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QUESTION NO: 1

Which of the following statements about software virtualization are correct? (Choose TWO correct answers.)

A. A virtual machine can run its own guest operating system.

B. Several virtual machines can share one physical host.

C. Virtualization requires a separate physical CPU for every guest system.

D. A virtual machine cannot use network connections.

E. Virtualization removes the need for an operating system.

ANSWER: A B

Explanation:

A virtual machine is a software-defined computer environment that can run its own operating system and applications. Multiple virtual machines can share the physical resources of one host computer, with a hypervisor allocating resources such as CPU time, memory, storage, and networking.

Virtualization can also help isolate workloads. A problem or configuration change inside one virtual machine is generally separated from the guest operating systems running in other virtual machines, although all guests still depend on the host hardware and hypervisor.

The Red Hat overview of virtualization explains the relationship between virtual machines, hypervisors, and physical hardware.

QUESTION NO: 2

Which of the following commands can display the current user name? (Choose TWO correct answers.)

A. whoami

B. id -un

C. pwd

D. uname -r

E. groups -g

ANSWER: A B

Explanation:

`whoami` prints the effective user name of the current process. `id -un` requests the user name (`-u`) and displays it as a name rather than a numeric UID (`-n`).

The whoami(1) manual page and the id(1) manual page document these commands.

QUESTION NO: 3

Which command displays the contents of a text file named `notes.txt` on standard output?

A. cat notes.txt

B. touch notes.txt

C. mkdir notes.txt

D. rm notes.txt

E. cd notes.txt

ANSWER: A

Explanation:

The command `cat notes.txt` reads the named file and writes its contents to standard output, which is normally the terminal. It is suitable for quickly displaying a short text file and can also be used to combine the contents of multiple files.

For long files, a pager such as `less` is often more convenient because it supports scrolling and searching. However, `cat` is the direct command for sending a file's contents to standard output. See the GNU Coreutils documentation for cat.

QUESTION NO: 4

In the output of `ls -l`, what does a leading `d` in the permissions field indicate?

A. It is a directory.

B. It is a deleted file.

C. It is a device driver.

D. It is a disk mount point.

ANSWER: A

Explanation:

A leading `d` indicates that the listed object is a directory. For example, a permissions field beginning with `drwxr-xr-x` identifies a directory whose remaining characters show its access permissions. A leading `-`, by contrast, normally identifies a regular file.

See the ls(1) manual page.

QUESTION NO: 5

What are the three sets of permissions for a file?

A. user, group, others

B. administrator, group, others

C. user, standard user, others

D. administrator, standard user, others

ANSWER: A

Explanation:

The correct answer is **user, group, others**. Linux file access control assigns permissions according to these three classes of users. The *user* class is the file's owner, normally the account that created the file or an account to which ownership was later assigned. The *group* class consists of users who are members of the file's owning group. The *others* class, sometimes called "other," includes every user who is neither the owner nor a member of the owning group. For each class, Linux can set read, write, and execute permissions. These permissions are commonly displayed by commands such as `ls -l`, for example `-rwxr-xr--`, where each group of three permission characters corresponds to the user, group, and others classes in that order. The `chmod` command can modify these permission bits, using symbolic expressions such as `u+x` or numeric

modes such as `755`. This user/group/others model is the fundamental traditional Linux permission scheme and is essential for controlling access to files and directories. See the GNU Coreutils documentation on file permission modes and the chmod manual page.

QUESTION NO: 6

Given the following directory permissions:

drwxrwxrwt 14 root root 36864 2012-03-02 11:17 /tmp

What does the letter t at the end of drwxrwxrwt indicate?

A. It is the sticky bit that causes all commands in this directory to be launched as root.

B. It means that, although the directory is globally writable, only a file's owner, the directory owner, or root can delete or rename that file.

C. It makes the directory accessible for everybody.

D. It indicates that this directory contains only temporary files that may be deleted.

E. It is a temporary bit that prevents launching commands in this directory.

ANSWER: B

Explanation:

The permission string `drwxrwxrwt` shows that `/tmp` is a directory which is readable, writable, and searchable by all users, with the sticky bit enabled. On a directory, the sticky bit restricts removal and renaming of entries within that directory. A user who has write permission on the directory can create files there, but may delete or rename a file only when that user owns the file, owns the directory, or has appropriate privileged access such as the root user. This is especially important for a shared location such as `/tmp`, where many users need to create temporary files without being able to interfere with files belonging to other users.

In a symbolic mode display, a lowercase `t` in the final position means that the sticky bit is set and the execute/search permission for other users is also set. The behavior is defined for directories; it does not cause programs to run with root privileges. GNU documents the sticky bit as preventing users from deleting or renaming files they do not own in a writable directory. See the GNU Coreutils mode structure documentation and the chmod manual page.

QUESTION NO: 7

Which statements about the `grep` command are correct? (Choose TWO correct answers.)

A. grep normally outputs lines that match its pattern.

B. grep -v outputs lines that do not match its pattern.

C. grep can only search binary executable files.

D. grep changes matching text in the input file by default.

E. grep requires a graphical desktop environment.

ANSWER: A B

Explanation:

The `grep` command searches input for lines that match a pattern and normally writes matching lines to standard output. For example, `grep error system.log` searches the file `system.log` for lines containing the text `error`.

The `-v` option inverts the match. Therefore, `grep -v error system.log` outputs lines that do not match the pattern `error`. This is useful for excluding unwanted lines from command output or text files.

See the GNU Grep manual for pattern matching and command options.

QUESTION NO: 8 - (SIMULATION)

What is the usual absolute path of the personal directory for the user foo?

ANSWER: See the explanation for the answer

Explanation:

The usual absolute path to the personal (home) directory of user `foo` is:

`/home/foo`

On typical Linux systems, regular users' home directories are stored under `/home`, with a directory named after the username.

QUESTION NO: 9

Which command shows if /usr/bin is in the current shell search path?

A. cat PATH

B. echo $PATH

C. echo %PATH

D. cat $PATH

E. echo %PATH%

ANSWER: B

Explanation:

`echo $PATH` is correct because `PATH` is an environment variable that specifies the directories the current shell searches, in order, when a command is entered without an explicit path. The dollar sign tells the shell to expand the variable to its current value, while `echo` displays that expanded value on the terminal. The resulting output is normally a colon-separated list such as `/usr/local/bin:/usr/bin:/bin`. To determine whether `/usr/bin` is part of the command search path, inspect that list for `/usr/bin` as one of its directory entries. This checks the effective value inherited or configured for the shell session currently being used, which is the relevant value for command lookup. The PATH variable is fundamental to normal command execution: when a user runs a command such as `ls`, the shell searches the directories named in PATH until it finds an executable file with that name. Bash documents parameter expansion with the `$` syntax and describes PATH as the search path used for command execution. See the GNU Bash Shell Parameters documentation and the POSIX Environment Variables specification.

QUESTION NO: 10

Which of the following Linux distributions use the dpkg package management system? (Choose TWO correct answers.)

A. Suse

B. Red Hat

C. Debian

D. Ubuntu

E. Mandriva

ANSWER: C D

Explanation:

Debian and **Ubuntu** use the dpkg package-management system. dpkg is Debian's low-level tool for installing, removing, and querying software packages in the `.deb` format. Debian maintains dpkg as a fundamental component of its operating system, and package metadata and installed-package records are managed through the dpkg database. Debian-based systems commonly use higher-level tools such as APT and apt-get to locate packages, resolve dependencies, download packages from configured repositories, and then invoke dpkg to perform the local package installation or removal.

Ubuntu is derived from Debian and retains the Debian package format and the dpkg/APT package-management stack. Consequently, Debian packages and administrative commands associated with dpkg are central to software management on both distributions. This Debian-family relationship is an important way to identify distributions that use dpkg: distributions based on Debian generally use `.deb` packages, dpkg, and APT. The Debian dpkg documentation describes dpkg as the package-management system used to handle Debian packages, while Ubuntu's documentation identifies APT and Debian packages as its standard software-management approach. See the Debian dpkg wiki and the Ubuntu APT guide.

QUESTION NO: 11

Which of the following answers are true for cloud computing? (Choose TWO correct answers.)

A. Cloud Computing provides new tools to manage IT resources.

B. From the business perspective, Cloud Computing means outsourcing or centralization of IT operations.

C. Cloud Computing is the opposite of green IT; i.e. the use of fossil, non-regenerative energy for computing.

D. Cloud Computing implies sharing all information with everyone else in 'the cloud'.

ANSWER: A B

Explanation:

Cloud computing provides new tools to manage IT resources because cloud providers expose computing capabilities such as virtual machines, storage, networking, identity management, monitoring, and automation through web portals, command-line tools, and APIs. These tools allow organizations to provision, configure, scale, and observe resources without directly operating all of the underlying physical infrastructure. This supports the cloud characteristic of on-demand access to a shared pool of configurable computing resources.

From the business perspective, Cloud Computing means outsourcing or centralization of IT operations because an organization can obtain infrastructure, platforms, or applications from a provider rather than purchasing, housing, and maintaining every component itself. Cloud services can consolidate resources and operational responsibilities in provider-managed data centers, while enabling the customer to focus its own staff and investment on business needs. The precise division of responsibility depends on whether the service is infrastructure, platform, or software as a service, but using externally operated, centrally managed services is a fundamental cloud computing model. The NIST Definition of Cloud Computing describes these service models and resource characteristics. The LPI Linux Essentials learning materials on cloud computing also cover cloud computing as a way to obtain and manage IT services.