



## Exercise 19.2: Building a Debian package from source

In this exercise we will build a **Debian** package from its upstream source tarball. (Of course if you are on a non-**Debian** based system you can not perform this exercise!)

We will use a simple **hello** program package, the source of which is contained in the SOLUTIONS tarball you can obtain from <https://training.linuxfoundation.org/cm/LFS211>.

Before beginning you may want to make sure you have the necessary utilities installed with:

```
$ sudo apt-get install dh-make fakeroot build-essential
```

The contents are:

```
$ tar xvf myappdebian-1.0.tar.gz
myappdebian-1.0/
myappdebian-1.0/Makefile
myappdebian-1.0/myhello.c
myappdebian-1.0/README
```

where:

```
$ cat README
```

Some very informative information should go in here :)

```
$ cat myhello.c
```

```
#include <stdio.h>
#include <stdlib.h>
char hello_string[] = "hello world";
int main ()
{
    printf ("\n%s\n\n", hello_string);
    exit (EXIT_SUCCESS);
}
```

```
$ cat Makefile
```

```
BIN = $(DESTDIR)/usr/bin
CFLAGS :=      -O $(CFLAGS)
TARGET=        myhello
SRCFILES=      myhello.c

all: $(TARGET)

$(TARGET):      $(SRCFILES)
                $(CC) $(CFLAGS) -o $(TARGET) $(SRCFILES)

install: $(TARGET)
                install -d $(BIN)
                install $(TARGET) $(BIN)

clean:
                rm -f $(TARGET)
```

**Note:** You can certainly construct a simpler Makefile. However, you must have the line:

```
BIN = $(DESTDIR)/usr/bin
```

and point the installation to the BIN directory, or the executable will not be installed as part of the package.

The main steps in the following are encapsulated in the `lab_makedeb.sh` which is also in the SOLUTIONS tarball for this class section:

1. Make a working directory and put a copy of the source tarball in there:

```
$ rm -rf WORK && mkdir WORK && cd WORK
$ cp ../myappdebian-1.0.tar.gz .
```

2. Expand the source tarball:

```
$ tar xvf myappdebian-1.0.tar.gz
```

3. Go into the expanded directory and build the package, using **dh.make**, one of several possible package builder programs:

```
$ cd myappdebian-1.0
$ dh_make -f ../myappdebian-1.0.tar.gz
$ dpkg-buildpackage -uc -us
```

4. Make sure the program works!

```
$ ./myhello
hello world
```

Verify its contents:

```
$ dpkg --contents ../*.deb
```

5. Take a good look at all the files in the `debian` directory and try to imagine building them all by hand!

6. Install the package:

```
$ cd ..
$ sudo dpkg --install *.deb
```

Verify the installation worked:

```
$ myhello
hello world
```

You can uninstall the package with:

```
$ sudo dpkg --remove myappdebian
```