

Linux

Q1 What is Linux? [2010]

Ans: – Linux is an operating system distributed under an open-source license. It is introduced by Linus Torvalds (when he was computer science student) at the University of Helsinki, Finland on September 17, 1991.

Linus Torvalds used to work on the Unix operating system and thought that it needed improvements. However, when his suggestions were rejected by the designers of UNIX, he thought of launching an operating system. So Linus Torvalds developed LINUX.

Q2 Explain the features of Linux. [2005, 2015]

Or

Why Linux is so popular?

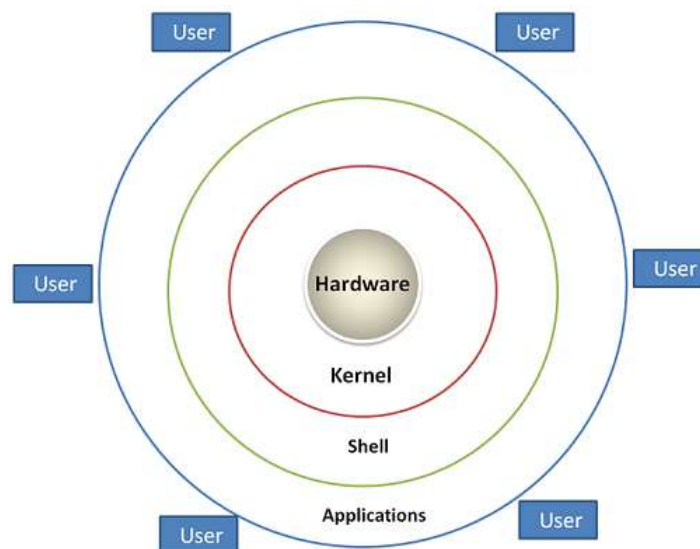
[2010]

Ans: – The main features of Linux operating system are –

- 1) **Portable**: – Linux operating system can work on different types of hardware's as well as Linux kernel supports the installation of any kind of hardware platform.
- 2) **Open Source**: – Source code of Linux operating system is freely available. It is free to use.
- 3) **Multiuser**: – Linux operating system is a multiuser system, which means, multiple users can access the system resources like RAM, Memory or Application programs at the same time.
- 4) **Multiprogramming**: – Linux operating system is a multiprogramming system, which means multiple applications can run at the same time.
- 5) **Hierarchical File System**: – Linux operating system affords a standard file structure in which system files or user files are arranged.
- 6) **Shell**: – Linux operating system offers a special interpreter program, that can be used to execute commands of the OS. It can be used to do several types of operations like call application programs, and so on.
- 7) **Security**: – Linux operating system offers user security systems using authentication features like encryption of data or password protection or controlled access to particular files.
- 8) **Virus Free**: – Linux operating system is free from viruses because any virus cannot reach upto administrator level.
- 9) **Virtual Memory**: – Linux can use a portion of hard drive as a virtual memory.

Q3 Explain the structure of Linux. [2012, 2013]

Ans: – The architecture of a Linux System consists of the following layers –



Linux System Architecture

- 1) **Hardware Layer**: – Hardware consists of all peripheral devices like RAM, HD, CPU etc.

2) **Kernel:** – It is the core component of operating system, interacts directly with hardware. It controls entire hardware resources of the computer system.

Some main functions performed by Kernel are –

- i) Managing the machines memory and allocating it to each process.
- ii) Organizing the transfer of data from one part of the computer to another.
- iii) Accepting the instructions from shell and carrying them out.
- iv) Enforcing the access permissions that are in force of the file system.

3) **Shell:** – Linux has a simple user interface called the shell that has power to provide the services that a user wants. The shell acts as command interpreter. It takes command from the user and passes command to the operating systems Kernel part then displays result on the screen.

Some main functions performed by Shell are –

- i) Writes shell scripts.
- ii) Manipulates the command history.
- iii) Edits the command line.
- iv) Automatically completes the command line.
- v) Creates an environment that meets the user needs.

4) **Applications:** – Application Programs or Utilities provides the user most of the functionalities of an operating systems.

Q4 Explain the different advantages of Linux. [2014, 2016]

Ans: – The main advantages of Linux operating system are –

- 1) Source code of Linux operating system is freely available. It is free to use.
- 2) In terms of security, Linux is more secure than any other operating system.
- 3) The software updates in Linux are easy and frequent.
- 4) Various Linux distributions are available so that we can use them according to our requirements or according to our taste.
- 5) It has large community support.
- 6) It maintains the privacy of the user.
- 7) The performance of the Linux system is much higher than other operating systems.
- 8) It is network friendly.
- 9) Linux is compatible with a large number of file formats.
- 10) It is fast and easy to install from the web. It can also install in any hardware even in our old computer system.

Q5 Explain the different disadvantages of Linux. [2015, 2016]

Ans: – The main disadvantages of Linux operating system are –

- 1) It is not much user-friendly. So it may be confusing for beginners.
- 2) It has small peripheral hardware drivers as compared to windows.
- 3) Getting started with windows is easy for beginners but learning Linux is difficult.
- 4) There is no support such as after-sales service because Linux is distributed for free.

Q6 Name the different interfaces available on Linux. [2013]

Ans: – The interfaces of Linux operating system are –

- 1) Command Line Interface (CLI) or Command User Interface (CUI) or Command Line Interpreter (CLI)
- 2) Graphical User Interface (GUI)

Q7 What is Command User Interface, available in Linux? [2014]

Or

What is Command Line Interface in Linux? Write its uses. [2019]

Ans: – Command Line Interface (CLI) or Command User Interface (CUI) is a non-graphical, text-based interface, where the user types a command and the computer then successfully executes it. The CLI terminal accepts the commands that the user types and passes to a shell.

Advantages of Command Line Interface

CLI is useful, in that case when we have a limited resources to perform our tasks. Using CLI, we can execute our commands if we have a low resolution monitor, low primary memory etc.

Disadvantages of Command Line Interface

The main disadvantage of CLI is that the user has to remember all commands and their working. CLI does not provide any helping instructions to complete a command.

Q8 Explain Graphical User Interface, available in Linux? [2005, 2008, 2016]

Or

What is GUI? Explain its advantages. [2006]

Ans: – An interface that allows users to interact with the system visually through Icons, Windows or Graphics is a Graphical User Interface. The face of the Linux operating system is the graphical environment provided by the X–Window System. The X–Window System works on the Client Server Technology. Kernel is the heart of Linux.

Advantages of Graphical User Interface

The major advantage of GUI is that it makes system very user friendly. Any user can use GUI based operating system with user friendly mode by clicking different icons without typing commands.

Disadvantages of Graphical User Interface

GUI interfaces requires a high capacity of primary memory (RAM), high speed processor, better colour display monitor etc.

Q9 Write the name of different desktop available in Linux. Explain any one. [2011, 2014]

Or

Explain GNOME. [2015]

Ans: – Some desktop environments of Linux are –

- 1) **GNOME**: – GNOME stands for **GNU Network Object Model Environment**. It is probably the most popular desktop environment among Linux users. It is free, open source, powerful and easy to use. It is a stable and reliable desktop environment with many features. We can run any application by clicking the related icon or menu item available on the desktop.

The latest version of GNOME is GNOME 3 in which the following components and features are available –

- i) Uses Metacity as default window manager.
- ii) Comes with Nautilus as default file manager.
- iii) Supports desktop notifications using a convenient messaging system.
- iv) Enables on/off switching of desktop notifications and many more.

- 2) **KDE (K–Desktop Environment)**: – KDE is a well-known, powerful and highly customizable desktop environment. It is also user friendly as GNOME. In KDE desktop there is a bar at the bottom of the desktop known as Taskbar. The remaining area is called Pannel where different icons like home, welcome, trash etc. are available.

The latest release in the KDE desktop series is the Plasma 5 in which the following components and features are available –

- i) Dolphin file manager.
- ii) Kwin window manager.
- iii) Smoother graphics performance.
- iv) Supports high density (high DPI) display.

- 3) **Unity Desktop:** – Unity is a graphical desktop shell for GNOME desktop environment. The Unity project was started by Mark Shuttleworth and Canonical, the makers of the well-known **Ubuntu Linux** distribution.

Q10 What are the Text Editors in Linux? [2006, 2017, 2019]

Ans: – When we want to type some matter (data) then we need software that provide a space where we can type. There are following text editors –

- Line Editor:** – The line editor allows user to create or delete one line at a time. Every line in text file is given a line number to make changes in it. All the editing and formatting functions applied on text with the help of line number.
- Stream Editor:** – Stream editor displays the entire text as a continuous stream of character on lines of text in the file.
- Screen Editor:** – The line editor and stream editor does not display the text on the screen in the manner, it would appear in the printed form. On other hand screen editor gives output on printed form as it displays on screen with the help of screen editor user can perform several operations like cut, copy, paste, delete etc.
- Word Processor:** – It is also known as document editors. It contains the advance features of formatting and editing. We can create an attractive document with the help of these formatting options. The Word processor also provides the facility to move text, searching and replacing options, spell checking features etc.

Q11 Explain Vi Text Editor and write its different modes. [2019]

Or

Explain Vi Text Editor. [2008, 2011, 2014, 2018]

Or

Explain different command options of Vi Text Editor. [2017]

Ans: – Linux have several text editors. They work in different types such as line, screen, stream etc. The Vi Text Editor is one of those popular editor's works in Full Screen, that's why it is also known as **Visible Editor**. It is used to show the text file stored in secondary storage unit.

The Vi Text Editor displays usually 20–22 lines at a time. The user can insert, delete or edit the text. Some commands used in Vi Text Editor are –

| S.N. | Command | Meaning |
|------|---------|--|
| 1 | ESC | Terminate Insert Mode and return to Command Mode |
| 2 | dd | Used to delete the current line |
| 3 | 3dd | Delete 3 lines |
| 4 | x | Delete the current character |
| 5 | zz | Used to save changes and exit |
| 6 | a | Used to append text after cursor |
| 7 | A | Used to append text at the end to the current line |
| 8 | i | We can switch to the Insert mode from the Command Mode |

Note: – Vi Text Editor is case-sensitive so make sure we type the commands in the right letter-case.

Modes of Vi Text Editor

The Vi Text Editors work in following modes –

- 1) **Command Mode:** – By Default Vi Text Editor supports the Command Mode. In this mode we can't insert text.

2) **Input Mode (Insert Mode):** – When we want to insert any text then this mode is used. We can also create new file using this mode.

3) **Line Editing Mode:** – It is used to edit any text.

Q12 What is X–Windows in Linux? [2012, 2020]

Or

Explain X–Window System of Linux. [2019]

Ans: – The X–Window System (sometimes referred to as “X” or “X11” or “X–Windows”) is a windowing system for Linux like systems. It provides a basic framework for GUI environment.

The face of the Linux operating system is the graphical environment provided by the X–Window System. The X–Window System works on the Client Server Technology.

Q13 Explain security management, their features and advantages available in Linux. [2019]

Or

Security features available in Linux is very good. Explain it with example. [2011]

Or

What are the features available in Linux for security? Explain it. [2010]

Or

Explain security management in Linux. [2005, 2007, 2008]

Ans: – Here are some basic security tricks available inside Linux. Using following tricks we can secure our Linux System –

1) **Delete X Window System from Server:** – X Window System on a server is not exactly necessary. X Windows can be disabled and removed to improve server security and performance.

2) **Secure OpenSSH Server:** – For remote login and file transfer, the SSH (Secure Shell) protocol is highly effective but this facility also supports hackers to many type of attacks. So we should make ensure that the OpenSSH server is secure.

3) **Turn off IPv6:** – The Internet Protocol version 6 (IPv6) brings in a new internet layer of the TCP/IP protocol which replaces IPv4. Sometimes bad traffic can be sent by crackers via IPv6 (since most admins don’t monitor it) so disable it.

4) **Setting up root password:** – In Linux tools such as **sudo** can be used to grant selected users the ability to run selected commands as root. Always setup root password for root users.

5) **Keep the software updated:** – We should always update our Linux operating system with latest features.

6) **Make use of Linux Firewall:** – The Linux kernel comes embedded with a Firewall component called **ipfire**. This offers a pretty effective tool to manage network traffic and also to check different types of cyber attacks.

7) **Improve Browser security:** – It’s important to have the browser secured as much as possible.

8) **Use an Anti–Virus Software:** – Linux is also a secure operating system but always use updated Anti–Virus Software.

Q14 Explain Messaging Over LAN. [2007]

Or

How can you transfer data over Local Area Network (LAN) in Linux?

Ans: – We can send or receive information from one computer to another computer with the help of following commands –

1) **Write:** – This command is used to send the message to the other user, who is currently logged–in. It means both the users (sender and receiver) are in active form.

Syntax: – write User_Name

.....

Message

.....
(Press Ctrl + D)

Example: – write P5
Hello! How are you?
(Press Ctrl + D)

After executing the above command the message will be sent to the user named P5. If the user is not currently Logged-In, the message will generate “P5 is not Logged-In”

- 2) **Talk:** – We can use the talk command for regular communication between 2 users. Both the users have to Logged-In.

Syntax: – talk User_Name

Example: – talk P8

After executing the above command, when user P8 receives the message from the sender (P5) then he should respond the following command –

Example: – talk P5

When user P5 receives the message then the message session will start.

- 3) **Wall:** – Using wall command, a single user can send a common message towards more than one receiver at a single time.

Example: – wall school.txt

After executing the above command we can send the contents of the attached file (school.txt) as a message to all the terminals.

- 4) **Mail:** – This command is used to send a message to the user who is not currently Logged-In. When the user logged his system then a message will appear –

“You have a new mail”

Syntax: – mail User_Name File_Name

Example: – mail P8 school.txt

After executing the above command, user P8 receives the contents of the attached file (school.txt) as a mail.

Q15 Write the names of different types of Linux. [2017]

Or

Write the name of different distributors or versions of Linux.

Ans: – Ubuntu, Fedora, Linux Mint, Debian, Mandriva, PCLinuxOS, openSUSE etc.

Q16 Write the difference between cat and more command in Linux. [2012, 2017]

Or

What is the similarity and difference between cat and more command in Linux?

Ans: – cat and more both commands are used to display the contents of any file. The difference between these two commands is that –

more command displays information page-wise and accepts user permission before displaying the contents of each page. On the other hand, cat command displays contents of all pages at the same time without user permission.

Q17 What is System Administrator in Linux? [2012]

Ans: – The person who manages and controls the files and directories in Linux operating system is known as System Administrator. He also creates users and groups for the system, take backup timely to prevent the loss of data due to system breakdown. The System Administrator is also known as the Root User and he have all the rights for the Linux System.

Q18 What is the core part of Linux operating System? [2019]

Ans: – Kernel

Q19 What is Log-In?

Ans: – Log-In (sometimes referred to as “Sign-In” or “Logon”) is the process by which an individual gains access (uses) to a computer system or a website or a database by using proper password.

Q20 What is Log-Out?

Ans: – Log-Out (sometimes referred to as “Sign-Out” or “Logoff”) means to end access (uses) to a computer system or a website or a database.

Q21 In Linux, which key is used to press, to switch Insert Mode from Command Mode?

Ans: – By pressing i (Small letter) button

Q22 In Linux, which key is used to press, to switch Command Mode from Insert Mode? [2015]

Ans: – By pressing Esc button

Q23 In Linux, which key is used to press, to switch Line Editing Mode from Command Mode?

Ans: – By pressing : (Colon) button

Q24 Name the Wildcard Characters used in Linux.

Ans: – Following Wild Card Characters are used in Linux –

- 1) * (Astrick) – Represents zero or more characters
- 2) ? (Question Mark) – Represents a single character
- 3) [] (Square Brackets) – Represents a range of characters

Q25 Write the names of different types of files used in Linux.

Ans: – In Linux following type of files are used –

- 1) **Simple or Ordinary File:** – An ordinary file is a file on the system that contains data, text or program instructions.
- 2) **Directory File:** – Directories store both special and ordinary files.
- 3) **Special File:** – Some special files provide access to hardware such as Hard Disk, CD-ROM Drives, MODEM, Ethernet Adapters etc. are called Special Files.
