

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>

Purpose

This tutorial covers how to configure a brand new Raspberry Pi with the Raspbian OS. It also covers how to configure a Raspberry Pi as a development platform for the JavaFX platform.

Time to Complete

Approximately 1 hour

Introduction

The Java platform is designed to run on different machines regardless of operating system. Computers come in different shapes and capabilities, and Java still runs on most of them. The Raspberry Pi is a small, affordable, and extensible computer that is based on an ARM 11 processor, which is capable of running a Linux distribution. This new, compact computer also runs Java with the new Java 8 ARM distribution, providing you with a small and portable device on which to run your applications.

The Raspberry Pi has USB, Ethernet, audio, High-Definition Media Interface (HDMI), and RCA composite video output, making it capable of running applications that connect to the network, are displayed in a connected screen, and are controlled by using any USB keyboard or mouse.

In this tutorial, you install the Java Development Kit (JDK) for Java Platform, Standard Edition Release 8 (Java SE 8) on the Raspberry Pi, and then you deploy, run, and stop JavaFX applications directly and remotely in the Pi.

Software Requirements

Download and install the following software on your PC:

- [NetBeans 8 Developer version](#)
- [Oracle Java 8 JDK](#) (Windows, Linux, or Mac, depending on your system)
- [SD Association Formatter tool](#)
- [Win32DiskImager](#) (Windows)
- [SHA-1 checksum verifier tool](#) (Windows)
- [PuTTY Telnet and Secure Shell \(SSH\) Client](#)
- [PSFTP client](#)

Download the following software:

- [Raspbian Wheezy image \(2013-09-16-wheezy-raspbian or later\)](#)
- [Oracle Java SE 8 JDK for Linux ARMv6/7](#)

Note: File versions and file names might differ.

Hardware Requirements

- Raspberry Pi Model B Revision 2
- 4 GB (or larger) Secure Digital (SD) memory card
- Micro-USB power supply (5v, 1A)
- USB keyboard and USB mouse
- HDMI cable
- HDMI-compatible monitor (or TV screen)
- Ethernet cable
- (Optional) [Wireless USB module](#)

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<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

Prerequisites

Before starting this tutorial, you should have:

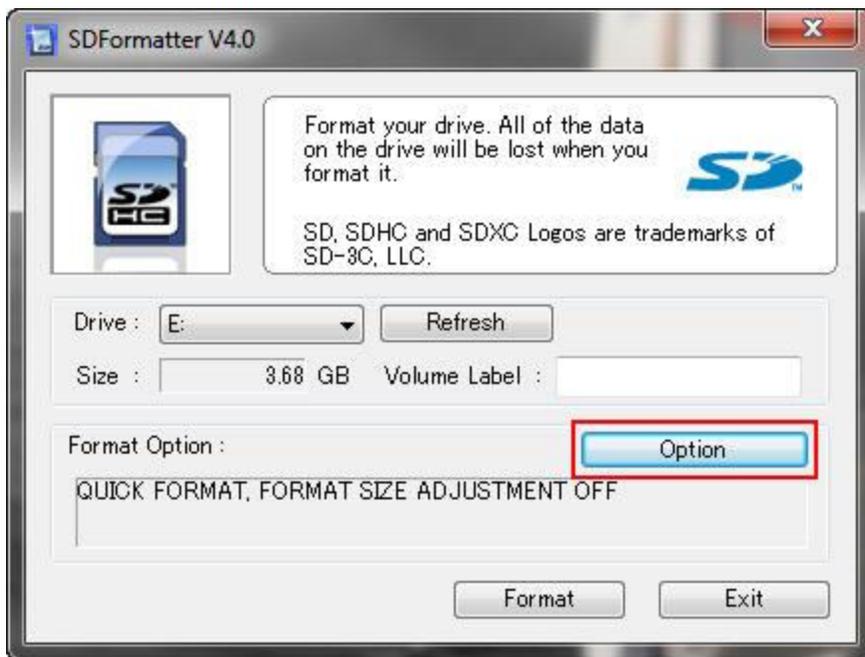
- Read the [Raspberry Pi Quick Start Guide](#) for instructions on how to connect your Raspberry Pi to a power source, a keyboard, a mouse, and a monitor.
- (Optional) Completed the [Configuring the Raspberry Pi as an Oracle Java Embedded Development Platform OBE](#). If you did, you can skip sections 1 and 2 of this tutorial.

Creating a Bootable Image for the Raspberry Pi

In order to boot, the Raspberry Pi requires a bootable Linux image on an SD memory card. There is no hard drive for the computer. Instead, the 4 GB card stores the image that the computer runs when it is powered on. This SD memory card also acts as the storage for other applications that are loaded onto the card.

Formatting the SD Memory Card with the SD Formatter Tool

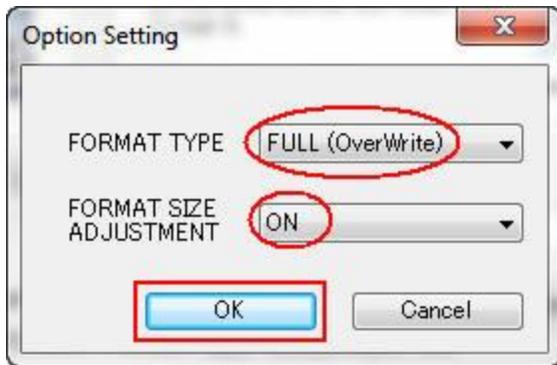
1. Insert the SD card into your computer, or connect it to your computer by using an SD card peripheral.
2. Start the SD Formatter tool and click **Option**.



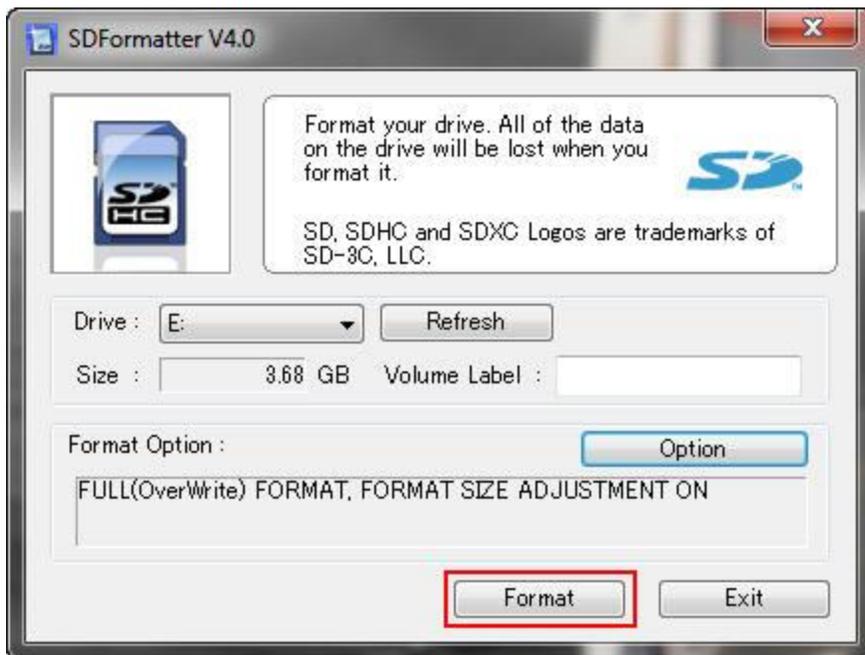
- 3.
4. Sizes might differ, depending on the SD size.
5. In the Option Setting dialog box, select **FULL (Overwrite)** from Format Type and **ON** from Format Size Adjustment, and then click **OK**.

This tutorial can be found at the URL below:

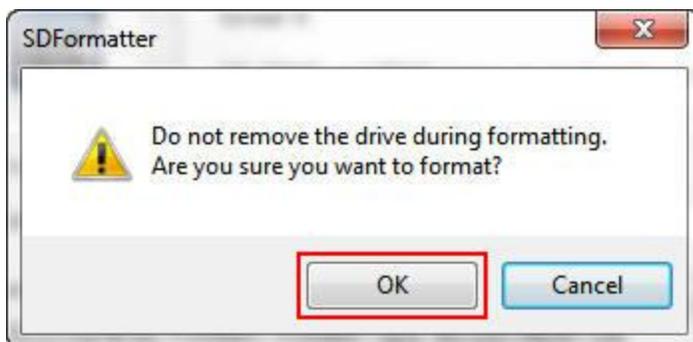
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



- 6.
7. Click **Format** to start the SD Formatter tool.



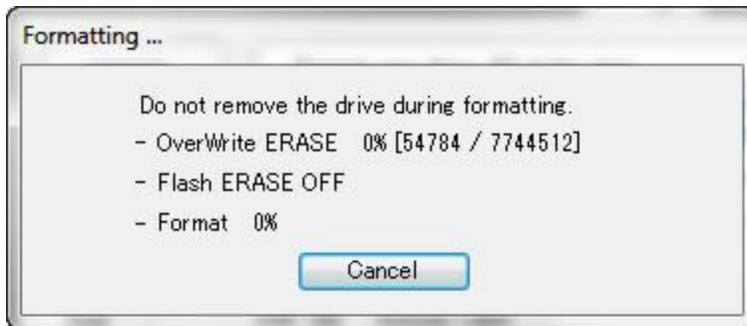
- 8.
9. Click **OK** to format the SD memory card.



- 10.
11. A dialog box displays the progress of the format.

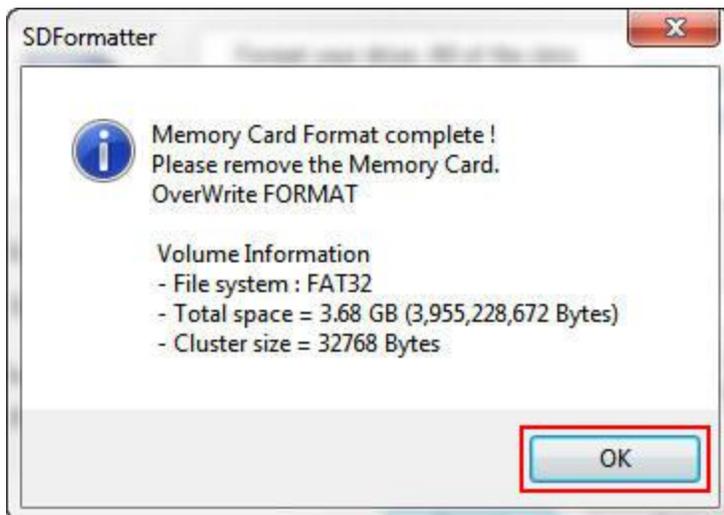
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



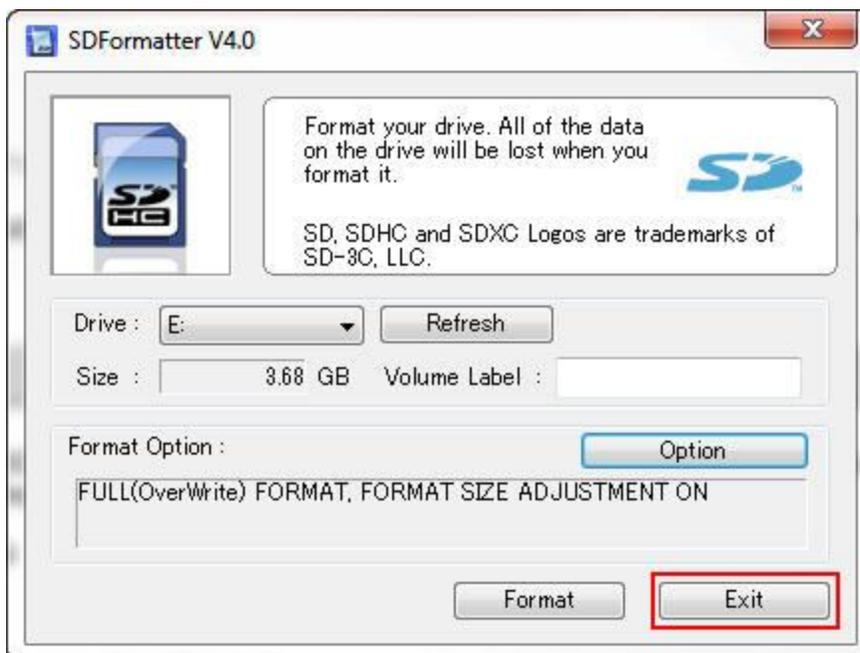
12.

13. When the format is completed, click **OK** to close the dialog box.



14.

15. Click **Exit** to close the SD Formatter tool.



16.

You are now ready to install the Raspbian Wheezy image in the SD memory card. Leave the card in the computer.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

Downloading and Confirming the Raspbian Wheezy Image

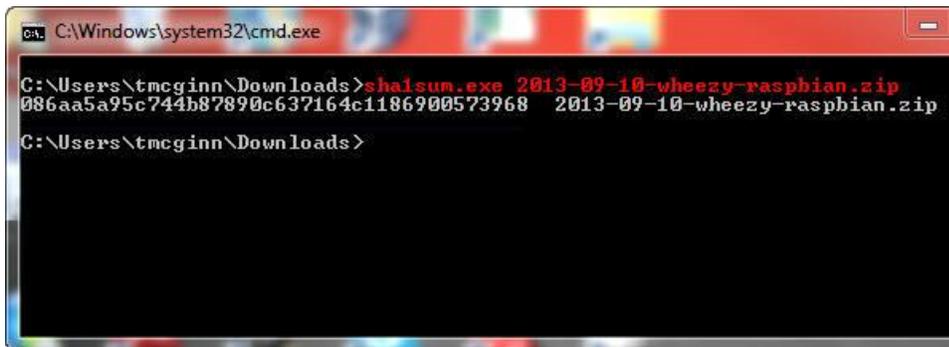
17. Make a note of the SHA-1 checksum for the zip file that you downloaded.

Raspbian



Image	2013-09-10-wheezy-raspbian.zip
Torrent	2013-09-10-wheezy-raspbian.zip.torrent
SHA-1 Checksum	086aa5a95c744b87890c637164c1186900573968
Default login	pi / raspberry

- 18.
19. **Note:** The SHA-1 checksum may also be in a file with a .sha1 extension.
20. Open a command window in the directory where you downloaded the zip file and enter `sha1sum.exe 2013-09-10-wheezy-raspbian.zip`.

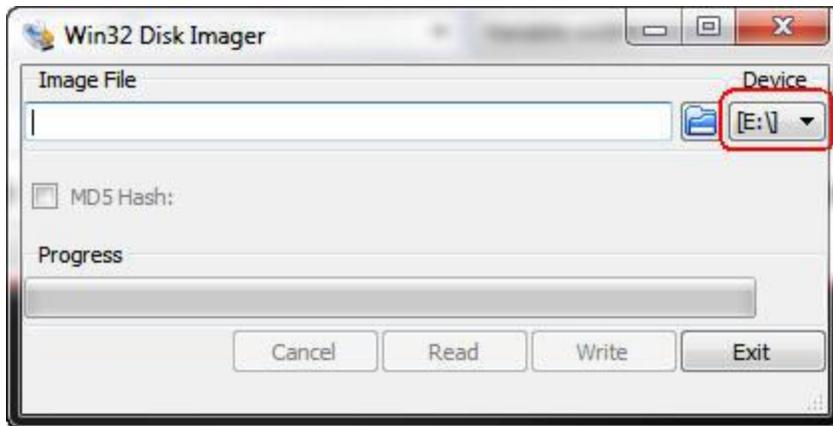


```
C:\Windows\system32\cmd.exe
C:\Users\tmcginn\Downloads>sha1sum.exe 2013-09-10-wheezy-raspbian.zip
086aa5a95c744b87890c637164c1186900573968 2013-09-10-wheezy-raspbian.zip
C:\Users\tmcginn\Downloads>
```

- 21.
22. **Note:** If the SHA-1 checksum does not match the checksum listed on the download page, try downloading the zip file again.
23. Unzip **2013-09-10-wheezy-raspbian.zip** with your favorite unzip tool.
24. Start the Win32DiskImager application. Make sure that the device address is the same as the mount point for the SD memory card.

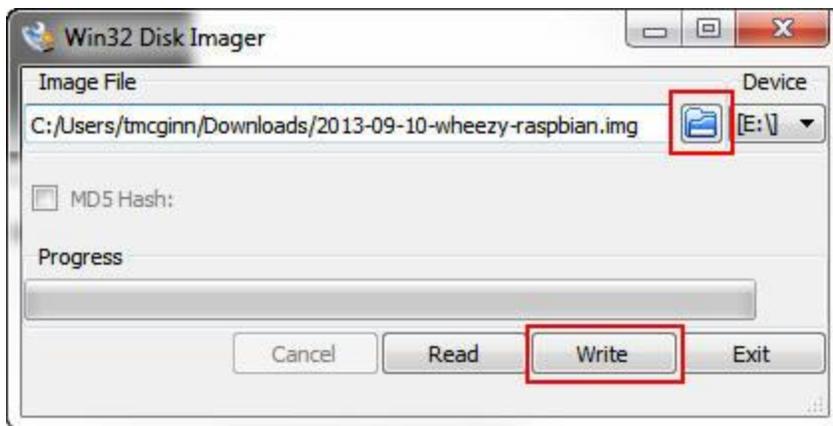
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



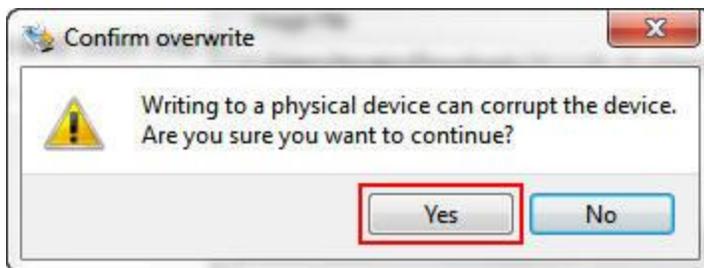
25.

26. Click the folder button, navigate to the location of the image file, and then click **Write**.



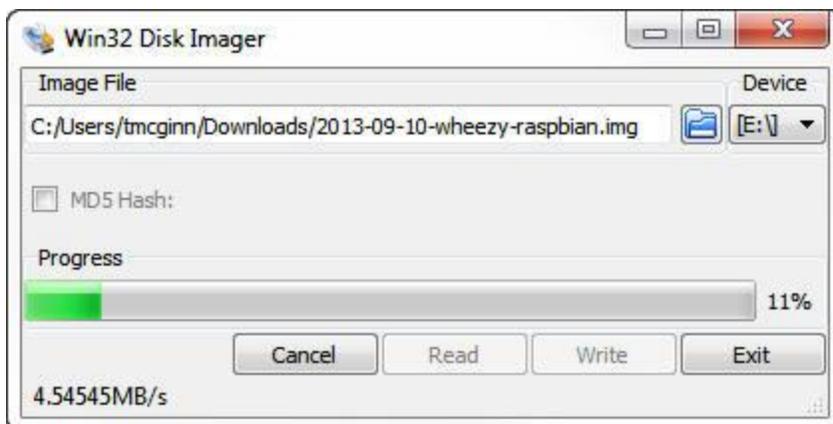
27.

28. Click **Yes** to confirm that you want to overwrite the contents of the SD memory card.



29.

30. A progress meter is displayed.



31.

This tutorial can be found at the URL below:

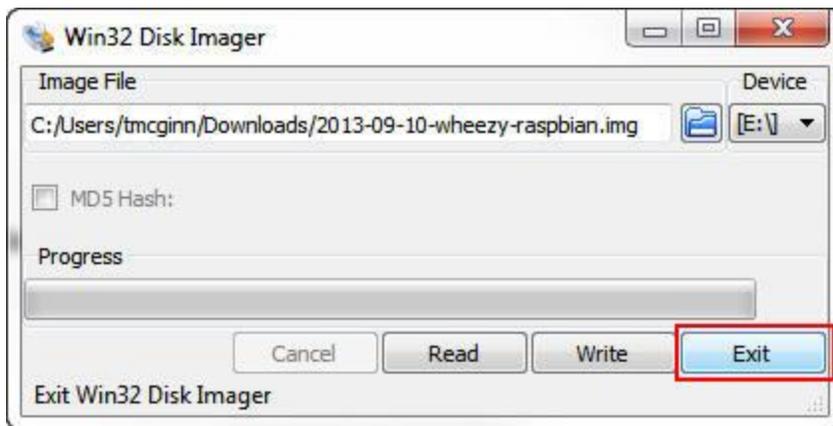
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

32. When the Write Successful message is displayed, click **OK**.



33.

34. Click **Exit** to close Win32 Disk Imager.



35.

36. Remove the SD memory card from the computer.

You are now ready to boot the Raspberry Pi and install the JDK 8 distribution for Pi.

Setting Up the Raspberry Pi for Remote Access

To set up the Raspberry Pi for remote access, you configure Raspbian to allow SSH connections. To ensure that the Raspberry Pi always has the same IP address, you configure the Raspberry Pi to use a static IP address.

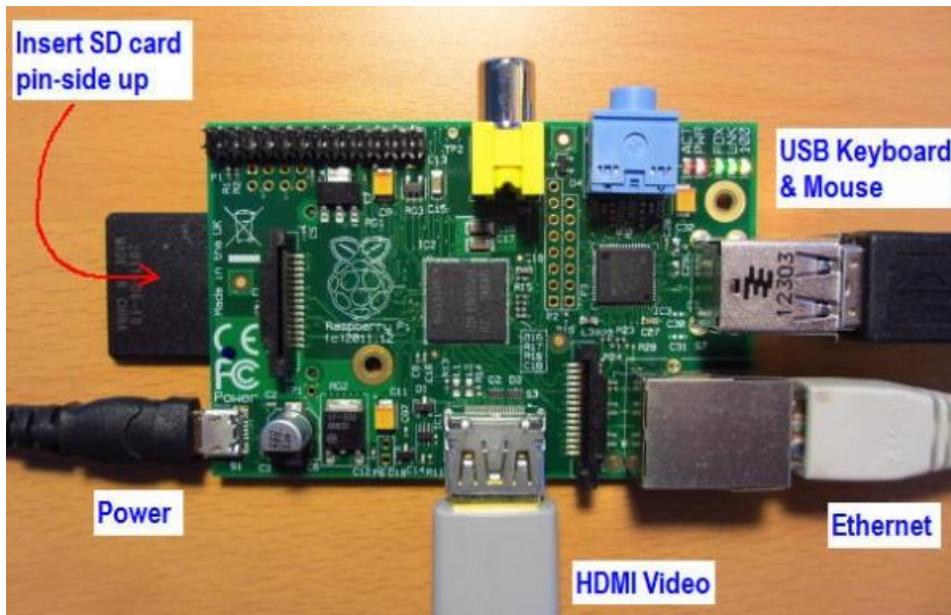
Booting the Raspberry Pi and Configuring Raspbian Wheezy Linux

37. Perform the following steps:

- a. Insert the SD memory card into the Raspberry Pi.
- b. Connect the USB keyboard and USB mouse.
- c. Connect the HDMI display.
- d. Connect the Ethernet cable.
- e. Plug in the power cable.

This tutorial can be found at the URL below:

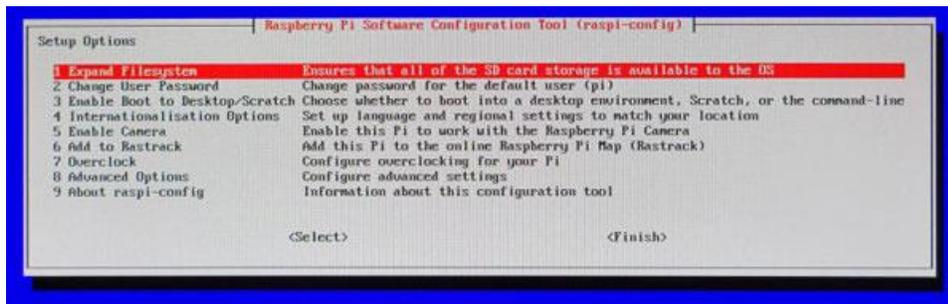
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



38.

39. After a few moments, the monitor displays text, and the Raspberry Pi raspi-config configuration screen appears.

40. Select setup option 1, **Expand Filesystem**, and press **Enter** to expand the file system and use all of the SD memory card storage.

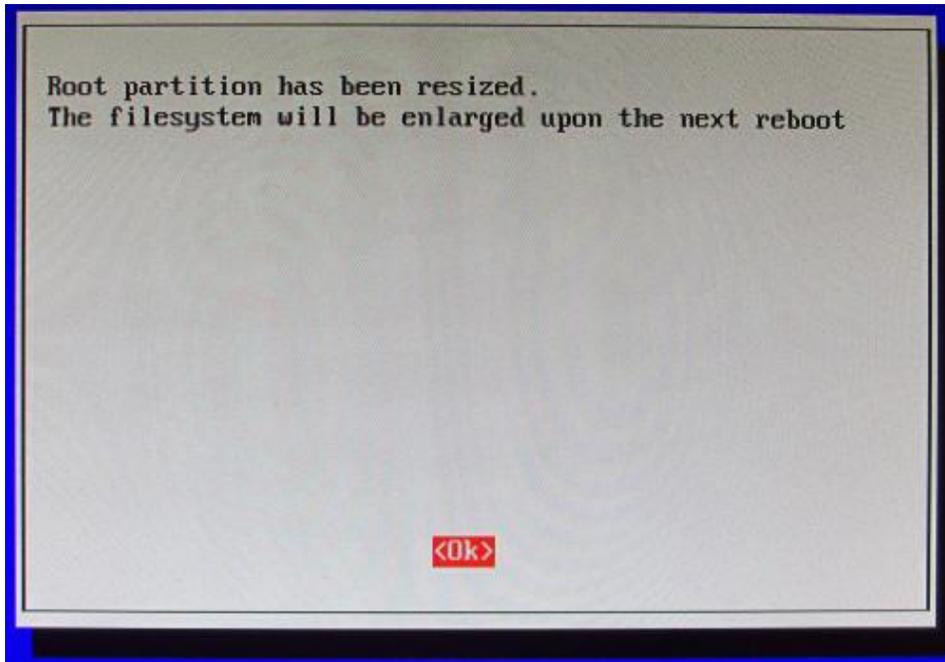


41.

42. Press **Enter** to close the confirmation screen.

This tutorial can be found at the URL below:

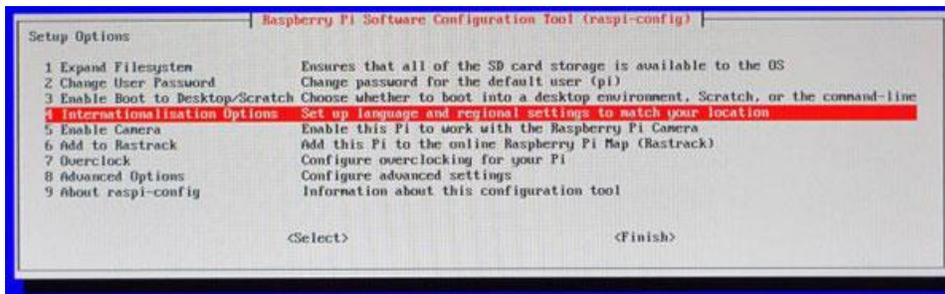
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



43.

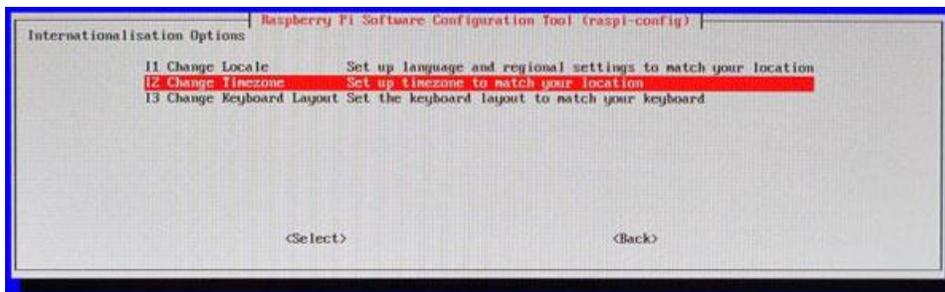
Configuring the Time Zone

44. Press the up or down arrow key to select option 4, **Internationalisation Options**, and press **Enter**.



45.

46. Press the up or down arrow key to select option 12, **Change Timezone**, and press **Enter**.

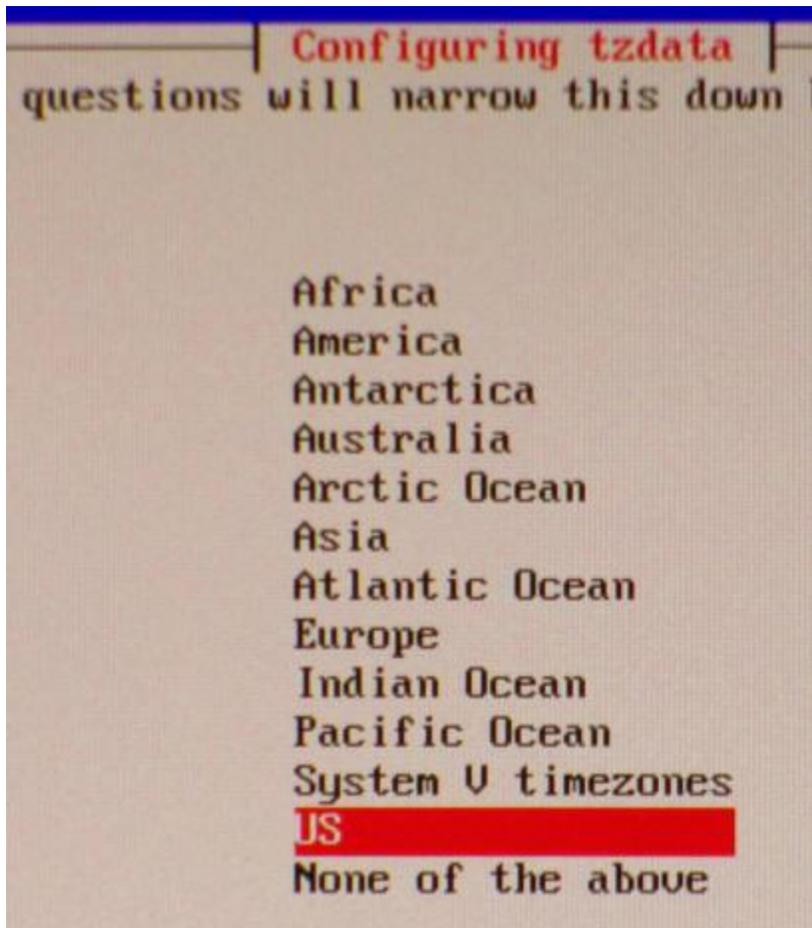


47.

48. Press the up or down arrow key to select your country and press **Enter**.

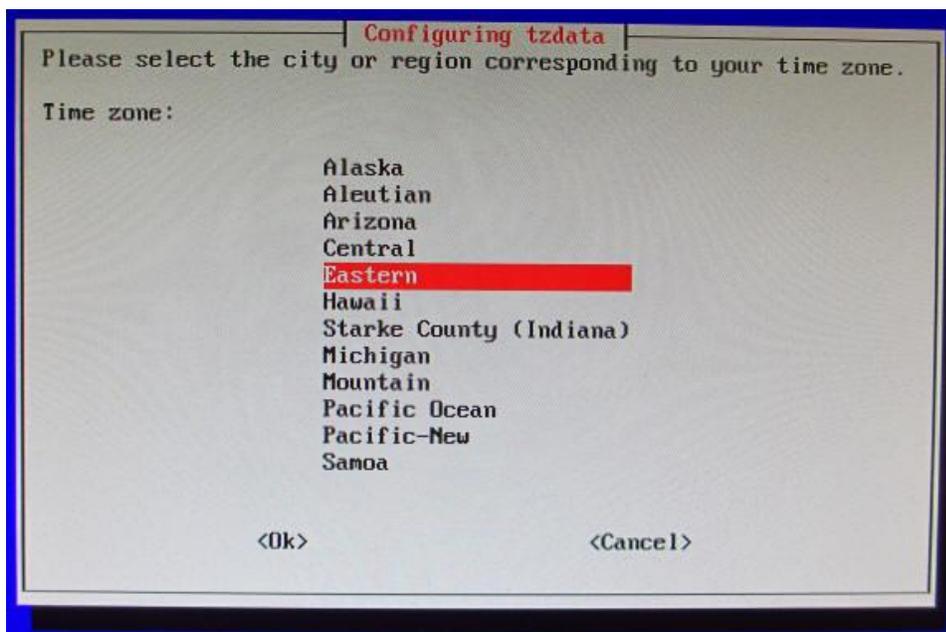
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



49.

50. Press the up or down arrow key to select the time zone in your country (if applicable) and press **Enter**.



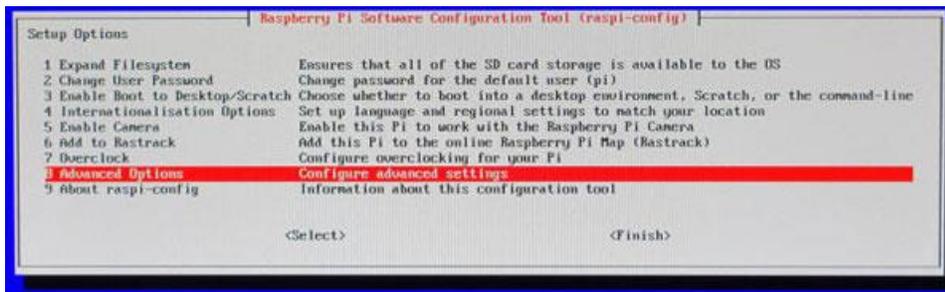
51.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

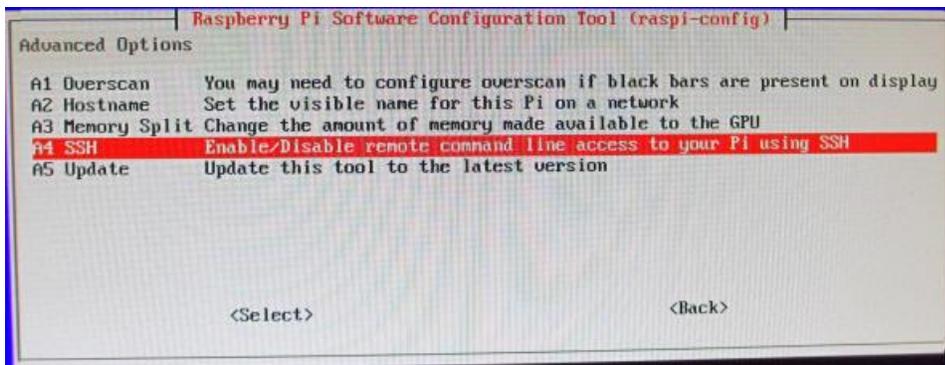
Configuring the Raspbian Wheezy OS to Enable SSH Connections

52. Press the up or down arrow key to select option 8, **Advanced Options**, and press **Enter**.



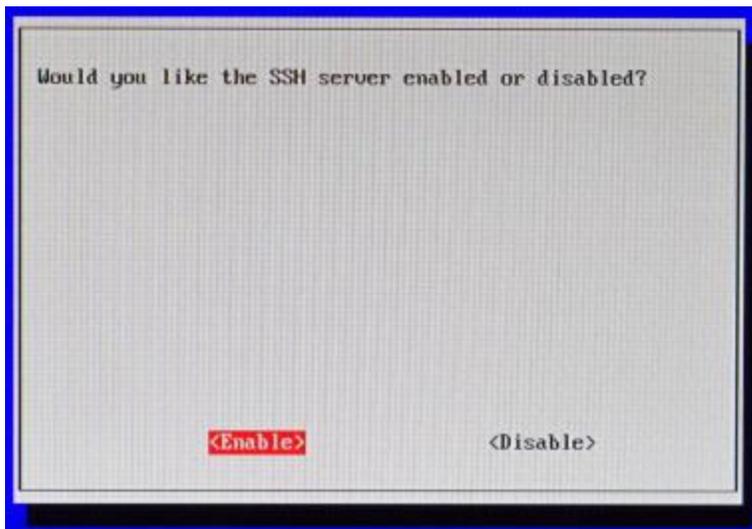
53.

54. Press the up or down arrow key to select option A4, **SSH**, and press **Enter**.



55.

56. Press the left or right arrow key to select **Enable** and press **Enter**.

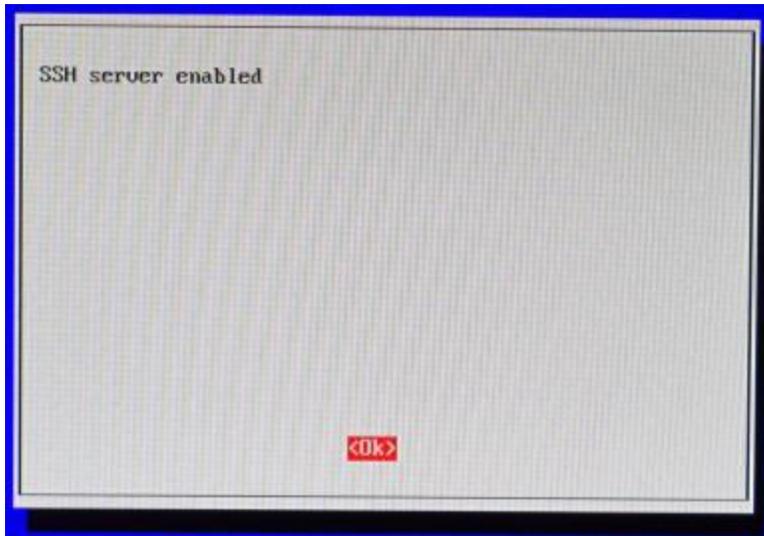


57.

58. Press **Enter**.

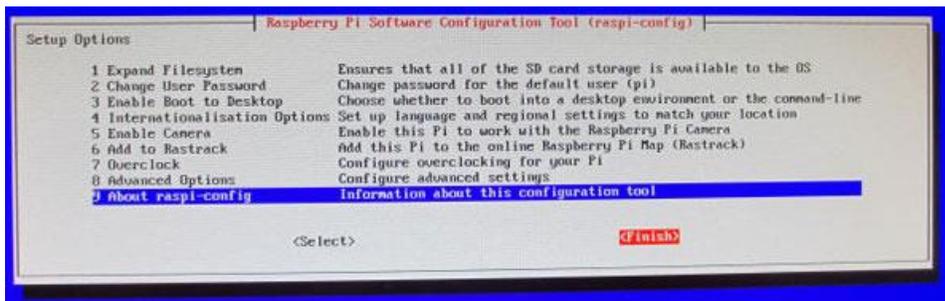
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



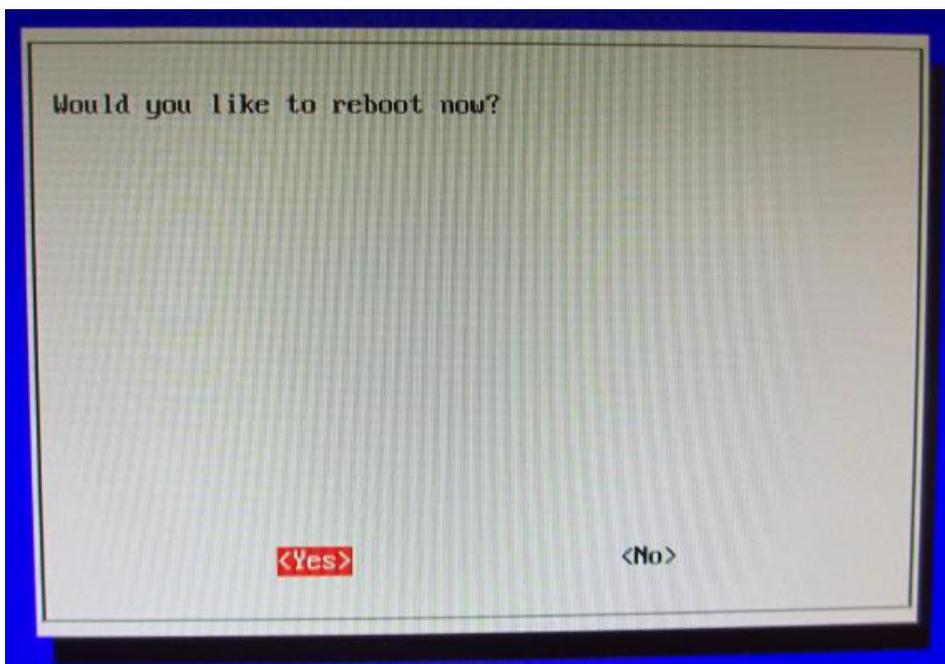
59.

60. Press the left or right arrow key to select **Finish** and press **Enter**.



61.

62. Press the left or right arrow key to select **Yes** and then press **Enter** to reboot the Raspberry Pi.

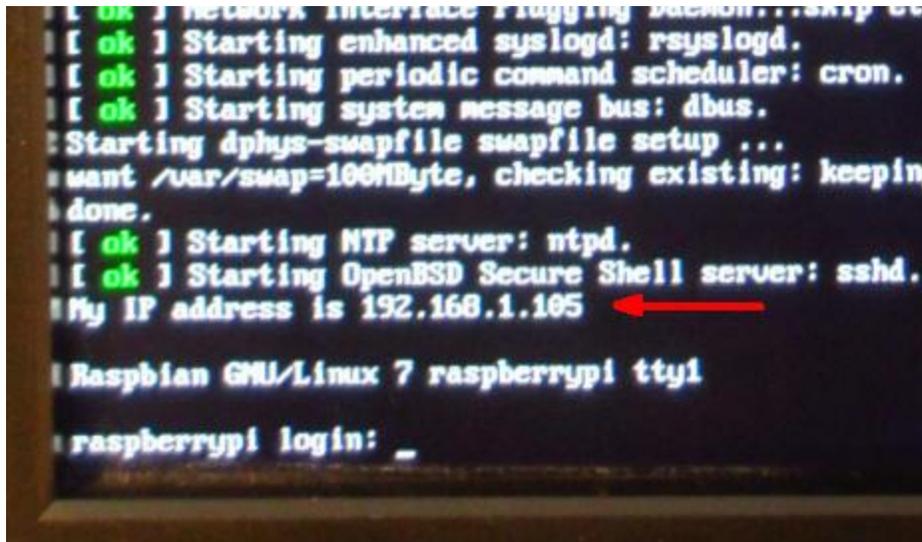


63.

64. The Raspberry Pi reboots.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



```
[ ok ] network interface plugging daemon...skip
[ ok ] Starting enhanced syslogd: rsyslogd.
[ ok ] Starting periodic command scheduler: cron.
[ ok ] Starting system message bus: dbus.
Starting dphys-swapfile swapfile setup ...
want /var/swap=100MByte, checking existing: keeping
done.
[ ok ] Starting NTP server: ntpd.
[ ok ] Starting OpenBSD Secure Shell server: sshd.
My IP address is 192.168.1.105
Raspbian GNU/Linux 7 raspberrypi tty1
raspberrypi login: _
```

65.

66. Notice the line that indicates the IP address of the Raspberry Pi.

At this point, you can disconnect the HDMI monitor, the USB mouse, and the USB keyboard.

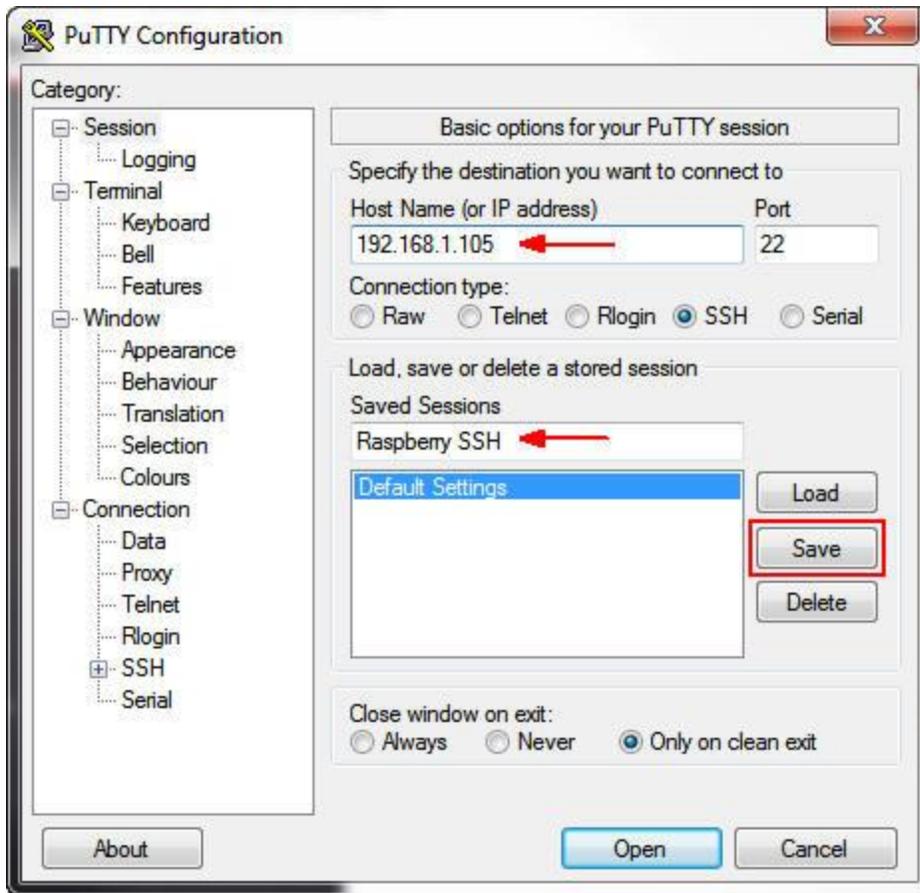
Connecting to the Raspberry Pi with the Secure Shell

67. Start **putty.exe** and perform the following steps:

- a. On the boot screen, enter the IP address in the IP address field.
- b. Enter **Raspberry SSH** in the Saved Sessions field.
- c. Click **Save**.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

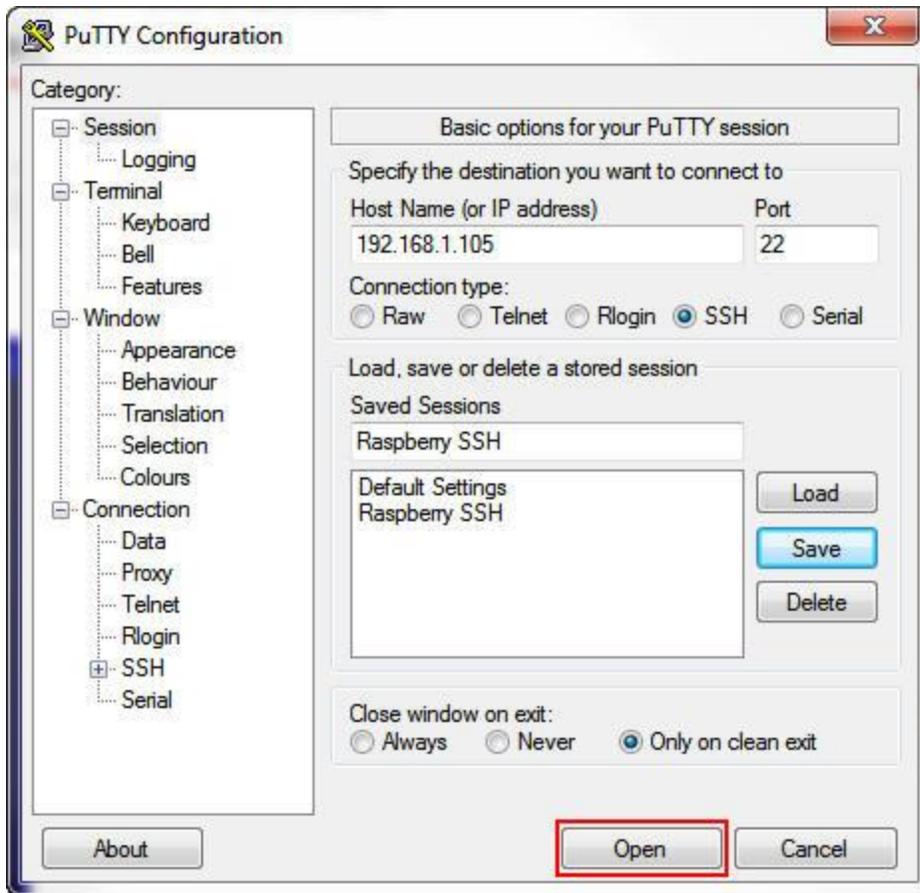


68.

69. Click **Open**.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



70.

71. Click **Yes** to accept the security alert.

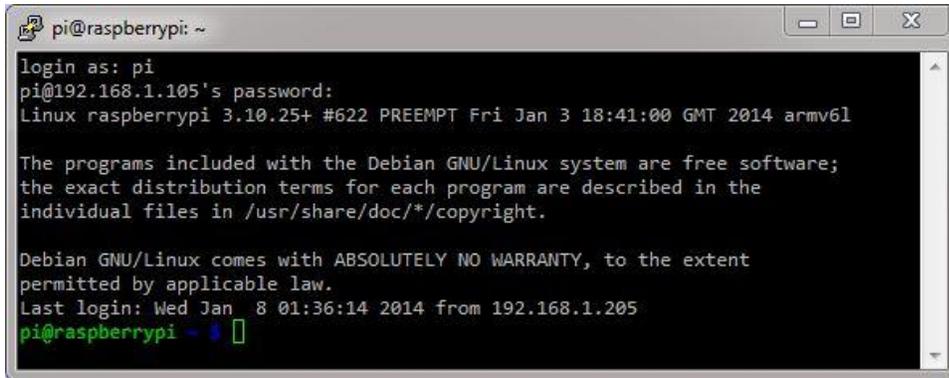


72.

73. Enter **pi** as the login name and **raspberrypi** as the password.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



```
pi@raspberrypi: ~
login as: pi
pi@192.168.1.105's password:
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

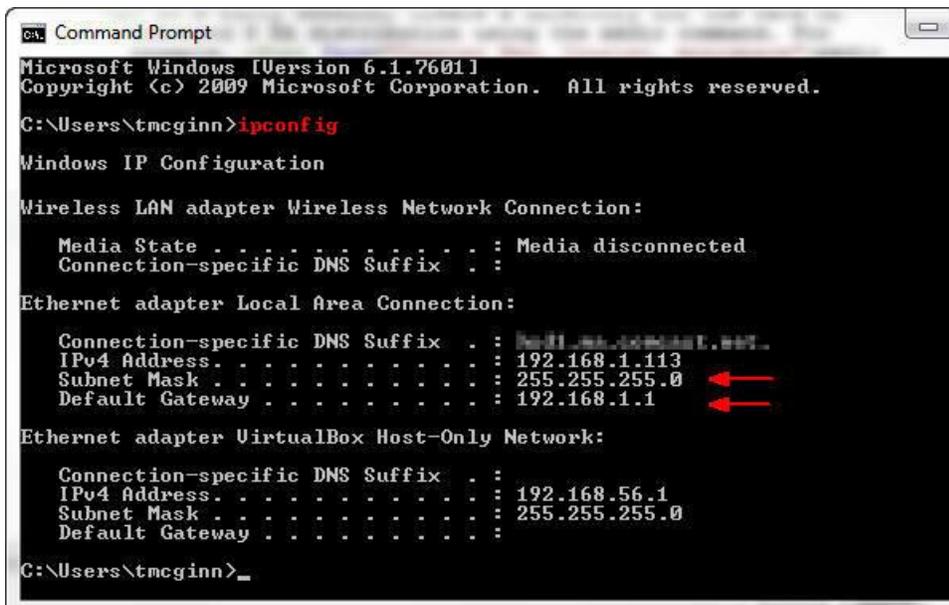
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Jan  8 01:36:14 2014 from 192.168.1.205
pi@raspberrypi ~$
```

74.

Setting Up the Raspberry Pi to Use a Fixed Wired IP Address

If you plan to use your Raspberry Pi on a wireless network, skip this section.

75. In a separate command-prompt window, enter **ipconfig** to get the netmask and default gateway for your network.



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\tmcginn>ipconfig

Windows IP Configuration

Wireless LAN adapter Wireless Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : local_area_connection.net
    IPv4 Address. . . . . : 192.168.1.113
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

Ethernet adapter VirtualBox Host-Only Network:

    Connection-specific DNS Suffix  . :
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

C:\Users\tmcginn>
```

76.

77. **Note:** If you are using a wireless connection, the information appears under the Wireless LAN adapter heading.

78. In a PuTTY window, enter **sudo nano /etc/network/interfaces** and then perform the following steps:
 - a. Comment out the **iface eth0 inet dhcp** line.
 - b. Below that, add the **iface eth0 inet static** line.
 - c. Use your network settings to add the IP, network, netmask, broadcast, and gateway addresses.

For example:

address 192.168.1.105 should be similar to the IPv4 address.

network 192.168.1.0 should be the network prefix and zeroes.

netmask 255.255.255.0 should match the subnet mask.

broadcast 192.168.1.255 should be the network broadcast address.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

gateway 192.168.1.1 should match the default gateway.

```
pi@raspberrypi: ~
GNU nano 2.2.6 File: /etc/network/interfaces
auto lo

iface lo inet loopback
#iface eth0 inet dhcp

# Added to make this Raspberry use a static IP
iface eth0 inet static
address 192.168.1.105
network 192.168.1.0
netmask 255.255.255.0
broadcast 192.168.1.255
gateway 192.168.1.1

allow-hotplug wlan0
iface wlan0 inet manual
wpa-roam /etc/wpa_supplicant/wpa_supplicant.conf
iface default inet dhcp

^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Po
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spe
```

79.

80. **Note:** You have to set the network properties to match the network configuration that you are using on your PC.

```
pi@raspberrypi: ~
GNU nano 2.2.6
auto lo
iface lo inet lo
#iface eth0 inet

# Added to make
iface eth0 inet static
address 192.168.1.105
network 192.168.1.0
netmask 255.255.255.0
broadcast 192.168.1.255
gateway 192.168.1.1

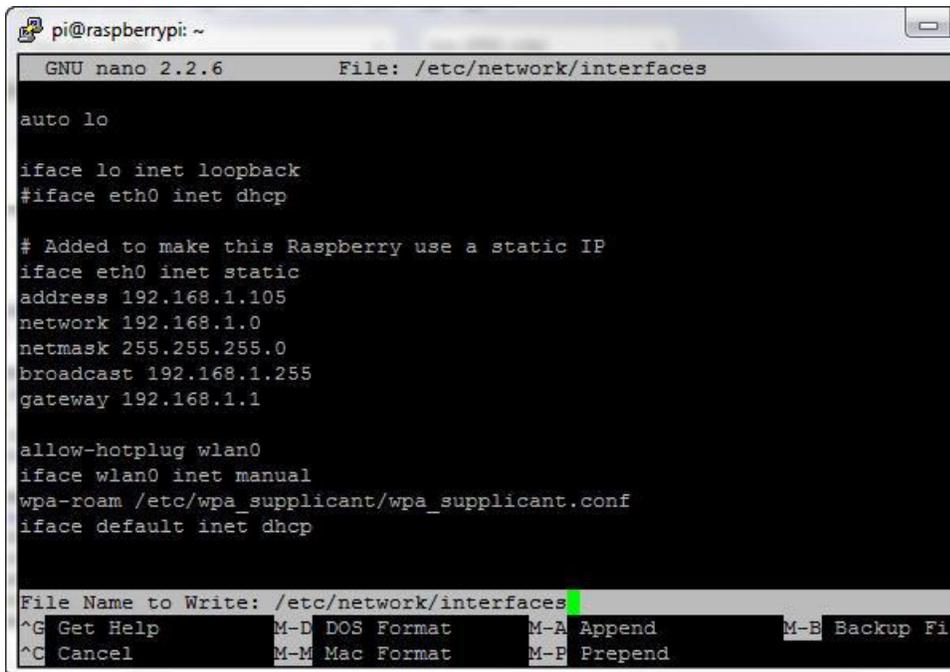
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C C
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To
```

81.

82. Press **Ctrl + O** and then press **Enter** to write the file.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



```
pi@raspberrypi: ~
GNU nano 2.2.6 File: /etc/network/interfaces

auto lo

iface lo inet loopback
#iface eth0 inet dhcp

# Added to make this Raspberry use a static IP
iface eth0 inet static
address 192.168.1.105
network 192.168.1.0
netmask 255.255.255.0
broadcast 192.168.1.255
gateway 192.168.1.1

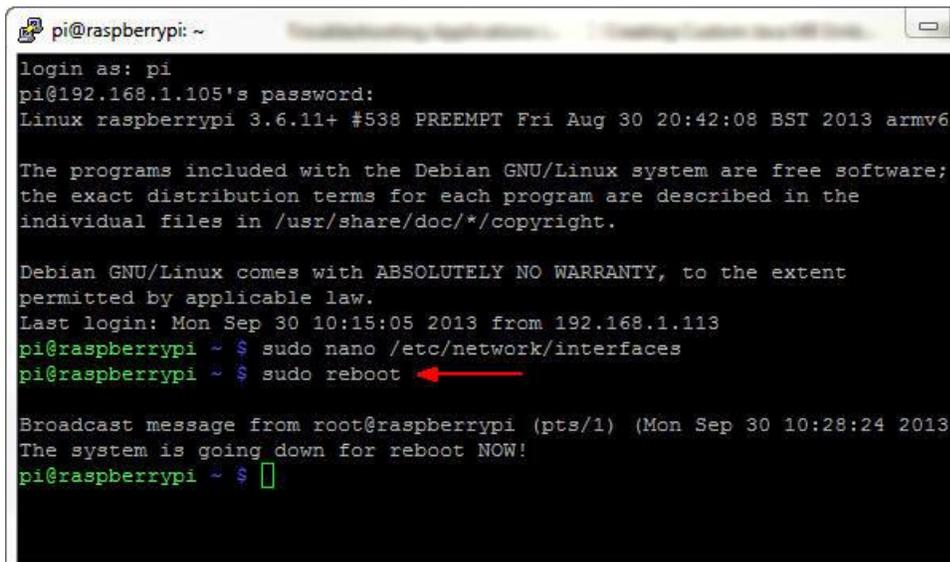
allow-hotplug wlan0
iface wlan0 inet manual
wpa-roam /etc/wpa_supplicant/wpa_supplicant.conf
iface default inet dhcp

File Name to Write: /etc/network/interfaces
^G Get Help M-D DOS Format M-A Append M-B Backup Fil
^C Cancel M-M Mac Format M-E Prepend
```

83.

84. Press **Ctrl + X** and then press **Enter** to close nano and return to the prompt.

85. Enter **sudo reboot** to reboot the Raspberry Pi and make the changes.



```
pi@raspberrypi: ~
login as: pi
pi@192.168.1.105's password:
Linux raspberrypi 3.6.11+ #538 PREEMPT Fri Aug 30 20:42:08 BST 2013 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Sep 30 10:15:05 2013 from 192.168.1.113
pi@raspberrypi ~ $ sudo nano /etc/network/interfaces
pi@raspberrypi ~ $ sudo reboot
Broadcast message from root@raspberrypi (pts/1) (Mon Sep 30 10:28:24 2013):
The system is going down for reboot NOW!
pi@raspberrypi ~ $
```

86.

Optional: Setting Up the Raspberry Pi to Use a Wireless Network with a Fixed IP Address

If you plan to use a wireless USB module with your Raspberry Pi, you need to edit the network interfaces file.

87. In a PuTTY window, enter **sudo nano /etc/network/interfaces** and then perform the following steps:

- a. Comment out the following lines: **allow-hotplug wlan0**
iface wlan0 inet manual
wpa-roam /etc/wpa_supplicant/wpa_supplicant.conf

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>

- b. Below that, add the following lines: **auto wlan0**
iface wlan0 inet static
- c. Use your network settings to add the IP address, network mask, and gateway address. For example:
address 192.168.1.105
netmask 255.255.255.0
gateway 192.168.1.1
- d. Add the network SSID and passkey for your network in double quotation marks. For example:
wpa-ssid "mynetwork"
wpa-psk "cants@y"

```
pi@raspberrypi: ~
GNU nano 2.2.6 File: /etc/network/interfaces
auto lo

iface lo inet loopback
iface eth0 inet dhcp

# Comment the lines below out
#allow-hotplug wlan0
#iface wlan0 inet manual
#wpa-roam /etc/wpa_supplicant/wpa_supplicant.conf

# Add these lines
auto wlan0
iface wlan0 inet static
address 192.168.1.105
netmask 255.255.255.0
gateway 192.168.1.1
wpa-ssid "<your SSID>"
wpa-psk "<your security key>"
```

88.

89. Press **Ctrl + O** and then press **Enter** to write the file. Press **Ctrl + X** to exit nano.

90. Enter **sudo halt** to halt the Raspberry Pi.

```
PuTTY (inactive)
login as: pi
pi@192.168.1.105's password:
Linux raspberrypi 3.6.11+ #538 PREEMPT Fri Aug 30 20:42:08 BST 2013

The programs included with the Debian GNU/Linux system are free soft
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Thu Oct 3 14:46:59 2013 from 192.168.1.113
pi@raspberrypi ~ $ sudo nano /etc/network/interfaces
pi@raspberrypi ~ $ sudo halt

Broadcast message from root@raspberrypi (pts/1) (Thu Oct 3 15:23:27 2013)
The system is going down for system halt NOW!
pi@raspberrypi ~ $
```

91.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

92. Unplug the power cable to the Raspberry Pi.
93. The Raspberry Pi supports only two USB connections. To use the USB Wifi module, unplug the USB mouse, the USB keyboard, and the Ethernet cable, and then plug in the USB Wifi module.
94. To use JavaFX applications, you need a mouse and preferably a keyboard. You can use a USB hub to connect everything to the Raspberry Pi.



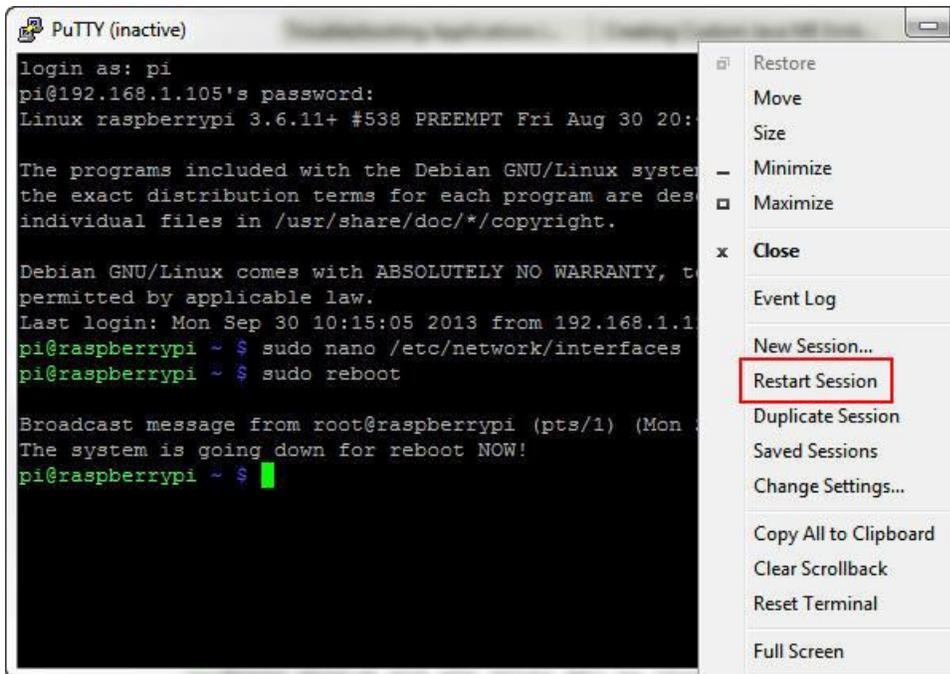
- 95.
96. Plug the power cable into the Raspberry Pi.

Restarting the PuTTY Connection

97. To reconnect to the Raspberry Pi, right-click in the header of the PuTTY window and select **Restart Session**.

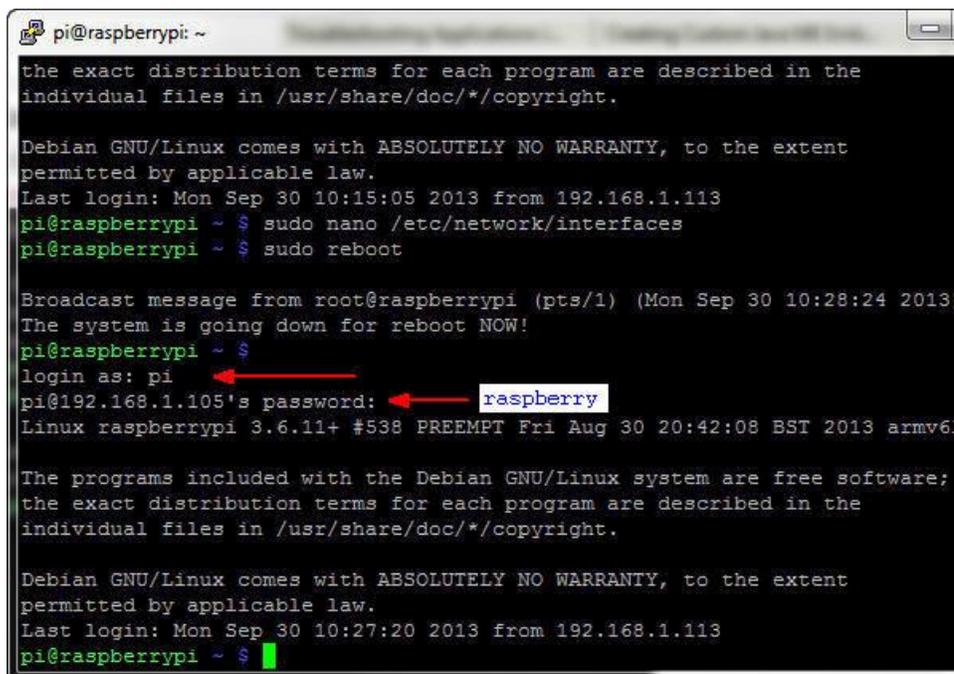
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



98.

99. Enter **pi** as the login name and **raspberrypi** as the password.



100.

Installing JDK 8 in the Raspberry Pi

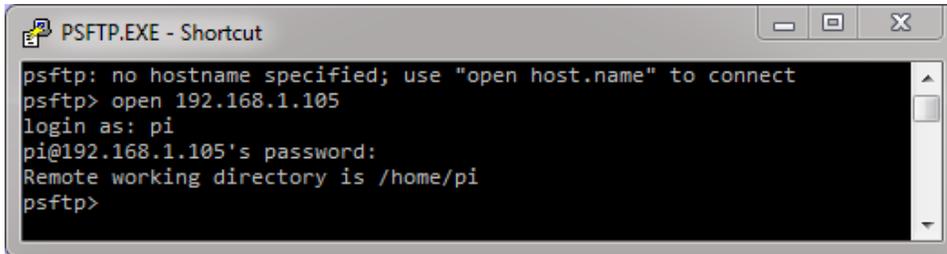
Raspbian comes with an installed version of Java. To install a new version of Java with the full JDK, you transfer the ARMV6/7VFP gzip distribution to the Pi by using PSFTP. After the gzip is on the Pi, you unzip it and set the required environment variables.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

Transferring JDK 8 to the Raspberry Pi by Using PSFTP

101. Launch the PSFTP tool and then perform the following steps:
 - a. Enter **open 192.168.1.105**.
 - b. Enter **pi** as the login name and **raspberrypi** as the password.

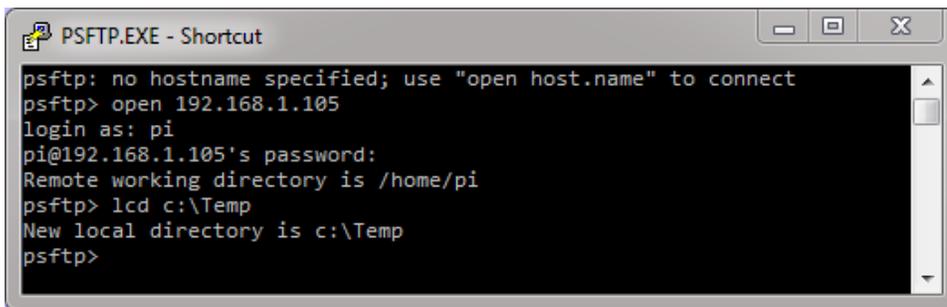


```
PSFTP.EXE - Shortcut
psftp: no hostname specified; use "open host.name" to connect
psftp> open 192.168.1.105
login as: pi
pi@192.168.1.105's password:
Remote working directory is /home/pi
psftp>
```

102.

103. If a dialog box about a cached key is displayed, press **Y** to update the key.

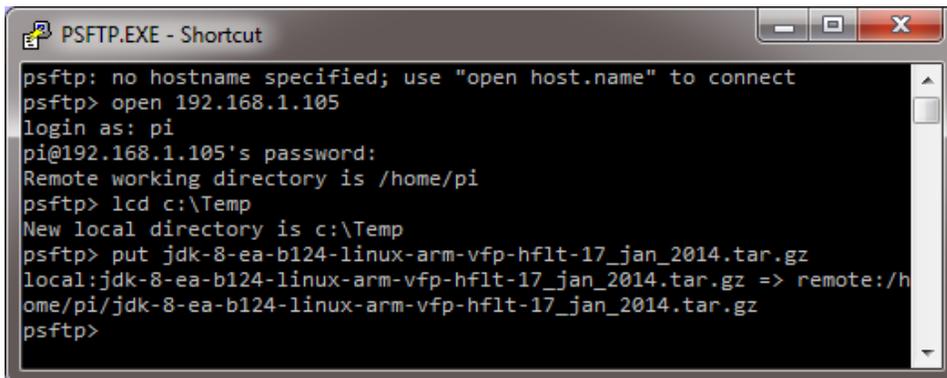
104. Enter **lcd C:\Temp** to change the local directory to the location of JDK 8 for Linux ARMv6/7.



```
PSFTP.EXE - Shortcut
psftp: no hostname specified; use "open host.name" to connect
psftp> open 192.168.1.105
login as: pi
pi@192.168.1.105's password:
Remote working directory is /home/pi
psftp> lcd c:\Temp
New local directory is c:\Temp
psftp>
```

105.

106. Enter **put jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz**.



```
PSFTP.EXE - Shortcut
psftp: no hostname specified; use "open host.name" to connect
psftp> open 192.168.1.105
login as: pi
pi@192.168.1.105's password:
Remote working directory is /home/pi
psftp> lcd c:\Temp
New local directory is c:\Temp
psftp> put jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz
local:jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz => remote:/home/pi/jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz
psftp>
```

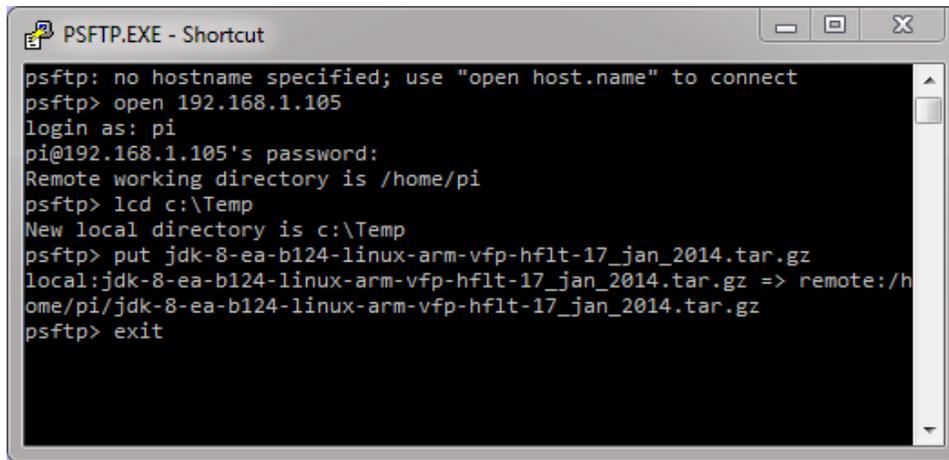
107.

108. This process may take several minutes because it uploads JDK to the Raspberry Pi.

109. Type **exit** to quit the PSFTP tool.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrifyx.html>

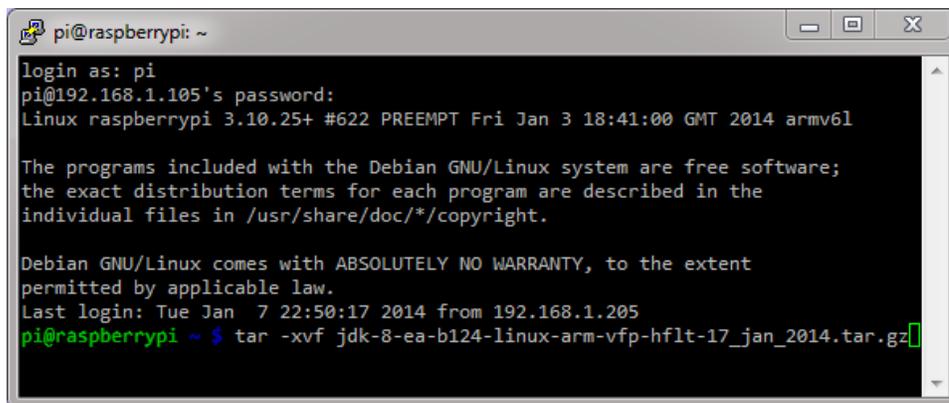


```
PSFTP.EXE - Shortcut
psftp: no hostname specified; use "open host.name" to connect
psftp> open 192.168.1.105
login as: pi
pi@192.168.1.105's password:
Remote working directory is /home/pi
psftp> lcd c:\Temp
New local directory is c:\Temp
psftp> put jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz
local:jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz => remote:/home/pi/jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz
psftp> exit
```

110.

Installing the Raspberry Pi JDK 8

111. In the PuTTY window, enter `tar -xvf jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz` to extract JDK 8.



```
pi@raspberrypi: ~
login as: pi
pi@192.168.1.105's password:
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Jan 7 22:50:17 2014 from 192.168.1.205
pi@raspberrypi ~ $ tar -xvf jdk-8-ea-b124-linux-arm-vfp-hflt-17_jan_2014.tar.gz
```

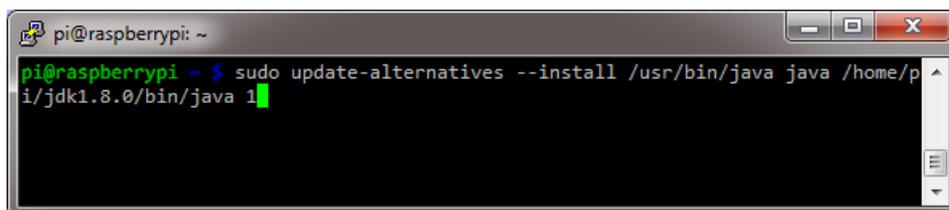
112.

113. Files are extracted inside the `jdk1.8.0` folder. (The process may take several minutes.)

114. If a message indicates that some files have a timestamp, perform the following steps to correct the error:

115. Solving Timestamp Error

116. Enter `sudo update-alternatives --install /usr/bin/java java /home/pi/jdk1.8.0/bin/java 1`.



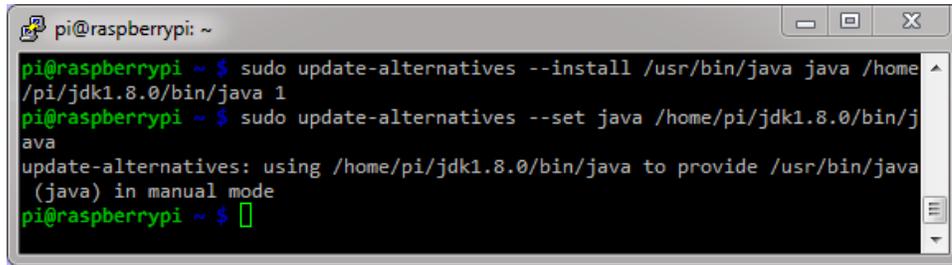
```
pi@raspberrypi: ~
pi@raspberrypi ~ $ sudo update-alternatives --install /usr/bin/java java /home/pi/jdk1.8.0/bin/java 1
```

117.

118. Enter `sudo update-alternatives --set java /home/pi/jdk1.8.0/bin/java`.

This tutorial can be found at the URL below:

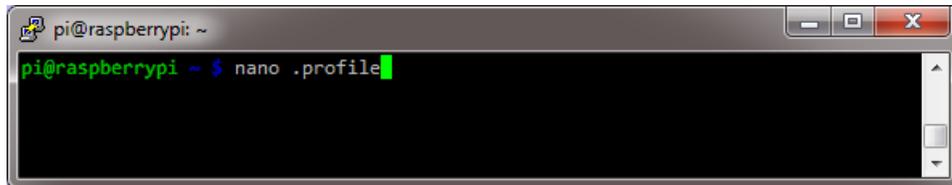
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>



```
pi@raspberrypi ~ $ sudo update-alternatives --install /usr/bin/java java /home/pi/jdk1.8.0/bin/java 1
pi@raspberrypi ~ $ sudo update-alternatives --set java /home/pi/jdk1.8.0/bin/java
update-alternatives: using /home/pi/jdk1.8.0/bin/java to provide /usr/bin/java (java) in manual mode
pi@raspberrypi ~ $
```

119.

120. Enter **nano .profile**.

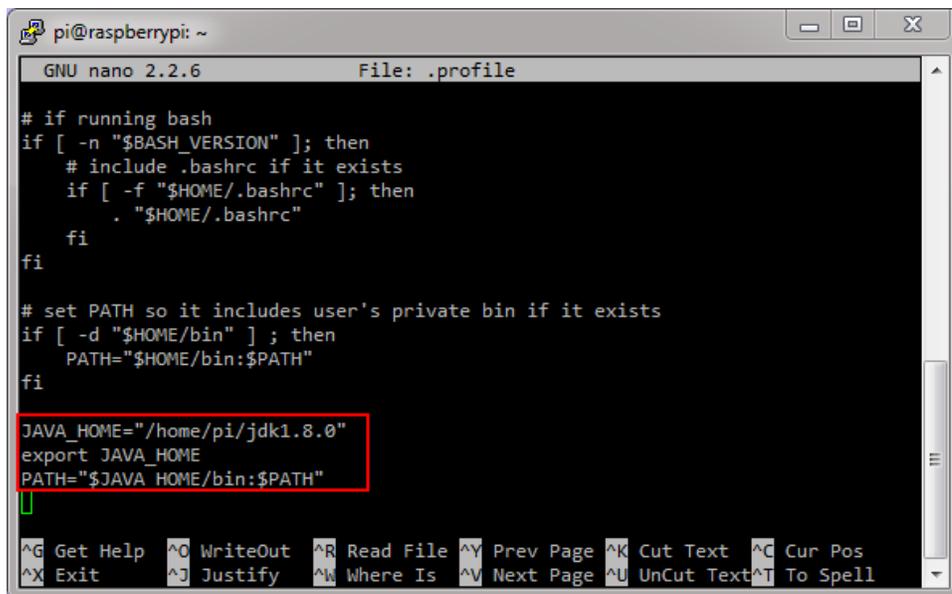


```
pi@raspberrypi ~ $ nano .profile
```

121.

122. At the bottom of the file, add the following:

123. `JAVA_HOME="/home/pi/jdk1.8.0" export JAVA_HOME PATH="$JAVA_HOME/bin:$PATH"`



```
GNU nano 2.2.6 File: .profile
# if running bash
if [ -n "$BASH_VERSION" ]; then
  # include .bashrc if it exists
  if [ -f "$HOME/.bashrc" ]; then
    . "$HOME/.bashrc"
  fi
fi

# set PATH so it includes user's private bin if it exists
if [ -d "$HOME/bin" ]; then
  PATH="$HOME/bin:$PATH"
fi

JAVA_HOME="/home/pi/jdk1.8.0"
export JAVA_HOME
PATH="$JAVA_HOME/bin:$PATH"

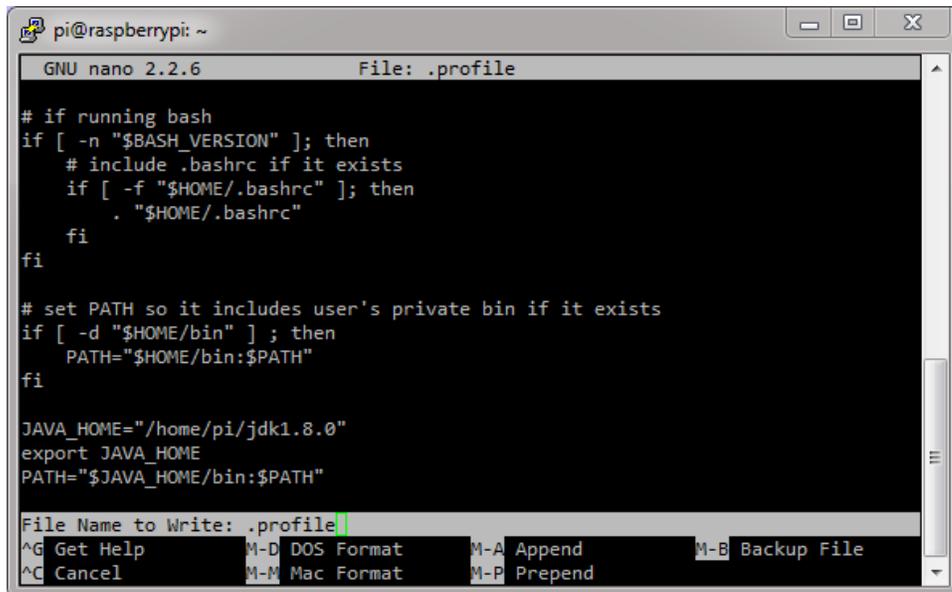
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

124.

125. Press **Ctrl + O** and then press **Enter** to save the changes. Press **Ctrl + X** to exit nano.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrify.html>



```
pi@raspberrypi: ~
GNU nano 2.2.6 File: .profile

# if running bash
if [ -n "$BASH_VERSION" ]; then
  # include .bashrc if it exists
  if [ -f "$HOME/.bashrc" ]; then
    . "$HOME/.bashrc"
  fi
fi

# set PATH so it includes user's private bin if it exists
if [ -d "$HOME/bin" ]; then
  PATH="$HOME/bin:$PATH"
fi

JAVA_HOME="/home/pi/jdk1.8.0"
export JAVA_HOME
PATH="$JAVA_HOME/bin:$PATH"

File Name to Write: .profile
^G Get Help      M-D DOS Format  M-A Append      M-B Backup File
^C Cancel        M-M Mac Format  M-P Prepend
```

126.

Setting Up JAVA_HOME for sudo Commands

127. In the PuTTY window, enter **sudo visudo**.



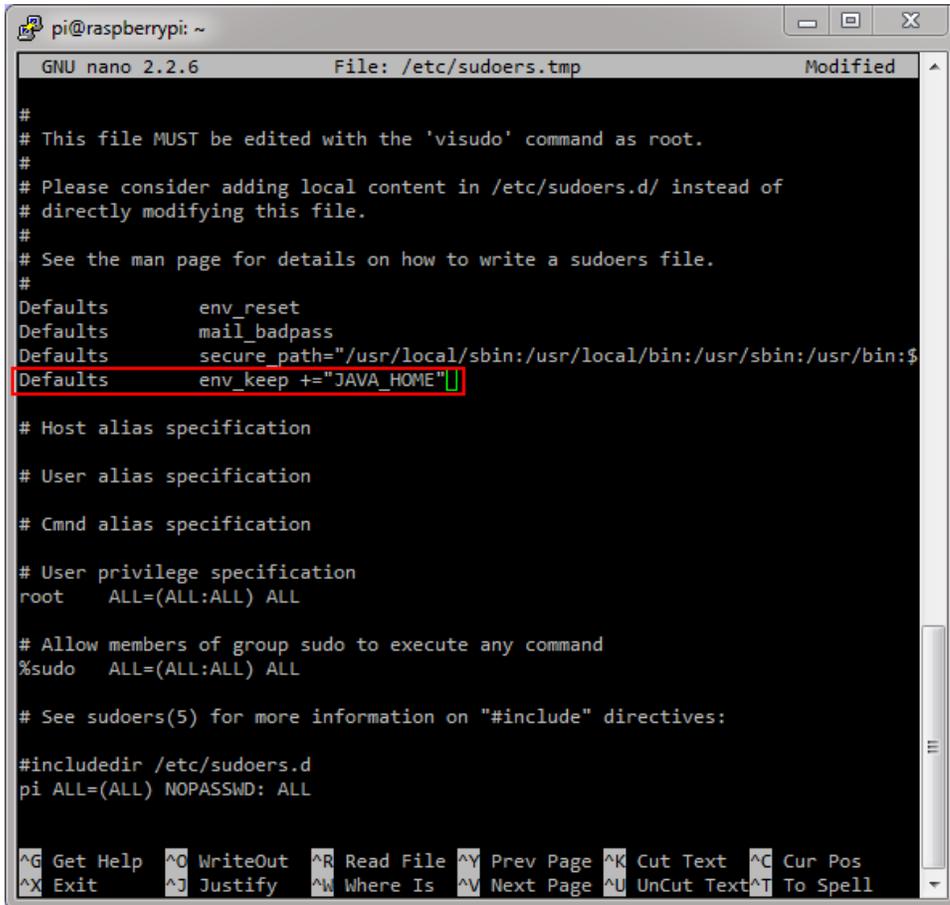
```
pi@raspberrypi: ~
pi@raspberrypi ~ $ sudo visudo
```

128.

129. Enter **Defaults env_keep += "JAVA_HOME"** after all the Defaults declarations.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>



```
pi@raspberrypi: ~
GNU nano 2.2.6 File: /etc/sudoers.tmp Modified
#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults env_reset
Defaults mail_badpass
Defaults secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:$
Defaults env_keep += "JAVA_HOME"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root ALL=(ALL:ALL) ALL

# Allow members of group sudo to execute any command
%sudo ALL=(ALL:ALL) ALL

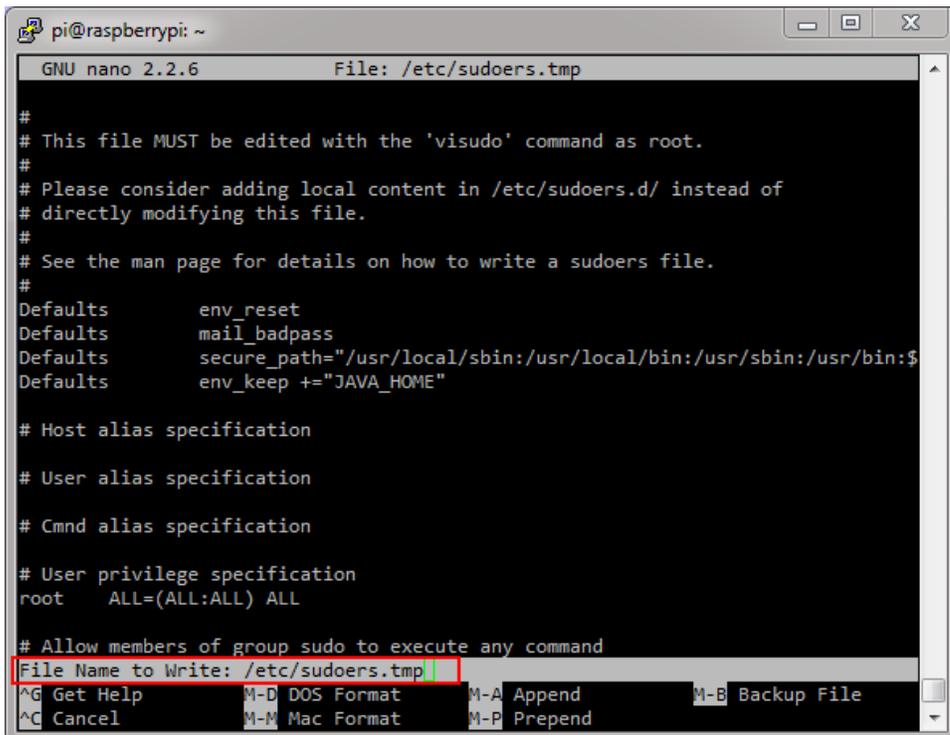
# See sudoers(5) for more information on "#include" directives:

#include_dir /etc/sudoers.d
pi ALL=(ALL) NOPASSWD: ALL

^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

130.

131. Press **Ctrl + O** and then press **Enter** to save the changes. Press **Ctrl + X** to exit nano.



```
pi@raspberrypi: ~
GNU nano 2.2.6 File: /etc/sudoers.tmp
#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults env_reset
Defaults mail_badpass
Defaults secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:$
Defaults env_keep += "JAVA_HOME"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root ALL=(ALL:ALL) ALL

# Allow members of group sudo to execute any command
File Name to Write: /etc/sudoers.tmp

^G Get Help M-D DOS Format M-A Append M-B Backup File
^C Cancel M-M Mac Format M-P Prepend
```

132.

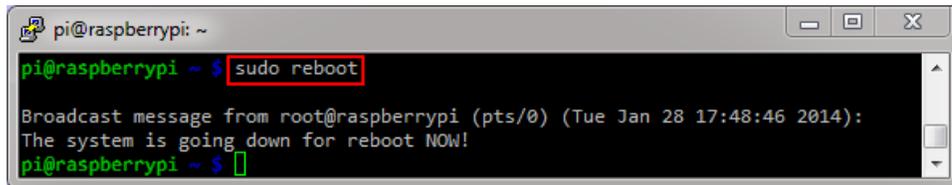
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

133. Using visudo, you edit the sudoers file safely. After the editor is closed, the file is validated. If any validation errors are in the file, the sudoers file is not modified.

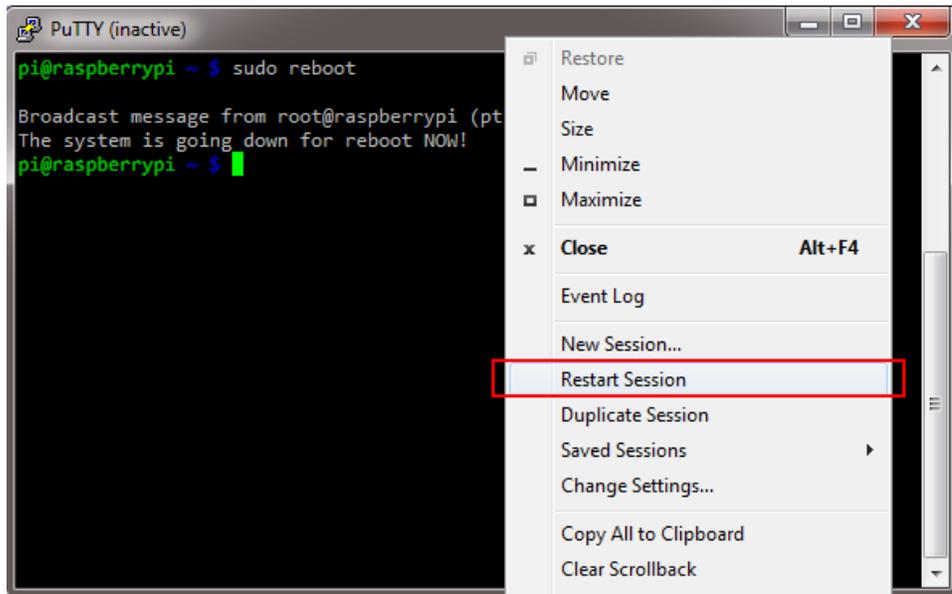
Verifying the JDK 8 Installation

134. Enter **sudo reboot** to restart the Raspberry Pi. Wait a couple of seconds to let the Raspberry Pi reboot.



```
pi@raspberrypi: ~  
pi@raspberrypi ~ $ sudo reboot  
Broadcast message from root@raspberrypi (pts/0) (Tue Jan 28 17:48:46 2014):  
The system is going down for reboot NOW!  
pi@raspberrypi ~ $
```

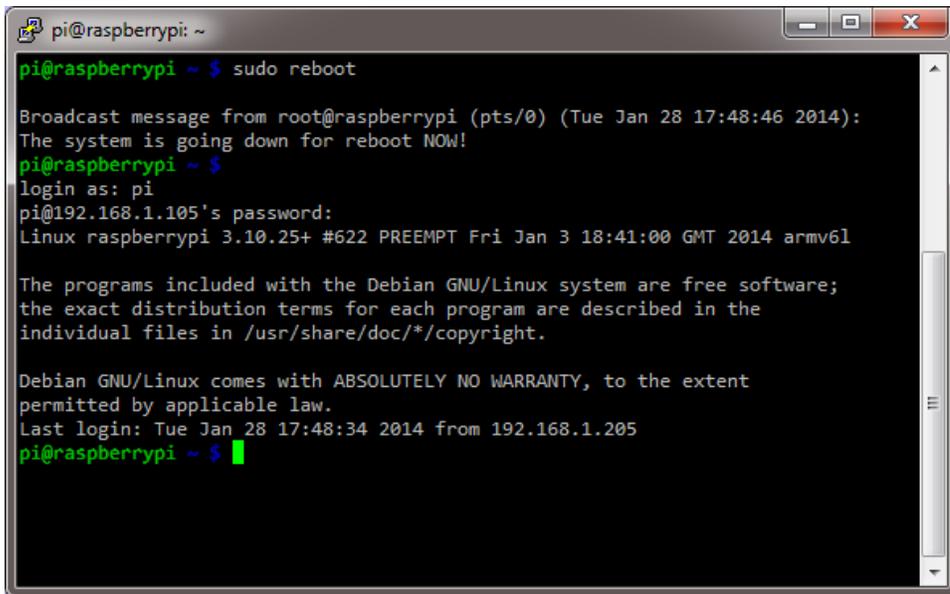
- 135.
136. Right-click in the header of the PuTTY window and select **Restart Session** to reconnect to the Raspberry Pi.



- 137.
138. Enter **pi** as the user name and **raspberry** as the password.

This tutorial can be found at the URL below:

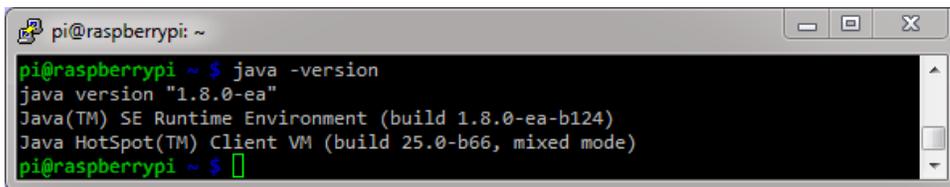
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>



```
pi@raspberrypi: ~  
pi@raspberrypi ~ $ sudo reboot  
Broadcast message from root@raspberrypi (pts/0) (Tue Jan 28 17:48:46 2014):  
The system is going down for reboot NOW!  
pi@raspberrypi ~ $  
login as: pi  
pi@192.168.1.105's password:  
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Tue Jan 28 17:48:34 2014 from 192.168.1.205  
pi@raspberrypi ~ $
```

139.

140. Enter `java -version` to see the current Java version that is being used.

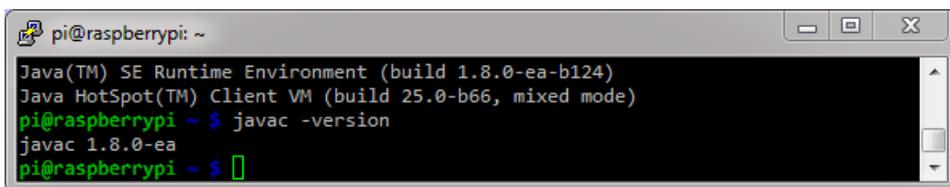


```
pi@raspberrypi: ~  
pi@raspberrypi ~ $ java -version  
java version "1.8.0-ea"  
Java(TM) SE Runtime Environment (build 1.8.0-ea-b124)  
Java HotSpot(TM) Client VM (build 25.0-b66, mixed mode)  
pi@raspberrypi ~ $
```

141.

142. **Note:** Your Java version should be at least 1.8.

143. Enter `javac -version` to see the current Java compiler version that is being used.

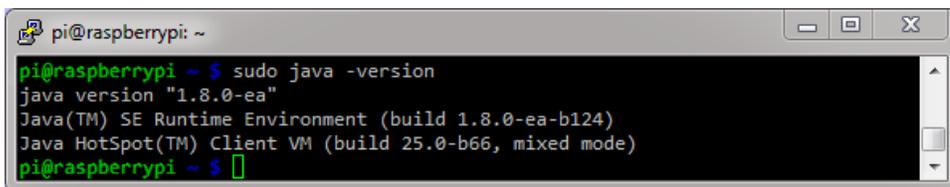


```
pi@raspberrypi: ~  
Java(TM) SE Runtime Environment (build 1.8.0-ea-b124)  
Java HotSpot(TM) Client VM (build 25.0-b66, mixed mode)  
pi@raspberrypi ~ $ javac -version  
javac 1.8.0-ea  
pi@raspberrypi ~ $
```

144.

145. **Note:** Your Java version should be at least 1.8.

146. Enter `sudo java -version` to see the Java version that is being used by the root user.



```
pi@raspberrypi: ~  
pi@raspberrypi ~ $ sudo java -version  
java version "1.8.0-ea"  
Java(TM) SE Runtime Environment (build 1.8.0-ea-b124)  
Java HotSpot(TM) Client VM (build 25.0-b66, mixed mode)  
pi@raspberrypi ~ $
```

147.

148. **Note:** Your Java version should be at least 1.8.

This tutorial can be found at the URL below:

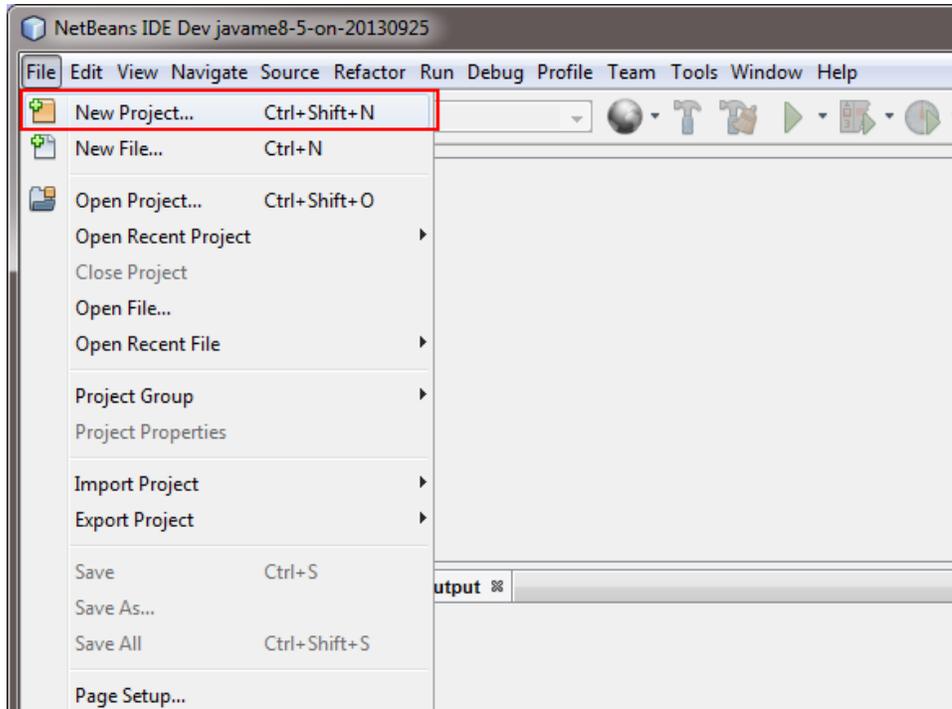
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

Building JavaFX Applications

To develop JavaFX applications faster, you use your desktop computer with the NetBeans IDE. The JavaFX projects generate JAR files that can be deployed to any device that can run JavaFX. In this section, you create two applications with NetBeans and move the resulting JAR files to upload them later to the Raspberry Pi.

Building a Basic JavaFX Application

149. In NetBeans, select **File > New Project**.

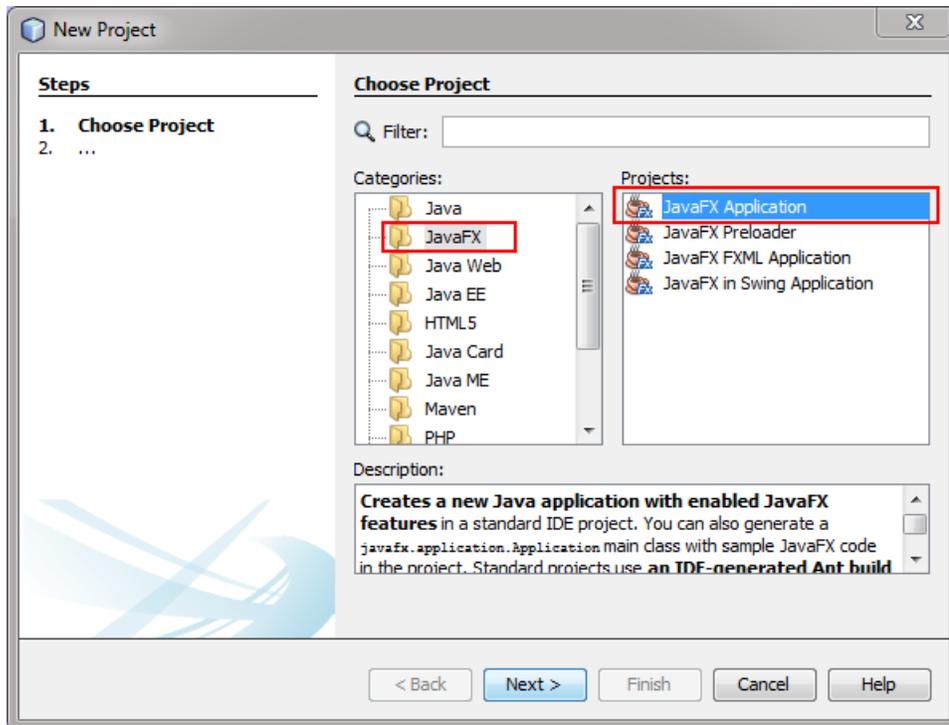


150.

151. Select **JavaFX** from Categories and **JavaFX Application** from Projects and click **Next**.

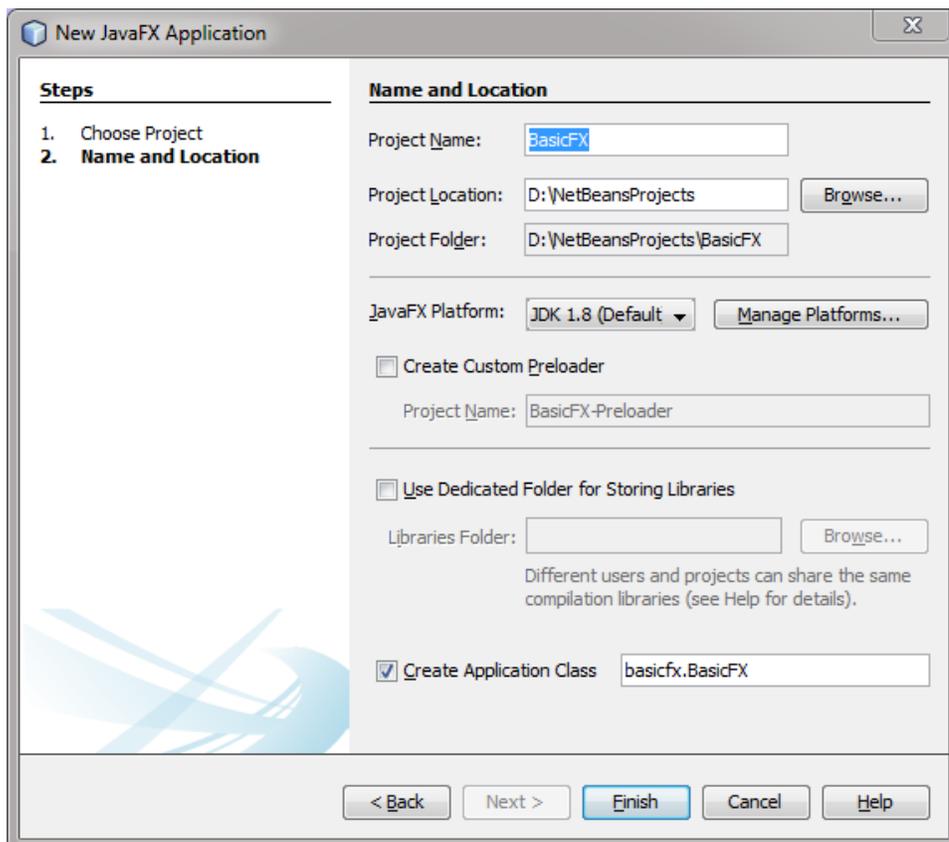
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



152.

153. Enter **BasicFX** as the project name, select a location for the project, and click **Finish**.



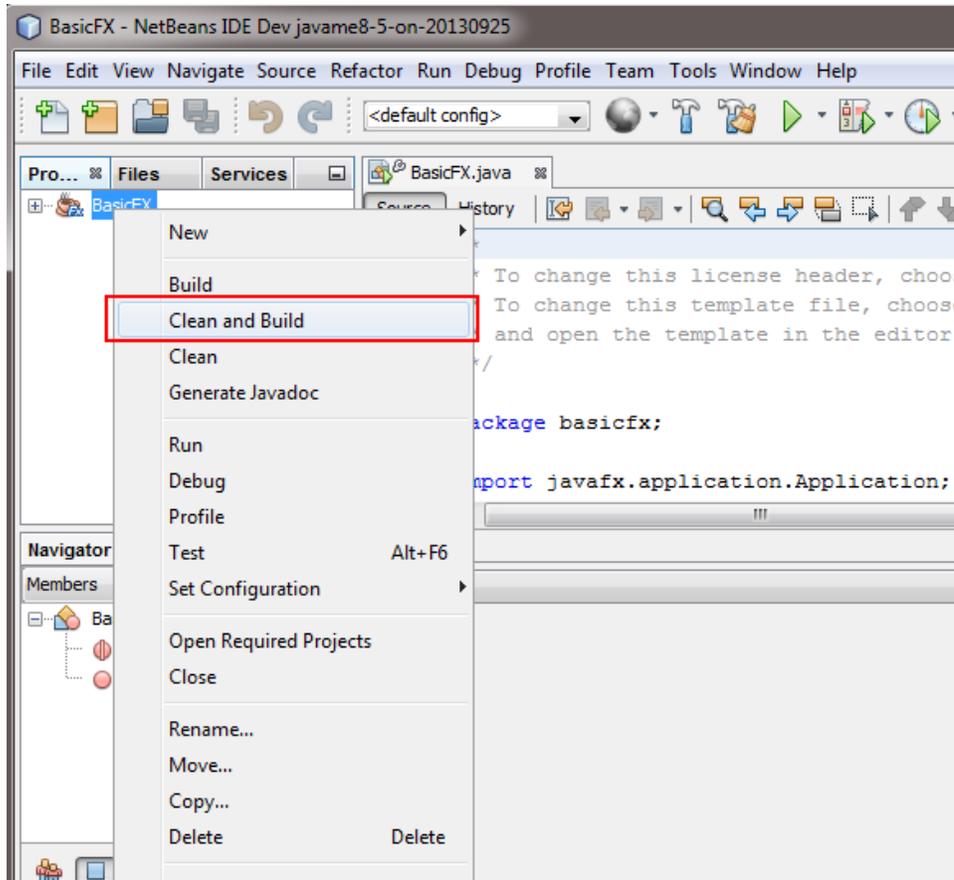
154.

155. Your project is created and loaded into the IDE, and you can explore the contents of the project.

156. Right-click the project and select **Clean and Build** to generate a distributable JAR file.

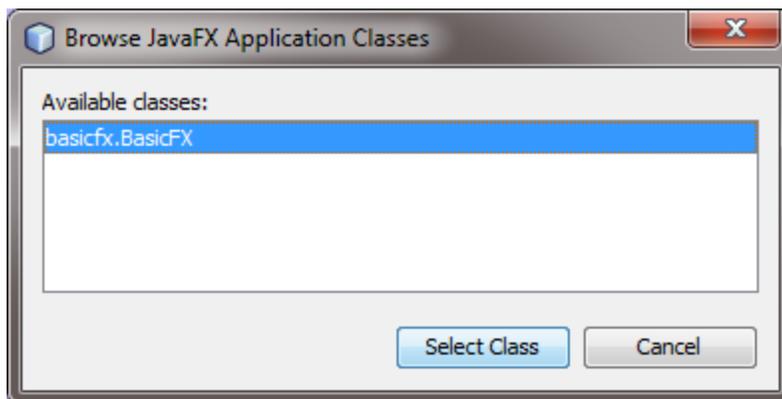
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



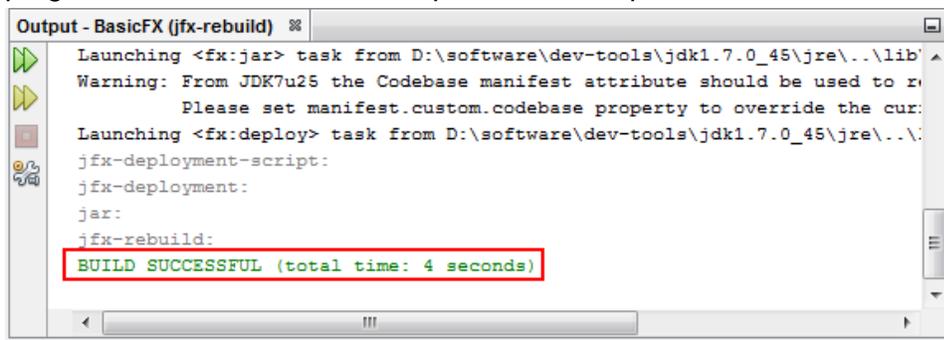
157.

158. Click **Select Class** in the Browse JavaFX Application Classes if the dialog box is displayed.



159.

The Output tab shows the progress and indicates when the process is completed.

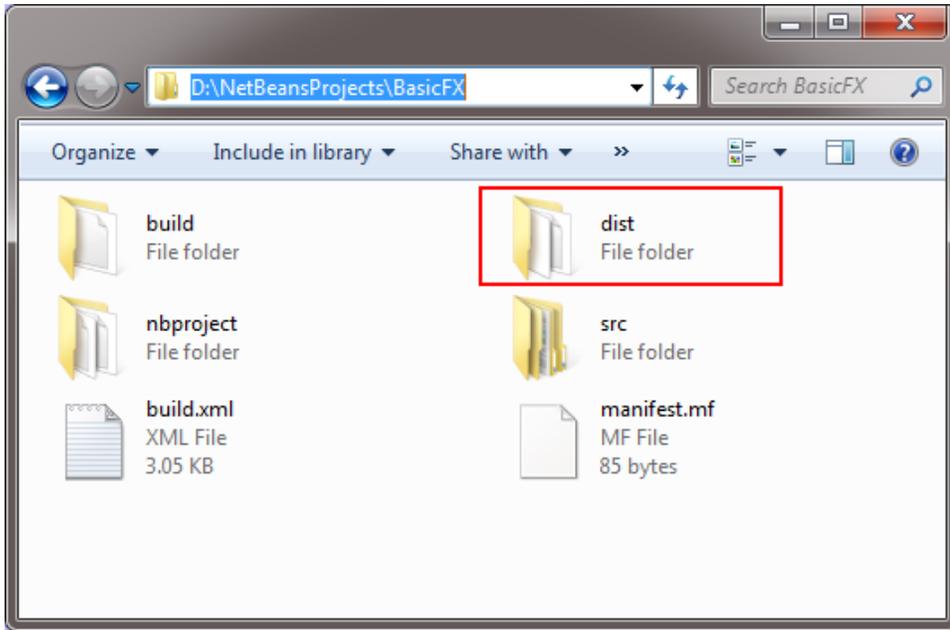


160.

Open a File Explorer window and locate the project folder.

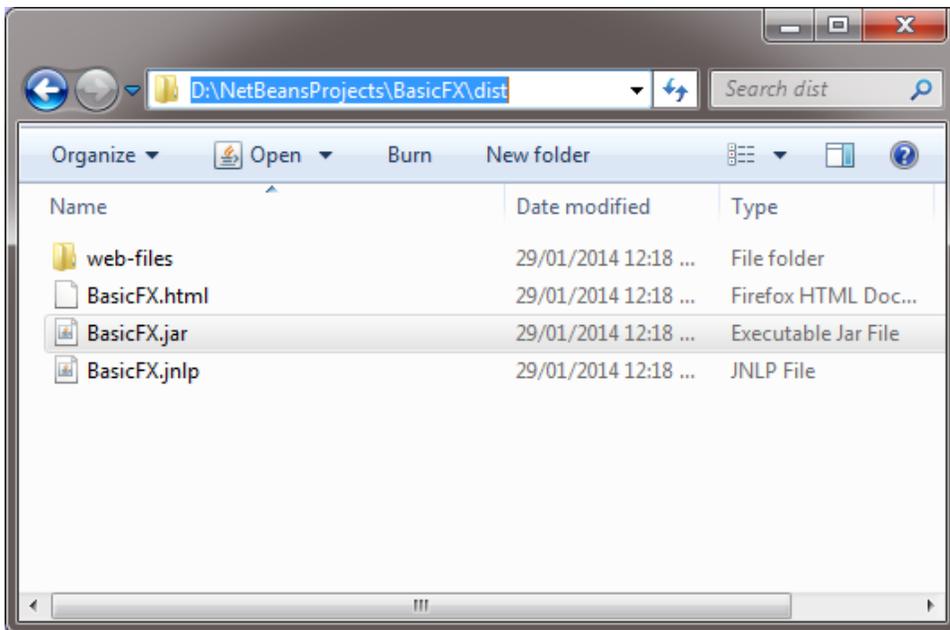
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrify.html>



161.

162. Open the **dist** folder and locate the **BasicFX.jar** file

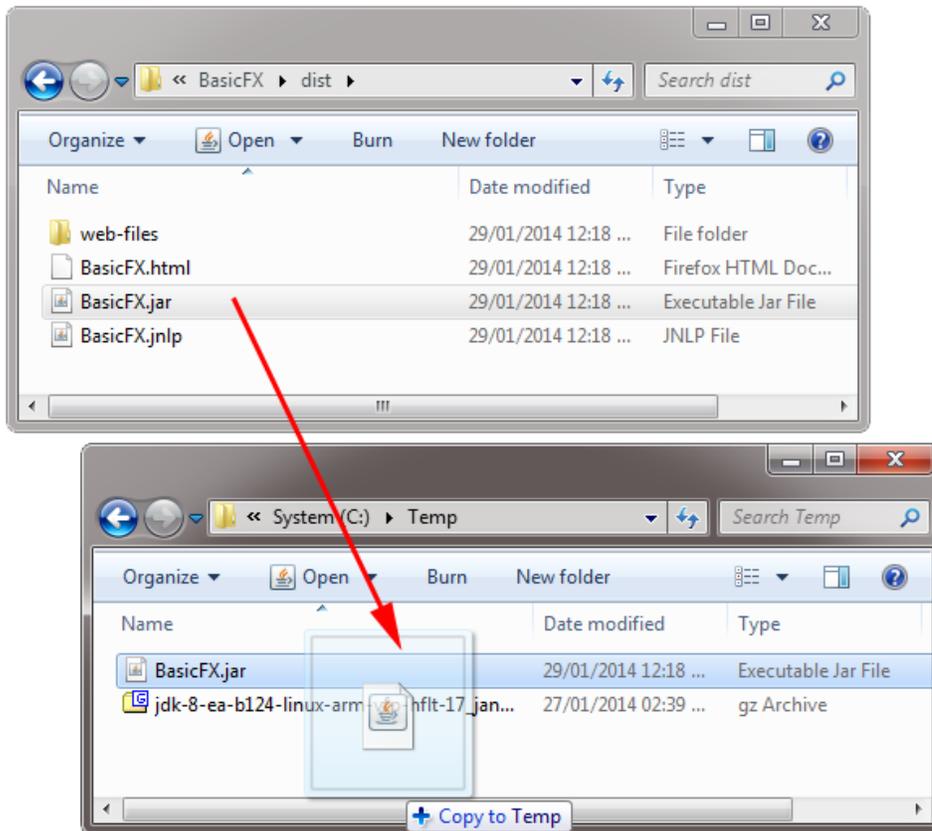


163.

164. Copy the **BasicFX.jar** file to **c:\Temp** to make it easier to upload to the Raspberry Pi.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



165.

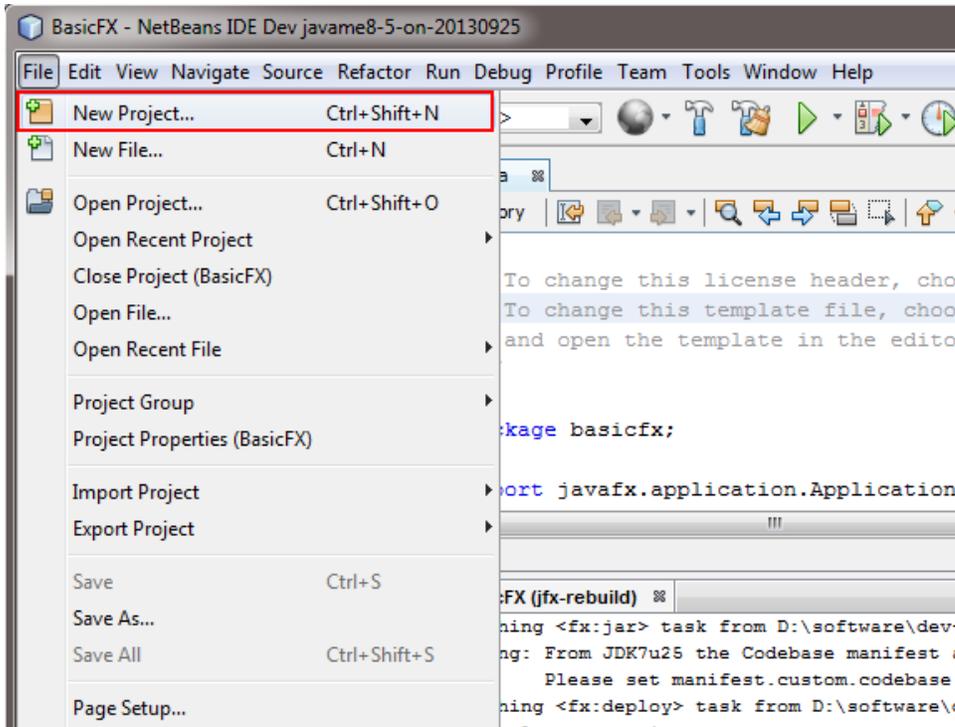
Building the Clock Sample JavaFX Application

The NetBeans IDE includes sample applications that you can create and modify to showcase Java technologies. In this section, you create a JavaFX clock application by using one of these templates.

166. In NetBeans, select **File > New Project**.

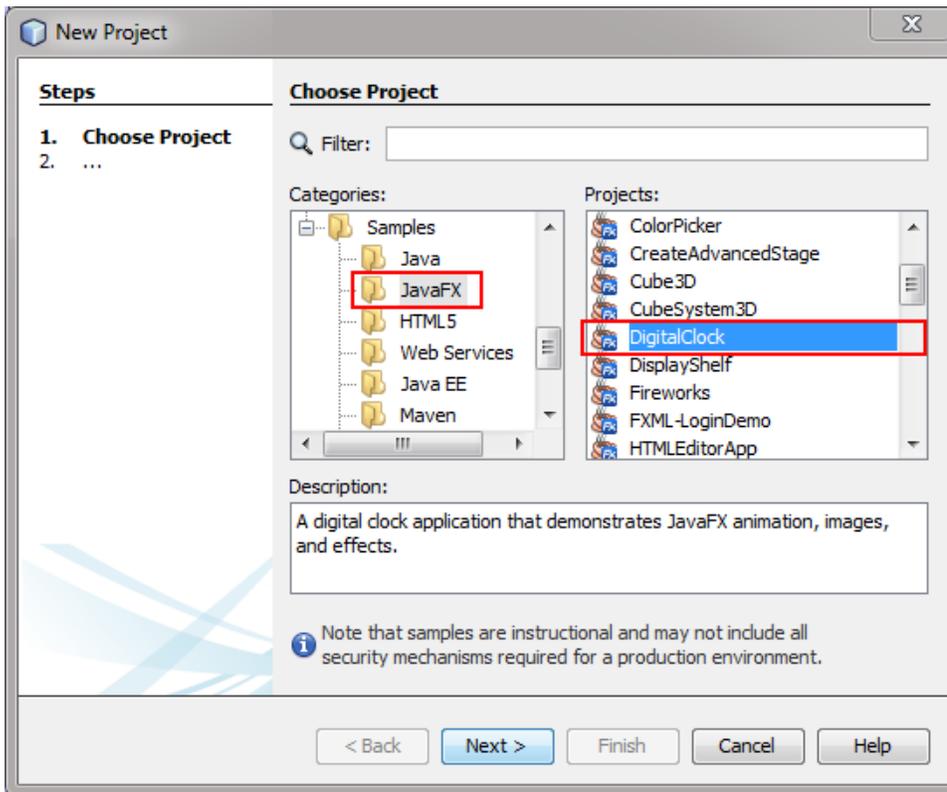
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



167.

168. Select **Samples > JavaFX** from Categories and **DigitalClock** from Projects and click **Next**.

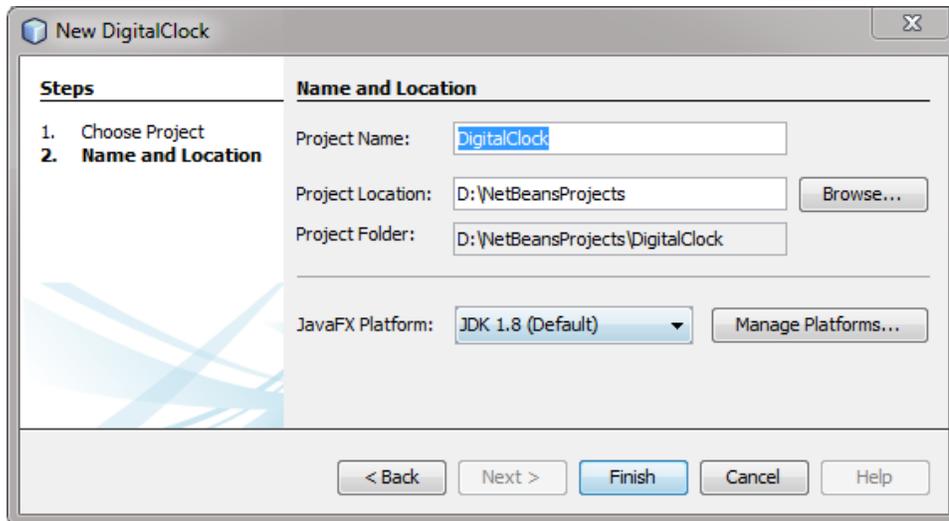


169.

170. Set a location for the project and click **Finish**.

This tutorial can be found at the URL below:

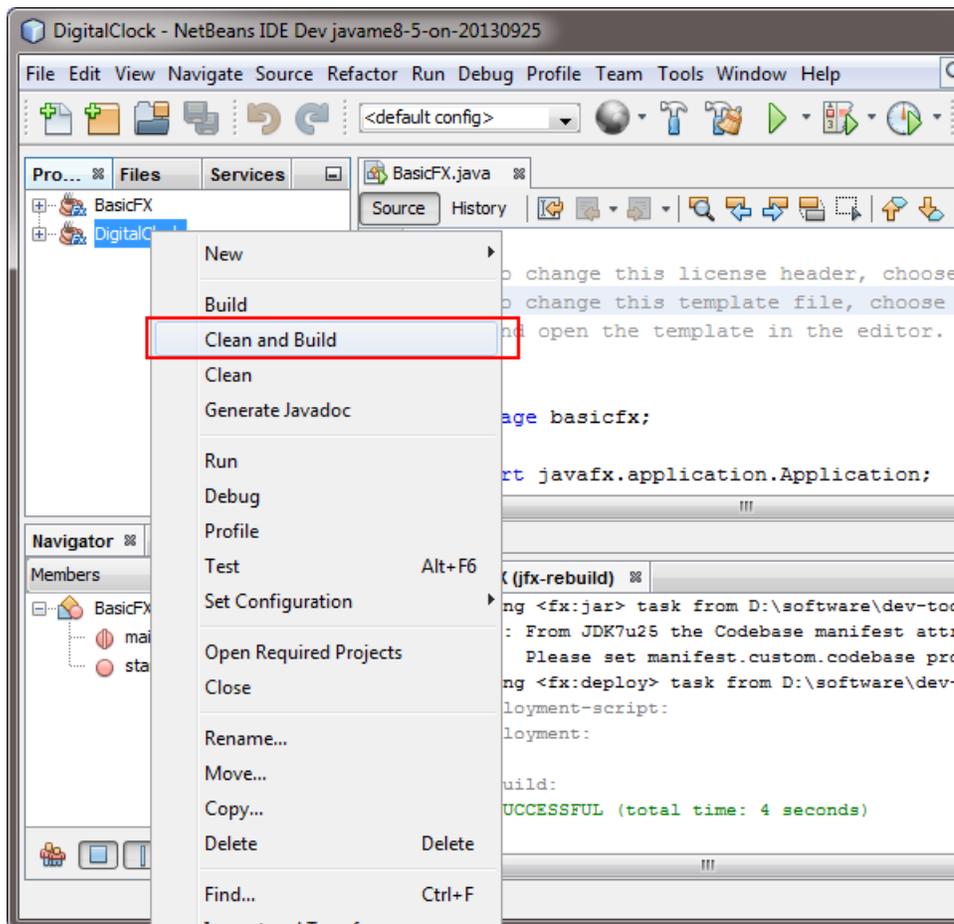
<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



171.

172. The project is created with the code required to display a digital clock using JavaFX.

173. Right-click the project, select **Clean and Build**, and wait until the project is built.

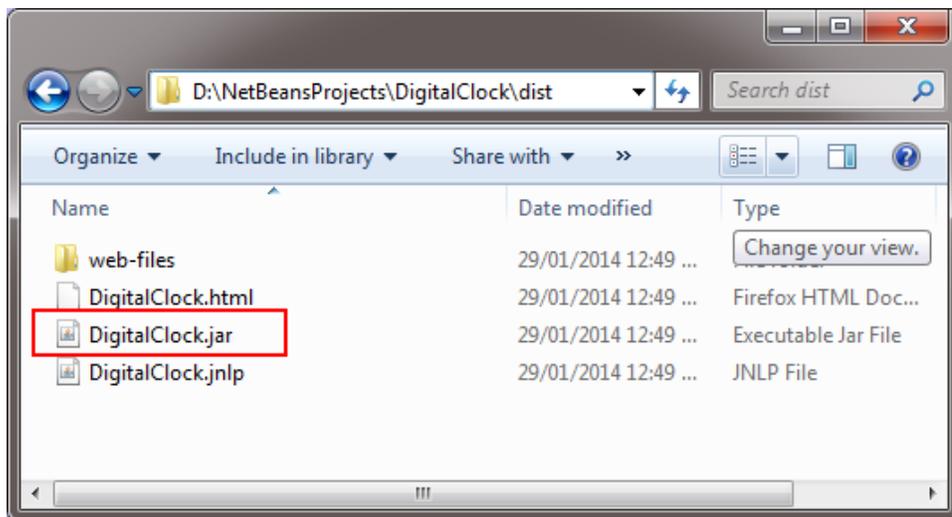


174.

175. Open a File Explorer window, browse to the **DigitalClock** project folder, and open the **dist** folder.

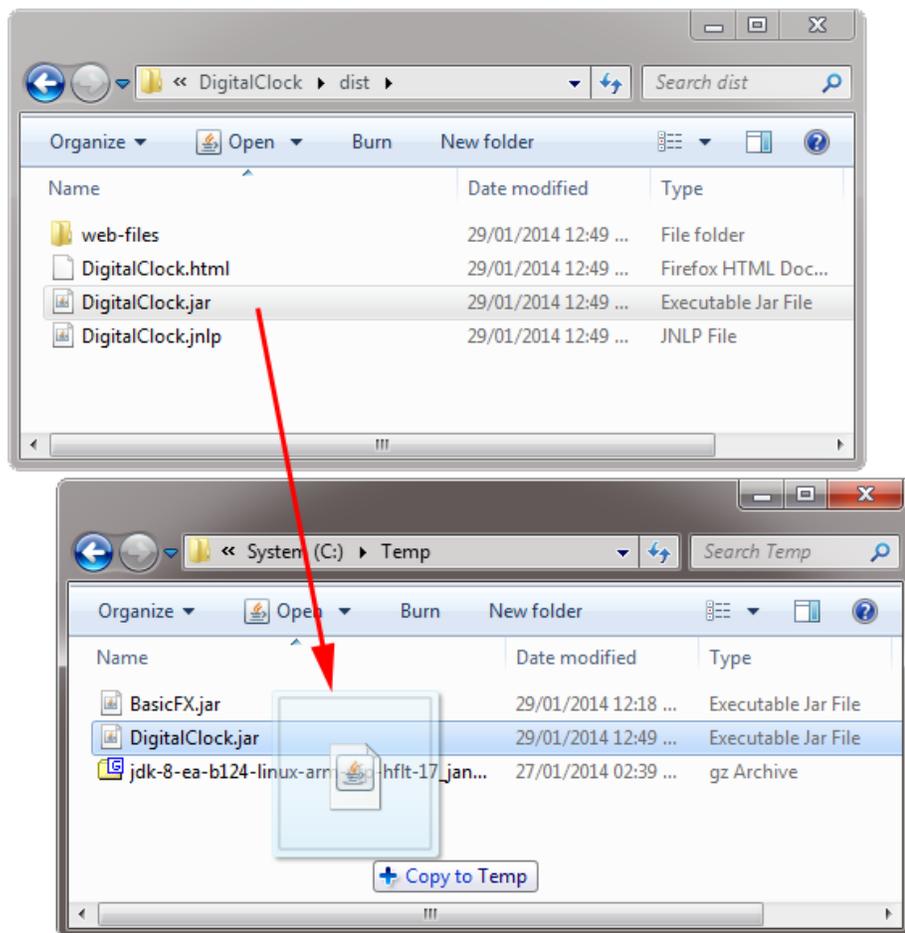
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



176.

177. Copy the **DigitalClock.jar** file to the **c:\Temp** folder to make it easier to deploy it on the Raspberry Pi.



178.

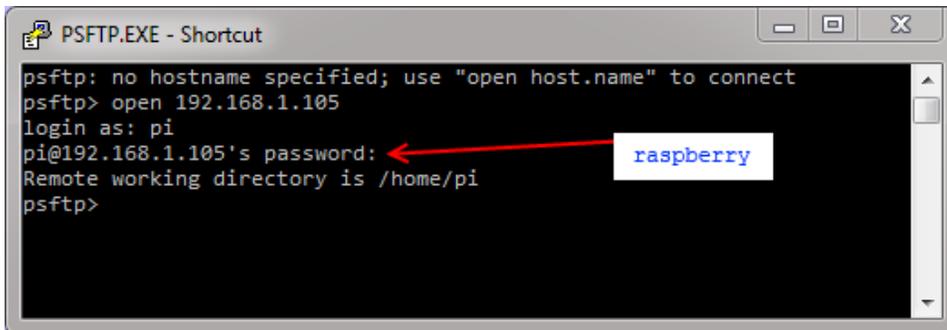
Deploying, Running, and Stopping JavaFX Applications

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>

Transferring the JavaFX Application JARs to the Raspberry Pi by Using PSFTP

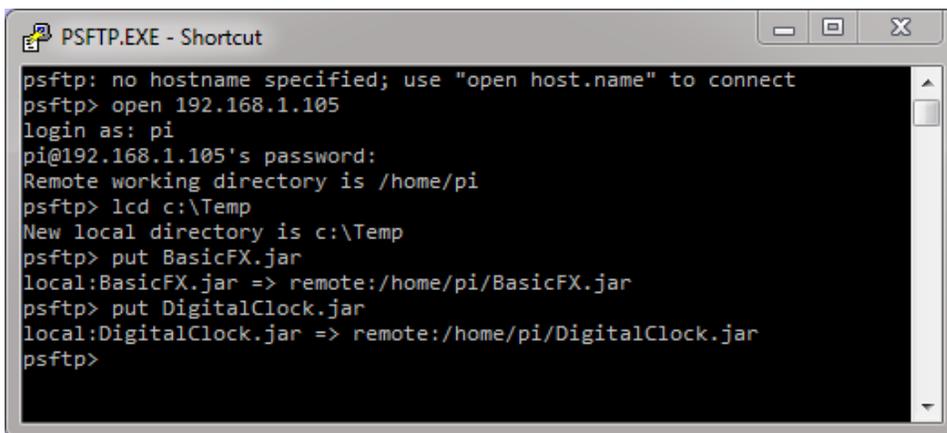
179. Launch the PSFTP tool and then perform the following steps:
 - a. Enter **open 192.168.1.105**.
 - b. Enter **pi** as the login name and **raspberrypi** as the password.



```
PSFTP.EXE - Shortcut
psftp: no hostname specified; use "open host.name" to connect
psftp> open 192.168.1.105
login as: pi
pi@192.168.1.105's password: raspberrypi
Remote working directory is /home/pi
psftp>
```

180.

181. Perform the following steps to transfer the JavaFX application JAR files:
 - a. Enter **lcd C:\Temp** to change the local directory to the location of the JDK 8 for Linux ARMv6/7.
 - b. Enter **put BasicFX.jar**.
 - c. Enter **put DigitalClock.jar**.



```
PSFTP.EXE - Shortcut
psftp: no hostname specified; use "open host.name" to connect
psftp> open 192.168.1.105
login as: pi
pi@192.168.1.105's password:
Remote working directory is /home/pi
psftp> lcd c:\Temp
New local directory is c:\Temp
psftp> put BasicFX.jar
local:BasicFX.jar => remote:/home/pi/BasicFX.jar
psftp> put DigitalClock.jar
local:DigitalClock.jar => remote:/home/pi/DigitalClock.jar
psftp>
```

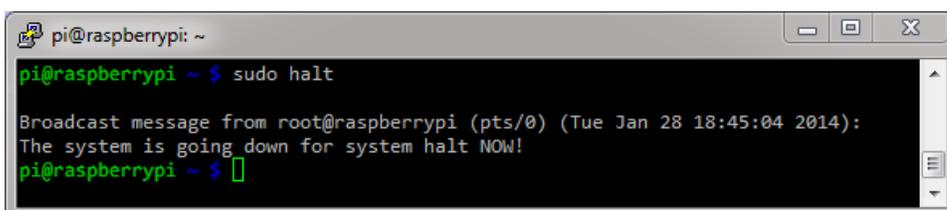
182.

183. Type **exit** to quit the PSFTP tool.

The applications are deployed on the Raspberry Pi.

Running a JavaFX Application JAR in the Raspberry Pi

184. In a PuTTY window, enter **sudo halt** and wait for the LEDs to stop blinking.



```
pi@raspberrypi: ~
pi@raspberrypi ~ $ sudo halt
Broadcast message from root@raspberrypi (pts/0) (Tue Jan 28 18:45:04 2014):
The system is going down for system halt NOW!
pi@raspberrypi ~ $
```

185.

186. When only the PWR LED is on, unplug the power cable from the Pi.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



187.

188. Connect the video cable, mouse, and keyboard to the Raspberry Pi, and then connect the power cable.



189.

190. In the Pi, log in as the user **pi** with the password **raspberrypi**.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>

```
done.
[....] Mounting local filesystems...[ 17.168431] FAT-fs (mmcblk0p1): Volume was not properly
done.
[ ok ] Activating swapfile swap...done.
[ ok ] Cleaning up temporary files...
[ ok ] Setting kernel variables ...done.
[ ok ] Configuring network interfaces...done.
[ ok ] Cleaning up temporary files...
[ ok ] Setting up ALSA...done.
[info] Setting console screen modes.
[info] Skipping font and keymap setup (handled by console-setup).
[ ok ] Setting up console font and keymap...done.
[ ok ] Setting up X socket directories... /tmp/.X11-unix /tmp/.ICE-unix.
INIT: Entering runlevel: 2
[info] Using makefile-style concurrent boot in runlevel 2.
[ ok ] Network Interface Plugging Daemon...skip eth0...done.
[ ok ] Starting enhanced syslogd: rsyslogd.
[ ok ] Starting periodic command scheduler: cron.
Starting dphys-swapfile swapfile setup ...
want /var/swap=100MByte, checking existing: keeping it
done.
[ ok ] Starting NTP server: ntpd.
[ ok ] Starting system message bus: dbus.
[ ok ] Starting OpenBSD Secure Shell server: sshd.
My IP address is 192.168.1.105

Raspbian GNU/Linux 7 raspberrypi tty1

raspberrypi login: pi
Password:
Last login: Tue Feb  4 18:53:36 CST 2014 from 192.168.1.205 on pts/0
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
pi@raspberrypi ~$
```

191.

192. Enter `java -jar BasicFX.jar`.

```
Raspbian GNU/Linux 7 raspberrypi tty1

raspberrypi login: pi
Password:
Last login: Tue Feb  4 18:54:33 CST 2014 on tty1
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

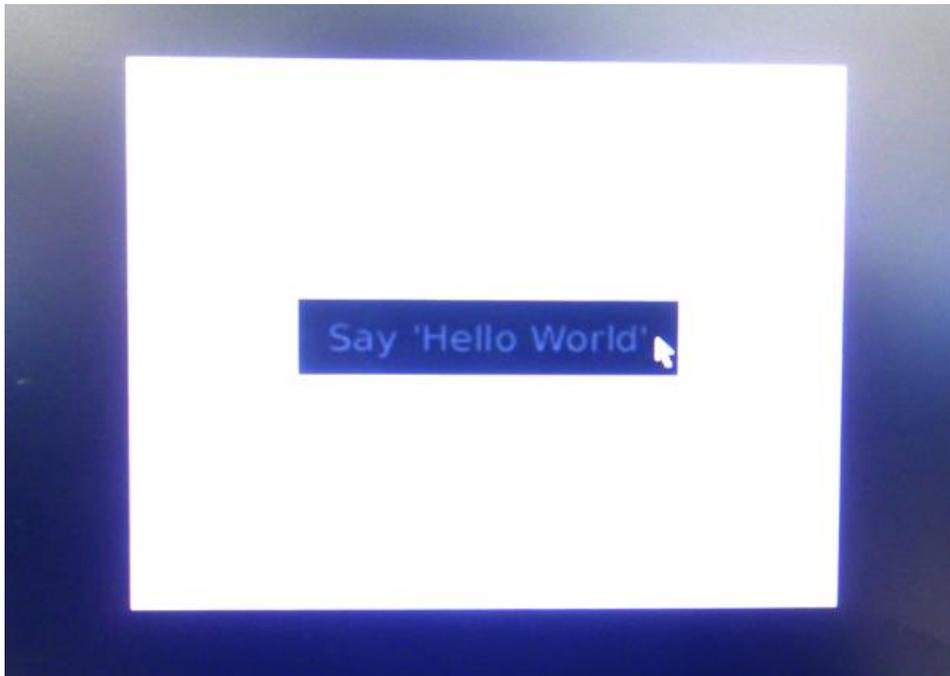
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
pi@raspberrypi ~$ java -jar BasicFX.jar
```

193.

194. The application is displayed on the Raspberry Pi screen.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>



195.

Stopping a JavaFX Application

JavaFX applications are displayed on the main screen of the Raspberry Pi, but you can start and stop them from a remote console, which is useful when debugging or when the application cannot be stopped. In some cases, you can stop applications by pressing **Ctrl + C**. If the application doesn't stop, use the method outlined in this section.

196. On your Desktop PC, open a PuTTY window and log in to the Raspberry as the user **pi** with the password **raspberrypi**.
197. Enter **ps ax | grep java** and locate the process ID of the BasicFX.jar application.

A screenshot of a terminal window titled "pi@raspberrypi: ~". The terminal shows the following text:

```
login as: pi
pi@192.168.1.105's password:
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l

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individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Jan 28 18:57:27 2014 from 192.168.1.205
pi@raspberrypi ~ $ ps ax | grep java
2326 tty1 S1+ 0:15 java -jar BasicFX.jar
2369 pts/0 S+ 0:00 grep --color=auto java
pi@raspberrypi ~ $
```

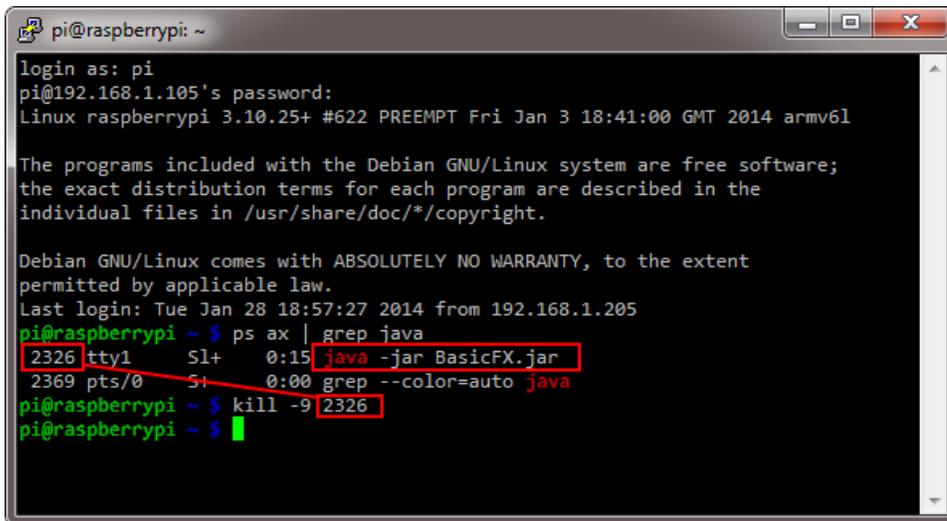
A red box highlights the first line of the output: "2326 tty1 S1+ 0:15 java -jar BasicFX.jar". A red arrow points from this box to a white box labeled "Process ID".

198.

199. Enter **sudo kill -9 2326** and replace 2326 with the process ID from the previous step.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>



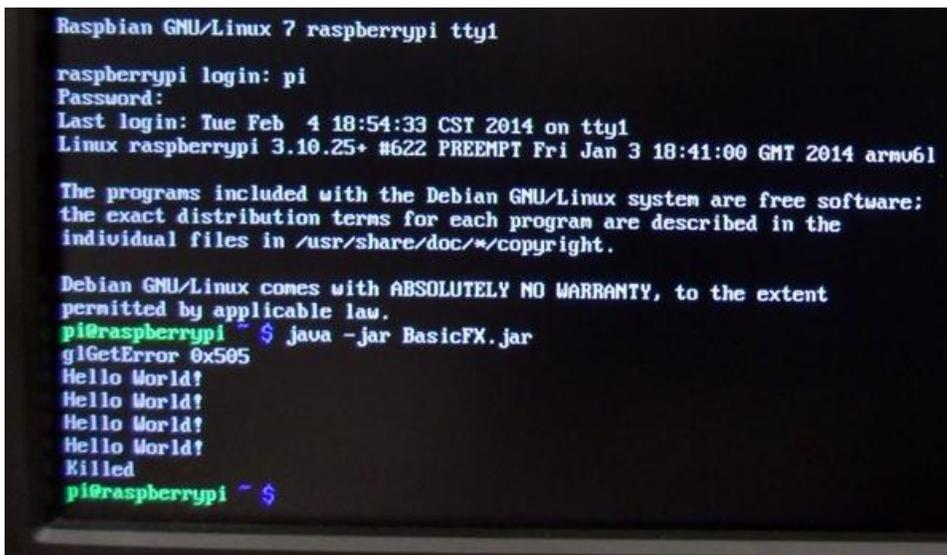
```
pi@raspberrypi: ~
login as: pi
pi@192.168.1.105's password:
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Jan 28 18:57:27 2014 from 192.168.1.205
pi@raspberrypi ~ $ ps ax | grep java
2326 tty1      Sl+      0:15 java -jar BasicFX.jar
2369 pts/0     Sl+      0:00 grep --color=auto java
pi@raspberrypi ~ $ kill -9 2326
pi@raspberrypi ~ $
```

200.

201. Notice that the JavaFX application stops.



```
Raspbian GNU/Linux 7 raspberrypi tty1
raspberrypi login: pi
Password:
Last login: Tue Feb  4 18:54:33 CST 2014 on tty1
Linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

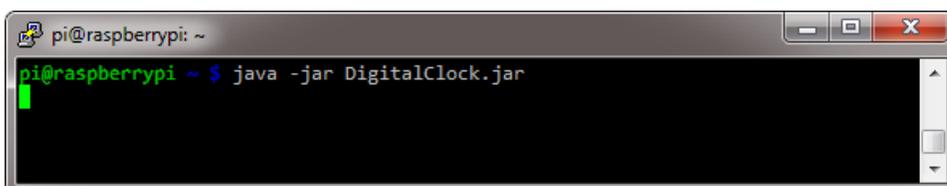
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
pi@raspberrypi ~ $ java -jar BasicFX.jar
giGetError 0x505
Hello World!
Hello World!
Hello World!
Hello World!
Killed
pi@raspberrypi ~ $
```

202.

You can use this method whenever you cannot shut down an application normally and you need to forcefully stop it.

Running a JavaFX Application Remotely

203. In the PuTTY window, enter `java -jar DigitalClock.jar`.



```
pi@raspberrypi: ~
pi@raspberrypi ~ $ java -jar DigitalClock.jar
```

204.

205. The Digital Clock application starts and runs in full screen mode.

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

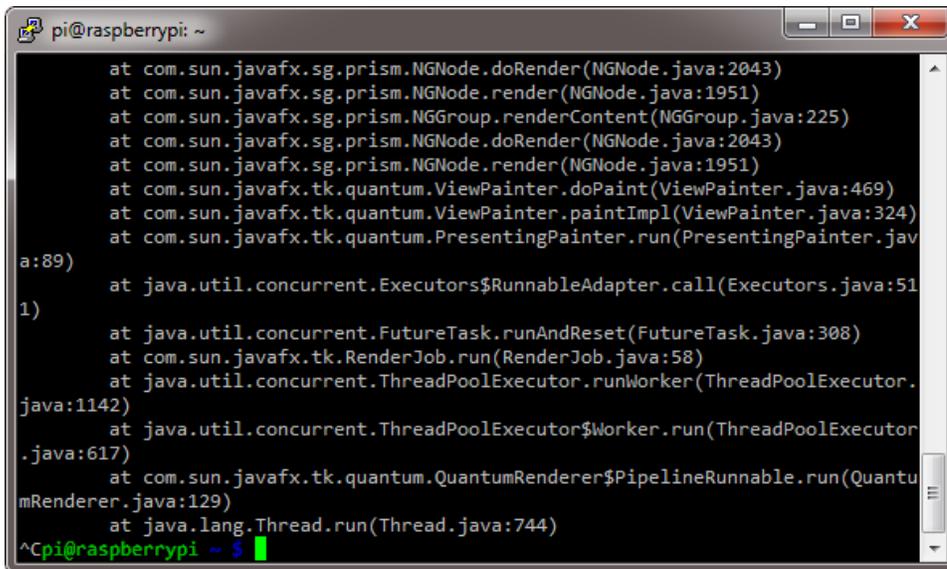


206.

207. In the PuTTY window, press **Ctrl + C** to stop the application.

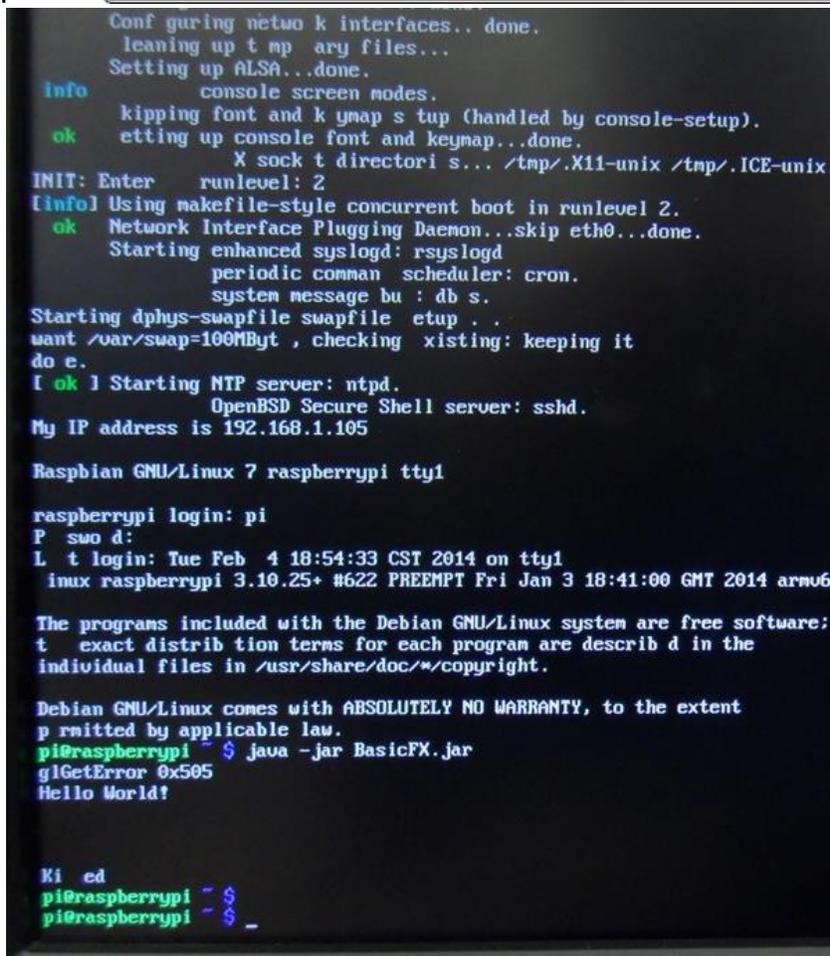
This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberrypi.html>



```
pi@raspberrypi: ~
at com.sun.javafx.sg.prism.NGNode.doRender(NGNode.java:2043)
at com.sun.javafx.sg.prism.NGNode.render(NGNode.java:1951)
at com.sun.javafx.sg.prism.NGGroup.renderContent(NGGroup.java:225)
at com.sun.javafx.sg.prism.NGNode.doRender(NGNode.java:2043)
at com.sun.javafx.sg.prism.NGNode.render(NGNode.java:1951)
at com.sun.javafx.tk.quantum.ViewPainter.doPaint(ViewPainter.java:469)
at com.sun.javafx.tk.quantum.ViewPainter.paintImpl(ViewPainter.java:324)
at com.sun.javafx.tk.quantum.PresentingPainter.run(PresentingPainter.java:89)
at java.util.concurrent.Executors$RunnableAdapter.call(Executors.java:511)
at java.util.concurrent.FutureTask.runAndReset(FutureTask.java:308)
at com.sun.javafx.tk.RenderJob.run(RenderJob.java:58)
at java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1142)
at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:617)
at com.sun.javafx.tk.quantum.QuantumRenderer$PipelineRunnable.run(QuantumRenderer.java:129)
at java.lang.Thread.run(Thread.java:744)
^Cpi@raspberrypi ~ $
```

208.



```
Configuring network interfaces.. done.
Cleaning up temporary files...
Setting up ALSA...done.
info console screen modes.
ok skipping font and keymap setup (handled by console-setup).
Setting up console font and keymap...done.
X socket directories... /tmp/.X11-unix /tmp/.ICE-unix.
INIT: Enter runlevel: 2
[info] Using makefile-style concurrent boot in runlevel 2.
ok Network Interface Plugging Daemon...skip eth0...done.
Starting enhanced syslogd: rsyslogd
periodic command scheduler: cron.
system message bus: dbus.
Starting dphys-swapfile swapfile setup...
want /var/swap=100MByte, checking existing: keeping it
done.
[ok] Starting NTP server: ntpd.
OpenBSD Secure Shell server: sshd.
My IP address is 192.168.1.105

Raspbian GNU/Linux 7 raspberrypi tty1

raspberrypi login: pi
Password:
Last login: Tue Feb 4 18:54:33 CST 2014 on tty1
linux raspberrypi 3.10.25+ #622 PREEMPT Fri Jan 3 18:41:00 GMT 2014 arm64

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Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
pi@raspberrypi ~ $ java -jar BasicFX.jar
glGetError 0x505
Hello World!

Ki ed
pi@raspberrypi ~ $
pi@raspberrypi ~ $
```

209. If the screen is blank, press **Enter** to display the shell console.

Summary

In this tutorial, you learned to:

This tutorial can be found at the URL below:

<http://www.oracle.com/webfolder/technetwork/tutorials/obe/java/RaspberryPiFX/raspberryfx.html>

- Create a bootable image for the Raspberry Pi
- Set up the Raspberry Pi for remote access
- Install JDK 8 on the Raspberry Pi
- Deploy and run JavaFX applications on the Raspberry Pi
- Run and stop JavaFX applications remotely

Resources

- [Raspberry Pi Foundation](#)
- [JDK 8 Project page](#)
- To learn more about Java 8 and the Raspberry Pi, refer to additional OBEs in the [Oracle Learning Library](#)

Credits

- Lead Curriculum Developer: Eduardo Moranchel
- Other Contributors: Tom McGinn