

# Homework 2

## Build Linux Kernel

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1. **Research:** I used Google to search for the best method to build the kernel in my environment (Ubuntu 14.10 Intel I7). [This video](#) was the most helpful.
2. **Prerequisites:** Throughout the process I encountered many packages that needed installation. As I encountered them, I installed them. The above video helped in this regard.
3. **Download & Unzip:** The next step was to download and unzip the latest stable kernel from [www.kernel.org](http://www.kernel.org). That kernel was 3.19.
4. **Prepare:** I then initialized the environment with the following command:

```
make clean && make mrproper
```
5. **Configure:** The next step was to configure. I figured I would make many mistakes doing a cold configuration. So I copied `\boot\config-3.16.0-30-generic` to the unzipped directory. This provides a sane base for the correct values of configuration options I don't understand.

I then ran `make menuconfig` and reviewed and changed the following options and saved to the file `.config`:

1. The default is a generic x86 cpu, but my laptop has an I7. I configured accordingly.
2. Since I use NTFS formatted USB drives, I added NTFS write support.
6. **Make:** I then compiled the kernel to a package using the following command and added a custom signature.

```
fakeroot make-kpkg -j8 --initrd --append-to-version=-david-csci-523 kernel-image kernel-headers
```
7. **Install:** I then installed the kernel with the following command:

```
sudo dpkg -i *.deb
```
8. **Boot:** I then rebooted:

```
sudo reboot
```
9. **Verify:** I then verified the compiled kernel booted successfully. The command `uname -a` produced this output:

```
Linux DavidLaptop 3.19.0-david-csci-523 #1 SMP Wed Feb 11 18:32:04 CST 2015 x86_64 x86_64 x86_64 GNU/Linux
```