MOSAIC Installation Guide

This guide describes the steps needed in order to install and configure Eclipse MOSAIC on Debian (i.e. Ubuntu) distributions, Windows, and macOS. It is based on the official guide found in the webpage.

MOSAIC requires two additional pieces of software: Java and SUMO.

Installing Java

If you have been using your computer for some time, you might already have Java installed. Type in the following terminal (*Windows Shortcut: WindowsKey, type cmd*) command to check: `java --version`

The output should look similar to this:

```
openjdk 16.0.1 2021-04-20
OpenJDK Runtime Environment AdoptOpenJDK-16.0.1+9 (build 16.0.1+9)
OpenJDK 64-Bit Server VM AdoptOpenJDK-16.0.1+9 (build 16.0.1+9, mixed
mode, sharing)
```
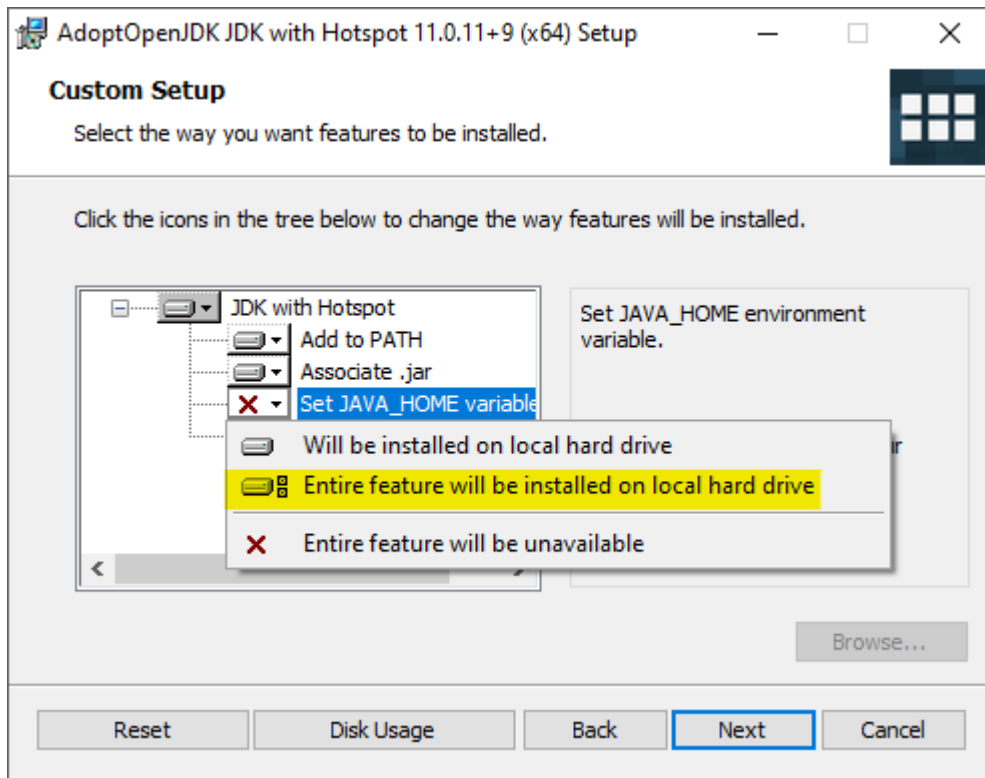
Else, if you get an error message or something similar, you need to install Java based on the official guide:

Linux

1. Download the latest release: AdoptOpenJDK
2. Create a new directory in your home-folder called **adoptopenjdk**
   1. Use either file explorer or terminal
3. Locate the downloaded tarball using terminal
   1. If you are using a file explorer, you can right-click and select *"Open in Terminal"*.
   2. Otherwise, open the terminal and change directory to the download folder.
4. Copy-paste/move the tarball to **adoptopenjdk** and open a terminal in this folder ala Step 3.
5. Extract the tarball using `tar xzf OpenJDK16U-jdk_x64_linux_hotspot_16.0.1_9.tar.gz` or type `tar xzf Open` and click **Tab**. The terminal should autofill the rest.
6. The tarball should extract the following folder: **jdk-16.0.1+9**.
7. Open a new terminal and type in the following commands: First `cd` and then `gedit .bashrc`.
8. Insert the following line at the end: `export PATH=/home/USERNAME/adoptopenjdk/jdk-16.0.1+9/bin:$PATH`, save and exit.
   1. You can get your USERNAME using the command `whoami` in a terminal.
9. Open a new terminal and type `java --version`. It should now be installed.

Windows

1. Download the latest LTS release: AdoptOpenJDK
2. Double click and run as administrator
3. **IMPORANT:** You need to set the environment variable **JAVA_HOME**. See next Figure:

After installation type `java --version` in the command line to check whether the installation was successful.

macOS

1. Download the latest release: [AdoptOpenJDK](#)
2. Install the `.pkg` file just like any other application
3. Open a new terminal and type `java --version`. It should now be installed.

Installing SUMO

Linux

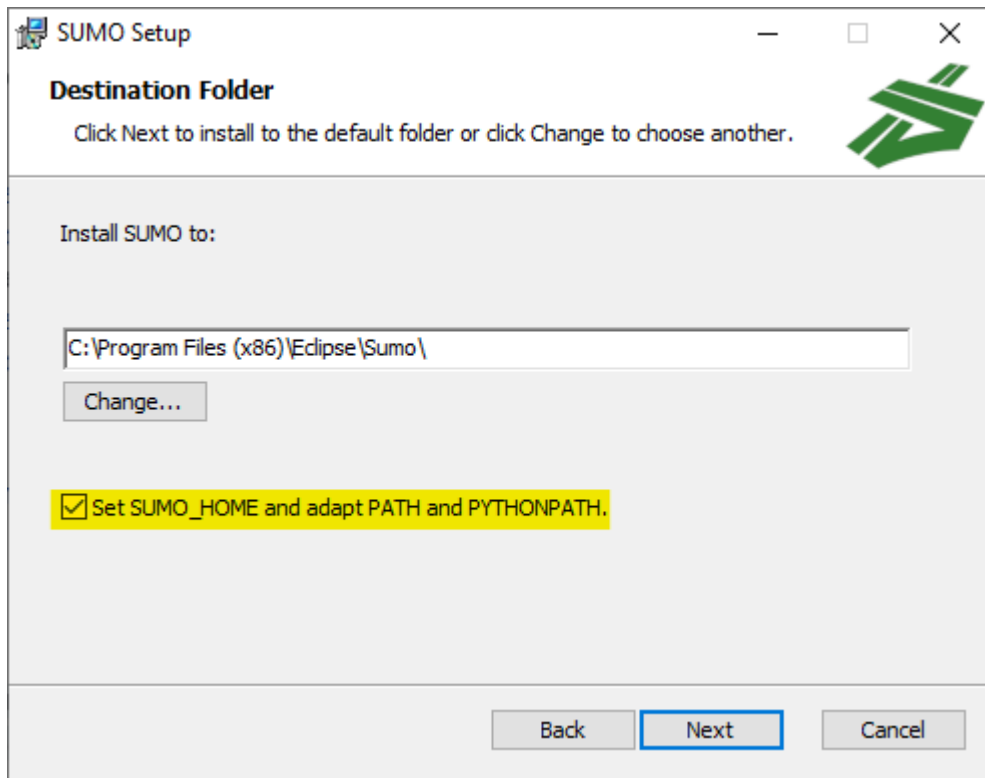In the terminal, type in the following commands:

```
sudo add-apt-repository ppa:sumo/stable
sudo apt-get update
sudo apt-get install sumo sumo-tools sumo-doc
```

After installation, check using `sumo --version`.

Windows

Download https://sumo.dlr.de/releases/1.9.2/sumo-win64-1.9.2.msi and install as usual.

IMPORTANT: Don't forget to set environment variable **SUMO_HOME**:

After installation, check using `sumo --version`.

macOS

Installation on macOS is a litle harder as there are now pre-compiled binaries available. However, the installation is well documented: Follow "The Homebrew Approach" in the official guide. Skip all the optional steps.

After installation, check using `sumo --version`.

Installing Eclipse MOSAIC

1. Download (Eclipse MOSAIC 21)[https://www.dcaiti.tu-berlin.de/research/simulation/download/]
2. Extract it and open a terminal in the resulting folder (on Windows you can simply write "cmd" in the address bar to open the terminal)
3. On Linux and macOS: Type `chmod +x mosaic.sh`. This will make the shell script executable.
4. Type `./mosaic.sh -s Barnim -v` on Linux and macOS or `./mosaic.bar -s Barnim -v` on Windows. This should run the Barnim simulation and open the web visualizer.
5. In the terminal window you should see an output similar to this:

```
2021-06-08 11:10:13,981 INFO  ROOT - Running Eclipse MOSAIC 21.0 on Java
JRE v16.0.1 (AdoptOpenJDK)
2021-06-08 11:10:14,271 INFO  FederationManagement - Start federation with
id 'Barnim'
2021-06-08 11:10:14,271 INFO  FederationManagement - Add
ambassador/federate with id 'application'
2021-06-08 11:10:14,272 INFO  FederationManagement - Add
ambassador/federate with id 'environment'
2021-06-08 11:10:14,273 INFO  FederationManagement - Add
```

```
ambassador/federate with id 'mapping'
2021-06-08 11:10:14,273 INFO  FederationManagement - Add
ambassador/federate with id 'sns'
2021-06-08 11:10:14,273 INFO  FederationManagement - Add
ambassador/federate with id 'sumo'
2021-06-08 11:10:14,273 INFO  FederationManagement - Deploying federate
'sumo' locally in ./tmp/sumo
2021-06-08 11:10:14,298 INFO  FederationManagement - Starting federate
'sumo' locally in ./tmp/sumo
2021-06-08 11:10:14,298 INFO  FederationManagement - Add
ambassador/federate with id 'output'
11:10:18 - Simulating: 59000000000ns (59.0s / 1000.0s) - 5.9% (RTF:0.00,
ETC:unknown)
11:10:19 - Simulating: 124000000000ns (124.0s / 1000.0s) - 12.4%
(RTF:0.00, ETC:unknown)
11:10:20 - Simulating: 175000000000ns (175.0s / 1000.0s) - 17.5%
(RTF:0.00, ETC:unknown)
11:10:20 - Simulating: 195000000000ns (195.0s / 1000.0s) - 19.5%
(RTF:37.26, ETC:21.7s)
11:10:21 - Simulating: 250000000000ns (250.0s / 1000.0s) - 25.0%
(RTF:37.26, ETC:21.7s)
11:10:23 - Simulating: 302000000000ns (302.0s / 1000.0s) - 30.2%
(RTF:37.26, ETC:21.7s)
11:10:24 - Simulating: 385000000000ns (385.0s / 1000.0s) - 38.5%
(RTF:37.26, ETC:21.7s)
11:10:25 - Simulating: 555000000000ns (555.0s / 1000.0s) - 55.5%
(RTF:37.26, ETC:21.7s)
11:10:25 - Simulating: 1000000000000ns (1000.0s) - 100.0%
11:10:25 - Duration: 00h 00m 10.008s (RTF: 99.00)
11:10:25 - Simulation finished: 101
```

Congrats! If you need help with problem or need troubleshooting, please feel free to contact me:
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