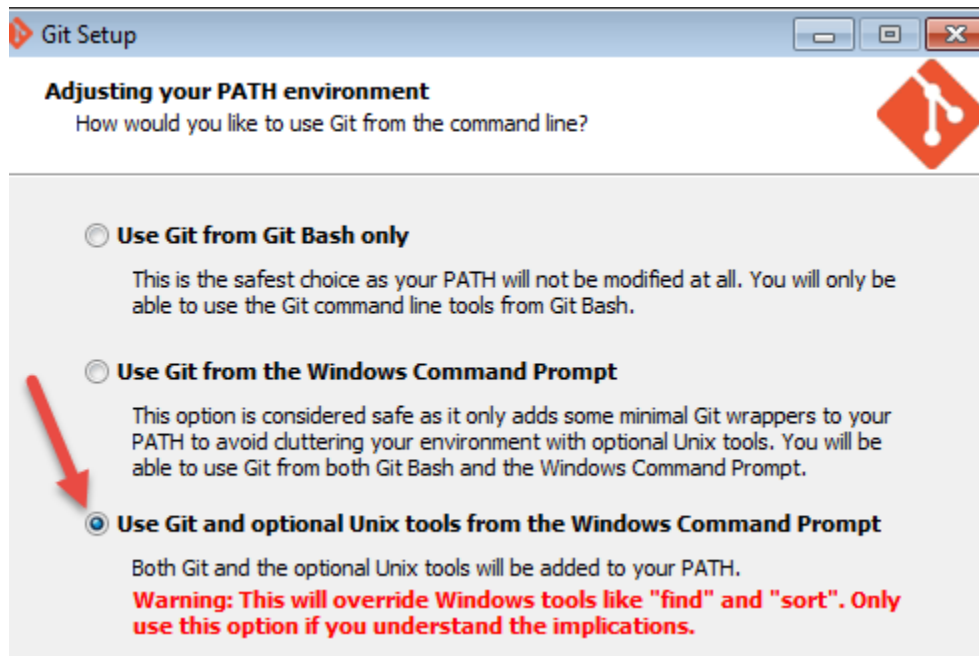
\_\_5. Click Next.



\_\_6. Click **Next**.

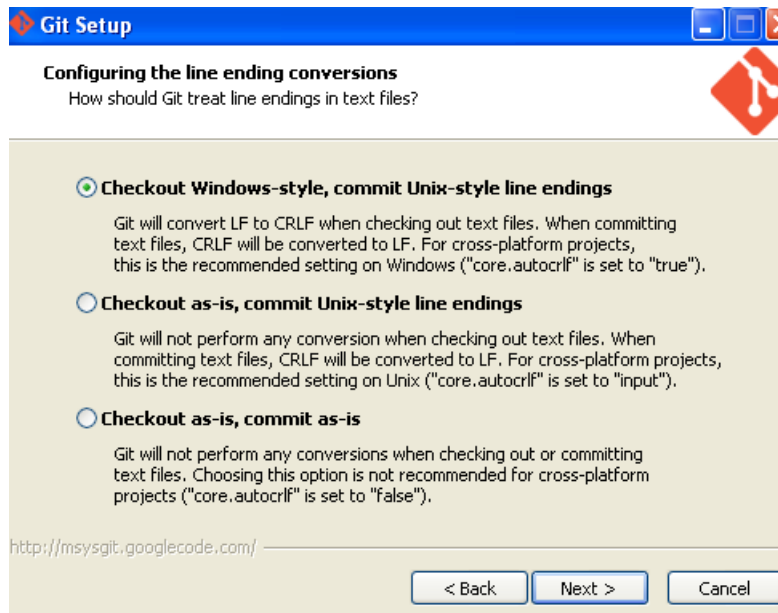


\_\_7. Select **Use Git and Optional Unix tools from the Windows Command Prompt**.

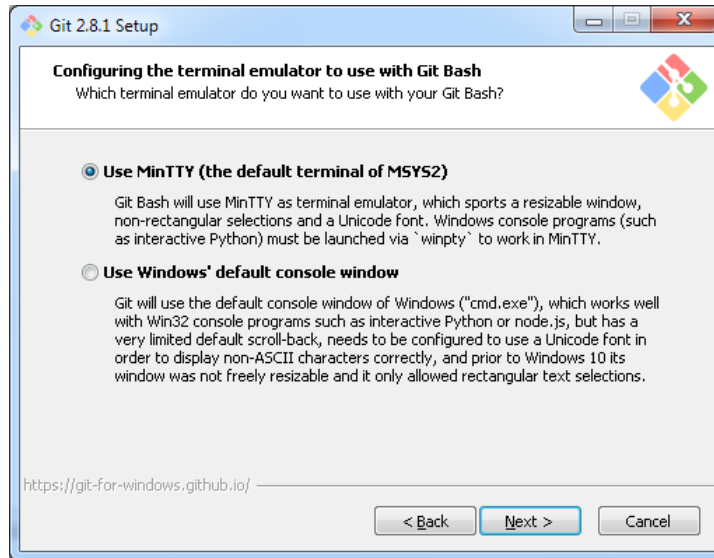


\_\_ 8. Make sure you select the 3<sup>rd</sup> option as shown above and then click Next.

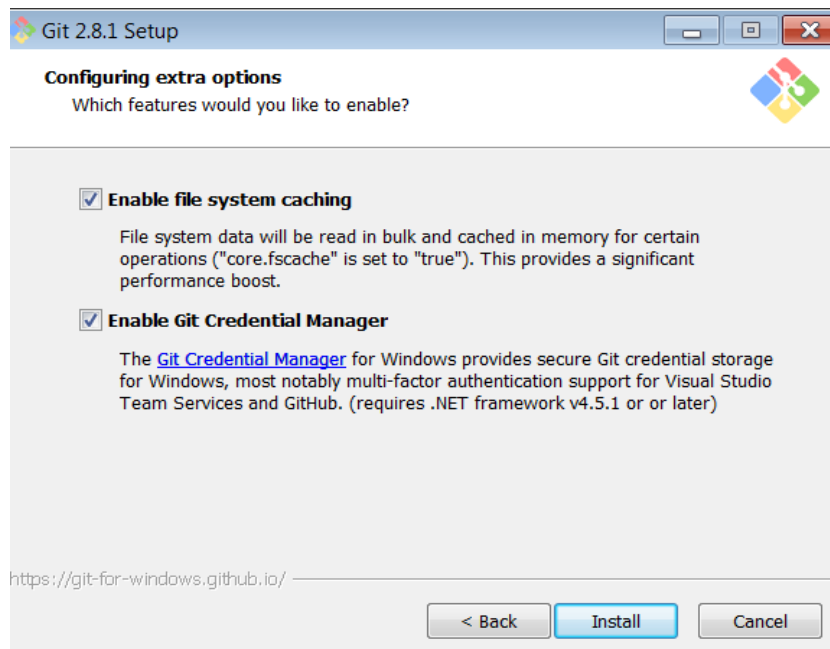
\_\_ 9. Click Next.



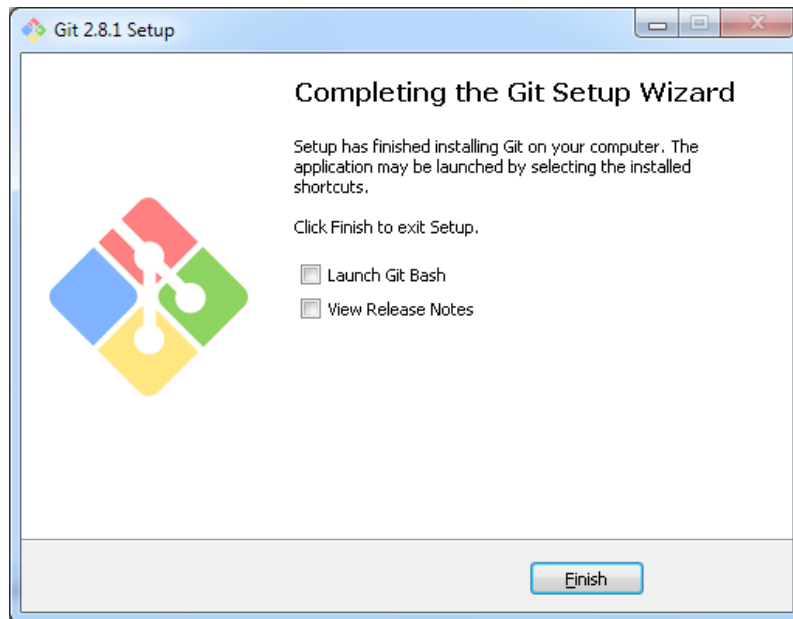
\_\_ 10. Click Next.



\_\_ 11. Leave defaults and click **Install**.



\_\_ 12. De-select **View Release Notes**, and then click **Finish**.



\_\_13. Close all open files.

You have completed GIT installation.

## Part 13 - Installing Maven 3.6.3

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 there is a JAVA\_HOME variable.

\_\_ 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-3.6.3\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.

\_\_ 11. In the command window, type:

```
mvn -version
```

\_\_ 12. Verify the version is 3.6.3 as shown below:

```
C:\Users\wasadmin>mvn -version
Apache Maven 3.6.3 (cecedd343002696d0abb50b321
Maven home: C:\Software\apache-maven-3.6.3\bin
Java version: 1.8.0_45, vendor: Oracle Corpora
Default locale: en_US, platform encoding: Cp12
OS name: "windows 7", version: "6.1", arch: "x
```

\_\_13. Close all.

## Part 14 - Install Jenkins 2.204.5-Windows

\_\_1. Open a command prompt window and ensure that the Java JDK is installed.

```
java -version
```

\_\_2. If you are using a computer where possibly Jenkins was used before then delete the following folders in case they exist:

```
C:\Program Files\Jenkins
C:\Program Files(x86)\Jenkins
C:\Users\\.m2
C:\Users\\.docker
```

\_\_3. In Windows Explorer, navigate to:

```
C:\Software\jenkins-2.204.5-Windows
```

\_\_4. Double-click on:

```
jenkins.msi
```

The installer will show the initial dialog.

\_\_5. Click **Next**.

\_\_6. On the **Destination Folder** panel, leave the defaults and click **Next**.



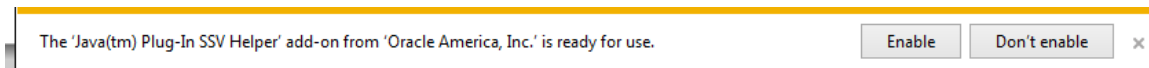
- \_\_7. On the **Ready to Install...** panel, click **Install**.
- \_\_8. Windows may show a security dialog. If it does, click **Yes**.
- \_\_9. In the final dialog panel, click **Finish**.
- \_\_10. If you see the **Create First Admin User** screen then click Jenkins.



- \_\_11. If you see the following message, click **Don't show this message again**.



- \_\_12. If you see the following message, click **Enable**.



The installer will open a browser window to the Jenkins home page. The page shows the location of a file where you can find the initial administration password, and also a text box to enter the password into.



- \_\_13. Open the indicated file with an editor such as Notepad, and copy the password to the clipboard with Ctrl-C.
- \_\_14. Paste the password into the **Administrator Password** box.

C:\Program Files\Jenkins\secrets\initialAdminPassword

Please copy the password from either location and paste it below.

Administrator password

\_\_15. Click **Continue**.

\_\_16. If you are prompted to save the password just close that window.

\_\_17. Click on **Install Suggested Plugins**.

## Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

### Install suggested plugins

Install plugins the Jenkins community finds most useful.

### Select plugins to install

Select and install plugins most suitable for your needs.

\_\_18. Getting Started will begin. Wait until is done.

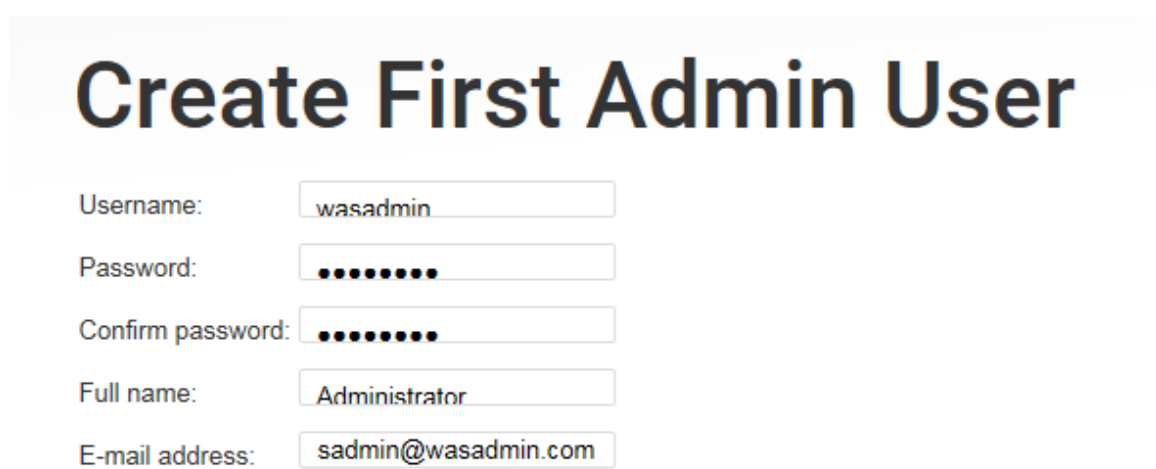
## Getting Started

✓ Folders Plugin	✓ OWASP Markup Formatter Plugin	✓ build timeout plugin	✓ Credentials Binding Plugin	** Jenkins G
✓ Timestamper	✓ Workspace Cleanup Plugin	✓ Ant Plugin	✓ Gradle Plugin	** Jenkins G
✓ Pipeline	🔄 GitHub Organization Folder Plugin	✓ Pipeline: Stage View Plugin	✓ Git plugin	** Pipeline:
🔄 Subversion Plug-in	🔄 SSH Slaves plugin	✓ Matrix Authorization	✓ PAM Authentication	Libraries
				** Branch AP
				** Pipeline:
				** Durable T
				** Pipeline:
				Processes
				** Pipeline:
				** Pipeline:
				** Pipeline:

\_\_19. In the **Create First Admin User** screen. Enter the following fields:

**Username:** wasadmin  
**Password:** wasadmin  
**Confirm Password:** wasadmin  
**Full name:** Administrator  
**E-mail address:** wasadmin@wasadmin.com

\_\_20. When the input looks like below, click **Save and Continue**.



**Create First Admin User**

Username:

Password:

Confirm password:

Full name:

E-mail address:

\_\_21. Instance Configuration page will open, just click **Save and Finish**.

# Instance Configuration

Jenkins URL:

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the `BUILD_URL` environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

150.3

Not now

Save and Finish

\_\_22. If you are prompted to save the password just close that window.

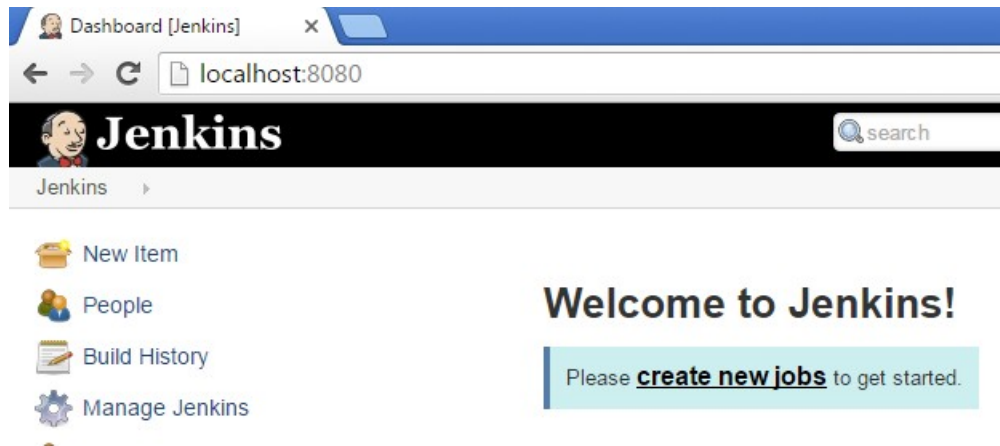
\_\_23. You will see that Jenkins is ready. Click **Start using Jenkins**.

## Jenkins is ready!

Your Jenkins setup is complete.

Start using Jenkins

\_\_24. Jenkins will open.



\_\_25. Jenkins installation is complete. Close the browser.

\_\_26. Close all open windows.

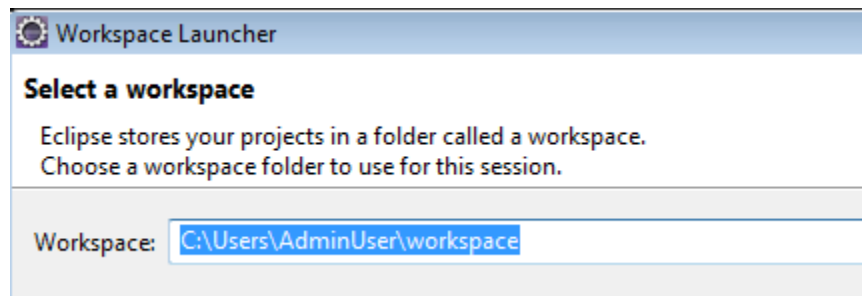
## Part 15 - Eclipse Mars 1

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

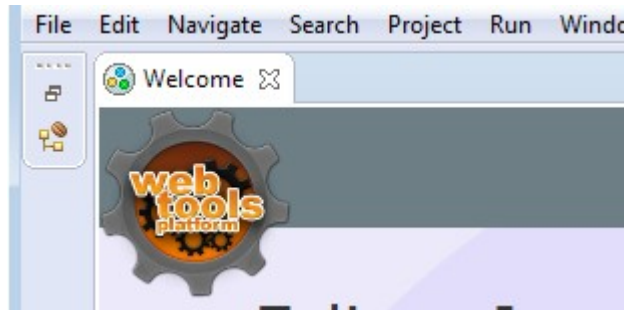
Eclipse Mars 1 will start.



\_\_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 - Verification

\_\_1. Make sure there are shortcut's in the desktop called as:

- **learn\_puppet\_centos-6.5**
- **LabServer\_C2**
- **WA2675-REL-2-1-minikube-MASTER**
- **VM\_WA2451\_REL\_6\_0**

\_\_2. Close all VM's and make sure there are shortcut in the desktop for all the VMs.

## **Part 17 - 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