Here's how to display hardware information:

1. uname -mip ; displays information about the system. The -m option is used to print the machine hardware name, the -i option prints the hardware platform, and the -p option prints the processor type.
2. cat /proc/cpuinfo; displays CPU information includes details about the processor (architecture, vendor name, model, number of cores, speed of each core etc). The "/proc/cpuinfo" file contains details about individual CPU cores.
3. lsusb; displays the list of USB devices.

Execute the cat /proc/interrupts command to view the information about the interrupts in use and how many times processor has been interrupted.  
  
The "/proc/interrupts" file lists the number of interrupts per CPU per I/O device. It displays the IRQ number, the number of that interrupt handled by each CPU core, the interrupt type, and a comma-delimited list of drivers that are registered to receive that interrupt.

Execute the lspci command to display information about all the PCI bus in a server.

Execute the lsmod command to list the information about all loaded kernel modules.  
  
The lsmod command displays information only about kernel modules, not about drivers that are compiled directly into the Linux kernel.

Execute the rmmod sr\_mod command to remove the "sr\_mod" module.

Execute the lsusb -t command to dump the physical USB device hierarchy as a tree.

The **mkswap** command is used to set up a Linux swap area on a device or in a file. After creating the swap area, a user needs the **swapon** command to start using the area. Usually swap areas are listed in **/etc/fstab** so that they can be taken into use at boot time by the **swapon -a** command in boot scripts.

Here are commands that you need to execute to unmount a filesystem:

1. parted /dev/sda print; verifies partitions on your target disk.
2. df; displays the currently mounted partitions.
3. mkfs -t ext2 /dev/sda4; creates an "ext2" filesystem.
4. mount /dev/sda4 /usr; mounts to the "/usr" mount point.
5. df /usr; obtains basic accounting information for the filesystem.
6. umount /usr; unmounts the filesystem.

Linux stores information about local and remotely mounted filesystems in a file called **/etc/fstab**.

Here are the commands that you need to execute to maintain backup of the hard disk:

1. fdisk -l; displays the current status of partitions and hard disk.
2. dd if=/dev/sda of=/dev/sdb; creates backup of entire hard drive to another drive where;
   * The dd command copies a file, converting the format of the data in the process, according to the operands specified.
   * The if=FILE option is used to read from FILE instead of stdin (standard input).
   * The of=FILE option is used to write to FILE instead of stdout (standard output).

Execute the gunzip -c aprog.tar.gz | tar xv command to extract an archive file of the aprog.tar.gz file.

Execute the bzip2 -v ubuntu redhat command to compress "ubuntu" and redhat" files. Where, the -v option is used to show the compression ratio of each file processed.

Here are the commands that you need to execute to modify the ownership of a file:

1. ls -l; displays the owner of the "product" file.
2. chown michael product; sets the user "michael" as the owner of the "product" file.

Here are the commands that you need to execute check the file permission of a file:

1. touch sales; creates an empty file named "sales".
2. ls -l sales; checks the file permission of "sales".
3. chmod 777 sales; sets the permission for the "sales" file that all users can read, write, and execute.
4. ls -l sales; verifies the file permission of "sales".
5. **chattr** is a Linux command that allows a user to **change** the file attributes on a Linux second extended filesystem. It is used to make files immutable so that **password** files and certain **system** files cannot be erased during **software** upgrades.

Here's how to enable and disable user quotas for filesystems:

1. quotaon -u -a; enables user quota, pass the -u option to the quotaon command to enable user quotas for the file system. The -a option is used to enable or disable all filesystems.
2. quotacheck -a; checks all file systems with disk quotas enabled in /etc/filesystems.
3. quotaoff -u -g -a ; disables quotas, so you need to use the -u -g -a command to disable user and group quotas for all file systems in the /etc/filesystems file.
4. quotacheck -a; checks all file systems with disk quotas enabled in /etc/filesystems.
5. quotacheck -g -a; checks all file systems with disk quotas with g option checks group quotas.
6. quotacheck -u -a; checks all file systems with disk quotas with u option check user quotas in all filesystems and -a option is used to check all filesystems.

 which init; shows the full path of commands and finds the location of init executable.

 whereis init; locates the binary source and manual page files and displays the files that contain the manual sections for the init command

1.  tail /var/log/messages ; shows the lines from the bottom of the fil

Execute the dmesg command to display the messages from the kernel ring buffer.

Execute the dmesg | less command to display the boot log available in the kernel ring buffer.

The reboot command immediately stops all **processes** and hence should be run only in single-user mode, i.e., runlevel **1**.

runlevel; checks the runlevel of a system. The first character is the previous runlevel. When the character is **N**, this means the system has not switched runlevels since booting.

 grep :initdefault: /etc/inittab ; looks for the line specifying the "initdefault" action and determines your default runlevel by inspecting the "/etc/inittab" file with the less command or opening it in an editor.

The **startx** command is a front end to **xinit** that provides a somewhat nicer user interface for **running** a single session of the X Window System. It generally runs with no arguments. Arguments that immediately **follow** this command is used to **start** a client in the same manner as xinit.

ere are the commands that you need to execute to create and delete an account:

1. groupadd sales; adds the "sales" group.
2. useradd -s /bin/bash salesman; adds a new user; the -s option is used to set the login shell.
3. gpasswd -a salesman sales; adds "salesman" to the "sales" group.
4. groups salesman; show a user's group memberships for the current user.
5. userdel -r salesman; deletes the user account "salesman" with the home directory and the mail spool.

ere are the commands that you need to execute to manage a group:

1. cat /etc/group; lists all groups on the system.
2. groupadd product; adds a group "product" in the system.
3. gpasswd -a manager product; adds the existing user named "manager" to the "product" group.
4. gpasswd -d manager product; removes a user "manager" from the "product" group.
5. groupdel product; deletes the product group.
6. groupadd sales; adds a group named "sales".
7. useradd -u 1001 -g sales -e 2015/12/01 -s /usr/bin/zsh john; adds a group. The **-u** option sets the user id for new users. The -g option is used to set the group name or gid. To automatically deactivate the account, you should use the -e option with date, which should be in YYYY/MM/DD format. For setting the user's login shell, you can use the -s option.
8. groups john; verifies the group membership for "john".
9. chage -l john; verifies the user password expiry information.
10. cat /etc/passwd | grep jandrew; searches the "jandrew" user only in the /etc/passwd file.
11. chage -m 3 -M 60 -W 7 jandrew; changes the user password expiry. The -m option sets the minimum age, the -M option sets the maximum age, and the -W option sets the warning days before expiration.
12. chage -l jandrew ; verifies the aging information such as expiry date and time.
13. Execute the userdel -r sally command to delete a user account.
14. ls -l /etc/localtime
15. route -n; views the routing table
16. route add -net 172.20.0.0 netmask 255.255.0.0 gw 172.21.1.1; shows how to add static route destined for the 172.20.0.0/16 subnet should be passed through the 172.21.1.1 router, which isn't the default gateway system.
17. route -n; verifies the configured routing table.

Here are the commands that you need to execute to add a default gateway:

1. ifconfig eth0 up 192.168.29.39 netmask 255.255.255.0 ; links the specified IP address to the device and brings up eth0.
2. ifconfig eth0; views the interface configuration.
3. route add default gw 192.168.29.1; adds a default gateway.

Here are the commands that you need to execute to work with local Ethernet connection:

1. ifconfig; displays information about local network settings for all the network interfaces.
2. route -n; prints the routing table information.
3. ifconfig eth0 down; brings down the local Ethernet connection.
4. ifconfig; displays information about local network settings for all the network interfaces.
5. ifconfig eth0 up; brings up the local Ethernet connection.
6. ifconfig; displays information about local network settings for all the network interfaces.

Here are the commands that you need to execute to display sockets:

1. netstat -a; displays all the sockets.
2. netstat -l; displays the listening server sockets.
3. netstat -s; shows network statistics.
4. Execute the ping6 ipv6.google.com command to ping global website.

**Lesson:** Configuring Basic Networking

Here are the commands that you need to execute to display environment variable:

1. env; displays the current environment or set the environment for the execution of a command.
2. echo $HOSTNAME; displays the value of the current HOSTNAME variable of the system.
3. echo $MAIL ; holds the location of the user's mail spool.

Here are the commands that you need to execute to identify TCP/IP and UDP ports:

1. nmap -sT 14.102.98.40 ; searches all TCP/IP ports that are in use in the system.
2. nmap -sU 14.102.98.40; searches all UDP/IP ports that are in use.
3. Execute the find / -perm /2000 -type f command to search all regular SGID (Set Group ID up on execution) files.
4. Execute the command fuser -v ./ to display detailed information of all the processes.
5. Execute the tracepath6 www.6bone.net command to trace the IPv6 path to the site www.6bone.net discovering the MTU along this path.