Packages:

```
# If you haven't already added the ev3dev.org repository...
sudo apt-add-repository "deb http://archive.ev3dev.org/ubuntu trusty main"
sudo apt-key adv --keyserver pgp.mit.edu --recv-keys 2B210565
sudo apt-get update
# then install required packages
sudo apt-get install git build-essential ncurses-dev fakeroot bc
```

Plus any of the following that apply...

- For EV3 or Beaglebone kernel:

```
sudo apt-get install u-boot-tools lzop
gcc-linaro-arm-linux-gnueabihf-5.2
```

1. Create a working directory somewhere. For this tutorial, we are using `~/work`. The build scripts will generate extra subdirectories here so we suggest creating a new directory instead of using an existing one.

```
~ $ mkdir work
~ $ cd work
```

2. Clone this repo and also the ev3-kernel repo (or rpi-kernel or bb.org-kernel), then make sure the lego drivers submodule is up to date (we don't always update the submodule commit in the kernel repo, so you have to pull manually to get the most recent commits).

```
~/work $ git clone git://github.com/ev3dev/ev3dev-buildscripts
~/work $ git clone --recursive git://github.com/ev3dev/ev3-kernel
~/work $ cd ev3-kernel/drivers/lego
~/work/ev3-kernel/drivers/lego $ git pull origin master
~/work/ev3-kernel/drivers/lego $ cd ../../..
```

3. Change to the `ev3dev-buildscripts` directory and have a look around.

```
~/work $ cd ev3dev-buildscripts
~/work/ev3dev-buildscripts $ ls
```

```
boot.cmd        build-kernel  LICENSE    menuconfig  setup-env
build-boot-scr  defconfig     local-env  README.md
```

Create a `local-env` to make use of all of your processing power. See the Faster Builds and Custom Locations section below for more about this file.

```
~/work/ev3dev-buildscripts $ echo "export EV3DEV_MAKE_ARGS=-j4" >
local-env
```

4. Now we can compile the kernel.

```
~/work/ev3dev-buildscripts $ ./build-kernel
```

Sharing Your Kernel

Want to send your custom kernel to someone so that they can use it? Never fear, there is an easy way to do that - using Debian packaging.

First, we want to set a kernel option so that our friends will know what kernel they are running. Run `./menuconfig` and set this option:

```
General setup --->
  (-your-name-ev3) Local version - append to kernel release
```

Make sure to include the '-' prefix in `-your-name` on the *Local version*. And, of course, substitute something like your github user name for *your-name*. It is also important that the kernel release ends with `-ev3` so that `flash-kernel` will recognize it as a "good" kernel and install it automatically.

Then, we build a Debian package.

```
~/work/ev3dev-buildscripts $ ./build-kernel deb-pkg KDEB_PKGVERSION=1
...
<lots-of-build-output>
...
```

```
~/work/ev3dev-buildscripts $ ls ./build-area/*.deb
./build-area/linux-headers-3.16.7-ckt9-5-ev3dev-your-name-ev3_1_armel.deb
./build-area/linux-image-3.16.7-ckt9-5-ev3dev-your-name-ev3_1_armel.deb
./build-area/linux-libc-dev_1_armel.deb
```

Now, send the `linux-image-*` file to your friend with these instructions:

- Copy the `.deb` file to your EV3
- Install the package
- Reboot the EV3

```
user@host ~ $ scp linux-image-*.deb otheruser@ev3dev:~
user@host ~ $ ssh otheruser@ev3dev
otheruser@ev3dev:~$ sudo dpkg --install ~/linux-image-*.deb
otheruser@ev3dev:~$ sudo reboot
```