# Linux Kernel Fundamentals

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## Linux Kernel Fundamentals: Chapter 5, Configuring and Building a Linux Kernel

1. In the top-level kernel source directory, copy the config file for your current kernel from `/boot`, and call it `.config`. You will start with that. The file name should be something like `/boot/config-<kernel version>`.

2. Use make `menuconfig` or make `xconfig` to configure the kernel.

   Some parameters to make sure to select:

   General setup
   Prompt for development and/or incomplete code/drivers.
   Enable loadable module support.
   Module unloading
   Forced module unloading
   Device drivers
   Network device support
   Your system's network driver
   (as a module, try `ethtool -i eth0 # or maybe eth1, or ens1…`)

   File systems
   DOS/FAT/NT filesystems
   MSDOS fs (as a module)
   VFAT (as a module)
   Kernel hacking
   Kernel debugging
   Tracers
   Kernel function graph tracer

   Make sure to select your network card driver as a module.

3. Compile the kernel to a bootable bzImage format with make. While this is building, you can move on to the tags question below. What files were added to your current directory? What files were added to `arch/x86/boot`?

4. Install the modules with make `modules_install`.

5. Copy the bzImage file and the `System.map` file to the `/boot` directory. You can accomplish these on most systems with just `“make install”`.

   *On Ubuntu, you may need to do some extra steps after make install.*

   *- Create a new initramfs with the command. (You may need to adjust the kernel version.)*