1.What is GRUB
GNU GRUB is a Multiboot boot loader. It was derived from GRUB, the GRand Unified Bootloader, which was originally designed and implemented by Erich Stefan Boleyn. Briefly, a boot loader is the first software program that runs when a computer starts. It is responsible for loading and trferring control to the operating system kernel software (such as the Hurd or Linux). The kernel, in turn, initializes the rest of the operating system (e.g. GNU)

2. Which files are called for user profile by default when a user gets login
$HOME/.bash_profile, $HOME/.bash_bashrc

3. Which file needs to update if srequired to change default runlevel 5 to 3
File is /etc/inittab and required to change below lines:
id:5:initdefault: to id:3:initdefault:

4. What command used for showing user info like Login Name, Canonical Name, Home Directory,Shell etc..
FINGER command can be used i.g; finger username

5. What is inode number
An inode is a data structure on a traditional Unix-style file system such as UFS or ext3. An inode stores basic information about a regular file, directory, or other file system object.
iNode number also called as index number, it consists following attributes:
File type (executable, block special etc)
Permissions (read, write etc)
Owner
Group
File Size
File access, change and modification time (remember UNIX or Linux never stores file creation time, this is favorite question asked in UNIX/Linux sys admin job interview)
File deletion time
Number of links (soft/hard)
Extended attribute such as append only or no one can delete file including root user (immutability)
Access Control List (ACLs)

Following command will be used to show inodes of file and folders:
ls -i

Following command will show complete info about any file or folders with inode number
stat file/folder

Files/Folders can also be deleted using inode numbers with following command:
find out the inode number using ‘ls -il’ command then run below command

```
find . -inum inode_number -exec rm -i {} \;
```

6. How can we increase disk read performance in single command
blockdev command
This is sample output – yours may be different.

```
# Before test
$ blockdev –getra /dev/sdb
256
$ time dd if=/tmp/disk.iso of=/dev/null bs=256k
2549+1 records in
2549+1 records out
668360704 bytes (668 MB) copied, 6,84256 seconds, 97,7 MB/s

real 0m6.845s
user 0m0.004s
sys 0m0.865s

# After test
$ blockdev –setra 1024 /dev/sdb

$ time dd if=/tmp/disk.iso of=/dev/null bs=256k
2435+1 records in
2435+1 records out
638390272 bytes (638 MB) copied, 0,364251 seconds, 1,8 GB/s

real 0m0.370s
user 0m0.001s
sys 0m0.370s
```

7. Command used to lock user password

```
usermod -L username
```

8. How many default number of Shells available and what are their names?
SH, BASH, CSH, TCSH, NOLOGIN, KSH

9. What is the path of network (ethX) configuration files
/etc/sysconfig/network-scripts/ethX

10. How can we change speed and make full duplex settings for eth0
We can do this with below given 2 methods:

```
ethtool -s eth0 speed 100 duplex full
ethtool -s eth0 speed 10 duplex half
```

OR
mii-tool -F 100baseTx-HD
mii-tool -F 10baseT-HD

11. File which stores the DNS configuration
/etc/resolve.conf

12. Main configuration file and command used for NFS enabling exported directories and deamons
/etc/exports and exportfs -av , deamons are quotad, portmapper, mountd, nfsd and nlockmgr/status

13. What is command to check ports running/used over local machine
netstat -antp

14. What is the difference between soft and hard links
Soft Links =>
1) Soft link files will have different inode numbers then source file
2) If original file deleted then soft link file be of no use
3) Soft links are not updated
4) Can create links between directories
5) Can cross file system boundaries

Hard Links => 1) Hard links will have the same inode number as source file
2) Hard links can not link directories
3) Can not cross file system boundaries
4) Hard links always refers to the source, even if moved or removed

15. Display or Kill all processes which are accessing any folder/file
Display User who are using file/folder : fuser -u file/folder
Kill All Processes which are using file/folder: fuser -k file/folder

16. Kill any user’s all processes
killall -u username

17. What we have to do if we do required to rotate logs without moving and creating new log file
We can use “logrotate”‘s “copytruncate” option which will simply copy original file and

truncate original file

18. What is the difference between cron and anacron
Cron :
1) Minimum granularity is minute (i.e Jobs can be scheduled to be executed every

minute)
2) Cron job can be scheduled by any normal user (if not restricted by super user)
3) Cron expects system to be running 24 x 7. If a job is scheduled, and system is down during that time, job is not executed
4) Ideal for servers
5) Use cron when a job has to be executed at a particular hour and minute
Anacron :
1) Minimum granularity is only in days
2) Anacron can be used only by super user (but there are workarounds to make it usable by normal user)
3) Anacron doesn't expect system to be running 24 x 7. If a job is scheduled, and system is down during that time, it start the jobs when the system comes back up.
4) Ideal for desktops and laptops
5) Use anacron when a job has to be executed irrespective of hour and minute

19. Default Port numbers used by ssh,ftp,http,https,telnet,smtp,pop3,pop3s,imap,imaps
SSH 22, ftp 20/21, http 80, https 443, SMTP/SMPTS 25/465, POP3/POP3S 110/995, IMAP/IMAPS 143/993

20. How to setup ACLs in following case:
1) Create a file FILE1 and this should be read,write,executable for all user but Read only for user USER1
2) Copy FILE1 ACLs to FILE2 ACL
3) Delete a USER1's rule for FILE1 which were setup in step 1)

1) touch FILE1 ; chmod 777 FILE1 ; setfacl -m u:USER1:r FILE1
2) getfacl FILE1 | setfacl –set-file=- FILE2
3) setfacl -x u:USER1 FILE1

21. How to make USB bootable?
Write efidisk.img from RHEL 6 DVD images/ subdirectory to USB
dd if=efidisk.img of=/dev/usb (usb device name)

22. How can we check disk/device status/failure/errors using smartctl utility?
Try following to check:
Enable/Disable SMART on device/disk : smartctl -s on /dev/sda
Check device SMART health : smartctl -H /dev/sda
Check device SMART capabilities : smartctl -c /dev/sda
Enable/Disable automatic offline testing on device : smartctl -o on/off /dev/sda
Show device SMART vendor-specific Attributes and values : smartctl -A /dev/sda
Show device log [TYPE : error, selftest, selective, directory,background, scttemp[sts,hist]] : smartctl -l TYPE /dev/sda
Run test on device [TEST: offline short long conveyance select,M-N pending,N afterselect,[on|off] scttempint,N[,p] : smartctl -t /dev/sda

23. What is the difference between ext2 vs ext3 vs ext4?
– dear friends read our next blog to get diffrences.

24. Disable ping to avoid network/ICMP flood
Set following in /etc/sysctl.conf : net.ipv4.icmp_echo_ignore_all = 1
Then “sysctl -p”
or
echo “1” > /proc/sys/net/ipv4/icmp_echo_ignore_all

24. What is SYN Flood, ICMP Flood
SYN Flood :
A SYN flood occurs when a host sends a flood of TCP/SYN packets, often with a fake/forged sender address. Each of these packets is handled like a connection request, causing the server to spawn a half-open connection, by sending back a TCP/SYN-ACK packet(Acknowledge), and waiting for a packet in response from the sender address(response to the ACK Packet). However, because the sender address is forged, the response never comes. These half-open connections saturate the number of available connections the server is able to make, keeping it from responding to legitimate requests until after the attack ends
ICMP Flood : There are three types of ICMP Flood :
1) Smurf Attack : http://en.wikipedia.org/wiki/Smurf_attack
2) Ping Flood : http://en.wikipedia.org/wiki/Ping_flood
3) Ping of Death : http://en.wikipedia.org/wiki/Ping_of_death

25. How to setup Password less remote login/ssh?
Use “ssh-keygen -t dsa or rsa” at local system for creating public and private keys
Then copy /root/.ssh/id_dsa.pub to remote_server by name /root/.ssh/authorized_keys
Change permissions of /root/.ssh/authorized_keys file at remote_server “chmod 0600 ~/.ssh/authorized_keys”
Now try to login from local system to remote_server “ssh root@remote_server”

26. How do you monitor or measure performance of a Linux server which is running for more than 5 years with out a break?
These are the commands that can help.
top, sar, vmstat, iostat, free
More detailed explanation of about these commands is here.

27. Explain how DNS works, and talk about DNS Table?
This video here gives you the basic understanding of DNS. However, you should check this article here to understand the theory part better. More about DNS tables is explained here.

28. Talk about the boot process?
Boot process follows 6 major steps. Starting with BIOS > MBR > GRUB > KERNEL > INIT > RUN LEVELS

This image here (taken from the geek stuff) should give you a better idea. linux-boot-process
Image:

29. What utility do we have to use for a log to rotate automatically?
For automatic rotation, mailing or removal if the log files, for compressing or rotating the log files each day (when the file is too big) we can use the logrotate command: logrotate [-dv][-f|] [-s|] config file+. We can also use it with the –f option in the command line or for mailing with –m, which has two arguments: the subject and the recipient name.

30. How do we store an application’s documentation?
The documentation of an application is usually installed together with the application and the directory that we named for the application will be used for storage. As an example: we have the application App1- the documentation will be stored at /user/doc/App1. The documentations means all the information regarding that application including the time when it was created, its modules and of course its name.

31. How is a new user account created?
To create a new user account we must use the useradd command. With no –D option, the useradd the new account is determined by the default system values and the values from the command line. The home directory will be the that of the system default, for making the home directory, the option used is –m.

32. In what way is IMAP different than POP3?
With POP3 the inbox is verified on the server of the mail and the new mails are downloaded on your computer and stored there. With IMAP the mail headers are downloaded on the server and when you click on the mail message you can read it. The storage is made on the mail server in case of IMAP but they can be copied in your PC’s “Local Floder”. So POP3 is useful when u use a single computer for email checking and in this case there is no need to store the messages on the mail server. When you use more than one place or computer to verify your email IMAP is the solution.

33. What type of file server do we have on a Linux server?
The place used for maintaining files for the purpose of being accessed by the network systems is called a file server. The files can receive different access privileges. In Linux there is a software called “samba” for file sharing, file editing and viewing on remote systems that support Windows 9x, Millenium, 2000 and NT or Mac computers. Whwnever we delete a file we may recover it because all the time a backup is made for the files from the file server.

34. What is the meaning of Linux Shell and Shell Script?
These two are a little different because Linux Shell is an interface for command execution and Shell is a user program for command execution. So the Script Shell is obviously a script made for the Shell program, A Shell Script is not hard to be checked for errors, in comparison to other programs that are bigger. Anyway it has a

disadvantage: it is a little slow due to new processes that are started for each execution of a shell command.

35. How is the SATA hard disk configuration made when we install Redhat 9?
The driver must be put on a floppy disk, then when setup boots from the CD or DVD at the command promt write dd; later the driver will be loaded from the floppy drive, after this we can use the fdisk or disk druid utilities to configure the partitions. When the drivers setup is automatically the things become simple as in the case of IDE drives, but they can be accessed by /dev /sda, /dev /sdb an so on.

36. Can you give a detailed explanation on how the boot process of the Linux version you like happens?
Yes, in the beginning the boot loaders are being loaded by the BIOS then they are loading the kernel, then the file systems are mounted by the kernel so the drivers can begin installing and loading. To be more detailed the boot process happens in 4 major steps:
1)when we turn on the computer the Bios is called (that chip from the motherboard) and it starts the processor and the power on tests for verifying the devices that are connected and their availability for use. After this is done the BIOS will cross in a Specific place in the memory (RAM) and look for the booting device. The hard disk will have a boot sector which is the first sector and from here the MBR will be loaded in the RAM.
2)the booting process is performed by the boot loader (for example GRUB and LILO are common used boot loaders), this will give the user different boot options and this is what determines how the kernel is loaded.
3)the kernel handles the boot process after it is loaded and the hardware initialization begins, partitions are created by the kernel.
4)INITloads.

37. How can we describe a Stateless Linux server and what are its features?
The Linux centralized server that has no workstation state is called a Stateless Linux server. This server is being seen when a specific system's state is wanted by the user to be in the other machines too. Practically this server is storing each machine's prototype and each machine's snapshots, also the home directories. To know what state fits each system we must use LDAP.

38. What daemon does the event tracking in Linux?
For tracking information about a system syslogd is used, it helps us saving the information in log files too. It is used by the Unix or Internet sockets for remote and local logging. The logged messages some field like hostname, time or program name, which are the information that the daemon is tracking. The signals that the user is giving make syslogd react, these signals are: SIGHUP- which performs a re-initialization by closing all the files that are open and re-reading the cinfiguaration file (/etc/syslog.conf by dfault)and restarting the syslog;SiGTERMsyslogd is killed;SIGINT, SISQUIT-if the debugging is not activated syslog will be killed, but if it's activated these signals are

ignored;SIGURSR1- this is a signal that is used along with –d or debug option which is switched on or off;SIGCHLD-due to waiting messages it waits for childs.

39. How can we define SELinux?
SELinux is the name for Security-enhanced Linux which, as a prototype of Linux kernel that contains utilities which are made for improved functionality of the security feature in such a way to prove to the Linux community the value of Linux controls. In order to achieve greater security for the Flask system new design are made for the architectural components based on Role-based Accsess Control, Multi-level Security and Type Enforcement.

40. Which is the recommended size for the swap space partition?
Because the use of the swap space for extending the physical memory, the quantity of memory(RAM) from the system determines the needed size of the swap space. The physical memory and the swap space can be calculated together in Linux as the total amount of memory, so when for instance we have 16 MB of memory on the motherboard of the computer and we assign 8MB for swapping the total memory used by Linux will be 24.

41. What do we use for managing hash table collisions?
There are two ways of managing hash table collisions: one is open addressing and the other is separate chaining. The first way the data items are moved from the full array they hash to and their new place is another cell from the array. The second way every element of the array is made from a linked list and in this list the data items are moved.

42. How can we recover a file that was deleted in Linux?
We can see what was the partition where the lost file was located with the pwd (means present work directory) and with the unmount command we can unmount the directory. Then the “debugfs” command will manage and repair the majority of sever errors or bugs from Linux. The entire code is: #debugfs /usr/directory name. the next step is using “Isdel”.

43. How can we see the boot messages?
For viewing the boot messages we can use dmesg, a command that prints on the screen the kernel ring buffer messages; the command is to be used just after the boot sequence. The syntax of a ring buffer is like this: dmesg [options]. If dmesg is called with no options the messages from the kernel will be written to the standard output.

44. How do we give a shadow password?
Shadow passwords are given using pwconv command and their purpose is the increase in system security. The file /etc/shadow gets created with that command and modifications are made to the passwords, they will be replaces with “x” in /etc/passwd file.

45. In what way are home directories different from working directory?
The directory over which we as users have the control and when we log in it is the working directory. But the current user working directory is not necessarily the home directory.

46. What separates Unix Linux?
The graphics are different, Linux has more commands, Linux has more user-friendly features than Unix, Linux is versatile and independent while Unix requires special machine for installation, kernel and file system is different.

47. Which is the required command for checking the file system?
For checking the disk integrity and file system the command used is fsck.

48. What is the difference between UNIX and LINUX?
Unix originally began as a propriety operating system from Bell Laboratories, which later on spawned into different commercial versions. On the other hand, Linux is free, open source and intended as a non-propriety operating system for the masses.

49. What is the basic difference between BASH and DOS?
The key differences between the BASH and DOS console lies in 3 areas:
– BASH commands are case sensitive while DOS commands are not;
– under BASH, / character is a directory separator and \ acts as an escape character. Under DOS, / serves as a command argument delimiter and \ is the directory separator
– DOS follows a convention in naming files, which is 8 character file name followed by a dot and 3 character for the extension. BASH follows no such convention.

50. How do you open a command prompt when issuing a command?
To open the default shell (which is where the command prompt can be found), press Ctrl-Alt-F1. This will provide a command line interface (CLI) from which you can run commands as needed.