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DevOps Master's

ASSIGNMENT 1

Ques. 1. What is Linux?

Answer: Linux is a free and open-source operating system based on Unix. It is widely used for servers, desktops, smartphones, and embedded devices due to its stability, security, and versatility. Linux is also known for its large and supportive community of developers and users, who contribute to its development and maintenance. Basically, Linux is the kernel which communicate directly with Hardware.

Ques. 2. What is the difference between Linux and Unix?

Answer: Linux and Unix are both operating systems, but there are several key differences between them:

- Origin: Unix was developed by AT&T Bell Labs in the 1970s, while Linux was created by Linus Torvalds in the early 1990s as a free and open-source alternative to Unix.
- License: Unix is proprietary software and is typically sold by commercial vendors, while Linux is open-source software and is freely available to anyone.
- Customization: Unix is known for its highly customizable architecture, while Linux is also customizable, but its architecture is more streamlined and user-friendly.
- User interface: Unix systems generally use a command-line interface, while Linux systems often use a graphical user interface as well.
- Software availability: Unix systems typically come with a limited set of software and utilities, while Linux systems have a large repository of freely available software that can be easily installed.
- Portability: Unix is known for its high degree of portability, meaning that it can run on a variety of hardware platforms, while Linux is also portable and is used on a wide range of devices, from servers and desktop computers to smartphones and embedded devices.

Overall, both Unix and Linux are powerful and reliable operating systems, but the choice between them often depends on the user's specific requirements, such as cost, customization, and software availability.

Ques. 3. What is Linux Kernel? Is it legal to edit Linux Kernel?

Answer: The Linux kernel is the core component of the Linux operating system. It is responsible for interfacing with the hardware and providing services to other parts of the system, such as system libraries, utilities, and application programs.

The Linux kernel is open-source software, which means that its source code is freely available and can be modified, distributed, and used by anyone. This has led to the development of a large and vibrant community of developers who have contributed to its evolution and improvement over the years.

Ques. 4. What is LILO?

Answer: LILO (LInux LOader) is a boot loader for the Linux operating system. It is responsible for loading the operating system into memory and providing a menu-based interface for choosing between multiple operating systems installed on a single machine.

LILO is capable of booting multiple operating systems, including Linux, DOS, and Windows, and it can also be used to boot other operating systems if they are compatible.

LILO is a traditional boot loader for Linux and was widely used in the past. However, it has been largely replaced by newer boot loaders, such as GRUB (GRand Unified Bootloader), which provides more advanced features and a more user-friendly interface.

LILO is still used by some Linux distributions, but its use has declined over time. Some Linux users prefer to use other boot loaders, such as GRUB or Systemd-boot, due to their increased functionality and ease of use.

Ques. 5. What are the basic components of Linux?

Answer: The basic components of Linux include:

- Kernel: This is the central part of the operating system that interacts directly with the hardware and provides services to the other components of the system. The Linux kernel is open-source and highly modular, which makes it flexible and customizable.
- System Libraries: These are collections of pre-written code that provide common functions for the operating system and applications. They handle tasks such as input/output operations, memory management, and process management.
- Shell: This is a command-line interface that provides access to the operating system's services and features. It allows users to interact with the system, run applications, and automate tasks.
- Utilities: These are small, single-purpose programs that perform specific functions, such as copying files, compressing data, and displaying information.
- User Interfaces: These are the graphical components of the operating system that allow users to interact with the system using a graphical interface. Examples include the GNOME and KDE desktop environments.
- Application Programs: These are the programs that run on the system and perform specific tasks, such as word processing, web browsing, and media playback.

These components work together to form a complete operating system that provides users with a stable, flexible, and powerful computing environment.

Ques. 6. Which are the Shells used in Linux?

Answer: There are several shell types available for use in Linux, some of the most popular ones include:

- Bourne Shell (sh): This is the original shell used in Unix and was created by Steve Bourne. It is still widely used for shell scripting and is available in most Unix-based operating systems.
- Bash (Bourne Again SHell): This is the default shell in most Linux distributions. It is based on the Bourne shell and provides additional features and enhancements, including command history, job control, and built-in support for regular expressions. It is mostly preferred and widely used.
- C Shell (csh): This shell was created by Bill Joy and is used in BSD-based systems. It uses a syntax that is similar to the C programming language and provides features such as alias expansion and a built-in history mechanism.
- Korn Shell (ksh): This shell was developed by David Korn and is used in commercial Unix systems. It provides features from both the Bourne and C shells, as well as its own enhancements, such as arrays, pattern matching, and command line editing.
- Z Shell (zsh): This shell is similar to Bash and provides additional features, such as better handling of command line completion, advanced globbing, and improved startup speed.

Ques. 7. What is Swap Space?

Answer: Swap space is a portion of a computer's hard disk that is used as virtual memory. It acts as an extension of a system's physical memory (RAM) and provides temporary storage for data that is not actively being used. It is the space used in the disk instead of the memory.

Ques. 8. What is the difference between BASH and DOS?

Answer: BASH (Bourne Again SHell) and DOS (Disk Operating System) are two different types of command-line interfaces used in operating systems.

BASH is a Unix shell, which is a command-line interface used in Unix-based operating systems such as Linux, macOS, and BSD. BASH provides a rich set of commands and features for scripting, automation, and program execution.

DOS, on the other hand, was the primary shell for the MS-DOS operating system and early versions of Windows. It has a limited set of commands and is primarily used for basic file and system management.

Some of the key differences between BASH and DOS include:

- Syntax: BASH uses a different syntax for commands and options compared to DOS.
- Available commands: BASH provides a much larger set of commands than DOS, which allows for more advanced automation and scripting.
- File system: BASH is used in Unix-based operating systems, which use a hierarchical file system, while DOS uses a flat file system.
- Scripting: BASH supports advanced scripting features, such as loops and conditional statements, while DOS has limited support for scripting.

- Environment: BASH is used in a more advanced computing environment than DOS, which was designed for personal computers with limited resources.

Ques. 9. What command would you use to check how much memory is being used by Linux?

Answer: The command to check memory usage in Linux is:

Free -m

The -m option shows the output in MB. The command will display the total amount of available memory, used memory, and free memory in the system.

Ques. 10. Explain file permission in Linux.

Answer: In Linux, file permissions are the set of rules that determine who can access a file and how they can access it. Each file and directory has a set of 9 permissions bits, which can be grouped into 3 categories:

- User (or owner) permissions: These permissions apply to the user who owns the file. The user has the permission to read, write, and execute the file.
- Group permissions: These permissions apply to the group that the file belongs to. Members of the group have the permission to read, write, and execute the file, depending on the group's permissions.
- Other (or world) permissions: These permissions apply to everyone else who is not the owner or a member of the group. The permissions for others can also be set to read, write, and execute the file.