ReHoGiM User's manual

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1   What is

This file is the Manual for ReHoGiM (Receding Horizon Generator in Maxima).
This document describes

- How to Install

- How to Use

- Example

2 Installation

This installation is based on following versions.

Ubuntu `10.04.1`

VirtualBox `4.0.0-69151~Ubuntu~lucid`

Maxima `5.23.0-1~ppa8~lucid`

sbcl `1.0.29.11-1ubuntu1`

Installation

1. Install VirtualBox

   (a) Install VirtualBox main
   (b) Install VirtualBox Extension Pack

2. Install Ubuntu Linux 10.04

3. Run the install script *rehogim-install.sh*

   - to install maxima and other required environment.
   - during running the script, **required some input**.

2.1 Install virtual machine

If you use Ubuntu 10.04, skip this section.

In other case, like Windows, install virtual machine such as VirtualBox to install code generation environment. During installation you may see some warning for unsigned drivers, but you must install them.

1. Download 2 files from Download page

   - VirtualBox platform packages
   - Extension Pack

2. Install VirtualBox platform packages

3. Install Extension Pack

   - from simply double click the downloaded file or *File → Preferences → Extensions → Add package*

2.2   Install Ubuntu 10.04

Install Ubuntu 10.04 on vitrtual machine which you installed. Maybe 10.10 or later are also available, but no tested.

Installation flow(VirtualBox)

1. Download the install image of Ubuntu 10.04. If you are Japanese, Japanese Remix is also available. Maybe it is easier than normal edition for Japanese.

2. Click *New* to create a new virtual machine.

3. Set virtual machine

   - Set memory 512MB or larger.
   - If you don't have virtual hard disk, create it. *Dynamically expanding storage* is recommended. In this mode you can create extremely huge hard disk, because the size of *virtual strage file* dynamically variable. And changing the size of virtual hard disk is difficult even if it is virtual. Author usually create 500GB or larger.

4. Install Ubuntu 10.04

   (a) Run the virutal machine that you have created. Then you will see *First Run Wizard*.
   (b) Follow the wizard and set the Media Source to the downloaded image of Ubuntu 10.04. Then installer of Ubuntu show up.
   (c) Select *Install*.
   (d) Set time region and keyboard.
   (e) Set partition. If you don't care, use entire disk.
   (f) Set user name, password and computer name. Check *login automatically* if you want.
   (g) Then click Install and wait for some minutes.
   (h) After finishing the installation, click reboot button.
   (i) Deactivate CD/DVD Device by uncheck the install disk from *Devices → CD/DVD Devices*. And hit ENTER key.

5. Login

6. Update

   - Automatically
   (a) Some minutes later after login, Update Manager pops up.
   (b) Click *Install Updates* button.
   (c) Input your password. Then update starts. It may take long time.
   (d) Reboot if you need.

- Manually
  - (a) Launch Terminal from *Applications → Accessories → Terminal*
  - (b) Type
    ```
    sudo apt-get update && sudo apt-get upgrade
    ```
  - (c) Input your password. Then update starts. It may take long time.
  - (d) Reboot if you need.

2.3 Run the install script

Installation process is little complex, so use the install script. The script do 3 things.

- Add repository to install maxima for sbcl.

- Installs some packages including maxima and sbcl.

- Installs some lisp-libraries for template engine.

Follow instructions below.

1. Download install script.***

2. Double click the downloaded file to extract archive.

3. Run install script

   - (a) Double click **install/rehogim-install.sh** to run install script.
   - (b) Click *Run in Terminal*
   - (c) Showed installing packages, and asked
     ```
     Do you want to continue [Y/n]?
     ```
     Input 'y' or simply hit Enter.
   - (d) After installing packages install template-engine. During installing process, you will see the words 'debugger' and 'HELP'. But don't be afraid, this is Lisp style installer.
   - (e) You are asked where to install like below. Now we use Personal installation, so hit '2' and Enter.
     ```
     Install where?
     1) System-wide install:
        System in /usr/lib/sbcl/site-systems/
        Files in /usr/lib/sbcl/site/
     2) Personal installation:
        System in /home/hiroshi/.sbcl/systems/
        Files in /home/hiroshi/.sbcl/site/
      -->
     ```
   - (f) Next you will see

4

```
Type HELP for debugger help, or (SB-EXT:QUIT) to exit from SBCL.

restarts (invokable by number or by possibly-abbreviated name):
  0: [SKIP-GPG-CHECK] Don't check GPG signature for this package
  1: [CONTINUE      ] Ignore runtime option --load "cl-emb-install.lisp".
  2: [ABORT         ] Skip rest of --eval and --load options.
  3:                  Skip to toplevel READ/EVAL/PRINT loop.
  4: [QUIT          ] Quit SBCL (calling #'QUIT, killing the process).

(ASDF-INSTALL::VERIFY-GPG-SIGNATURE/URL
 "http://mtn-host.prjek.net//projects/cl-emb/files/cl-emb.tar.gz"
 #P"/home/hiroshi/Dropbox/lab/RH/manual/current/CL-EMB.asdf-install-tmp")
 0]
```

(g) Choose '0' to SKIP-GPG-CHECK. You will see the messages like above some times (maybe 5 times). ALL time choose '0' to SKIP-GPG-CHECK.

(h) At the last, you will see the messagge like below.

```
All installation have finished!
```

4. Test environment.

   (a) Double click *install-script/test-clemb.sh*

   (b) Click *Run in Terminal*

   (c) If you see below message at the last, installation have finished correctly. If you get in trouble, close the terminal and run *rehogim-install.sh* again.

   ```
   2 + 2 = 4

   press ENTER to close this window
   ```

2.4   For more useful

VirtualBox Guest Additions Guest Additions enables some useful options. Such as sharing clipboards and folders, auto window resizing, seamless changing machine between host and client.

Sharing clipboard and folders You can share clipboad and folders.

2.4.1   VirtualBox Guest Additions

To share clipboard and folders, auto window resizing, seamless changing machine between host and client.

Installation

1. Boot Virtual Ubuntu.

2. Select *VboxGuestAdditions.iso* from *Devices→CD/DVD Devices* to mount the image.

3. Select *Places → VBOXADDITIONS_**** to open CD Device.

4. Showed File Browser, and click *Open Autorun Prompt.*

5. Click Run, and input your password.

6. GuestAdditions installation starts, wait until the message showed.

   ```
   Press Return to close this window...
   ```

7. Press Return on the window to close the window.

8. Reboot from upper right corner button.

2.4.2 Sharing clipboard and folders

You have to install *GuestAdditions* beforehand.

   After installing Sharing *GuestAdditions* sharing clipboard is enabled. You don't have to do special things.

   Sharing folders described below may be little difficult for Linux beginner. But read and do carefully it isn't so difficult!

1. Setting shared folder on Virtualbox

   (a) Open Shared folder Setting from *Devices→Shared Folders...*
   (b) Click *Add Shared Folder* icon.
   (c) Set parameters
       Folder Path Shared folder place in Host OS.
       Folder Name Shared folder name which you want use in Ubuntu.
       Read-only Check this if you want.
       Make Permanent Check this to make the change permanent.

2. Mount shared folder on Ubuntu

   (a) Open terminal
   (b) Create a folder for sharing

   ```
   mkdir vbshare
   ```

   (c) Type below command. Don't forget change ****username**** to your username.

   ```
   sudo mount.vboxsf -o uid=1000,gid=1000 vbshare /home/**username**/vbshare
   ```

   (d) Check shared folders by creating new folders and files

3. Setting for automatic mount

(a) Type below command to open the file */etc/rc.local*

      `sudo leafpad /etc/rc.local`

(b) Editor window appears and you will see below.

```
# By default this script does nothing.

exit 0
```

(c) Insert 1 line you typed before like

```
# By default this script does nothing.

sudo mount.vboxsf -o uid=1000,gid=1000 vbshare /home/**username**/vbshare
exit 0
```

(d) Save and close the editor

(e) Reboot Ubuntu

(f) Check shared folders by creating new folders and files

3 Usage

1. Fill input file.

2. Edit *input.mac* to choose your input file.

3. Double click *rehogim.sh* to run code generation.