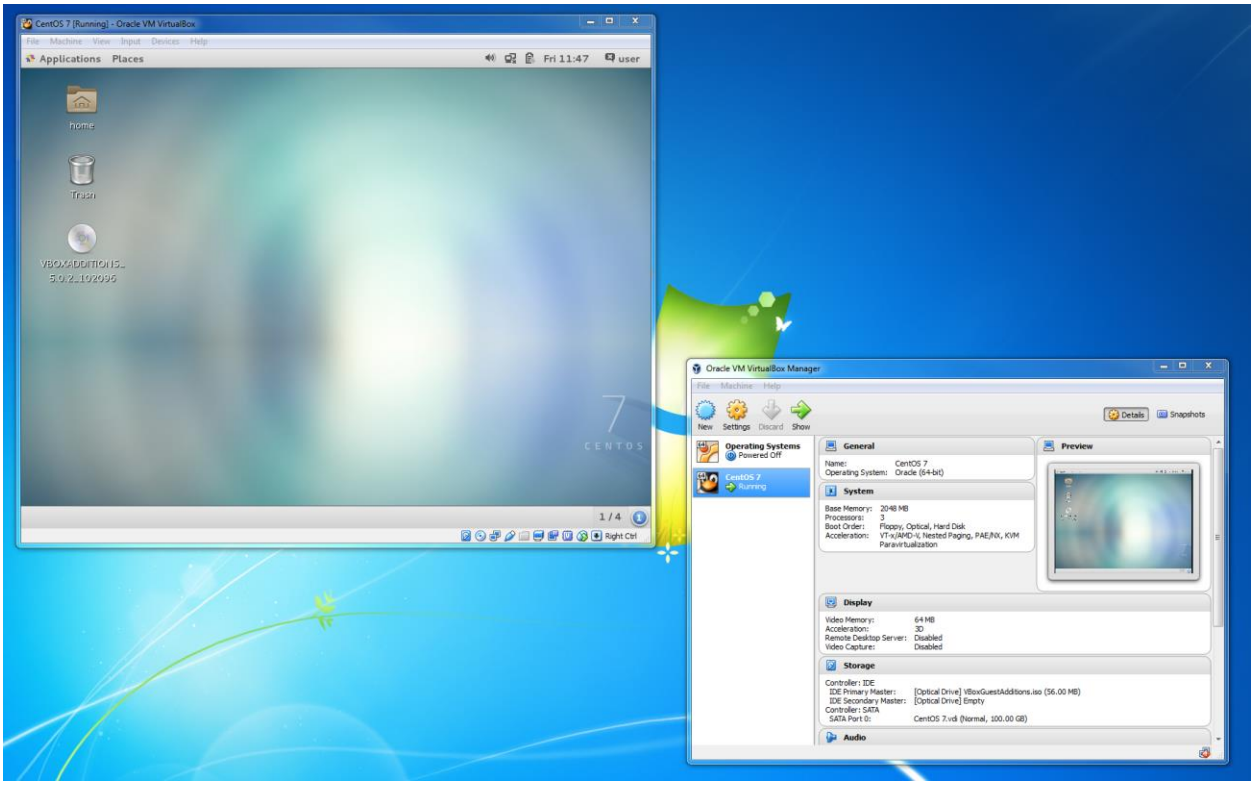
Homework #1
Kevin Kuo
COSC519

1. **Install CentOS VM and VM Player on your own Desktop or Laptop to do this homework. If not, you can use 304 lab to do this homework on VM.**



2. **Learn about 50 distinct commands of Linux/Unix OS by actually running them on the VM machine. Each command must be a distinct one, not with different options in the same command.**

    1. [user@localhost Desktop]$ **man** script

    2. [user@localhost Desktop]$ **ifconfig**

        enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

            ether 08:00:27:92:19:cf txqueuelen 1000 (Ethernet)

            RX packets 0 bytes 0 (0.0 B)

            RX errors 0 dropped 0 overruns 0 frame 0

            TX packets 0 bytes 0 (0.0 B)

            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

    3. [user@localhost Desktop]$ **whatis** ifconfig

ifconfig (8) - configure a network interface

4. [user@localhost Desktop]$ **whereis** ifconfig

   ifconfig: /usr/sbin/ifconfig /usr/share/man/man8/ifconfig.8.gz

5. [user@localhost Desktop]$ **ls**

   kevin.tar output.txt testfile1.txt

6. [user@localhost Desktop]$ **mkdir** testFolder

   [user@localhost Desktop]$ ls

   kevin.tar output.txt testfile1.txt testFolder

7. [user@localhost Desktop]$ **cd** testFolder/

8. [user@localhost testFolder]$ **pwd**

   /home/user/Desktop/testFolder

9. [user@localhost testFolder]$ **vim** testFile2.text

   [user@localhost testFolder]$ pwd

   /home/user/Desktop/testFolder

   [user@localhost testFolder]$ ls

   testFile2.text

10. [user@localhost testFolder]$ **mv** testFile2.text /home/user/Desktop

    [user@localhost testFolder]$ ls

    [user@localhost testFolder]$ pwd

    /home/user/Desktop/testFolder

    [user@localhost testFolder]$ cd ..

    [user@localhost Desktop]$ ls

    kevin.tar output.txt testfile1.txt testFile2.text testFolder

11. [user@localhost Desktop]$ **cp** testFile2.text testFolder/

    [user@localhost Desktop]$ cd testFolder/

[user@localhost testFolder]$ ls

testFile2.text

12. [user@localhost Desktop]$ ls

    kevin.tar output.txt testfile1.txt testFile2.text testFolder

    [user@localhost Desktop]$ **rm -rf** testFolder/

    [user@localhost Desktop]$ ls

    kevin.tar output.txt testfile1.txt testFile2.text

13. [user@localhost Desktop]$ **cat** testfile1.txt

    This is a test file for Homework #1.

14. [user@localhost Desktop]$ ls -ll

    total 80

    -rw-rw-r--. 1 user user 10240 Sep 14 18:00 kevin.tar

    -rw-rw-r--. 1 user user 62502 Sep 14 18:08 output.txt

    -rw-rw-r--. 1 user user 37 Sep 16 *08:26* testfile1.txt

    -rw-rw-r--. 1 user user 0 Sep 16 08:00 testFile2.text

    [user@localhost Desktop]$ **touch** testfile1.txt

    [user@localhost Desktop]$ ls -ll

    total 80

    -rw-rw-r--. 1 user user 10240 Sep 14 18:00 kevin.tar

    -rw-rw-r--. 1 user user 62502 Sep 14 18:08 output.txt

    -rw-rw-r--. 1 user user 37 Sep 16 *08:27* testfile1.txt

    -rw-rw-r--. 1 user user 0 Sep 16 08:00 testFile2.text

15. [user@localhost Desktop]$ **date**

    Wed Sep 16 08:28:17 EDT 2015

16. [user@localhost Desktop]$ **top**

top - 08:29:11 up 53 min, 3 users, load average: 0.01, 0.02, 0.05

Tasks: 194 total, 1 running, 193 sleeping, 0 stopped, 0 zombie

%Cpu(s): 2.1 us, 0.1 sy, 0.0 ni, 97.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

KiB Mem : 1884264 total, 896732 free, 455364 used, 532168 buff/cache

KiB Swap: 2097148 total, 2097148 free, 0 used. 1239844 avail Mem

17. [user@localhost Desktop]$ **history**

    1 su

    2 exit

18. [user@localhost Desktop]$ **env**

    XDG_VTNR=1

    XDG_SESSION_ID=1

    DBUS_STARTER_ADDRESS=unix:abstract=/tmp/dbus-w8GtZ4DNuO,guid=e51c55b1d57a29b9af53508355f9543a

    GPG_AGENT_INFO=/run/user/1000/keyring-CQbV1T/gpg:0:1

19. [user@localhost Desktop]$ **ping** www.google.com

    PING www.google.com (216.58.219.100) 56(84) bytes of data.

    ^C

    --- www.google.com ping statistics ---

    5 packets transmitted, 0 received, 100% packet loss, time 3999ms

20. [user@localhost Desktop]$ **which** netstat

    /usr/bin/netstat

21. [user@localhost Desktop]$ **netstat**

    Active Internet connections (w/o servers)

    Proto Recv-Q Send-Q Local Address Foreign Address State

    Active UNIX domain sockets (w/o servers)

Proto RefCnt Flags Type State I-Node Path

unix 2 [ ] DGRAM 10797 /run/systemd/shutdown

22. [user@localhost Desktop]$ **su**

    Password:

    [root@localhost Desktop]#

23. [root@localhost Desktop]# **clear**

24. [root@localhost Desktop]# **whoami**

    root

25. [root@localhost Desktop]# **md5sum** testfile1.txt

    54e4bfae41237533ea3e5502bbcc98fb testfile1.txt

26. [root@localhost Desktop]# **uname**

    Linux

27. [root@localhost Desktop]# time

    real 0m0.000s

    user 0m0.000s

    sys 0m0.000s

28. [root@localhost Desktop]# **head** testfile1.txt

    This is a test file for Homework #1.

29. [root@localhost Desktop]# **tail** testfile1.txt

    This is a test file for Homework #1.

30. [root@localhost Desktop]# **diff** testfile1.txt testFile2.text

    1d0

    < This is a test file for Homework #1.

31. [root@localhost Desktop]# less testfile1.txt

32. [root@localhost Desktop]# more testfile1.txt

    This is a test file for Homework #1.

33. [root@localhost Desktop]# **find** test*

    testfile1.txt

    testFile2.text

34. [root@localhost Desktop]# **grep** Homework testfile1.txt

    This is a test file for **Homework** #1.

35. [root@localhost Desktop]# **lsblk**

    NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT

    sda 8:0 0 100G 0 disk

    ├─sda1 8:1 0 500M 0 part /boot

    └─sda2 8:2 0 99.5G 0 part

    ├─centos-root 253:0 0 50G 0 lvm /

    ├─centos-swap 253:1 0 2G 0 lvm [SWAP]

    └─centos-home 253:2 0 47.5G 0 lvm /home

    sr0 11:0 1 56M 0 rom /run/media/user/VBOXADDITIONS_5.0.2_102096

    sr1 11:1 1 1024M 0 rom

36. [root@localhost Desktop]# **tar** cvf kevin.tar testfile1.txt

    testfile1.txt

37. [root@localhost Desktop]# **service** --status-all

    netconsole module not loaded

    Configured devices:

    lo enp0s3

    Currently active devices:

    lo enp0s3 virbr0

The VirtualBox Additions are currently running.

Checking for VBoxService ...not running

38. [root@localhost Desktop]# **ps**

PID TTY TIME CMD

7743 pts/1 00:00:00 su

7750 pts/1 00:00:00 bash

12121 pts/1 00:00:00 ps

39. [root@localhost Desktop]# **df** -k

Filesystem 1K-blocks Used Available Use% Mounted on

/dev/mapper/centos-root 52403200 7248268 45154932 14% /

devtmpfs 932552 0 932552 0% /dev

tmpfs 942132 148 941984 1% /dev/shm

40. [root@localhost Desktop]# **locate** crontab

/etc/anacrontab

/etc/crontab

/usr/bin/crontab

/usr/share/doc/man-pages-overrides-7.1.3/crontabs

41. [root@localhost Desktop]# **cal**

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Su Mo Tu We Th Fr Sa

1 2 3 4 5

6 7 8 9 10 11 12

13 14 15 16 17 18 19

20 21 22 23 24 25 26

27 28 29 30

42. [root@localhost Desktop]# **nslookup** www.google.com

    Server: 134.223.80.93

    Address: 134.223.80.93#53

    Non-authoritative answer:

    Name: www.google.com

    Address: 216.58.219.100

43. root@localhost Desktop]# **chkconfig**

    netconsole 0:off 1:off 2:off 3:off 4:off 5:off 6:off

    network 0:off 1:off 2:on 3:on 4:on 5:on 6:off

44. [root@localhost Desktop]# **dmesg**

    [0.000000] Initializing cgroup subsys cpuset

    [0.000000] Initializing cgroup subsys cpu

    [0.000000] Initializing cgroup subsys cpuacct

    [0.000000] Linux version 3.10.0-229.11.1.el7.x86_64 (builder@kbuilder.dev.centos.org) (gcc version 4.8.3 20140911 (Red Hat 4.8.3-9) (GCC)) #1 SMP Thu Aug 6 01:06:18 UTC 2015

45. [root@localhost Desktop]# **free**

	total	used	free	shared	buff/cache	available
Mem:	1884264	526824	536124	15468	821316	1125700
Swap:	2097148	0	2097148			

46. [root@localhost Desktop]# **iostat**

    Linux 3.10.0-229.11.1.el7.x86_64 (localhost.localdomain) 09/16/2015 _x86_64_ (3 CPU)

    avg-cpu: %user %nice %system %iowait %steal %idle

    0.63 0.00 0.22 0.04 0.00 99.12

47. [root@localhost Desktop]# **lsmod**

    Module Size Used by

    nls_utf8 12557 1

    isofs 39844 1

    bnep 19704 2

    bluetooth 372662 7 bnep

48. [root@localhost Desktop]# **tcpdump**

    tcpdump: verbose output suppressed, use -v or -vv for full protocol decode

    listening on enp0s3, link-type EN10MB (Ethernet), capture size 65535 bytes

    10:13:42.011752 IP localhost.localdomain.56394 > ng-vag-dc05.northgrum.com.domain: 6743+ A? tiles.services.mozilla.com. (44)

49. [root@localhost Desktop]# uptime

    10:14:24 up 2:38, 3 users, load average: 0.08, 0.07, 0.05

50. [root@localhost Desktop]# **shutdown** now

3. Learn two commands (objdump and nm) in Linux and try some options in these commands and capture the output. Why do we need these commands?

OBJDUMP

objdump displays information of object files. This tool is useful to programmers who are working on the compilation tools, as opposed to programmers who just want their program to compile and work.

Man pages:

objdump - http://linux.die.net/man/1/objdump

Example:

[root@localhost bin]# **pwd**

/usr/bin

[root@localhost bin]# **objdump** -f grep

grep: file format elf64-x86-64

architecture: i386:x86-64, flags 0x00000112:

EXEC_P, HAS_SYMS, D_PAGED

start address 0x0000000000403ecc

NM

nm lists the symbols for an object file. If not object file is specified, it defaults to a.out.

Man pages:

nm – http://linux.die.net/man/1/nm

Examples:

[root@localhost bin]# nm grep

nm: grep: no symbols

4. Learn "find" and "grep" commands and show some examples if their usage.

Find search the specified path for a given filename (in the form of an expression).

[root@localhost Desktop]# **find** test*

testfile1.txt

testFile2.text

Grep searches within text based files for an expression in a specified path.

[root@localhost Desktop]# **grep** Homework testfile1.txt

This is a test file for **Homework** #1.

5. Shell script

A shell script is a computer program designed to be run by the Unix shell, a command line interpreter. The various dialects of shell scripts are considered to be scripting languages.

Script:

```
# This script displays the date, time, username and
# current directory.
echo "Date and time is:"
date
echo
echo "Your username is: `whoami` \\n"
echo "Your current directory is: \\c"
pwd
```

Script running:

```
[root@localhost Desktop]# ll -x
eclipse       kevin.tar      output.txt  testfile1.txt  testFile2.text
testScript.sh  testScript.sh~  workspace
[root@localhost Desktop]# bash testScript.sh
Date and time is:
Thu Sep 17 13:39:39 EDT 2015

Your username is: root \n
Your current directory is: \c
/home/user/Desktop
[root@localhost Desktop]#
```