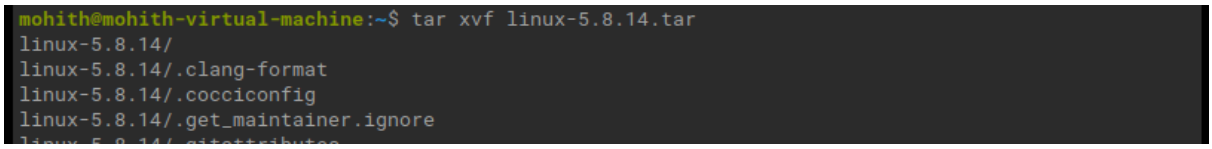
LINUX KERNEL COMPILATION

Objective:

- Compile the stable linux kernel downloaded from kernel.org .
- Dual boot it with the current linux version.

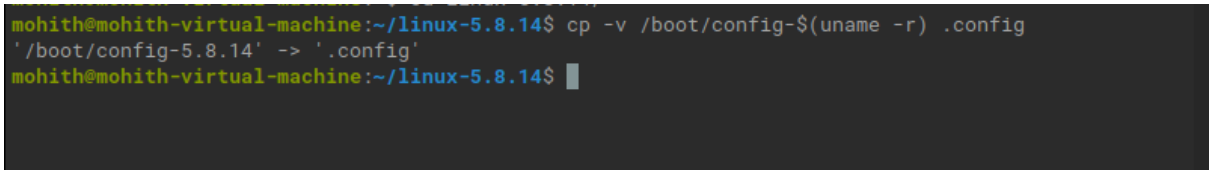
Step - 1:

Grab the current linux kernel version, download it and extract the source code file from tar.xz



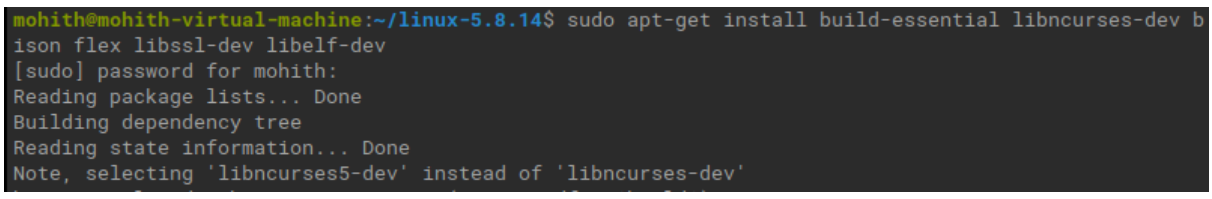
Step - 2:

Before building the kernel, one must configure Linux kernel features. Copy the existing kernel's configuration file to .config. Here ***uname -r*** is used to get the existing kernel's version.



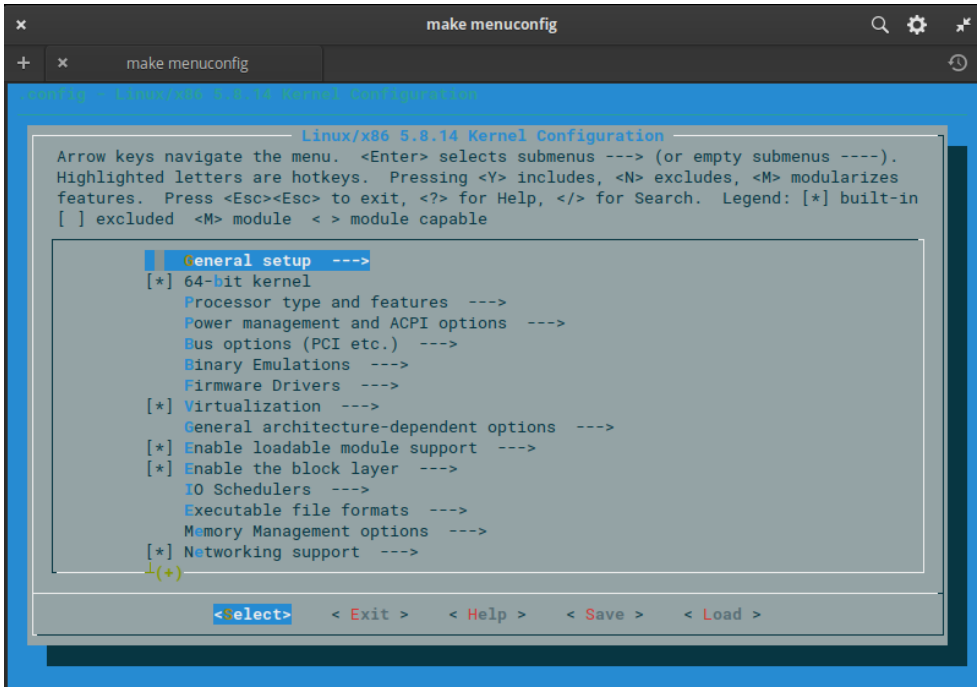
Step - 3:

Development tools such as GCC compilers and other necessary tools installed to compile the Linux kernel.



Step - 4: (optional)

Start configuring the kernel using test based color menus, radiolists and dialogs.



Step - 5:

Start compiling using ***make*** command. This process can also be speeded-up by using multiple threads

$ make -j $(nproc)

```
mohith@mohith-virtual-machine:~/linux-5.8.14$ nproc
4
mohith@mohith-virtual-machine:~/linux-5.8.14$ make -j 4
  DESCEND  objtool
  CALL    scripts/atomic/check-atomics.sh
  CALL    scripts/checksyscalls.sh
```

Step - 6:

Install the linux kernel modules .

```
mohith@mohith-virtual-machine:~/linux-5.8.14$ sudo make modules_install
[sudo] password for mohith:
  INSTALL arch/x86/crypto/aegis128-aesni.ko
  INSTALL arch/x86/crypto/aesni-intel.ko
  INSTALL arch/x86/crypto/blowfish-x86_64.ko
  INSTALL arch/x86/crypto/camellia-aesni-avx-x86_64.ko
  INSTALL arch/x86/crypto/camellia-aesni-avx2.ko
  INSTALL arch/x86/crypto/camellia-x86_64.ko
  INSTALL arch/x86/crypto/cast5-avx-x86_64.ko
  INSTALL arch/x86/crypto/cast6-avx-x86_64.ko
  INSTALL arch/x86/crypto/chacha-x86_64.ko
  INSTALL arch/x86/crypto/crc32-pclmul.ko
  INSTALL arch/x86/crypto/crct10dif-pclmul.ko
  INSTALL arch/x86/crypto/des3_ede-x86_64.ko
  INSTALL arch/x86/crypto/ghash-clmulni-intel.ko
  INSTALL arch/x86/crypto/glue_helper.ko
```

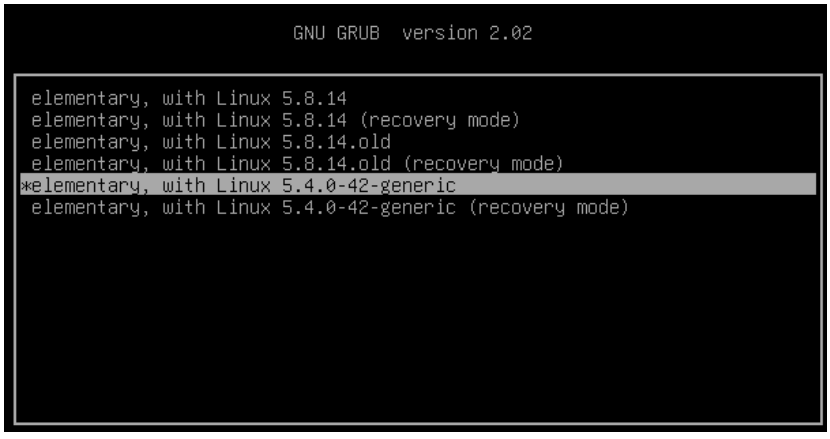
Step - 7:

Install the kernel.

```
mohith@mohith-virtual-machine:~/linux-5.8.14$ sudo make install
[sudo] password for mohith:
sh ./arch/x86/boot/install.sh 5.8.14 arch/x86/boot/bzImage \
        System.map "/boot"
run-parts: executing /etc/kernel/postinst.d/apt-auto-removal 5.8.14 /boot/vmlinuz-5.8.14
run-parts: executing /etc/kernel/postinst.d/initramfs-tools 5.8.14 /boot/vmlinuz-5.8.14
update-initramfs: Generating /boot/initrd.img-5.8.14
```

Step - 8:

Reboot the system and select the new kernel from the grub menu.



Step - 9:

Check for the current kernel version.

```
mohith@mohith-virtual-machine:~/linux-5.8.14$ uname -r
5.8.14
mohith@mohith-virtual-machine:~/linux-5.8.14$
```