Optional Assignment 3

Kernel Compilation

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Creating the Virtual Machine

- Install QEMU. `sudo pacman -S qemu`
- Create a Virtual Hard Drive of size 50GB for the Virtual operating system(ParrotSec) using command: `qemu-img create parrot.img 50G`
- Download ParrotSec ISO from its Website
- Boot up the virtual machine from the ParrotSec ISO on virtual drive `parrot.img` with 2GB ram assigned to the virtual machine. Using command: `qemu-system-x86_64 -hda parrot.img -enable-kvm -cpu host -boot d -vga virtio -cdrom ./ISOs/Parrot-security-4.7_x64.iso -m 2048`
- Follow the prompt to install Parrot sec on the virtual machine
- Boot up the virtual machine from the virtual drive using the command: `qemu-system-x86_64 -hda parrot.img -enable-kvm -cpu host -boot d -vga virtio -m 2048`

Compiling Kernel

- Download kernel 5.5.5.tar.xz.
- Extract the kernel source
- Install dependencies using command: `sudo apt-get install build-essential linux-source bc kmod cpio flex cpio libncurses5-dev`
- Change the config file so that it won't give error while compiling: `CONFIG_SYSTEM_TRUSTED_KEYS = ""`
- cd to the root folder of the kerenel source folder
- Copy the config file of the current kernel into the current working directory, this will tell which modules to include while compilation. Use command: `cp /boot/config-$(uname -r) .config`
- Use command `make menuconfig` to create the new config file
- Use command `make` to compile the kerenel
- Install the compiled modules using: `make modules_install`
- Install the kernel in /boot directory using the command: `sudo make install`
- Create the initial ram file system using the command:`sudo update-initramfs -c -k 5.5.5`
- Update the GRUB2 bootloader using the command: `sudo update-grub`

Output of `uname -a`

```
Linux parrot 5.5.5 #1 SMP Mon Feb 24 12:21:50 IST 2020 x86_64 GNU/Linux
```