

## CST8216 Processor Architecture – Lab Week One – Approximately Two Hours to complete and you MUST have an Internet Connection to Perform the Lab

This lab has been created so that you can configure your laptop with the software that we will be using in the course. You must complete this lab before Week Two of the course; otherwise, you will not be prepared to do the in-lab course work in Week Two that uses Multisim 13.

Annotate the date and time of lab work in your Course Notebook, along with any problems you had.

I do not recommend printing this document – it is best read in Adobe Acrobat Reader using magnification as required.

### Software Installation Instructions

The software packages that we will use in this course are:

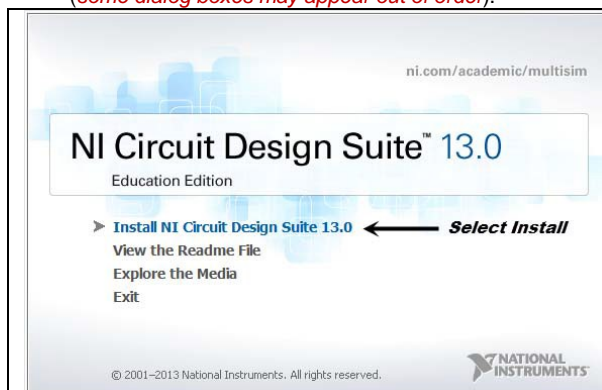
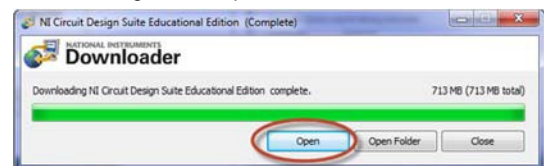
- National Instruments Multisim 13 Education Edition
- 68HCS12 Simulator and ASMIDE software

NOTE!

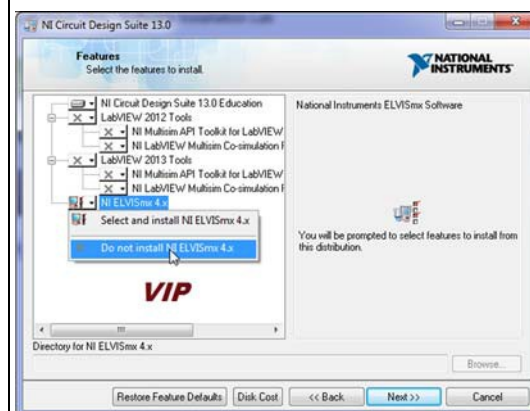
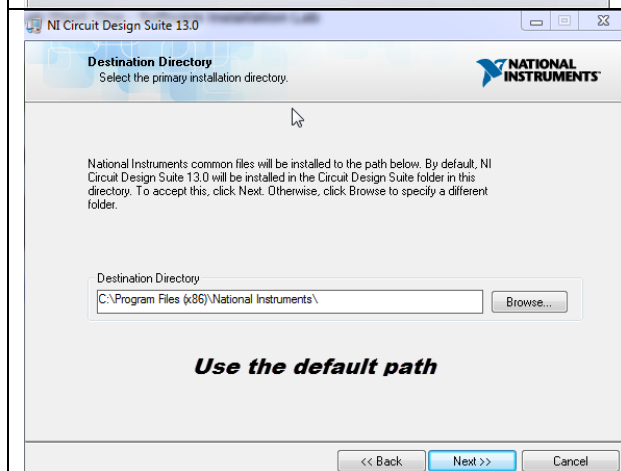
- Do not download any other version of Multisim other than version 13 and do not upgrade version 13 to 14 or later, as we are not licensed for anything other than version 13

### National Instruments Multisim 13 Download and Installation (You must have an internet connection to download and install this software)

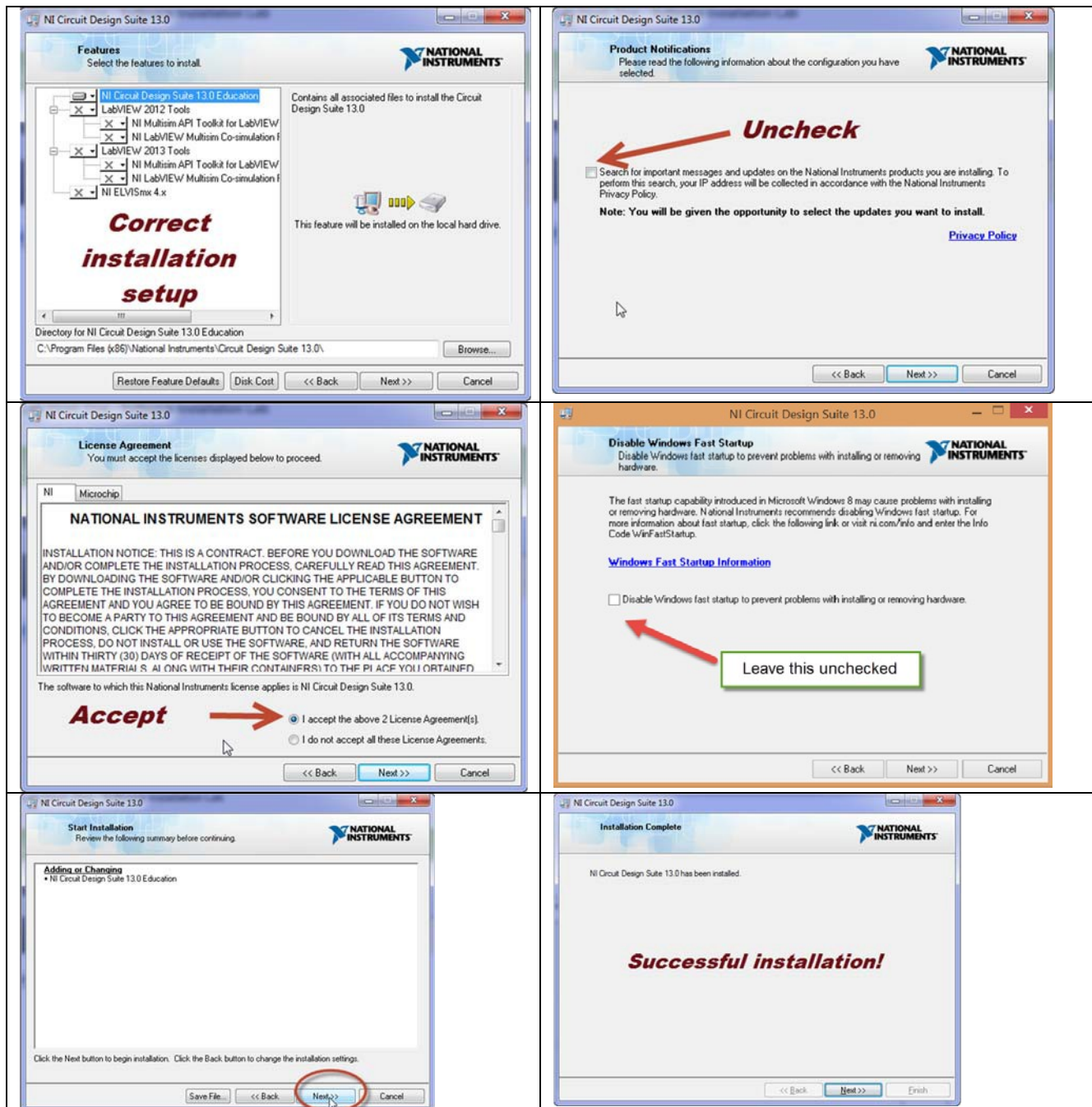
1. To download the latest version of Multisim, you must download and run the download manager for the product. The link for that software can be found in the same folder you found this document. Once you click on the link, save the file and then run it to download **NI\_Circuit\_Design\_Suite\_13\_0\_Education.exe** to your system. Once the download is complete, click on Open and extract the software to **its default directories**, noting any pop-up dialogue boxes as you proceed.
2. Now, install the software as per the following example screen captures (*some dialog boxes may appear out of order*).



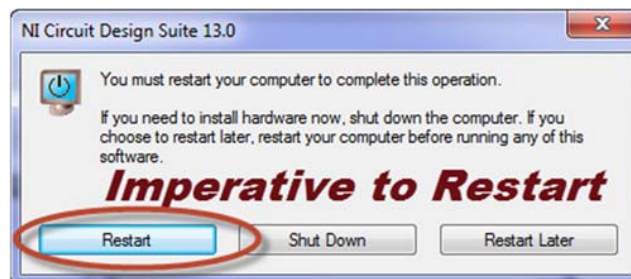
Add the required information, including the serial number **M76X57152**



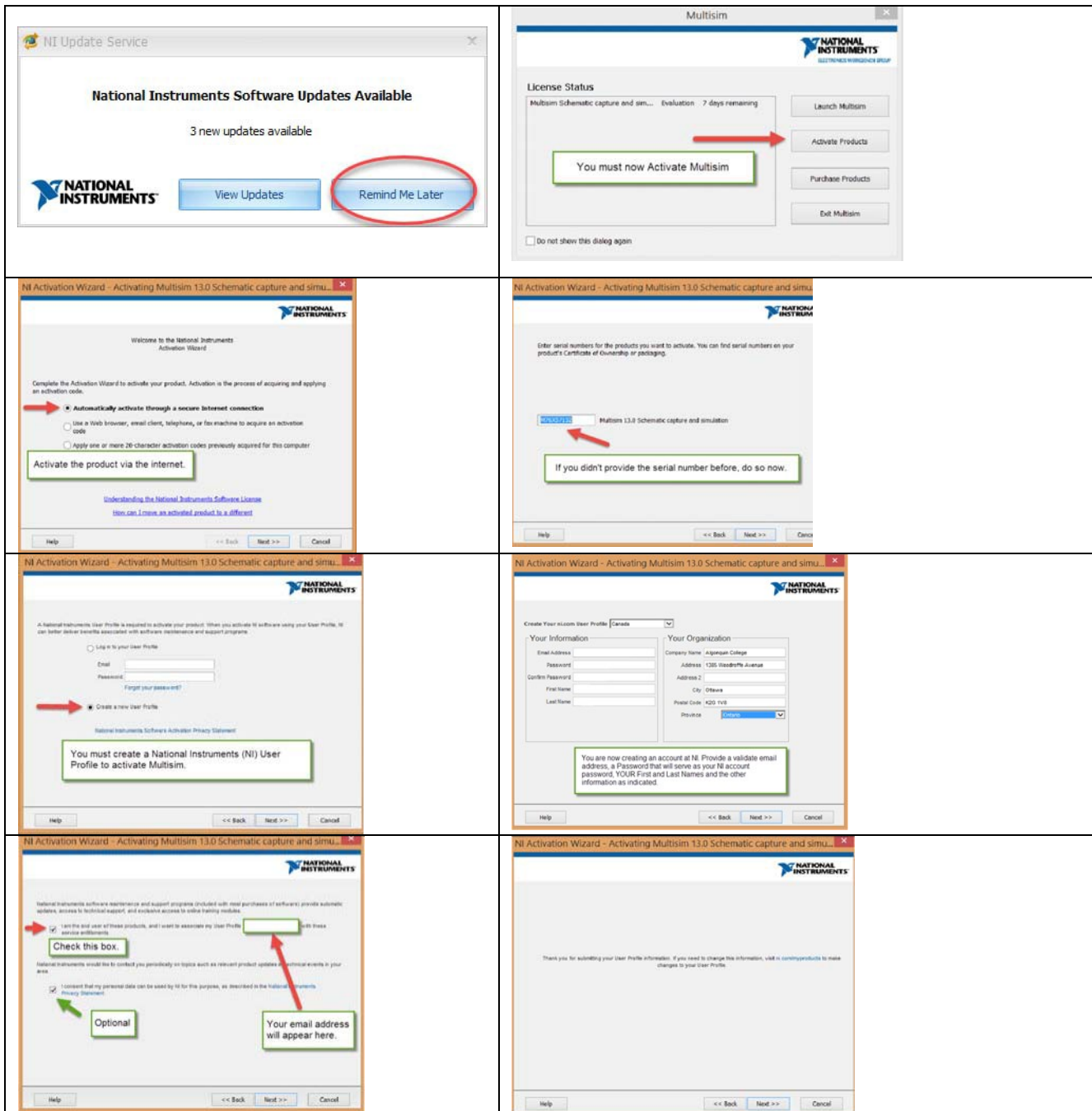
Use the drop-down menu beside NI ELVISmx 4.x to deselect the installation of that option.



3. Once installed, you must reboot your system.



4. When your Windows system reboots, you will be prompted to View and Install program updates. Click on "Remind Me Later", as we **do not update this software at any time**. Now you must run NI Multisim 13.0 from the start menu and follow the prompts to activate the product.



You will then be presented with a "Products Successfully Activated!" dialogue box.

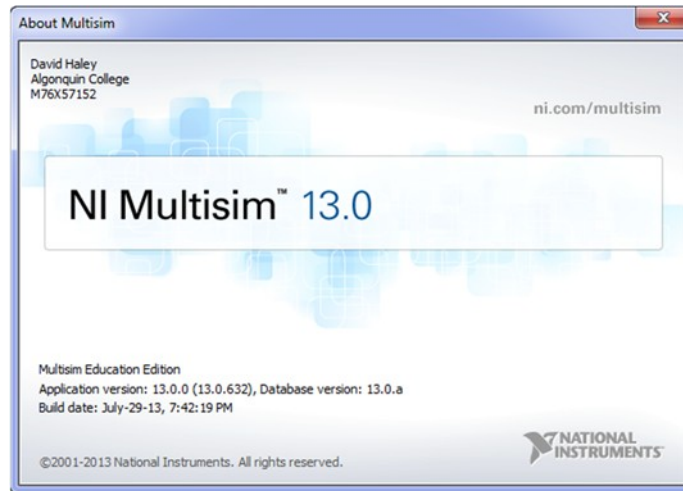
#### Notes:

- If you run Multisim and the "Print" functionality is "greyed-out", then Multisim has not been activated and you must repeat the above activation steps to activate the product.
- At any time you see the following updated notification, ignore it.



## Running Multisim 13

To run this software, find the NI Multisim 13.0 icon in Windows Apps and click on it (I also found it very handy to pin it to that taskbar). An opening dialogue box like the following should appear.



### Configuration Changes that must be completed:

In order for Multisim 13 to function correctly for the work we will do in this course, select the Multisim13.0 menu item and make the following **mandatory** configuration changes in Multisim 13.0.

To resolve the problem with wires not staying connected to components, we must change one of the Autowire features as follows.



Select Options → Global Options → General" and ensure that the following settings are evident

Wiring

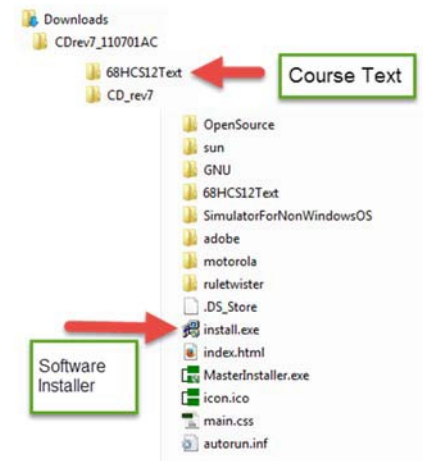
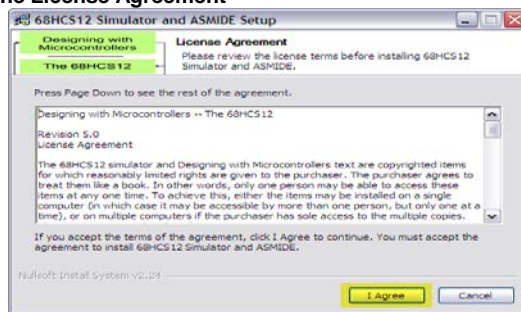
- ☒ Automatically connect components when pins are touching
- ☒ Autowire when wiring components  
Tip: Hold the Shift key while wiring to toggle modes.
- ☒ Autowire component on move, if number of connections is fewer than:   
Tip: Hold the spacebar while moving component to toggle modes.
- ☐ Delete associated wires when deleting component

Once they are, click on "Apply" and "OK" and then close the program.

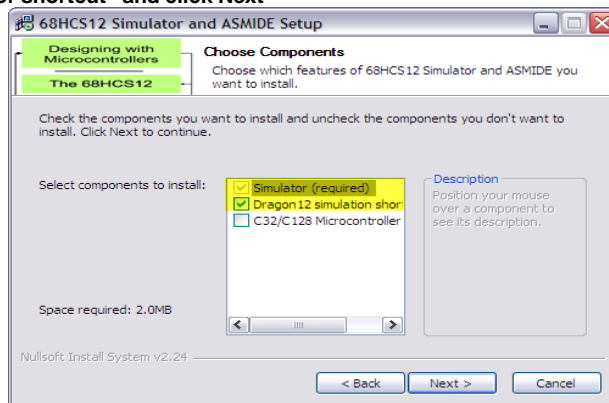


## The 68HCS12 Simulator and ASMIDE Installation

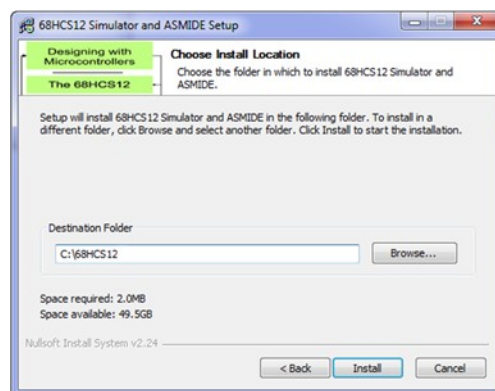
1. Download the latest version of this package via the link it in the same folder you found this document. After you download and unzip CD\_rev7a\_14SLU.zip, navigate to the CD\_rev7a\_14SLU folder (folder name may vary depending which decompression software you use) and install the software as per the following screenshots:
  - a. Click on "install" to proceed with the installation. (Note the course text is also in the compressed package.)
  - b. Agree to the License Agreement



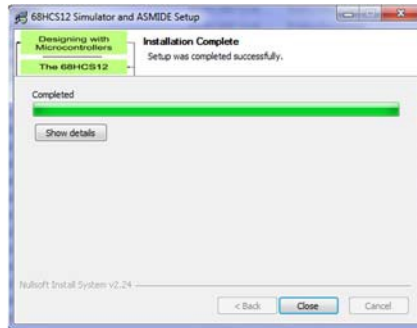
- c. Select the first two default options - Simulator and "Dragon 12 simulator shortcut" and click Next



- d. Install the package to C:\68HCS12 \*\* manually change the default "Destination Folder" value to "C:\68HCS12" \*\* as per the author's recommendations.



- e. Complete the installation, then click on the Close button.



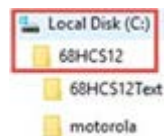
- f. We now have the following Windows 8.x Apps created for our use



Window 8.x View	Windows 10 View
<p>Note: You can right-click AsmIDE and the Simulator – Dragon12 &amp; Student icons on the Windows 8.x Taskbar.</p>	

## Testing Your Installation

The following describes a brief testing methodology to confirm that your installation is functional.

- a. Confirm that the installation folders were correctly selected when installing the software; otherwise, reinstall the software;

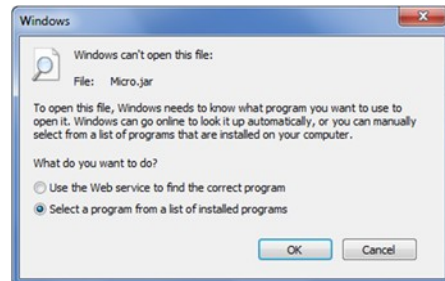


- b. On the Windows Start Menu, clicking on  **AsmIDE** should result in the assembler starting (answer “NO” to setting the PORT); and clicking on  **Simulator - Dragon12 & Student Mode** should start the simulator (click “Dismiss”)

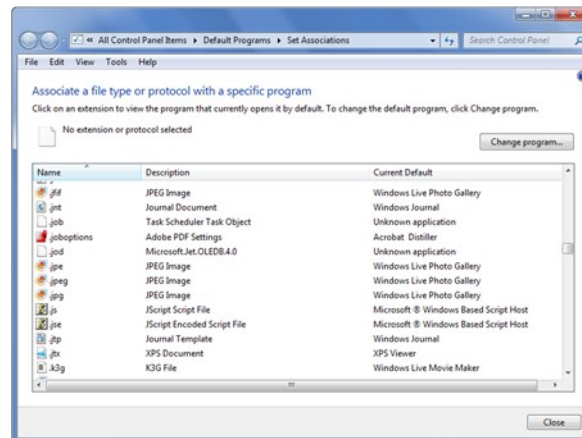
If all went well for those two steps, then your software is likely correctly installed as long as you used the installation folders that were identified in the instructions.

## Testing Your Installation – It did not Work!

When I first attempted this installation on my older Windows 7 laptop, I found that it did not have Java installed and I received the following notification when I attempted to start  Simulator - Dragon12 & Student Mode



A further investigation of my 64-bit Windows 7 installation confirmed that .jar files lacked a file extension association:



To run .jar files, you must navigate to the Sun (Oracle) website at: [www.oracle.com](http://www.oracle.com), click on Downloads and then select Java for Developers.



Now, click on the Java SE Downloads icon, and scroll down to select the download applicable to your operating system (Windows 32-bit and 64-bit OS selections circled to the left)

**Notes:** 1. The download names will continually be updated on the Sun website, so don't be alarmed if the versions illustrated here do not match.  
2. The direct link to these files is:

<http://www.oracle.com/technetwork/java/javase/download/sjdk8-downloads-2133151.html>

### Java SE Downloads



### Java SE Development Kit 8u92

You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download software.

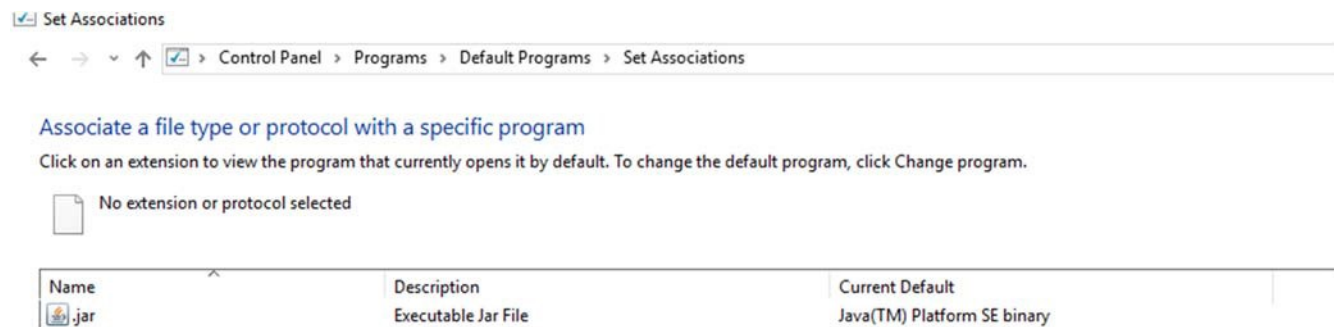
Thank you for accepting the Oracle Binary Code License Agreement for Java SE; you now download this software.


Product / File Description	File Size	Download
Linux x86	160.26 MB	<a href="#">jdk-8u92-linux-i586.rpm</a>
Linux x86	174.94 MB	<a href="#">jdk-8u92-linux-i586.tar.gz</a>
Linux x64	158.27 MB	<a href="#">jdk-8u92-linux-x64.rpm</a>
Linux x64	172.99 MB	<a href="#">jdk-8u92-linux-x64.tar.gz</a>
Mac OS X	227.32 MB	<a href="#">jdk-8u92-macosx-x64.dmg</a>
Solaris SPARC 64-bit (SVR4 package)	139.47 MB	<a href="#">jdk-8u92-solaris-sparcv9.tar.Z</a>
Solaris SPARC 64-bit	98.93 MB	<a href="#">jdk-8u92-solaris-sparcv9.tar.gz</a>
Solaris x64 (SVR4 package)	140.35 MB	<a href="#">jdk-8u92-solaris-x64.tar.Z</a>
Solaris x64	96.76 MB	<a href="#">jdk-8u92-solaris-x64.tar.gz</a>
Windows x86	188.43 MB	<a href="#">jdk-8u92-windows-i586.exe</a>
Windows x64	193.66 MB	<a href="#">jdk-8u92-windows-x64.exe</a>

Once Java has been installed on your system, the file extensions will correctly reflect the following and you will be able to run

 Simulator - Dragon12 & Student Mode

(In Windows 10, this view can be obtained using “Default Programs” in the search bar)



**Note:** In other installations, I have also found .jar files to be associated with a file compression program, which is incorrect. In such a case, you must modify the  Simulator - Dragon12 & Student Mode shortcut properties to read as follows:

**C:\68HCS12\Micro.jar -s -d**