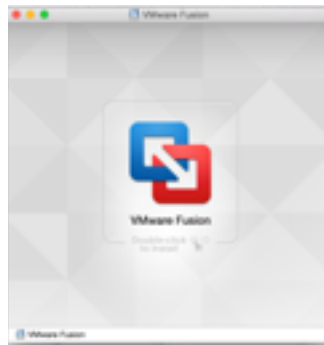


Operating System Project 0

1. Install VM-ware instead of Virtual-Box



Reason : Virtual-Box isn't easy to use because we confronted some difficulties, such as the size of the screen of virtual machines can't be changed, and the scrap book is not shared between virtual machines and the original real machine by default settings.

2. Install Ubuntu in VM-ware



The storage size divided for Ubuntu : 32 GB (We divided 8 GB before but found that it's not enough)

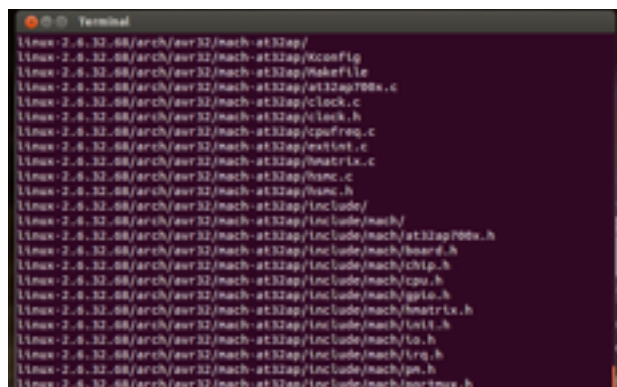
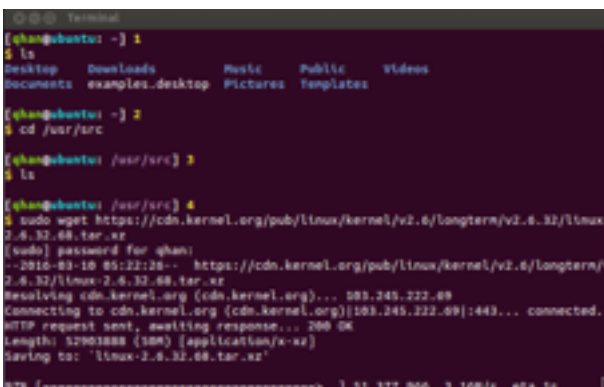
3. Get kernel packages and decompress them

```
$ sudo apt-get install fakeroot build-essential kernel-package libncurses5 libncurses5-dev
// install the tools for building a kernel

$ cd /usr/src // change directory to src for downloading the compressed kernel

$ sudo wget cdn.kernel.org/pub/linux/kernel/v2.6/longterm/v2.6.32/linux-2.6.32.68.tar.xz
// download the kernel

$ sudo tar xvf linux-2.6.32.68.tar.xz // decompress
```



4. Execute Makefile

```
$ sudo make mrproper           // clean stale object files or dependencies
$ sudo make menuconfig        // configure the kernel in text based color menu
$ sudo make bzImage            // compile and compress the kernel into
$ sudo make modules            // compile modules selected during menuconfig step
$ sudo make modules_install    // install modules into /lib/modules/`uname -r`
$ sudo make install            // install kernel
```

```
Linux-2.6.32.68/usr/initramfs_data.bz2.$
Linux-2.6.32.68/usr/initramfs_data.gz.$
Linux-2.6.32.68/usr/initramfs_data.lzma.$
Linux-2.6.32.68/virt/
Linux-2.6.32.68/virt/kvm/
Linux-2.6.32.68/virt/kvm/kconfig
Linux-2.6.32.68/virt/kvm/coalesced_mmio.c
Linux-2.6.32.68/virt/kvm/coalesced_mmio.h
Linux-2.6.32.68/virt/kvm/eventfd.c
Linux-2.6.32.68/virt/kvm/iapic.c
Linux-2.6.32.68/virt/kvm/iapic.h
Linux-2.6.32.68/virt/kvm/iodev.h
Linux-2.6.32.68/virt/kvm/iommu.c
Linux-2.6.32.68/virt/kvm/iirq_comm.c
Linux-2.6.32.68/virt/kvm/kvm_mmu.c
[ghas@ubuntu: /usr/src] #
$ cd linux-2.6.32.68/
[ghas@ubuntu: /usr/src/linux-2.6.32.68] #
$ sudo make mrproper
[ghas@ubuntu: /usr/src/linux-2.6.32.68] #
```

```
CC [M] sound/pci/intel8x0m.o
CC [M] sound/pci/nasr32.o
CC [M] sound/pci/rme32.o
CC [M] drivers/usb/lcd/hwmon/hwmon.o
CC [M] sound/pci/rme96.o
LD [M] drivers/usb/lcd/hwmon/hwmon.o
CC [M] sound/pci/sis7019.o
CC [M] drivers/usb/lcd/lpohl/lpohl_main.o
CC [M] sound/pci/sonicvibes.o
CC [M] drivers/usb/lcd/lpohl/lpohl_ib.o
CC [M] sound/pci/vl82xx/modem.o
CC [M] drivers/usb/lcd/lpohl/lpohl_multicast.o
CC [M] sound/pci/vl82xx.o
CC [M] drivers/usb/lcd/lpohl/lpohl_verbs.o
CC [M] sound/pci/ac97/ac97_codec.o
CC [M] drivers/usb/lcd/lpohl/lpohl_vlan.o
CC [M] drivers/usb/lcd/lpohl/lpohl_ethnet.o
CC [M] drivers/usb/lcd/lpohl/lpohl_cm.o
CC [M] sound/pci/ac97/ac97_pcm.o
LD [M] drivers/usb/lcd/lpohl/lpohl_ib_lpohl.o
CC [M] drivers/usb/lcd/lpohl/lpohl_verbs.o
CC [M] sound/pci/ac97/ac97_proc.o
```

Problems : The procedure of making object files is slow, thus we added “-j 2” in commands.

5. Edit the file /etc/default/grub

```
$ sudo vim /etc/default/grub
```

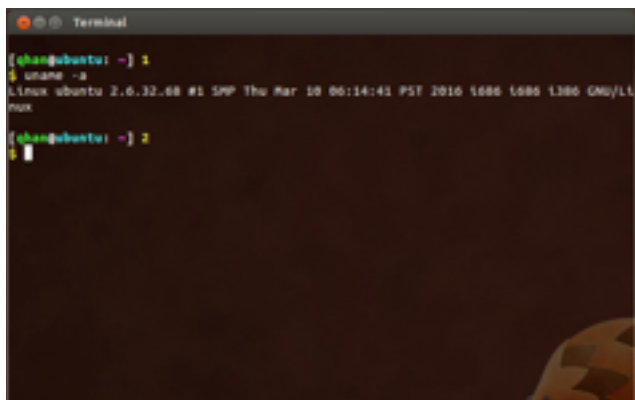
Add ‘#’ to ”GRUB_HIDDEN_TIMEOUT=10” and “GRUB_HIDDEN_TIMEOUT_QUIET=true” to cancel the timer of choosing the version before booting

```
$ sudo update-grub2
```

6. Restart the virtual machine

```
$ sudo shutdown -r now           // “-r” means restart
```

7. Finish building the kernel



reference :

http://linux.vbird.org/linux_basic/0540kernel/0540kernel-2.4.18.php

http://www.csee.umbc.edu/courses/undergraduate/CMSC421/fall02/burt/projects/howto_build_kernel.html

