ComS 252 Homework 6: Building Packages from Source

Group assignment (check syllabus for group penalty details)

Due October 17, 2023

1 Objectives

For this assignment, you will install software from source code. As discussed in lecture, this involves unpacking a compressed tarball, and then configuring, building, and installing the package.

2 Build a virtual machine

1. Download the ISO file to initialize the virtual machine for homework.
2. In VirtualBox, create a new virtual machine for this assignment. A little more disk space may be helpful for this machine (maybe 5 GB total).
3. Set the ISO file as the optical disk, and boot up the VM.
4. Select "Build Hw06 virtual machine" from the boot menu.
5. After installation completes, remove the homework initialization ISO from the Optical Drive. You are encouraged to take a snapshot of the VM at this point, in case you need to roll back to a fresh install.
6. At first boot, the VM initializes itself by fetching and running a script from the server. This requires Internet access, and VPN access if you are off campus. The script will, among other things, create a user account with your ISU username. All user accounts will initially have passwords that are the account name, followed by "`pw`".
7. When the VM shuts down after initialization, you are again encouraged to take a snapshot of the VM. That way, if you make a mistake and accidentally trash the user files, you can easily roll back to a freshly initialized VM.

The constructed virtual machine should have all necessary development tools and several libraries installed. Any other packages that you need should be built from source code, "by hand". **You may not use dnf, rpm, or yum.** If a package you are installing depends on another package (a library or executable), then you must install the dependency first. Tarballs for all the packages you will need (and others that you will not need) are available under subdirectory `Tarballs` in your home directory. Note that the submission script expects the following.

- Tarballs should be unpacked under the `Tarballs` subdirectory.
- Packages should be configured and built as ordinary user. **Do not do this as `root`.**
- Use `sudo make install`, to install packages to their *default locations*. You do this step as `root` because you must: ordinary users cannot copy files into `/usr` or `/usr/local`.
- Do not perform any cleanup after installing the packages. Leave the tarballs and the unpacked tarball directories in place.

You are *strongly encouraged* to read the documentation (`README` and/or `README.252` files) for any specific instructions to help you configure and build the packages.

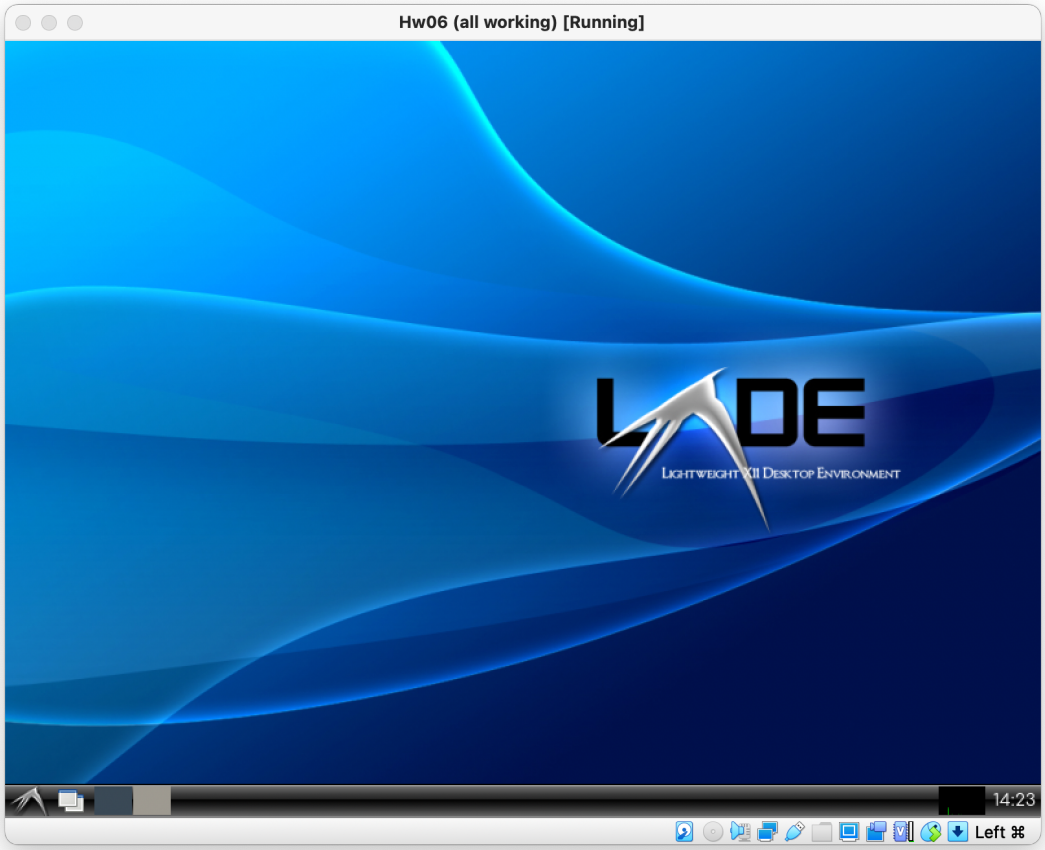

Figure 1: Screenshot of working LXDE

3 LXDE

1. Build and install `lxpanel`, `pcmanfm`, `lxsession`, and `lxde-common`, along with any required dependencies.
2. Run `ldconfig` as root after installing everything.
3. Test your `LXDE` installation by running `startx`; you should then see the screen shown in Figure 1.

4 Terminal

Build and install `lxterminal`, the terminal emulator for LXDE. To test this, run

```
startx
```

and when the GUI starts up, click on the menu icon in the lower left corner, and select "Run". Type "lxterminal" in the dialog box.

5 xearth

Build and install `xearth`. `xearth` is an amusement that draws the earth as seen from the sun according to the current time and date. You can test `xearth` by starting the GUI, opening a terminal window, and

running

```
xearth -noroot
```

If you forget the "`-noroot`", `xearth` will try (and fail silently) to display in the "root" window (the main background). If you forget to start the GUI, you will get a "Can't open display" error.

6 Submitting your work

From your user account, run "`sudo Turnin`" to submit your work. Again, this requires Internet access (and VPN access, from off campus), as this will collect and upload your work to the homework server.

Feedback on your submission is collected in a text file, that you can view later using "`cat submit.log`" or "`less submit.log`".

To shutdown the VM cleanly, run "`poweroff`".