

WA2684 Developing MicroServices

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).
- Hardware virtualization enabled in the BIOS.
- 16 GB RAM minimum
- 30 GB in the hard disk
- Internet connectivity.

Part 2 - Minimum Software Requirements

- Windows 7 64 bits or later
- Adobe Acrobat Reader
- 7-Zip extraction utility
- Chrome (latest version)
- VMWare Player
- eclipse *
- JDK *
- Erlang OTP *
- RabbitMQ Server *
- Maven *
- Postman *
- MongoDB 3.4.13 *
- curl *

* indicates software provided as part of the courseware.

Part 3 - Software Provided

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

WA2676_REL_1_0.ZIP

WA2684_REL_1_0.ZIP

VM_WA2684_REL_1_0.ZIP

WA2684+CentOS+VMware+Image+#2.ZIP

Internal instructions for Web Age Infrastructure: This course requires to start the CoachBase server.

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 4 - 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 to request keys generation and delivery of keys to the instructor.

Part 5 - ec2 CoachBase image

Note. This course requires a CoachBase server configured in ec2 with a public IP that has to be shared to the instructor.

__1. Connect to ec2 using super account.

__2. Go to the AMI's and make an instance of **WA2684_Master_CouchBase**

Name	AMI Name	AMI ID
DO NOT DELETE NEW MASTER (4 cores 8 GB ram)	WA2684_Master_CouchBase	ami-2336585b

3. Note from Shawn: Here is how I launched the couchbase server instance with a public IP. Note I created a security group (firewall rule) called “WA2684 Couchbase Server security group” that should be selected when launching these instances in the future. Only port 22 is open in that rule so it may need to be edited to add more ports if you need them open for couchbase. [Alex. There were more ports open]

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage

Number of instances [Launch into Auto Scaling Group](#)

Purchasing option Request Spot instances

Network [Create new VPC](#)

Subnet [Create new subnet](#)

Auto-assign Public IP

IAM role [Create new IAM role](#)

Shutdown behavior

Enable termination protection Protect against accidental termination

Monitoring Enable CloudWatch detailed monitoring
[Additional charges apply.](#)

Tenancy
[Additional charges will apply for dedicated tenancy.](#)

T2 Unlimited Enable
[Additional charges may apply](#)

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: Create a new security group
 Select an existing security group

Security Group ID	Name	Description
<input type="checkbox"/> sg-b44e07d1	default	default VPC security group
<input checked="" type="checkbox"/> sg-d189e2af	WA2684 Couchbase Server security group	DO NOT DELETE
<input type="checkbox"/> sg-c02d50bd	launch-wizard-10	launch-wizard-10 created 2017-10-24T11:57:32.153+01:00
<input type="checkbox"/> sg-9bf290e4	launch-wizard-11	launch-wizard-11 created 2018-02-21T15:49:33.994-05:00
<input type="checkbox"/> sg-a7f391d8	launch-wizard-12	launch-wizard-12 created 2018-02-21T15:53:35.873-05:00
<input type="checkbox"/> sg-ecf39193	launch-wizard-13	launch-wizard-13 created 2018-02-21T15:54:58.444-05:00
<input type="checkbox"/> sg-62fa981d	launch-wizard-14	launch-wizard-14 created 2018-02-21T15:58:20.478-05:00
<input type="checkbox"/> sg-a7f89ad8	launch-wizard-15	launch-wizard-15 created 2018-02-21T16:00:01.712-05:00
<input type="checkbox"/> sg-10fb996f	launch-wizard-16	launch-wizard-16 created 2018-02-21T16:02:51.710-05:00
<input type="checkbox"/> sg-75fe9c0a	launch-wizard-17	launch-wizard-17 created 2018-02-21T16:02:25.110-05:00
<input type="checkbox"/> sg-ccf99bb3	launch-wizard-18	launch-wizard-18 created 2018-02-21T16:03:02.322-05:00

Inbound rules for sg-d189e2af (Selected security groups: sg-d189e2af)

Type	Protocol	Port Range	Source
SSH	TCP	22	0.0.0.0/0
SSH	TCP	22	:::0

4. Note from Shawn: Do the labs in US-West Oregon region. Make sure the setup guide says to launch the EC2 instance from the AMI in US-West region.

5. Note from Shawn: You also need a key pair during launch of the instance. I have created one in the AWS account which should be reused for future launches. Make sure it is select it when launching the couchbase server instance. It should be in your setup instructions. Attached is the associated pem for use when using ssh.

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair

Select a key pair

WA2684 Couchbase Server Key

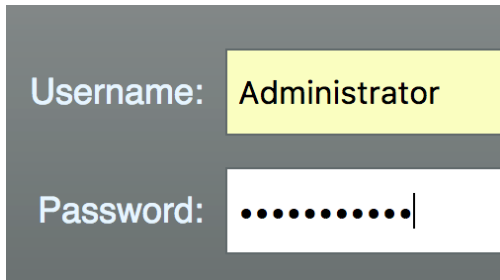
I acknowledge that I have access to the selected private key file (WA2684 Couchbase Server Key.pem), and that without this file, I won't be able to log into my instance.

[Cancel](#) [Launch Instances](#)

__6. Send the IP to the instructor.

__7. During the lab the student will connect as follows:

Enter the URL `http://COUCHBASE_IP:8091`. Where *COUCHBASE_IP* is the public IP address of the Couchbase EC2 instance.



A screenshot of a login form. The background is dark gray. There are two input fields. The first field is labeled "Username:" and contains the text "Administrator". The second field is labeled "Password:" and contains a series of black dots, indicating a masked password. The text "Administrator" is highlighted in a light yellow box.

Use **Administrator** as user ID.

Use **wasadmin** as password.

Click **Sign in**.

__8. Leave it running until end of class, then Terminate the instance.

Part 6 - VM_WA2684_REL_1_0.zip

__ 1. If you have 7 zip then right click **VM_WA2684_REL_1_0.ZIP** and select **7zip > Extract Here**.

If you don't have 7zip use another software and make sure you don't create an extra folder when you are extracting the zip file.

__ 2. Verify **C:\VM_WA2684_REL_1_0** has been created.

__ 3. Rename the folder as **WA2684 CentOS # 1**

__ 4. Open **C:\WA2684 CentOS # 1**

__ 5. Right-click **CentOS 7 64-bit-GNOME.vmx** and select **Send to desktop (create a shortcut)**

__ 6. Rename the shortcut in the desktop as **WA2684 CentOS # 1**

Part 7 - WA2684+CentOS+VMware+Image+#2.zip

__ 1. If you have 7 zip then right click **WA2684+CentOS+VMware+Image+#2.zip** and select **7zip > Extract to → C:\WA2684+CentOS+VMware+Image+#2**

If you don't have 7zip use another software and make sure you create the folder when you are extracting the zip file.

__ 2. Verify **C:\WA2684+CentOS+VMware+Image+#2** has been created.

__ 3. Rename the folder as **WA2684 CentOS # 2**

__ 4. Open **C:\WA2684 CentOS # 2**

__ 5. Right-click **CentOS 7 64-bit.vmx** and select **Send to desktop (create a shortcut)**

__ 6. Rename the shortcut in the desktop as **WA2684 CentOS # 2**

Part 8 - WA2676_REL_1_0.ZIP

Note. In this part you will create a Windows VM.

__1. Follow setup instructions of WA2676 using the following link and make sure you are creating and installing the software a new VM called **WA2676 Windows**:

<https://www.webagesolutions.com/setupguides/WA2676SetupGuide.pdf>

Software version may change over time, make sure to use the latest version.

__2. Create a shortcut in the desktop and call it **WA2676 Windows**

Part 9 - WA2684_REL_1_0.ZIP

Note. In this part you will create a Windows VM.

__1. **Follow instructions below and make sure you are creating and installing the software a new VM called WA2684 Windows**

__2. Create a user called **wasadmin** with password **wasadmin** and grant this user administrative access, or create an admin user and share this information to the instructor.

__3. Restart the computer and log in as **wasadmin**.

__4. Make sure you have internet access.

__5. Install the latest Chrome version.

__6. Extract the **WA2684_REL_1_0.ZIP** file to C:\

__7. Review that the following folders were created:

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

- **C:\Software\mongodb**
- **C:\Software\curl-7.55.1-win32-mingw**

__8. Review that the following files were created:

- **C:\Software\jdk-8u45-windows-i586.exe**
- **C:\Software\otp_win32_19.1.exe**
- **C:\Software\rabbitmq-server-3.6.6.exe**
- **C:\Software\Postman-win32-5.2.0-Setup.exe**

__9. Make a shortcut in the desktop to **C:\Software\NotepadPlus\notepad++.exe**

Part 10 - 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.

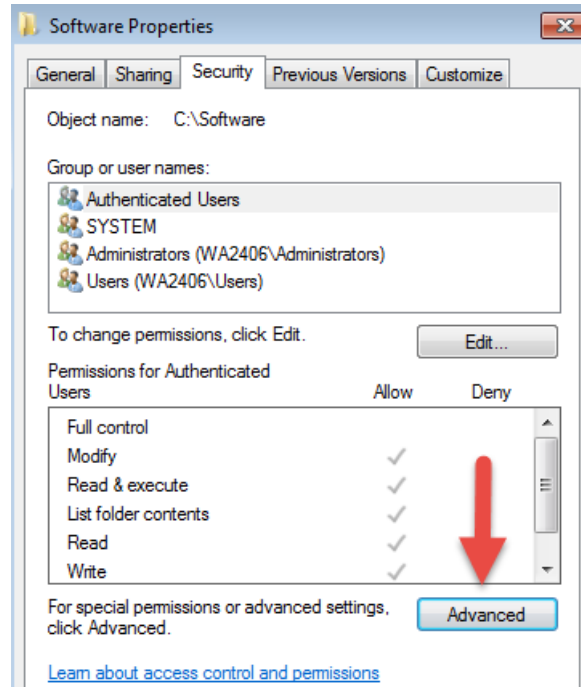
__2. Give the student user account administrative rights. During the labs the student requires this to install software.

__3. Open Windows Explorer.

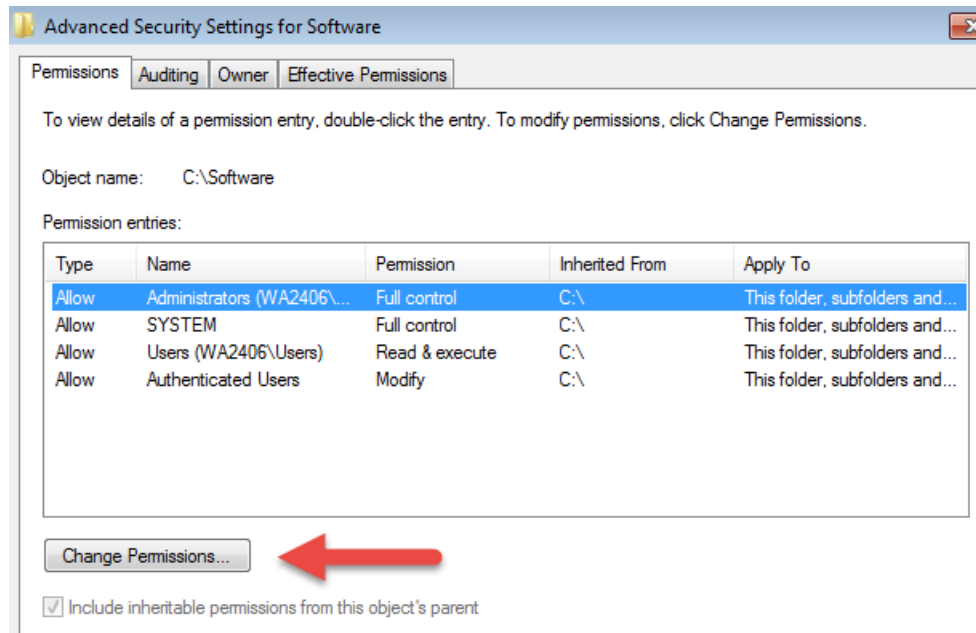
__4. Right click **C:\Software** and select **Properties**.

__5. Click the **Security** tab.

__6. Click **Advanced**.

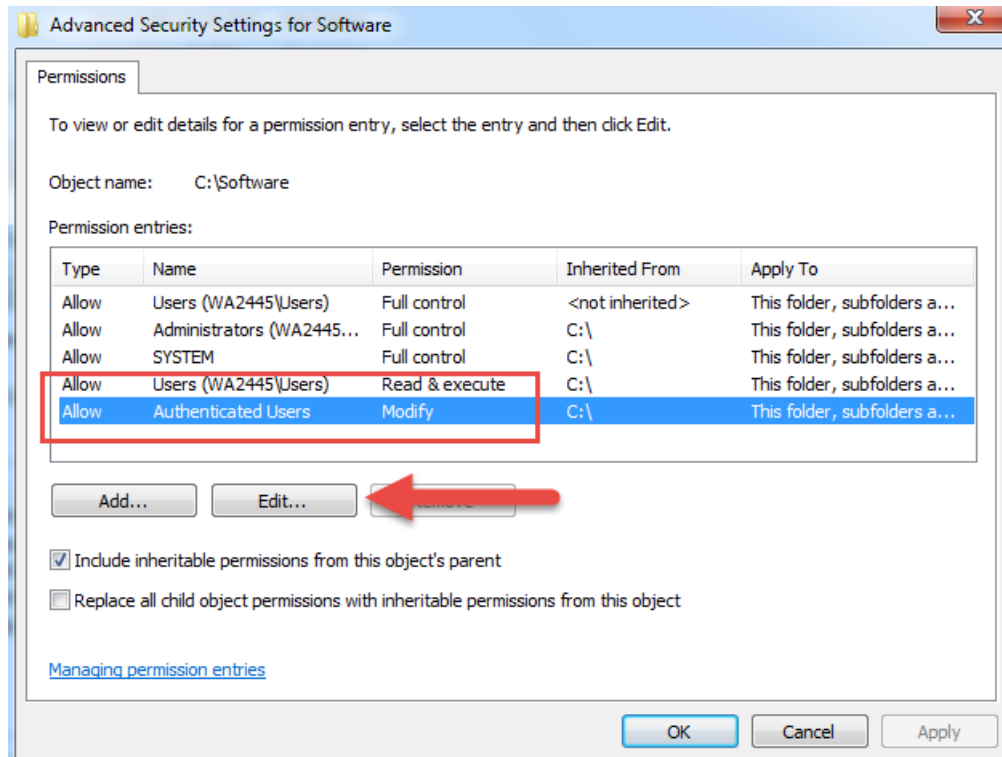


__7. Click **Change Permissions**.

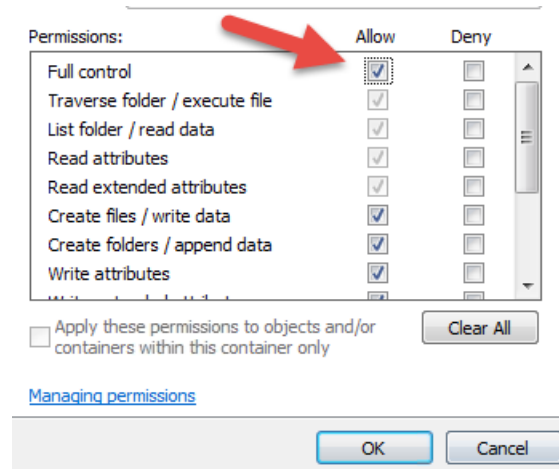


__8. Select the **Authenticated Users** entry and click **Edit...**

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 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:

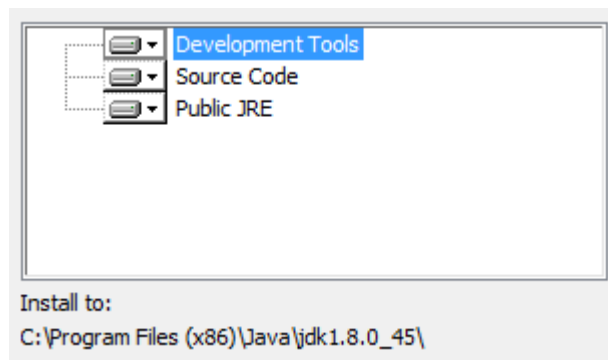
jdk-8u45-windows-i586.exe

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.



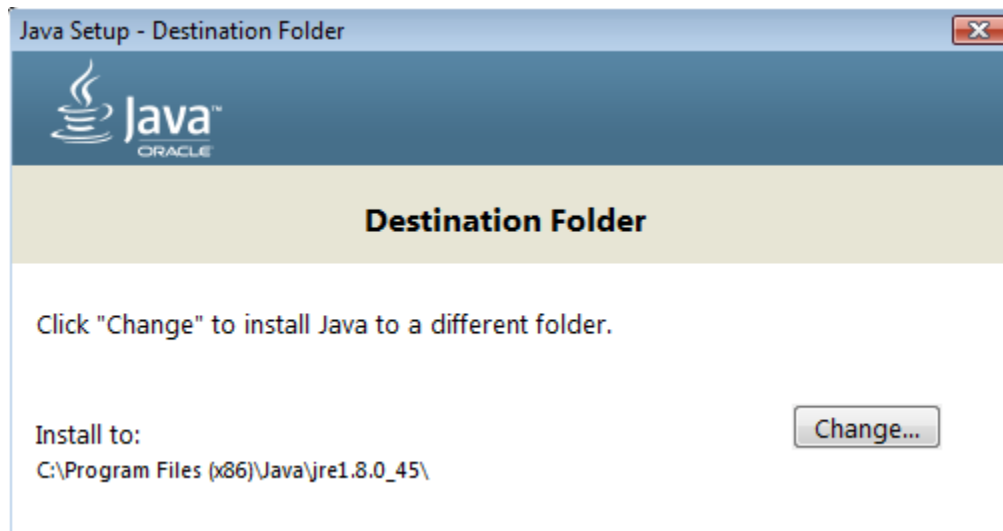
__4. Leave the defaults for installation location and options, and press the **Next** button.



Note: The installation directory may be slightly different.

The installation will begin installing files.

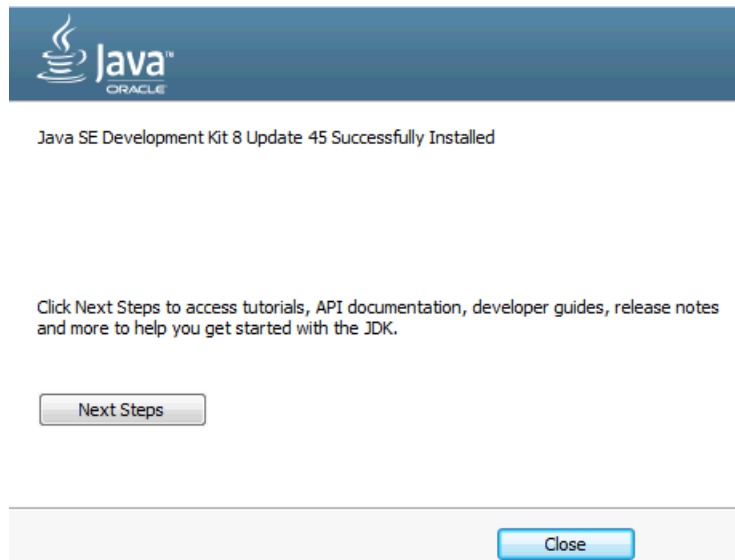
__5. The Destination Folder will appear, leave the default folder and click **Next**.



Note: The installation directory may be slightly different.

Wait until the software is completely installed.

__6. Click **Close**.



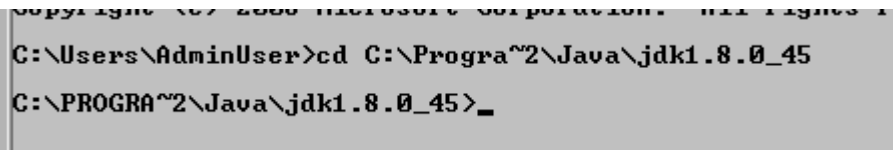
__7. Close any browser that appears asking to register the JDK software.

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
```



```
Copyright (c) 2009 Microsoft Corporation. All rights reserved.  
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

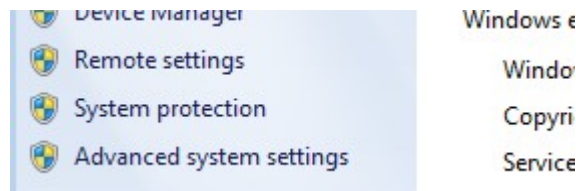
Some of the remaining steps will use the slightly different directory.

__3. Make sure you can reach the java folder and remember the value entered because you will use this value in the following steps.

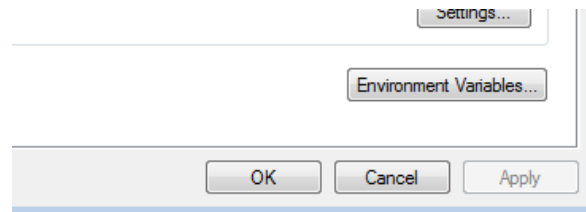
__4. Close the command prompt window.

__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**.

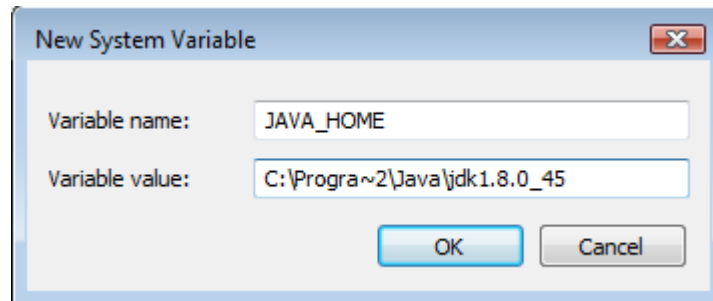


__8. Under the **System Variables** list, click the **New** button.

__9. Enter **JAVA_HOME** as Variable name.

__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



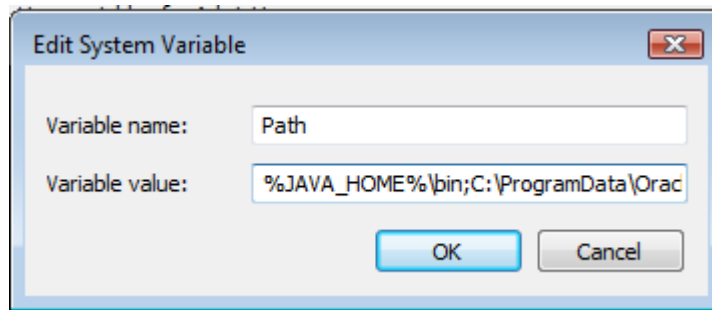
Note: If you are using a 32-bit OS you may have to use **C:\Progra~1\Java\jdk1.8.0_45**

__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.

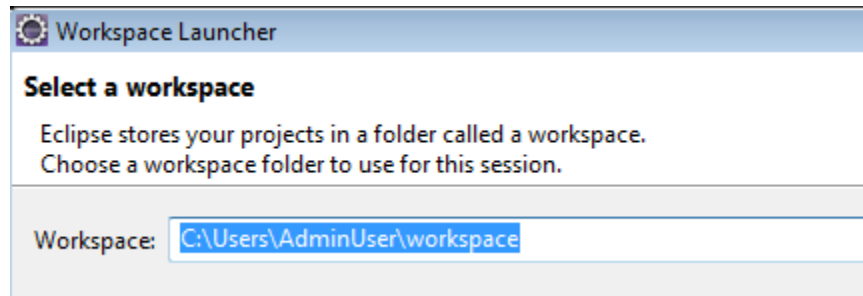
Part 13 - Verification of Eclipse Mars

__1. Run `C:\Software\eclipse\eclipse.exe`

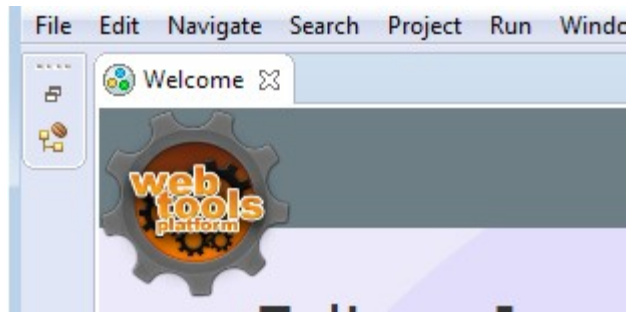
Eclipse Mars will start.



__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.

Eclipse Mars is working fine.

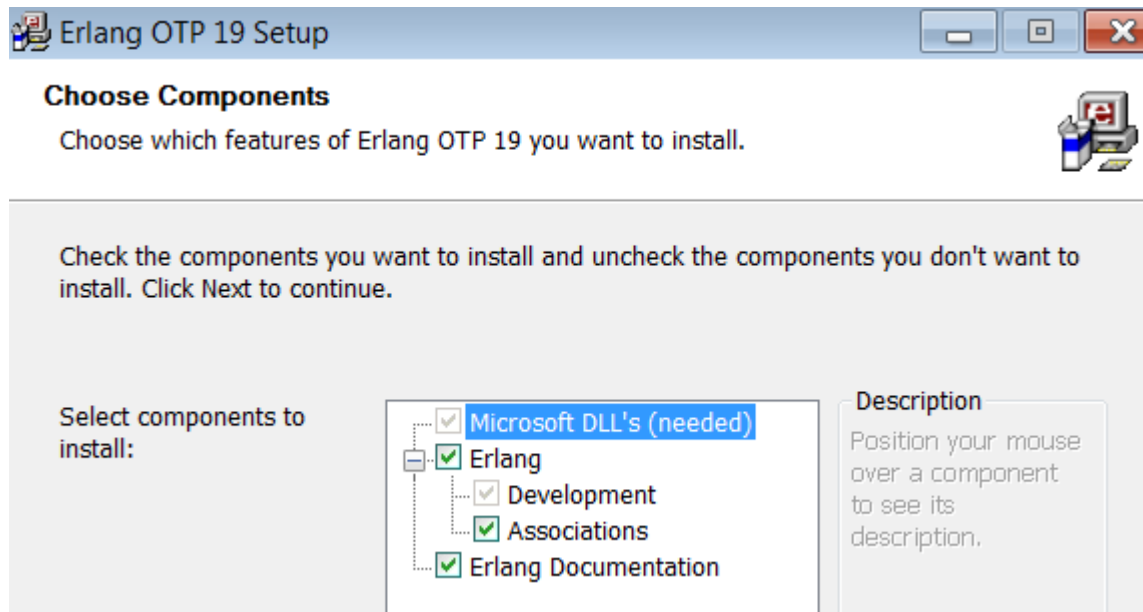
Part 14 - Installing Erlang 19.1

__ 1. Locate and run:

C:\Software\otp_win32_19.1.exe

__ 2. If window open Allow access in all similar windows.

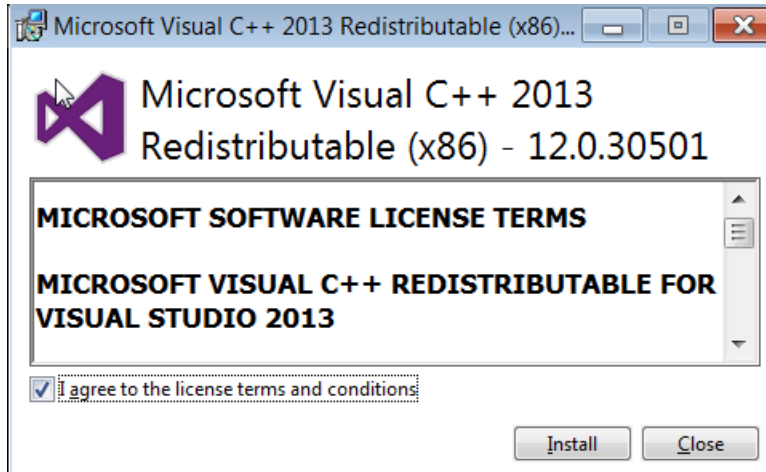
__ 3. Click **Next** in the Choose Components window.



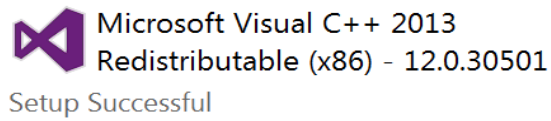
__ 4. Leave the default destination folder and click **Next**.

__ 5. Click **Install**.

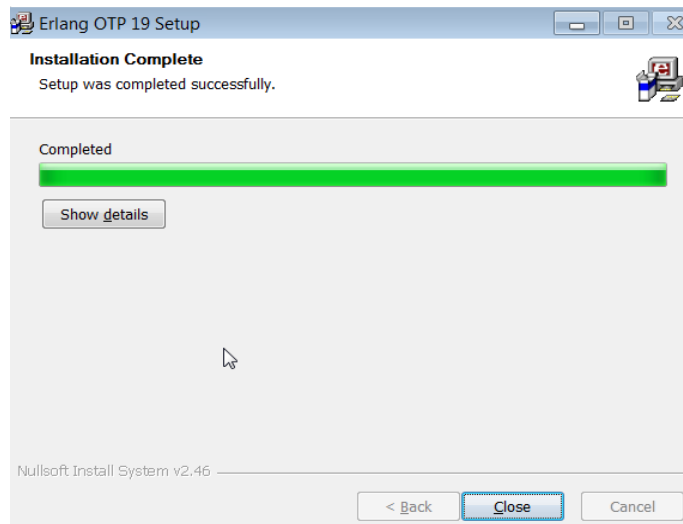
__ 6. If the following window appears then check the agreement box and click **Install**.



__7. Click **Close**.



__8. Click **Close**.



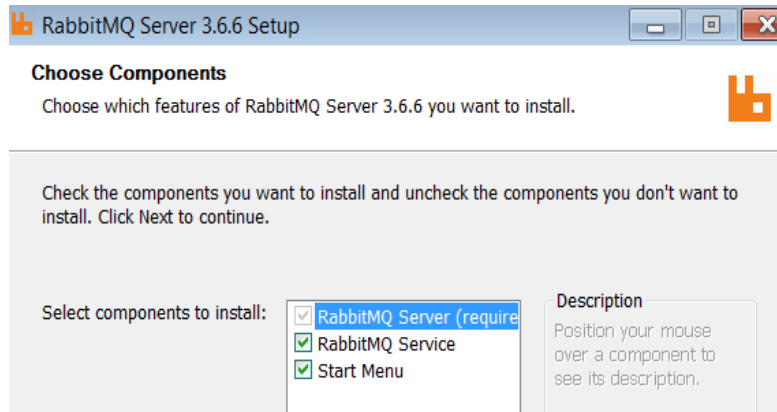
Part 15 - Installing RabbitMQ server 3.6.6

__ 1. Locate and run:

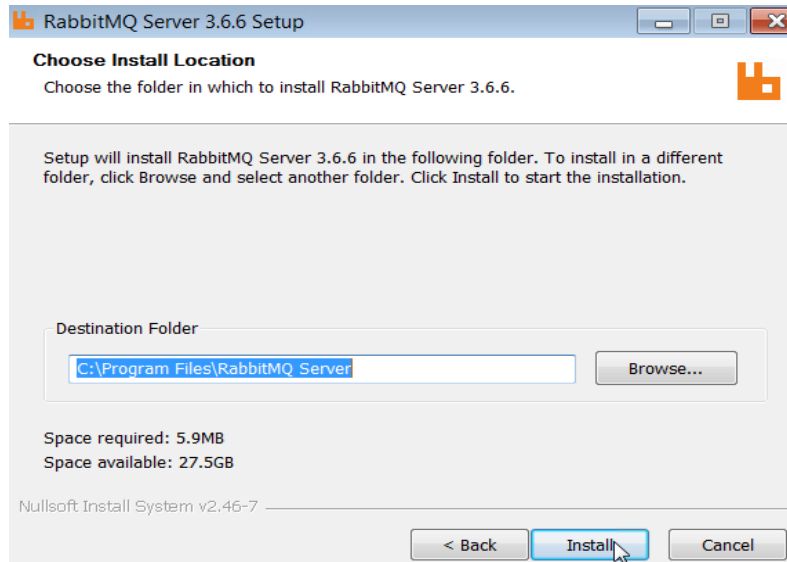
C:\Software\rabbitmq-server-3.6.6.exe

__ 2. If window open Allow access in all similar windows.

__ 3. Click **Next**.

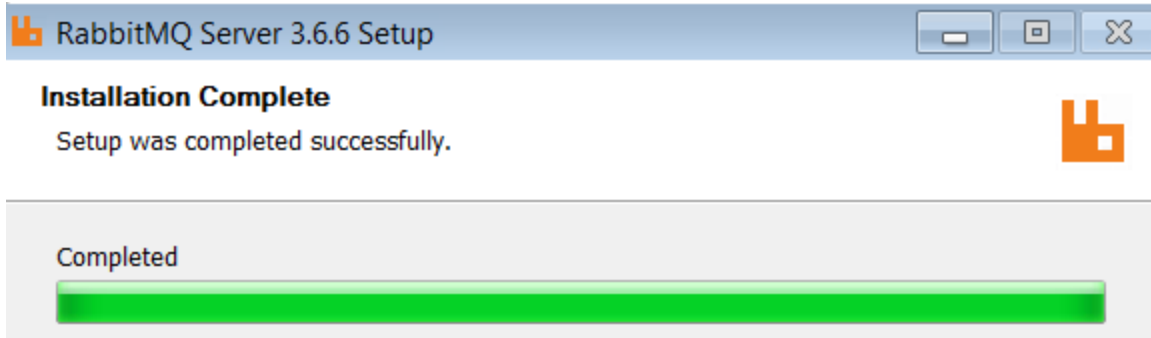


__ 4. Leave the default destination folder and click **Install**.

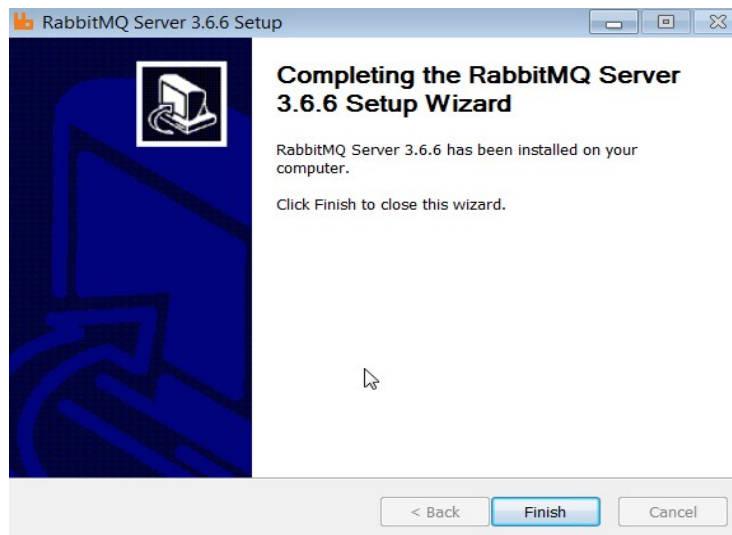


__ 5. If a Firewall window open, then click **Allow access** in all similar windows.

__ 6. Click **Next**.



__7. Click **Finish**.

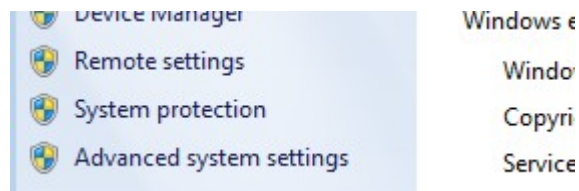


Part 16 - Install Maven 3.3.9

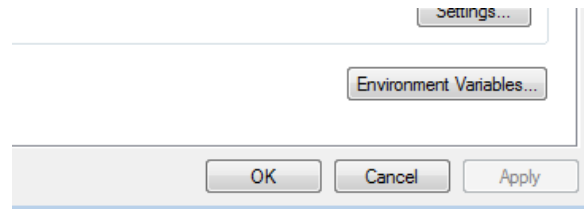
The following steps are based on Windows 7, other Windows versions instructions may vary.

__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**.

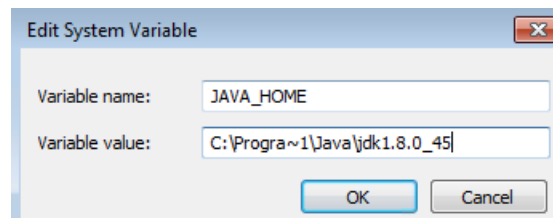
__2. Click on **Advanced system settings**.



__3. The system will display the **System Properties** dialog. Select the **Advanced** tab and click **Environment Variables**.



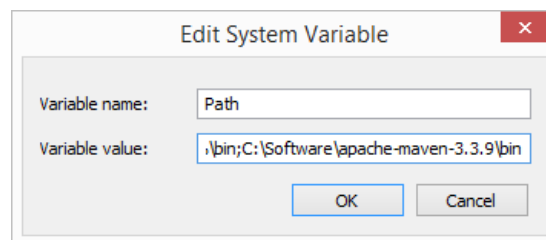
__4. Verify the JAVA_HOME variable is set to **C:\Progra~1\Java\jdk1.8.0_45** or similar path.



__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 17 - Installing Postman 5.2

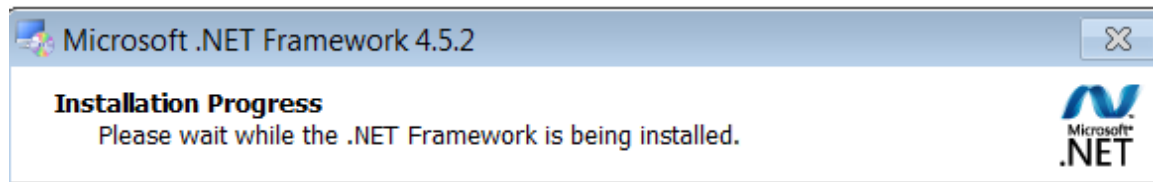
__ 1. Open C:\Software\

__ 2. Double click **Postman-win32-5.2.0-Setup.exe** to begin installation.

__ 3. Click **Install** if the **.NET Framework 4.5** is required to be installed.

__ 4. Click **Yes** to continue the installation.

__ 5. Wait until Framework is installed.



__ 6. After a while Postman will be installed and will be launched.



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__7. Close Postman.

Part 18 - MongoDB 3.4.13 - 32/64 bits

__1. Open a command prompt window and type in the following command at the prompt and press **ENTER** (execute the command)

```
mkdir c:\data\db
```

__2. Enter the following command:

```
cd C:\Software\mongodb\bin
```

__3. Verify mongodb version

```
mongod -version
```

Make sure your version matches version below.

```
C:\Software\mongodb\bin>mongo -version
MongoDB shell version v3.4.13-20-g1edf4ba
git version: 1edf4baa102a0a26dad5730ebafb5dfcb1714bed
allocator: tcmalloc
modules: none
build environment:
  distarch: x86_64
  target_arch: x86_64
```

__4. Start MongoDB server by running:

```
mongod
```

__5. If a Windows Security Alert open, click **Allow Access**.

```
e Pack 1 ) BOOST_LIB_VERSION=1_49
2015-09-03T15:12:57.935-0400 I CONTROL [initandlisten] allocator: tcmalloc
2015-09-03T15:12:57.936-0400 I CONTROL [initandlisten] options: {}
2015-09-03T15:12:57.943-0400 I NETWORK [initandlisten] waiting for connections
on port 27017
```

You will see the "waiting for connections on port 27017" message.

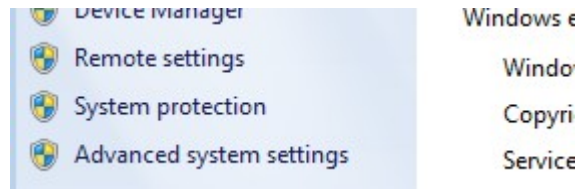
__6. End MongoDB by hitting **Control+C**.

__7. Close all.

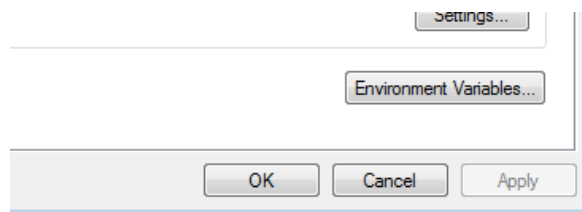
Part 19 - Installing CURL

__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. From the *System Variables* list, select **Path** and click **Edit**.

__5. At the end of the line enter the following. Make sure to include the semi-colon at the beginning:

```
;C:\Software\curl-7.55.1-win32-mingw\bin\
```

__6. Click **OK**.

__7. Click **OK** to close the *Environment Variables* window.

__8. Click **OK** to close the *System Properties* window.

__9. 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.

__10. Enter the following command:

```
curl --version
```

__11. Verify curl is reachable and close the command prompt window.

Part 20 - Verification

Make sure you have the following 4 VM images created with shortcuts in the desktop:

- **WA2676 Windows**
- **WA2684 Windows**
- **WA2684 CentOS # 1**
- **WA2684 CentOS # 2**

Part 21 - Summary

You have successfully installed the software for this course!

If you have any question please contact us by email at support@webagesolutions.com

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

International call: 416-406-3994 ext. 26