Project 1 Report

CSC 4320/6320 – Operating Systems

Spring 2018

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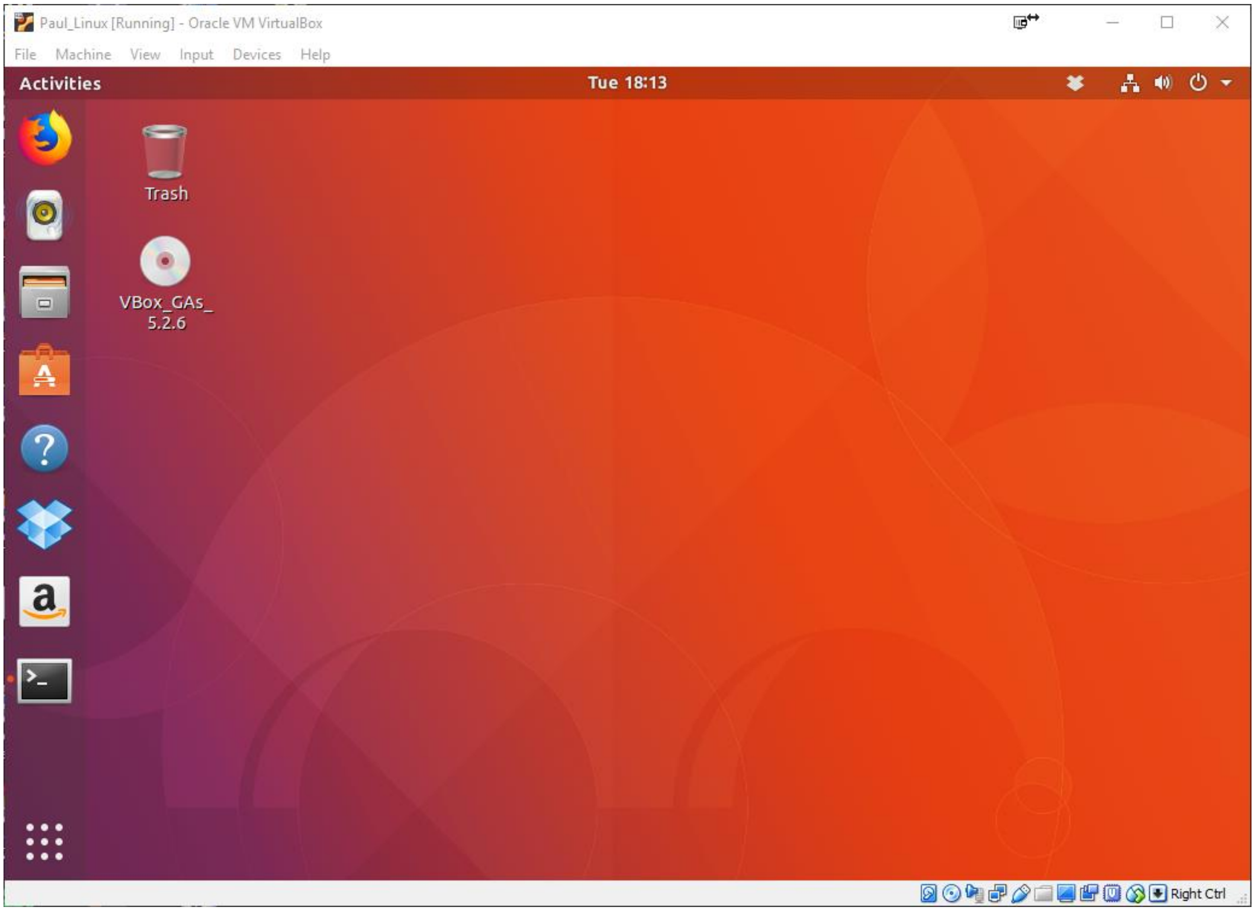
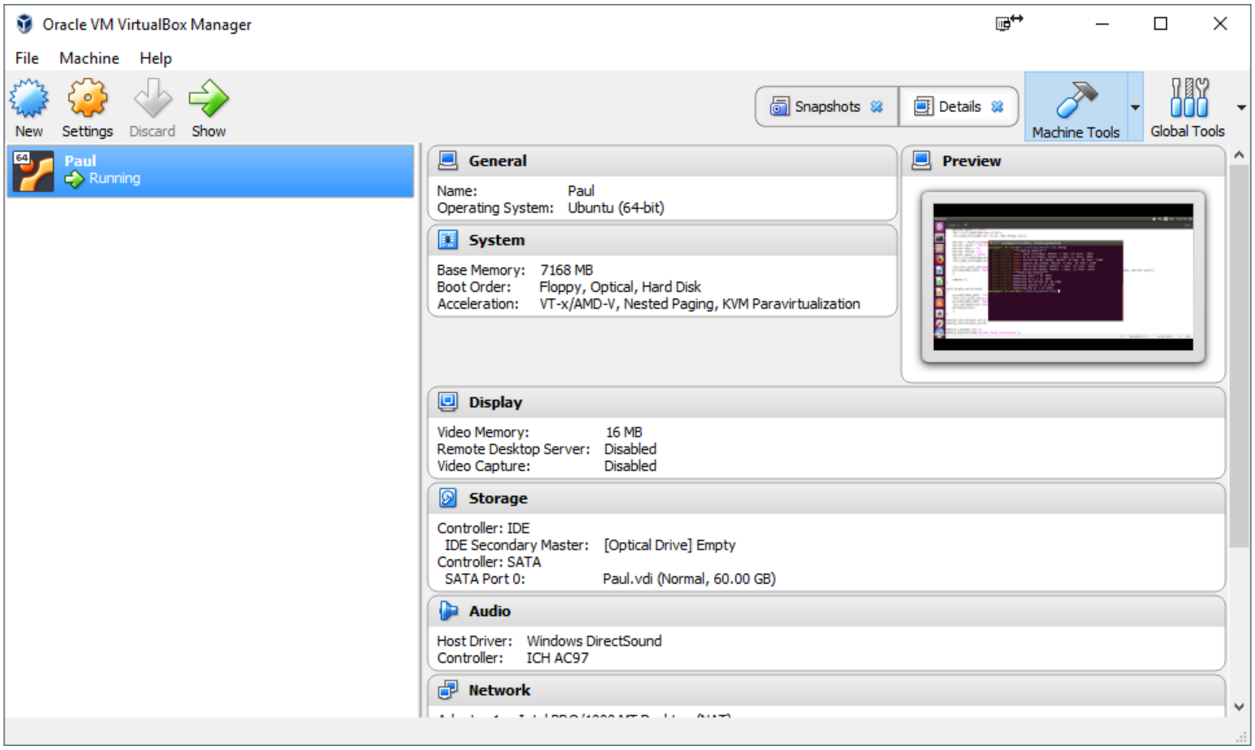
Part 1:


Paul_Linux [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Tue 18:13
Trash
VBox_GAs_
5.2.6
Right Ctrl



General

Name: Paul
Operating System: Ubuntu (64-bit)

System

Base Memory: 7168 MB
Boot Order: Floppy, Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization

Display

Video Memory: 16 MB
Remote Desktop Server: Disabled
Video Capture: Disabled

Storage

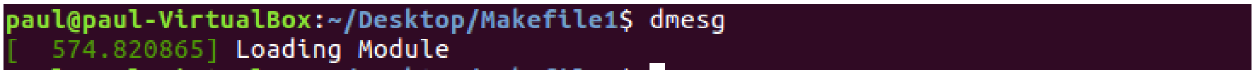
Controller: IDE
IDE Secondary Master: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Paul.vdi (Normal, 60.00 GB)

Audio

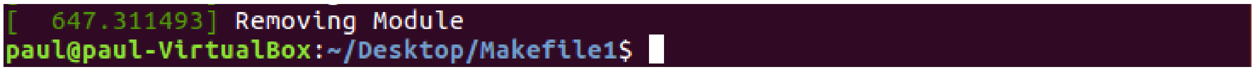
Host Driver: Windows DirectSound
Controller: ICH AC97

Network

Part 2:

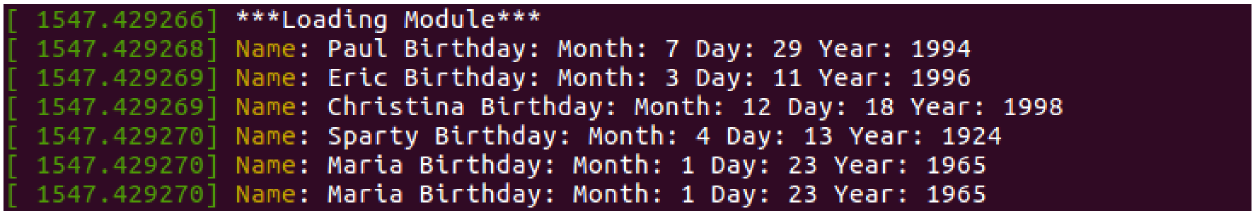


```
paul@paul-VirtualBox:~/Desktop/Makefile1$ dmesg
[  574.820865] Loading Module
```

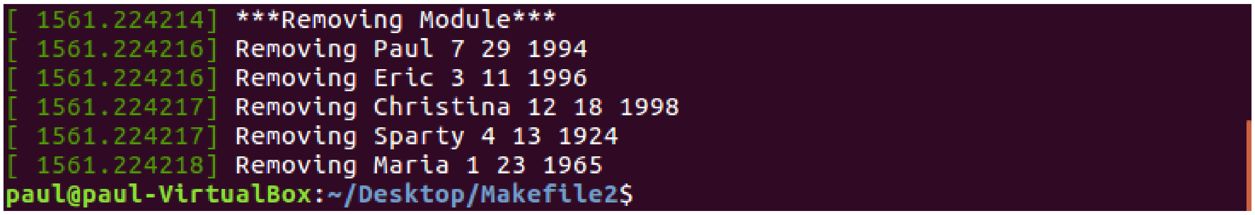


```
[  647.311493] Removing Module
paul@paul-VirtualBox:~/Desktop/Makefile1$ 
```

Part 3:



```
[ 1547.429266] ***Loading Module***
[ 1547.429268] Name: Paul Birthday: Month: 7 Day: 29 Year: 1994
[ 1547.429269] Name: Eric Birthday: Month: 3 Day: 11 Year: 1996
[ 1547.429269] Name: Christina Birthday: Month: 12 Day: 18 Year: 1998
[ 1547.429270] Name: Sparty Birthday: Month: 4 Day: 13 Year: 1924
[ 1547.429270] Name: Maria Birthday: Month: 1 Day: 23 Year: 1965
[ 1547.429270] Name: Maria Birthday: Month: 1 Day: 23 Year: 1965
```



```
[ 1561.224214] ***Removing Module***
[ 1561.224216] Removing Paul 7 29 1994
[ 1561.224216] Removing Eric 3 11 1996
[ 1561.224217] Removing Christina 12 18 1998
[ 1561.224217] Removing Sparty 4 13 1924
[ 1561.224218] Removing Maria 1 23 1965
paul@paul-VirtualBox:~/Desktop/Makefile2$
```

```
#include <linux/init.h>

#include <linux/module.h>

#include <linux/kernel.h>
```

```
#include <linux/list.h>
#include <linux/slab.h>

struct birthday
{
    int month;
    int day;
    int year;
    char *name;
    struct list_head list;
};

/**
 * The following defines and initializes a list_head object named birthday_list
 */
static LIST_HEAD(birthday_list);
struct birthday *person;
struct birthday *next;

int simple_init(void)
{
    printk(KERN_INFO "***Loading Module***\n");

    person = kmalloc(sizeof(*person), GFP_KERNEL);
    person->name = "Paul";
    person->day = 29;
    person->month = 7;
    person->year = 1994;
    INIT_LIST_HEAD(&person->list);
    list_add_tail(&person->list, &birthday_list);
```

```
person = kmalloc(sizeof(*person), GFP_KERNEL);
person->name = "Eric";
person->day = 11;
person->month = 3;
person->year = 1996;
INIT_LIST_HEAD(&person->list);
list_add_tail(&person->list, &birthday_list);

person = kmalloc(sizeof(*person), GFP_KERNEL);
person->name = "Christina";
person->day = 18;
person->month = 12;
person->year = 1998;
INIT_LIST_HEAD(&person->list);
list_add_tail(&person->list, &birthday_list);

person = kmalloc(sizeof(*person), GFP_KERNEL);
person->name = "Sparty";
person->day = 13;
person->month = 4;
person->year = 1924;
INIT_LIST_HEAD(&person->list);
list_add_tail(&person->list, &birthday_list);

person = kmalloc(sizeof(*person), GFP_KERNEL);
person->name = "Maria";
person->day = 23;
person->month = 1;
person->year = 1965;
```

```
    INIT_LIST_HEAD(&person->list);
    list_add_tail(&person->list, &birthday_list);

    person = kmalloc(sizeof(*person), GFP_KERNEL);
    person->name = "Maria";
    person->day = 23;
    person->month = 1;
    person->year = 1965;
    INIT_LIST_HEAD(&person->list);
    list_add_tail(&person->list, &birthday_list);

    list_for_each_entry(person, &birthday_list, list) {
    printk(KERN_INFO "Name: %s Birthday: Month: %d Day: %d Year: %d", person->name, person->month, person->day, person->year);
    }

    return 0;
}

void simple_exit(void)
{
    printk(KERN_INFO "***Removing Module***\n");
    list_for_each_entry_safe(person,next,&birthday_list,list) {
    printk(KERN_INFO "Removing %s %d %d %d", person->name, person->month, person->day, person->year);
    list_del(&person->list);
    kfree(person);
    }
}
```

```
module_init(simple_init);
module_exit(simple_exit);

MODULE_LICENSE("GPL");
MODULE_DESCRIPTION("Kernel Data Structures");
MODULE_AUTHOR("SGG");
```