Building Debian Packages

1. Advantages of building Debian packages
   (a) Easy upgrades
   (b) Leverage from following Debian standards
   (c) Feedback via Debian bug system (`http://www.debian.org/Bugs`)
   (d) Fame and free CDs
2. Considerations in building a package
   (a) Examine the upstream source (README, INSTALL, Makefile, etc.)
   (b) Is the license DFSG compliant (Debian Free Software Guidelines — `http://www.debian.org/social_contract.html#guidelines`)
   (c) Use boilerplate (the mawk packaging is my best example)
   (d) Install the debian-policy package and read /usr/doc/debian-policy
   (e) Follow the Linux filesystem standard (`http://www.pathname.com/fhs`)
   (f) Hint: use `make`(1)'s -n option
   (g) Test the packaging:
      - `ls -alR debian/tmp*`
      - `dpkg -c ../new-pkg.deb`
      - `dpkg -I ../new-pkg.deb`
      - `dpkg -i ../new-pkg.deb`
3. Example `debian/control` file

```
Source: mawk
Section: base
Priority: required
Maintainer: Chris Fearnley <cjf@netaxs.com>
Standards-Version: 2.1.1.0

Package: mawk
Architecture: any
Provides: awk
Depends: ${shlibs:Depends}
Description: a pattern scanning and text processing language
 Mawk is an interpreter for the AWK Programming Language. The AWK
 language is useful for manipulation of data files, text retrieval and
 processing, and for prototyping and experimenting with algorithms. Mawk
 is a new awk meaning it implements the AWK language as defined in Aho,
 Kernighan and Weinberger, The AWK Programming Language, Addison-Wesley
 Publishing, 1988. (Hereafter referred to as the AWK book.) Mawk conforms
 to the Posix 1003.2 (draft 11.3) definition of the AWK language
 which contains a few features not described in the AWK book, and mawk
 provides a small number of extensions.
 .
 Mawk is smaller and much faster than gawk. It has some compile-time
 limits such as NF = 32767 and sprintf buffer = 1020.
```

4. Example `debian/rules`

```
#!/usr/bin/make -f

# file: debian/rules
# Copyright 1994,1995 by Ian Jackson.
# I hereby give you perpetual unlimited permission to copy,
# modify and relicense this file, provided that you do not remove
# my name from the file itself.  (I assert my moral right of
# paternity under the Copyright, Designs and Patents Act 1988.)
# This file may have to be extensively modified

# There used to be ‘source’ and ‘diff’ targets in this file, and many
# packages also had ‘changes’ and ‘dist’ targets.  These functions
# have been taken over by dpkg-source, dpkg-genchanges and
# dpkg-buildpackage in a package-independent way, and so these targets
# are obsolete.

package=mawk
# The version of the package (for example, ‘19.28’).
version=1.3.3
# The Debian revision of the package (for example, ‘2’).
debian=1

make_directory= install -d -o root -g root -m 755
install_binary= install -s -o root -g root -m 755
install_script= install    -o root -g root -m 755
install_files=  install    -o root -g root -m 644

CC = gcc
CFLAGS = -O2 -g -Wall
LDFLAGS =

build:
$(checkdir)
@echo "Building the binaries ..."
./configure
$(MAKE) CC="$(CC)" CFLAGS="$(CFLAGS)" LDFLAGS="$(LDFLAGS)"
bash -n debian/postinst
bash -n debian/prerm
touch build

clean:
$(checkdir)
@echo "Cleaning up after 'make build' ..."
-rm -f build
-$(MAKE) -i clean || $(MAKE) -f Makefile.in distclean
-rm -f config.cache config.h config.log config.status Makefile man/index.db
-rm -rf debian/tmp debian*~ debian/{substvars,files,files.new}

binary-indep:  checkroot build
$(checkdir)
@echo 'No architecture independend package components.'; false
# There are no architecture-independent files to be uploaded
# generated by this package.  If there were any they would be
# made here.
```

```
binary-arch: checkroot build
$(checkdir)
@echo "Making the binary package: $(package)-$(version)-$(debian).deb ..."
rm -rf debian/tmp
$(make_directory) debian/tmp/DEBIAN
$(make_directory) debian/tmp/usr/bin
$(make_directory) debian/tmp/usr/man/man1
$(make_directory) debian/tmp/usr/doc/$(package)/examples
$(install_script) debian/{prerm,postinst} debian/tmp/DEBIAN/
$(install_binary) mawk debian/tmp/usr/bin/
$(install_files) CHANGES debian/tmp/usr/doc/$(package)/changelog
$(install_files) debian/changelog debian/tmp/usr/doc/$(package)/changelog.Debian
$(install_files) man/mawk.1  debian/tmp/usr/man/man1/
$(install_files) debian/copyright debian/tmp/usr/doc/$(package)/
$(install_files) examples/* debian/tmp/usr/doc/$(package)/examples/
gzip -9 debian/tmp/usr/{man/man1/mawk.1,doc/$(package)/{changelog,changelog.Debian,examples/*}}
dpkg-shlibdeps mawk; dpkg-gencontrol
chown -R root.root debian/tmp
dpkg --build debian/tmp ..

# Below here is fairly generic really.

binary: binary-indep binary-arch

dist-full:
dpkg-buildpackage -rsudo -uc -us -sa
@echo "You may run \"debian/rules clean\" to clean up after the build"

dist-update:
dpkg-buildpackage -rsudo -uc -us -sd
@echo "You may run \"debian/rules clean\" to clean up after the build"

dist: dist-full

update: dist-update

checkroot:
$(checkdir)
test root = "`whoami`"

define checkdir
test -f $(package).h -a -f debian/rules
endef

.PHONY: binary binary-indep binary-arch dist update clean checkroot
```