

Setting up the Latest Java Baby Simulator To run on a Raspberry Pi

These notes are provided "as is" to help in planning the Raspberry Pi installation of software that was originally written for use on old Windows operating systems and Java versions. Because of this, anyone installing the software now needs to be aware that there is no support for it, or for recovering from problems that may be caused by it, and that backing up your existing Raspberry Pi setup first is strongly recommended.

Compatible Raspberry Pi System Setups

A Raspberry Pi configuration known to work with the Baby simulator is listed below (although it can be expected to work with other similar configurations):

- A Model B Raspberry Pi with 512MB memory in total, with the default 64MB allocated to GPU;
- Using a standard Raspbian installation (with LXDE Desktop) on a 4GB or larger SDHC card;
- Running at the default LXDE Desktop HD screen resolution - 1080p, as output on its HDMI port. (The vertical resolution on your display must be at least 900 pixels deep for the simulator to fit¹);
- With Internet access from the Pi at a link capacity sufficient for the download of around 50MB of files;
- With booting directly to the LXDE Desktop enabled in **raspi-config**.

It is strongly recommended to back up your existing Raspberry Pi software setup before following these installation notes. This is because it involves installing a new Java setup to allow the Baby simulator to run, and this setup cannot be guaranteed to be compatible with all other previously installed programs.

Due to the restricted capabilities of the Raspberry Pi, the simulator does not usually run as smoothly as it does on Windows platforms (restrictions are listed in a separate section below), but it is still quite usable.

Raspberry Pi Installation steps

1. Load up the Raspberry Pi into the LXDE graphical Desktop environment.
2. From the Start menu **Internet** section, open a Web browser (usually either **Netsurf** or **Midori**).
3. The Baby simulator code may now be downloaded directly from David Sharp's archive website by typing into the browser the destination URL of <http://www.davidsharp.com/baby/ssem.zip>.
4. A message offering to download the file **ssem.zip** onto the Pi should appear.
5. Select option **Save** to save **ssem.zip** into the default download location on the Pi. (Unless you have changed the download location in your browser settings, this will be into **/home/pi**).
6. When the download completes, close both the Download dialogue and Browser windows.
7. Open **File Manager** from the **Accessories** section on the Start menu and display in it folder **/home/pi** (or your other download location if set).
8. Find the downloaded **ssem.zip** file in the folder, then right-click on it to open a context menu. Choose **Xarchiver** from the menu.
9. In the **Xarchiver** window, click on the **Action** menu and then choose **Extract**.
10. In the **Extract files** dialogue box that is displayed, amend the **Extract to:** box to read **/home/pi/ssem** before clicking on the **Extract** button.
11. When the files have been extracted, close the **Xarchiver** window and confirm in the **File Manager** that there is now a folder there named **/home/pi/ssem** and that there are files in it.

¹ If the screen requirement is a problem, there is also an older Baby simulator available that does not look like the real Baby computer, but it will run on the Pi in screen resolutions less than 900 pixels high. Separate instructions for downloading and running this are available.

12. If you like, you can now delete the download file `/home/pi/ssem.zip`.
13. Using the File Manager, copy the file `/home/pi/ssem/ssem.jar` into the Desktop.

To do this:

- Open up folder `/home/pi/ssem` and click once on file `ssem.jar` to highlight it.
 - Click on the **Edit** menu, then choose **Copy To...**
 - In the **Please select a folder** window, click on **Desktop** in the left hand pane, then on **OK**.
 - When it appears on the Desktop, you can rename it to a different name if you like, but keep the `.jar` extension on any new file name.
14. Copy any existing Snapshot (SNP) or Assembly (ASM) files you have that you want to use with the simulator into a folder created to hold them (for example: `/home/pi/babyprograms`).
 15. To update list of available Raspberry Pi packages and upgrade existing installed software versions:

Open up **LXTerminal** and enter the commands:

```
sudo apt-get update
```

then (a recommended step to upgrade all existing packages on your Pi)

```
sudo apt-get upgrade
```

(The first typically results in an Internet download of about 7Mb, and the size of the second will vary).

16. To download and install the **IcedTea** plug-in and **OpenJDK** packages:

Using **LXTerminal**, enter the command:

```
sudo apt-get install icedtea-plugin
```

(This typically results in an Internet download of about 42Mb)

17. You can now double-click on the `ssem.jar` file (or whatever you renamed it to) on the Desktop to start the simulator. Note that it takes about 45 seconds to appear.
18. (If desired). To stop the default screen blanking out after about 10 minutes of unattended running:

Edit the following line into the section of file `/etc/lightdm/lightdm.conf` headed **[SeatDefaults]**, then reboot to enable:

```
xserver-command=X -s 0 dpms
```

(Note: You will need do save updates to this file using Super User access – for example, by invoking the Nano editor from an LXTerminal window using `sudo nano /etc/lightdm/lightdm.conf`.)

Platform Restrictions

The main restrictions running the simulator on a Raspberry Pi are that:

- It takes 45 seconds for the simulator to load up initially.
- Loading in saved Assembly (ASM) or Snapshot (SNP) program files takes about 15 seconds.
- Animations of the Baby's Stop light either coming on or going off take about 15 seconds to complete. This means that when a program completes it stops as usual but then the simulator waits for 15 seconds before the Stop light is shown. Also, when the **KC** switch is used to turn off the lit Stop light, the simulator waits for 15 seconds before doing so.
- The installation also enables Java applets in the Pi's Midori browser. This means that you can also run the simulator on a web page. However, it takes over 90 seconds to initialise the applet, and it doesn't work every time, so this is not the recommended way of running it on a Raspberry Pi.