RSARTE Installation Instructions

Prerequisites

[↑]

(1) Java 11

RSARTE requires Java 11. You can execute `java -version` from a terminal to check your Java version you're running. If it is anything other than `11`, then install OpenJDK 11 from https://adoptopenjdk.net/releases.html (https://adoptopenjdk.net/releases.html).

> **Note:** if you have multiple versions of Java installed you need to force RSARTE to use Java 11 after completing the installation (see Troubleshooting).

(2) C++ Toolchain

To compile the generated code you'll need a C++ toolchain. Specifically, the GNU C++ compiler (i.e., `g++`) and `make`. Follow the instructions below for your operating system.

Windows

1. Download and install Cygwin (https://cygwin.com/install.html). Take note of the installation path (by default, this is `C:\cygwin64`).
2. During the installation process make sure to select the following packages: `gcc-core, gcc-g++, make, cmake`
3. Add the path to the Cygwin bin folder within the installation directory to your PATH enviromental variable (by default, this should be `C:\cygwin64\bin`.

Helpful video showing the installation process (https://www.youtube.com/watch?v=hh-V6el8Oxk). Note that you don't need all the packages from the video!

macOS
Run the command below in Terminal

```
xcode-select --install
```

Linux (debian-based)
Run the command below in a terminal.

```
sudo apt-get install build-essential
```

(3) Other

Linux and macOS
RSARTE expects to find a `var` subdirectory in your home directory. Simply run `mkdir -p ~/var` in a terminal.

Installation

[↑]

(1) Grab the files

1. Download and extract Eclipse IDE 4.16 (https://archive.eclipse.org/eclipse/downloads/drops4/R-4.16-202006040540). Other versions of Eclipse will not to work.
2. Download the file `11.1.0.0-Rational-RSART-2021-24-fixzippack` from this IBM site (http://ibm.biz/rte_download). You might need to create a free IBM account.

(2) Install the update site

1. Start Eclipse
2. From the 'Help' menu select 'Install new software'.
3. Press the 'Add' button and select the archive you've downloaded from the IBM site. Give it the name 'RSARTE'.
4. Select 'RSARTE' from the 'Work with' drop down menu. A list of categories should appear.
5. Select the checkbox next to 'RSARTE Core' then press 'Next'.
6. Follow the instructions to finish the installation. Eclipse should restart when the installation finishes.

(3) Apply the license

1. From the 'Help' menu select 'Manage Licenses'.
2. Select the line for RSARTE and press the 'Apply License' button.
3. In the dialog that appears, select 'Authorized user license'.
4. Enter the product key given to you by your instructor.

(4) Update the RTS

1. Find the `rsa_rt` directory. This should be next to the eclipse executable. On macOS, right click on the eclipse executable and choose "Show Package Contents" then navigate to Contents/Eclipse.
2. Rename the directory `rsa_rt` to `rsa_rt.bak`

3. Download the updated RTS (rsa_rt_w2020.zip) and puts its content in the same directory as (i.e., next to) the `rsa_rt.bak` directory.

(5) Build the RTS

Linux and macOS

From a terminal, navigate to the `rsa_rt/C++/TargetRTS/src` directory and execute:

```
make BUILDOPTS=-flat CONFIG=LinuxT.x64-gcc-4.x
```

Windows

1. Start Eclipse
2. Choose 'TargetRTS Wizard' from the 'Libraries' menu.
3. In the wizard, click 'Next' then choose `LinuxT.x64-gcc-4.x` under 'Existing Configurations' and 'Build' under 'Manage' then press next.
4. In the next window, choose 'make' under 'Make Command' and press next.
5. In the next window, click finish. This should open a command prompt and start the build process. Monitor the process to make sure there are no errors.

Troubleshooting

[↑]

(1) Eclipse shows a 'JVM not found' error, crashes on startup, or behaves abnormaly.

Eclipse is probably picking the wrong JVM and you might need to point it to the correct one.

1. Find the path to the bin folder containing the 'java' 11 executable. If you've installed OpenJDK from adoptopenjdk.net then the path should be similar to `C:\Program Files\AdoptOpenJDK\jdk-11.0.<version>\bin` on Windows and `/Library/Java/JavaVirtualMachines/AdoptOpenJDK-<version>/Contents/Home/bin` on macOS. For debian-based Linux, run the command `update-alternatives --list java` . Look for the path with 'java-11-openjdk' in it.
2. Find the `eclipse.ini` file in the eclipse package. On Linux and Windows, the file can be found next to the eclipse executable. On macOS, right click on the eclipse executable and choose "Show Package Contents" then navigate to Contents/Eclipse.
3. Edit the `eclipse.ini` file and add the following two line **before** `-vmargs` . Make sure to replace `<java_11_path>` with the path to the Java 11 installation you've identified in step 1.

   ```
   -vm
   <java_11_path>
   ```

(2) 'rtperl not found' error

Linux
Simply run 'sudo ln -s /usr/bin/perl /usr/local/bin/rtperl' in a terminal.

macOS
First run the following commands in a terminal:

```
mkdir -p $HOME/bin
echo 'export PATH=~/bin:$PATH' >> ~/.bash_profile
cd /usr/bin && for f in perl*; do cp -- "$f" "$HOME/bin/rt$f"; done
source ~/.bash_profile
```

Next, run 'Eclipse' from the terminal instead of double-clicking the executable. Note that you must always `source ~/.bash_profile` before running Eclipse.

```
# navigate to the location of the Eclipse executable
source ~/.bash_profile
./Eclipse.app/Contents/MacOS/eclipse
```