# SAS® University Edition: Installation Guide for Linux

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**SAS® University Edition: Installation Guide for Linux**

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# Chapter 1: Requirements

The following requirements are needed to run SAS University Edition:

- The SAS University Edition virtual image downloaded to your local system
- 64-bit hardware that supports hardware virtualization (sometimes abbreviated as VT, VT-x, or AMD-V). For more information see http://support.sas.com/kb/46/250.html.
- One of the two following virtualization software programs:
    - VMware Player version 6.0 or later. You can download VMware Player 6.0 from https://my.vmware.com/web/vmware/free#desktop_end_user_computing/vmware_player/6_0|PLAYER-602|product_downloads.
      **Note**: The SAS University Edition virtual image is configured to use 1GB of RAM and two processors. You can increase the RAM that is assigned to the SAS University Edition virtual image, but you should assign half (50%) or less of the available physical RAM. You cannot launch SAS Studio if more than two processors are assigned to the SAS University Edition virtual image in your virtualization software.
    - Oracle VM VirtualBox for Linux 4.3.12. You can download VirtualBox from https://www.virtualbox.org/wiki/Download_Old_Builds_4_3 (select release 4.3.12).
- See the VMware Player or the Oracle VirtualBox websites for the versions of Linux supported as the Host Operating System for use with the selected virtualization manager.
- One of the following web browsers:
    - Mozilla Firefox 21 or later
    - Google Chrome 27 or later

**Note**: Updating SAS University Edition from Early Adopter (EA) releases is not supported. Download the SAS University Edition virtual image and configure it in either VMware Player or Oracle VM VirtualBox.

# Chapter 2: Using VMware Player

## *Overview*

To set up SAS University Edition:

1) Unzip the SAS University Edition compressed file.
2) Configure VMware Player.
3) Start SAS University Edition in VMware Player.

## *Unzip the SAS University Edition File*

Uncompress the SAS University Edition zipped file. Wait for the files to be expanded before you continue.

## *Configure VMware Player*

You need to configure VMware Player in order to create a shared folder for your data that is available to both the SAS University Edition virtual image and to your local system.

To configure VMware Player to work with SAS University Edition:

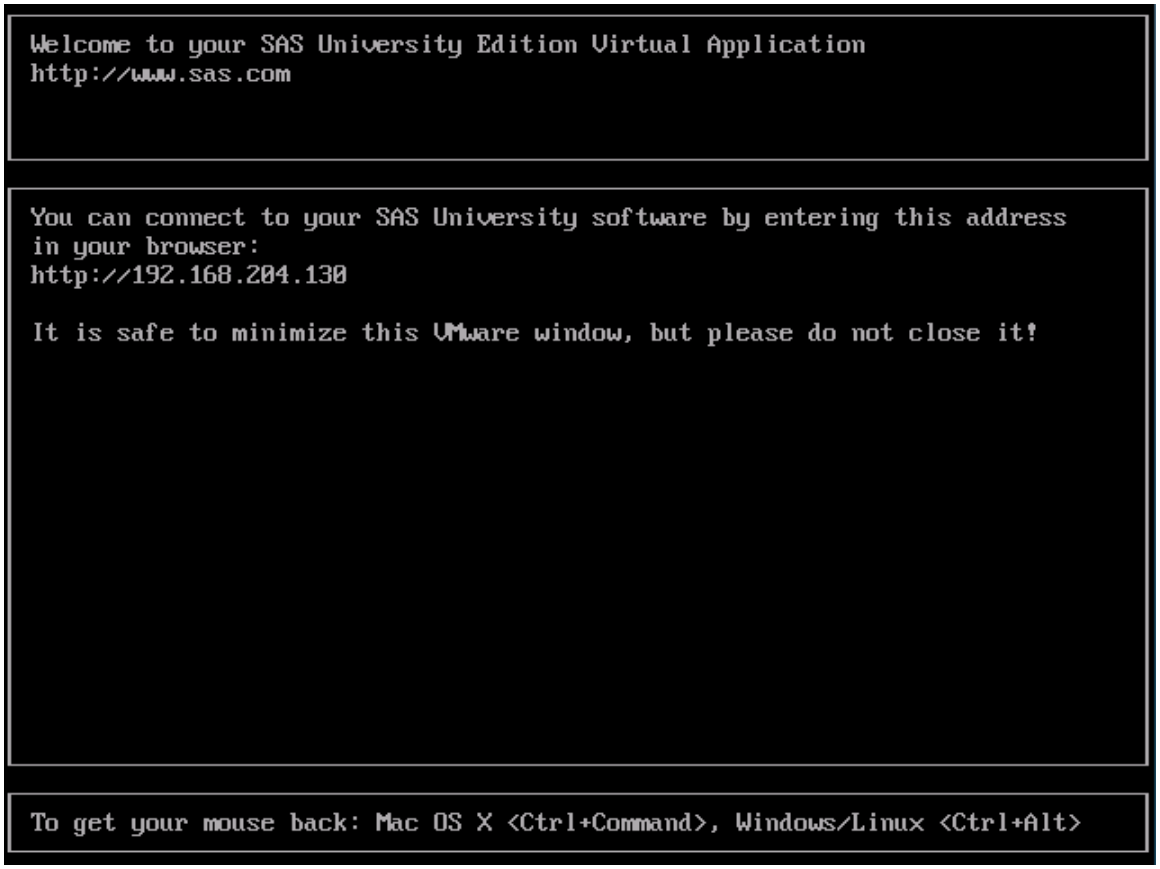
1) On your local computer (in a location that you will remember), create a folder called `SASUniversityEdition` and a subfolder called `myfolders`. You will save all of your SAS University Edition files to this location.
2) Launch VMware Player.
3) Click **Open a Virtual Machine**.
4) In the file browser window, navigate to the SAS University Edition virtual image, which ends in `.vmx`.
5) Select the SAS University Edition virtual image, and then click **Open**.
6) Share a folder from the SAS University Edition virtual image to the local system:
    a. Click **Edit virtual machine settings**.
    b. Click the **Options** tab.
    c. Click **Shared Folders**.
    d. Select **Always enabled**.
    e. Click **Add** to open the **Add a Shared Folder** window.
    f. Click **Browse** to open the **Browse For Host Path** window.
    g. In the **Browse For Host Path** window, select the `myfolders` folder that you created, and then click **Open**. This folder is mapped to the **My Folders** folder in SAS Studio.
    **Note**: The shared folder name is case sensitive.
    **Note**: You can add network folders that you have access permissions to. Do not include a backslash (\) in the network folder name.
    h. In the **Add a Shared Folder** window, confirm that **Read-only** is NOT selected.
    i. In the **Add a Shared Folder** window, click **Enabled**.
    j. (Optional) Create additional shared folders. Additional shared folders are displayed in SAS Studio under **Folder Shortcuts**.
    **Note**: See Chapter 6: Guidelines for Writing SAS Code for Use with SAS University Edition for requirements of names of shared folders.
    k. Click **Save**.

7) By default, the SAS University Edition virtual image network adapter is set to **NAT**. Confirm that the network adapter is set to **NAT**:
    a. In VMware Player, click **Edit virtual machine settings**.
    b. Click the **Hardware** tab.
    c. Select **Network Adapter**.
8) Click **NAT: Used to share the host's IP address**.
9) (Optional) Edit the CPU and RAM settings.
   **Note**: The SAS University Edition virtual image is configured to use 1GB of RAM and two processors. You can increase the RAM that is assigned to the SAS University Edition virtual image, but you should assign half (50%) or less of the available physical RAM. You cannot increase the number of processors that are assigned to the SAS University Edition virtual image.
10) Click **Save** to close the window.

## *Start SAS University Edition in VMware Player*

To start SAS University Edition in VMware Player:

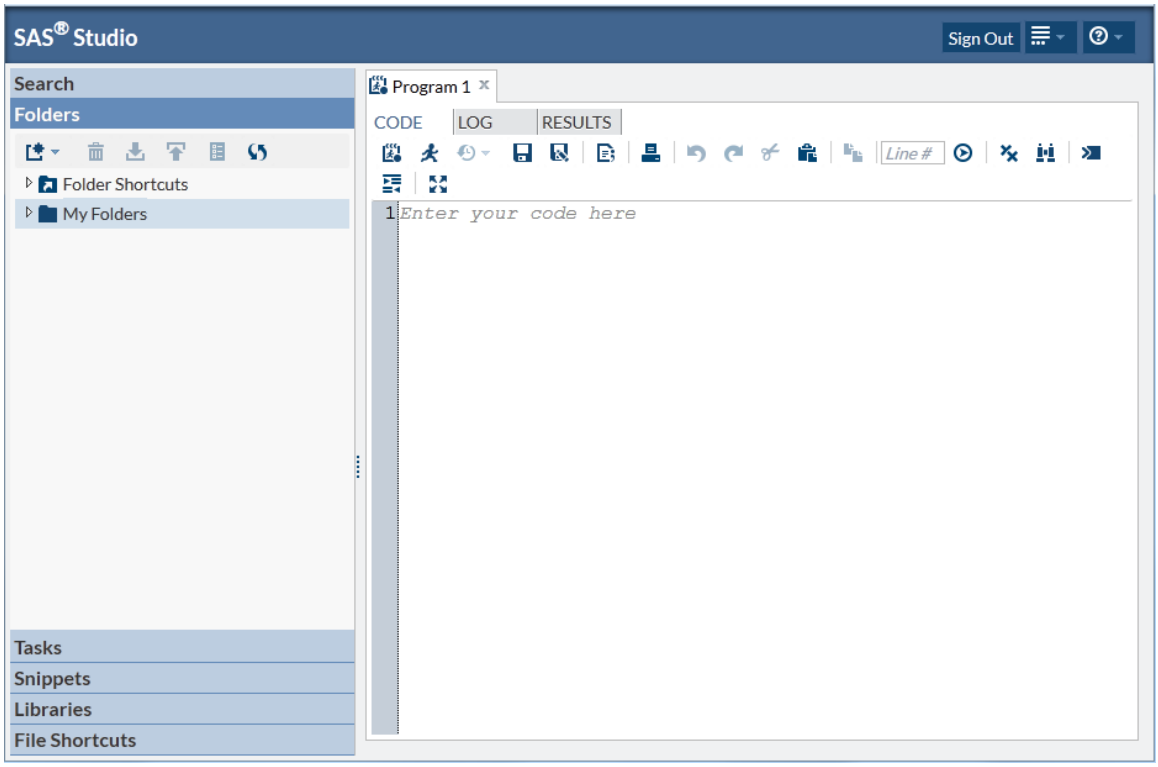
1) In VMware Player, click the name of your SAS University Edition virtual image in the left pane.
2) Click **Play virtual machine**.
3) Click **Remind me later**.
4) When the start-up process completes, the SAS University Edition Welcome screen appears:




5) Find the text on your Welcome screen that is similar to the following example text:
`You can connect to your SAS University software by entering this address in your browser:`
`http://192.168.204.130`
**Note:** Use the Uniform Resource Locator (URL) that is shown on your SAS University Edition Welcome screen. Do not use the example URL `http://192.168.204.130` that is shown here.

6) In a web browser, enter the URL that is shown on your Welcome screen, and press **Enter** to open the SAS Information Center.

7) Click **Start SAS Studio** to open SAS Studio.




## *Shut Down SAS University Edition in VMware Player*

Use VMware Player to shut down the SAS University Edition virtual image.

1) Select **Virtual Machine > Power > Power Off**.
2) Click **Yes**.

# Chapter 3: Using Oracle VM VirtualBox

## *Overview*

To set up SAS University Edition:

1) Configure Oracle VM VirtualBox.
2) Start SAS University Edition in VirtualBox.

## *Configure VirtualBox*

You need to configure VirtualBox in order to create a shared folder for your data that is available to both the SAS University Edition virtual image and to your local system.
**Note**: If you add a shared folder to the SAS University Edition virtual image while the SAS University Edition virtual image is running, you must restart the SAS University Edition virtual image.

To configure VirtualBox to work with SAS University Edition:

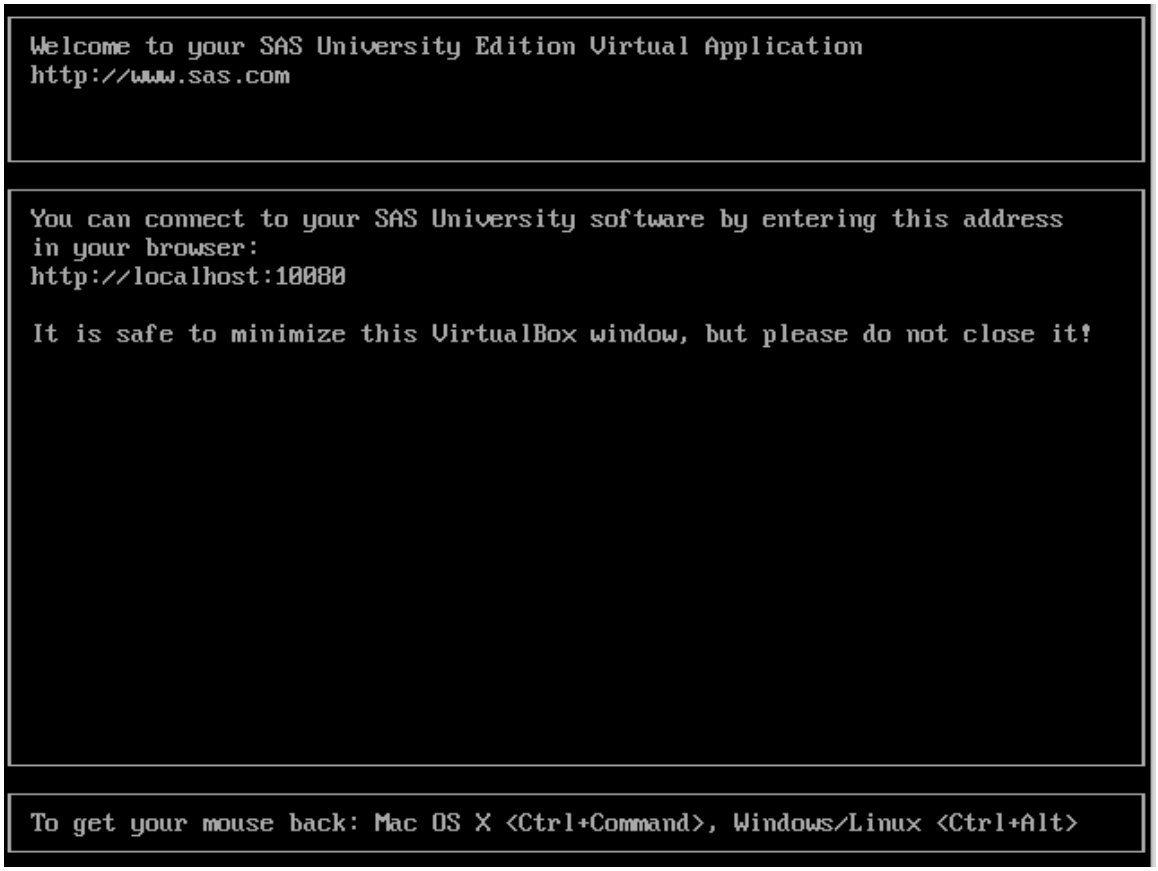
1) On your local computer (in a location that you will remember), create a folder called `SASUniversityEdition` and a subfolder called `myfolders`. You will save all of your SAS University Edition files to this location.
2) Launch VirtualBox.
3) Select **File > Import Appliance**.
4) In the **Import virtual appliance** window, click the folder icon to the right of the field.
   A file browser window appears.
5) Select the SAS University Edition .ova file.
6) Click **Open**.
7) Click **Next**.
8) (Optional) In the **Appliance settings** window, edit the CPU and RAM settings.
   **Note**: The SAS University Edition virtual image is configured to use 1GB of RAM and two processors. You can increase the RAM that is assigned to the SAS University Edition virtual image, but you should assign half (50%) or less of the available physical RAM. You cannot increase the number of processors that are assigned to the SAS University Edition virtual image.
9) In the **Appliance settings** window, click **Import**.
   The imported virtual machine is displayed in the **Oracle VM VirtualBox Manager** window.
   **Note**: If the message `drives in use` is displayed, click **Ignore**.
10) Select **Machine > Settings**.
11) In the navigation pane, click **Shared Folders**.
12) Click **Add Shared Folders**. The **Add Share** window appears.
13) In the **Folder Path** field, click the arrow and select **Other**.
    A file browser window appears.
14) Select the `myfolders` folder that you created, and then click **Open**. This folder is mapped to the **My Folders** folder in SAS Studio.
    **Note**: The shared folder name is case sensitive.
    **Note**: You can add network folders that you have access permissions to. Do not include a backslash (\) in the network folder name.

15) In the **Add Share** window, confirm that **Read-only** is NOT selected.
16) In the **Add Share** window, click **Auto-mount**, then click **OK**.
17) (Optional) Create additional shared folders. Additional shared folders are displayed in SAS Studio under **Folder Shortcuts**.
18) In the **Settings** window, click **OK**.

## *Start SAS University Edition in Oracle VM VirtualBox*

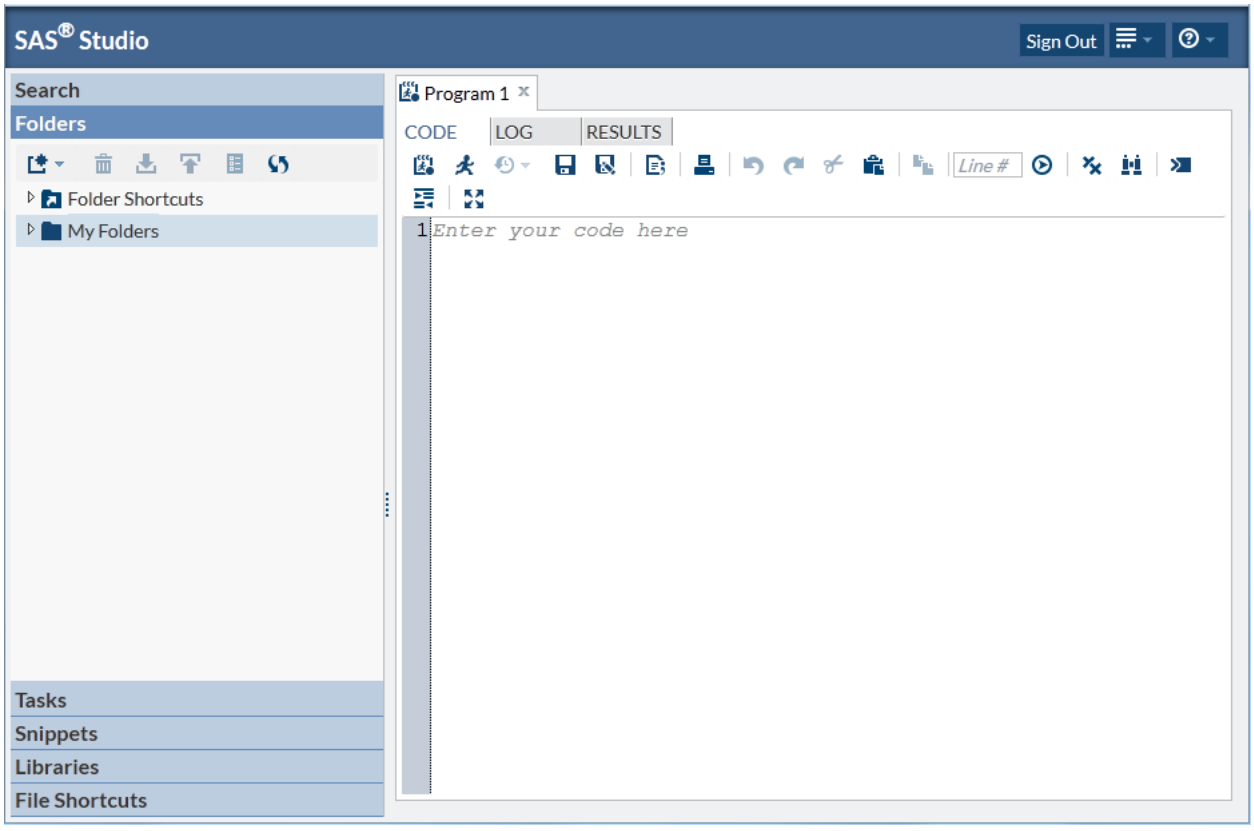
To start SAS University Edition in VirtualBox:

1) In VirtualBox, select the SAS University Edition virtual image in the left column, and then click **Start**.
2) (Optional) If you are prompted to upgrade, click **Don't upgrade**.
3) When the start-up process completes, the SAS University Edition Welcome screen appears:




4) Find the text on your Welcome screen that is similar to the following example:
```
You can connect to your SAS University software by entering this
address in your browser:
http://localhost:10080
```
5) In a web browser, enter the URL that is shown on your Welcome screen, and press **Enter** to open the SAS Information Center.

6) Click **Start SAS Studio** to open SAS Studio. The following window appears:



## *Shut Down SAS University Edition in VirtualBox*

To shut down SAS University Edition in VirtualBox:

1) In the left column of VirtualBox, click the SAS University Edition virtual image.
2) Select **Machine > Close > ACPI Shutdown**.

# Chapter 4: Updating SAS University Edition

You must be connected to the Internet in order to update SAS University Edition.

To update SAS University Edition:

1) Start SAS University Edition. When the virtual image finishes starting, text similar to the following appears:
```
You can connect to your SAS University software by entering this
address in your browser:
```
2) In a web browser, enter the URL that is shown on your Welcome screen, and press Enter to open the SAS Information Center.

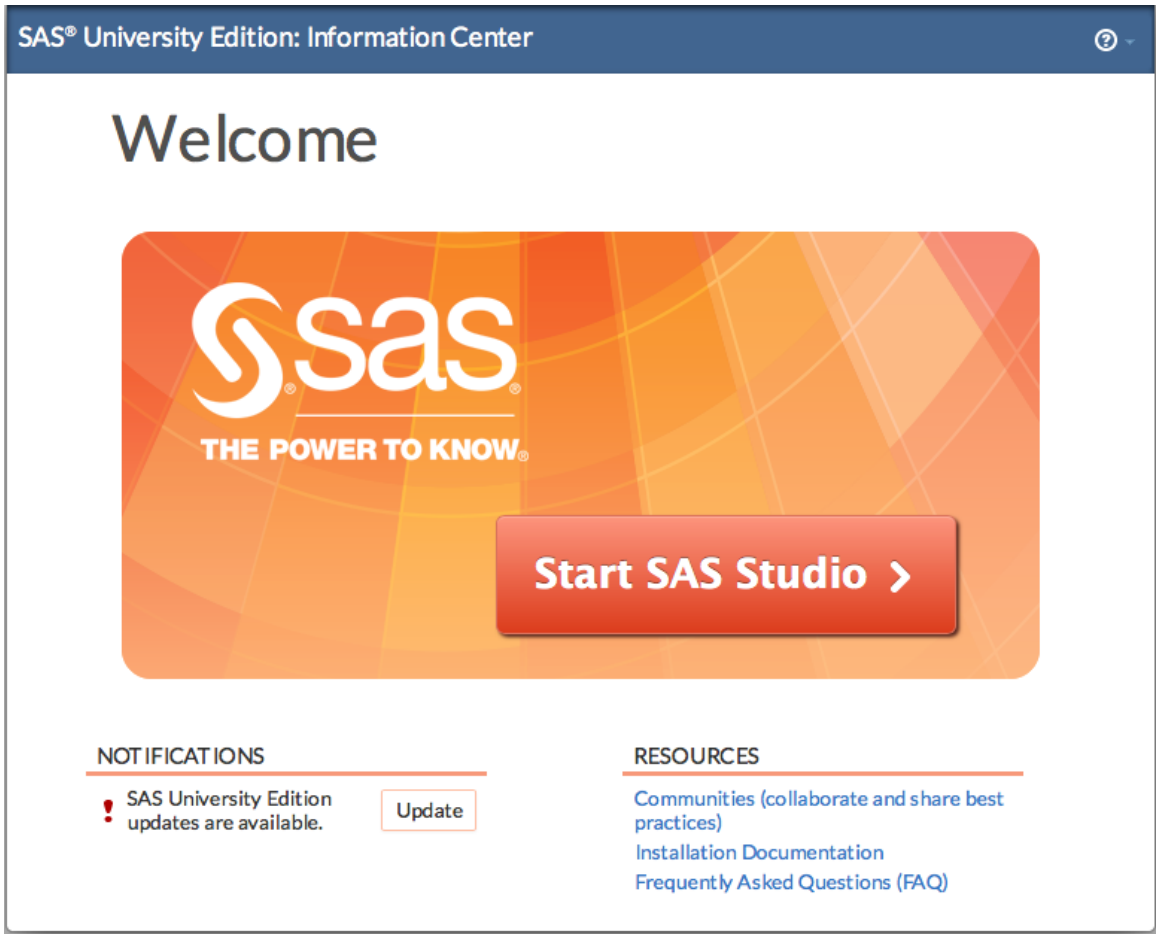
3) Click **Update**.
4) Click **Yes**.

# Chapter 5: Help and Troubleshooting

## *View the Installation Documentation*

To view this document online within SAS University Edition:

1) Start SAS University Edition. In a web browser, enter the URL that is shown on your Welcome screen, and press **Enter** to open the SAS Information Center.




2) Click **Installation Documentation** to view the installation documentation.

## *Unable to Start SAS University Edition*

If you are experiencing problems starting the SAS University Edition virtual image, your system might not support 64-bit virtual images, or hardware virtualization (sometimes abbreviated as VT, VT-x, or AMD-V) might be disabled in your system BIOS. For more information, see SAS Installation Note 46250:
http://support.sas.com/kb/46/250.html

## *Unable to Start SAS University Edition with an Unknown Status Code Error*

When starting the SAS University Edition virtual image, if you see an error message "The launch of the server process failed with an unknown status code", you should view your virtualization software's settings for SAS University Edition. You cannot launch SAS Studio if more than two processors are assigned to the SAS University Edition virtual image in your virtualization software. Set the number of CPUs assigned to SAS University Edition to 2 or 1, then try again.

## *Unable to Start SAS University Edition in VirtualBox with "This kernel requires an x86-64 CPU" Error*

When starting the SAS University Edition virtual image in VirtualBox, if you see an error message "This kernel requires an x86-64 CPU, but only detected an i686 CPU", this error indicates that you are attempting to start the SAS University Edition virtual image on a 32-bit guest operating system. Set the guest operating system to Red Hat (64-bit), then try again. For more information, see SAS Installation Note 53263:
http://support.sas.com/kb/53/263.html

## *Using DropBox with SAS University Edition*

Configure the shared folders for your virtualization software in order to add the Dropbox folder on your local system as a shared folder.

## *Opening SAS Studio in a Different Browser Window*

If you open SAS Studio, open SAS Information Center on a new tab in the same web browser, and then click **Start SAS Studio**, a window appears with the following message:

```
A SAS Studio session is already running in this browser. Would you like
to close it and start a new session?
```

If you click **Yes**, your SAS Studio session opens in the current browser window. If you click **No**, the window displays the message again. If you do not want to open SAS Studio in the current browser window, close the current browser window.

## *Files Missing on SAS Studio After the First Shared Folder Is Created*

If you start SAS Studio, create a file and save it in the default **My Folders** location in SAS Studio, and then create a shared folder of the default `myfolders` name, the existing SAS Studio My Folders is moved to the shared folder.

When the shared folder is created, existing files in the SAS University Edition virtual image's default folder are moved to the shared folder. If there is a name conflict when a file in the University virtual image is copied to the host operating system shared folder, then the file on the host operating system is renamed.

Suppose you create `Program 1` in SAS Studio, and then you create a shared folder in your virtualization software to an existing folder on the host operating system. If the folder on the host OS already contains a file named `Program 1`, then your SAS Studio `Program 1` filename is displayed as `Program 1`. The host operating system's `Program 1` is renamed as `Program 1.~1~`. Additional name collisions of the same file create `Program 1.~2~` and so on.

## *Starting SAS Studio without a Network Connection Results in a Delay*

If there is no network connection when you click **Start SAS Studio**, a long delay occurs before SAS Studio starts.

## *Error Messages Displayed When Running LIBNAME or FILENAME Statements in SAS Studio*

When running a LIBNAME statement in SAS Studio, you may see the following error message:

```
NOTE: Library [name of library] does not exist.
```

When running a FILENAME statement in SAS Studio, you may see an error message similar to the following example:

```
ERROR: Physical file does not exist,
/opt/sasinside/SASConfig/Lev1/SASApp/C:\SASUniversityEdition\myfolders\
Cheatsheet.xlsx.
```

If you see error messages similar to the above examples, you may be incorrectly referencing shared folders. For more information, see SAS Installation Note 53333:

http://support.sas.com/kb/53/333.html

## *"Path Invalid" Error Message When Accessing Data in SAS Studio*

When accessing your data from SAS Studio, you may see an error message similar to the following example:

```
ERROR: The path /users/xxyyzz/Downloads/Cheatsheet.xlsx is invalid
because it is not in the list of accessible paths when SAS is in the
lockdown state.
```

If you see error messages similar to the above examples, you may have shared folders configured incorrectly. For more information, see SAS Installation Note 53333:

http://support.sas.com/kb/53/333.html

## *PROC HTTP Returns Message "ERROR: Could not find extension: (tkessl)"*

When using an HTTPS URL with PROC HTTP, the following error message is returned:

```
ERROR: Could not find extension: (tkessl)
```

HTTPS and SFTP access are not supported in SAS University Edition.

# Chapter 6: Guidelines for Writing SAS Code for Use with SAS University Edition

SAS University Edition runs as a virtual image inside a virtualization software such as VMware Player.

**Note**: You should store data in the shared folder on your local system. Do not store data in the SAS University Edition virtual image.

Use the following guidelines when you store data on your local system and access your data from SAS University Edition.

There are two categories of shared folders.

- `myfolders`—A special shared folder that maps to **My Folders** in SAS Studio. To save your SAS Studio settings to the host filesystem, you must create this shared folder. Any SAS scripts in **My Folders** in SAS Studio are moved to the shared folder when it is created.
  Your SAS Studio settings are stored in the shared folder `myfolders` on the host filesystem. If you detach the shared folder, then SAS Studio is unable to access the settings file and starts with new default settings. Any changes that you made to the SAS Studio settings will not be active until that shared folder is reconnected.

- <*all other shared folders*>—Any other shared folder that is configured appears under SAS Studio's **Folder Shortcuts**. You cannot save SAS Studio settings to these folders.

The following guidelines apply to referencing shared folders and files.

- When you reference files in your shared folder, you should always reference them in the following way:

  `/folders/myfolders/`*`filename`*

  Replace *`filename`* with the name of the file that you are referencing.

- If you create additional shared folders in your virtualization software after the first shared folder, those folders are created in the following locations:

  `/folders/myshortcuts/`*`secondfolder`*
  `/folders/myshortcuts/`*`thirdfolder`*

  The names *`secondfolder`* and *`thirdfolder`* are replaced with the names of the folders that you created in the virtualization software.

- Always use a forward slash (`/`) as the directory separator when you reference files in your shared folders, even if your operating system is Windows.

  `/folders/myfolders/`*`foldername`* `(valid)`

  `\folders\myfolders\`*`foldername`* `(not valid)`

- File and directory references are case sensitive. For example, the following two paths specify difference directories:

  `/folders/myfolders/`*`foldername`*

  `/folders/myfolders/`*`FOLDERNAME`*

  The case that you use must match the case of the name that you specified for the shared folder when you defined it in your virtualization software.

- All files that you want to persist between sessions should be stored in the shared folder that you created in the virtual manager:

  `/folders/myfolders/`*`foldername`*

  **Note**: Currently, the virtual image does not stop you from saving to other locations, but those files might not be persisted.

- SASUSER is read-only and is not writeable, as in any SAS server-based environment. The following code example will NOT run successfully

```
/** Import an XLS file.  **/

PROC IMPORT DATAFILE="cars.xls"
             OUT=SASUSER.CARSBW
```

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