Debian Packages
IN719 Systems Administration

1 Introduction

One of the nice features of Debian is its excellent package management system that makes it easy to install, update, and remove software packages. Most of the time we can get the software we want from ocial repositories. But sometimes we need to go beyond the standard sources and install something special. In these cases, we might go outside the package system, but then we lose the benefitts of the package manager. It turns out that it's not hard to create our own packages, and we'll see that in this lab.

2 The problem

In the `week03` folder on GitHub there's a simple shell script called `interactive_cowsay`. We want to install it in `/usr/bin`. But our script has a *dependency*, the Debian package `cowsay` that is available from the standard repositories. We'll create a `.deb` fille for our packages that addresses these requirements. To begin, copy the `interactive_cowsay` script onto your Debian `mgmt` server. Create a subdirectory of your home directory called `interactive_cowsay_package`. We'll use it to set up our package.

3 Preparing the package

1. We want to install the executable file under `/usr/bin`, so create a `usr/bin` subdirectory tree under `interactive_cowsay_package`. Move the `interactive_cowsay` file into `interactive_cowsay_package/usr/bin`.
2. It's best to get the ownership and permissions right at this stage. Make sure that `root` owns the `usr` subdirectory and everything under it. Make sure that everybody can read and execute `interactive_cowsay`.
3. Create another subdirectory of `interactive_cowsay_package` called `DEBIAN`.
4. Inside `DEBIAN`, create three text files: `control`, `postinst`, and `prerm`. `postinst` is a shell script that does whatever tasks must be done after the package files are installed. `prerm` is a shell script that does whatever must be done before removing package files when uninstalling. We don't need to do anything in those cases, so both files just need to contain the following:

   ```
   #!/bin/sh
   exit 0
   ```

5. The `control` file contains information about your package. Use the following information, it is explained below.

```
Package: interactive-cowsay
Version: 1.0
Architecture: all
Essential: no
Depends: cowsay
Installed-Size: 512
Maintainer: Tom Clark <tom.clark@op.ac.nz> (use your own information here)
Description: Provides an interactive front end for cowsay
```

   Package What you chose to name your package. It shouldn't conict with another package's name and it can only contain alphanumeric characters, hyphens, and full stops.

   Version Whatever numbering scheme you want, but the standard x.y numeric format is best. Don't use hyphens, e.g., 2.4-2.

   Architecture Our package works on all hardware architectures.

   Essential Our package is not essential. If you try to uninstall essential packages, you will get a warning message.

   Depends Our package depends on the package `cowsay` to work properly.

   Installed-Size Our package will take up 512 bytes of disk once it's installed.

   Maintainer Who to blame for this fiasco.

   Description A short description of the package.

6. Now you're ready to make the package. Move back up to your home directory, or wherever the directory `interactive_cowsay_package` is located. Issue the command `dpkg -b interactive_cowsay_package interactive-cowsay-1.0.deb`. This should produce a `.deb` file named `interactive-cowsay-1.0.deb`.

4 Installing the package

Now you can install the package with the command `sudo dpkg -i interactive-cowsay-1.0.deb`. Try it. What happens? The problem is that your package depends on the `cowsay` package. But dpkg isn't smart enough to find and install it for you. For that, you need `apt-get`, and to use it for your new package, you need to set up a Debian *repository*. Setting up and running a repository is not hard, but it's beyond the scope of today's exercise. However, you can complete the install my installing `cowsay` yourself and then installing your new package.