Government Polytechnic, Nagpur

(An Autonomous Institute of Govt. of Maharashtra)

**Term Examination Even 2015**

**Model Answers**

Course Code: IT1404 Course Name: Unix/Linux O.S.

Maximum Marks: 80 Minimum Marks: 32

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| --- | --- | --- |
| Que. No. | Question and Answer | Marking |
| Q.1 | Attempt Any Ten | 20 |
| a) | What is Shell? | ½ mark for each point |
| Ans. | A Unix shell is a [command-line interpreter](https://en.wikipedia.org/wiki/Command-line_interpreter) or [shell](https://en.wikipedia.org/wiki/Shell_(computing)) that provides a traditional [user interface](https://en.wikipedia.org/wiki/User_interface) for the [Unix](https://en.wikipedia.org/wiki/Unix) [operating system](https://en.wikipedia.org/wiki/Operating_system) and for [Unix-like](https://en.wikipedia.org/wiki/Unix-like) systems. Users direct the operation of the [computer](https://en.wikipedia.org/wiki/Computer) by entering commands as text for a [command line interpreter](https://en.wikipedia.org/wiki/Command_line_interpreter) to execute, or by creating text scripts of one or more such commands. |  |
| b) | State any two advantage of Linux Operating System. |  |
| Ans. | LINUX IS VERY STABLE!Linux systems rarely crash, and when they do, the whole system normally does not go down. The “[blue screen of death](http://en.wikipedia.org/wiki/Blue_screen_of_death)” familiar to Windows users is not a worry for Linux users.LINUX IS LESS VULNERABLE TO COMPUTER MALWARE!Because most computer [malware](http://en.wikipedia.org/wiki/Malware) are designed to attack [Windows](http://en.wikipedia.org/wiki/Microsoft_Windows) (often through [Active X](http://en.wikipedia.org/wiki/Active_x) which is not typically found in Linux) the odds are considerably less for Linux to be infected with a [virus](http://en.wikipedia.org/wiki/Computer_virus) than Windows. The same holds true with [spyware](http://en.wikipedia.org/wiki/Spyware), [trojans](http://en.wikipedia.org/wiki/Trojan_horse_%28computing%29), and [worms](http://en.wikipedia.org/wiki/Computer_worm). While Linux malware does exist, they are relatively few in number and none have become widespread so far. |  |
| c) | Define Kernel. |  |
| Ans. | A Unix [kernel](https://en.wikipedia.org/wiki/Kernel_(computer_science)) — the core or key components of the operating system — consists of many kernel subsystems like [process management](https://en.wikipedia.org/wiki/Process_management_(computing)), [scheduling](https://en.wikipedia.org/wiki/Scheduling), file management, device management and [network management](https://en.wikipedia.org/wiki/Network_management), [memory management](https://en.wikipedia.org/wiki/Memory_management), dealing with interrupts from hardware devices.  The kernel provides these and other basic services: [interrupt](https://en.wikipedia.org/wiki/Interrupt_handler) and trap handling, separation between user and system space, [system calls](https://en.wikipedia.org/wiki/System_call), [scheduling](https://en.wikipedia.org/wiki/Scheduling_(computing)), timer and clock handling, [file descriptor](https://en.wikipedia.org/wiki/File_descriptor) management. |  |
| d) | Write the steps for creating a directory in Linux Operating System : i)Using GUI ii)Using Command Prompt | First Sub que. 1M,For second 1M |
| Ans. | i)Using GUI  The same way as in Windows, more or less. From the Files file browser:  To make a directory -- right-click and select New Folder.  To make a file -- right-click and select New Document -> Empty Document.  To edit the new file -- right-click the new file and Open With -> Other Application -> GVim (GVim is vi with a better GUI. GVim is in the Ubuntu repos.).  To delete all of the above -- the easy to delete anything is to click it once and send it to the Trash by pressing the Delete key.  ii) Using command prompt  Command mkdir is used to create [directories](http://www.computerhope.com/jargon/d/director.htm) on a [file system](http://www.computerhope.com/jargon/f/filesyst.htm). If the specified DIRECTORY does not already exist,mkdir creates it.  mkdir syntax  mkdir [OPTION ...] DIRECTORY ... |  |
| e) | Give any two features of Linux Kernel. | 1M for each Fun. |
| Ans. | [Concurrency](https://en.wikipedia.org/wiki/Concurrency_(computer_science)): As Unix is a multiprocessing OS, many processes run concurrently to improve the performance of the system.[[disputed](https://en.wikipedia.org/wiki/Wikipedia:Disputed_statement) – [discuss](https://en.wikipedia.org/wiki/Talk:Unix_architecture)]  [Virtual memory](https://en.wikipedia.org/wiki/Virtual_memory) (VM): Memory management subsystem implements the virtual memory concept and users need not worry about the executable program size and the RAM size.[[disputed](https://en.wikipedia.org/wiki/Wikipedia:Disputed_statement) – [discuss](https://en.wikipedia.org/wiki/Talk:Unix_architecture)]  [Paging](https://en.wikipedia.org/wiki/Paging): It is a technique to minimize the internal as well as the external fragmentation in the physical memory.  [Virtual file system](https://en.wikipedia.org/wiki/Virtual_file_system) (VFS): A VFS is a file system used to help the user to hide the different file systems complexities. A user can use the same standard file system related calls to access different file systems. |  |
| f) | What is Virtual file System? | ½ for each. |
| Ans. | The virtual file system must manage all of the different file systems that are mounted at any given time. To do this it maintains data structures that describe the whole (virtual) file system and the real, mounted, file systems.  The VFS describes the system's files in terms of superblocks and inodes in much the same way as the EXT2 file system uses superblocks and inodes. Like the EXT2 inodes, the VFS inodes describe files and directories within the system; the contents and topology of the Virtual File System. |  |
| g) | List any two file systems available. Out of these ,to which file system Linux supports. |  |
| Ans. | |  |  |  | | --- | --- | --- | | FS Name | Year Introduced | Original OS | | FAT16 | 1983 | MSDOS V2 | | FAT32 | 1997 | Windows 95 | | HPFS | 1988 | OS/2 | | NTFS | 1993 | Windows NT |   One of the most important features of Linux is its support for many different file systems.  Linux supports following file systems:   ext, ext2, ext3, xia, minix, umsdos, msdos, vfat, proc, smb, ncp,   iso9660, sysv, hpfs, affs and ufs |  |
| h) | What is Booting? Give any two major steps of Linux Boot Process. |  |
| Ans. | Booting is a process or set of operations that loads and hence starts the operating system, starting from the point when user switches on the power button.  **Stages of Booting of Linux OS:**  **1)System startup(Hardware ) 2)Boot loader Stage 1 (MBR loading) 3)Boot loader Stage 2 (GRUB loader) 4)Kernel 5)INIT 6)User prompt** | Defination:1M  Types:1M |
| i) | List out the editors supported by linux Operating System(any four). |  |
| Ans. | 1. Vi / Vim Editor 2. gEdit Editor 3. Nano Editor 4. gVim Editor 5. Emacs Editor |  |
| j) | What is daemon? |  |
| Ans. | A daemon is a type of program on Unix-like operating systems that runs unobtrusively in the background, rather than under the direct control of a user, waiting to be activated by the occurrence of a specific event or condition. |  |
| k) | Write the needs of Boot security for an Operating system. | ½ M for each |
| Ans. | Secure Boot is a security standard developed by members of the PC industry to help make sure that your PC boots using only software that is trusted by the PC manufacturer.  When the PC starts, the firmware checks the signature of each piece of boot software, including firmware drivers (Option ROMs) and the operating system. If the signatures are good, the PC boots, and the firmware gives control to the operating system. |  |
| l) | What is PAM? | 1M for each |
| Ans. | Pluggable Authentication Modules, basically, it is a flexible mechanism for authenticating users.  PAM provides a way to develop programs that are independent of authentication scheme. These programs need "authentication modules" to be attached to them at run-time in order to work. Which authentication module is to be attached is dependent upon the local system setup and is at the discretion of the local system administrator. |  |
| m) | Give the types of permissions granted in Linux operating system. |  |
| Ans. | |  |  | | --- | --- | | Value | Meaning | | 777 | (rwxrwxrwx) No restrictions on permissions. Anybody may do anything. Generally not a desirable setting. | | 755 | (rwxr-xr-x) The file's owner may read, write, and execute the file. All others may read and execute the file. This setting is common for programs that are used by all users. | | 700 | (rwx------) The file's owner may read, write, and execute the file. Nobody else has any rights. This setting is useful for programs that only the owner may use and must be kept private from others. | | 666 | (rw-rw-rw-) All users may read and write the file. | | 644 | (rw-r--r--) The owner may read and write a file, while all others may only read the file. A common setting for data files that everybody may read, but only the owner may change. | | 600 | (rw-------) The owner may read and write a file. All others have no rights. A common setting for data files that the owner wants to keep private. | |  |
|  |  |  |
| Q.2 | Attempt Any Three. | 12 |
| a) | Explain the Linux commands with example : 1) mount ii)whoami iii)ping iv)cp. | 1M for Defination.At least 3 components & 1M for each. |
| Ans. | i)mount  mount -t type device dir  This tells the kernel to attach the filesystem found on device (which  is of type type) at the directory dir. The previous contents (if  any) and owner and mode of dir become invisible, and as long as this  filesystem remains mounted, the pathname dir refers to the root of  the filesystem on device.  If only the directory or the device is given, for example:  mount /dir  then mount looks for a mountpoint (and if not found then for a  device) in the /etc/fstab file. It's possible to use the --target or  --source options to avoid ambivalent interpretation of the given  argument. For example:  mount --target /mountpoint  ii) whoami  whoami prints the effective user ID.This command prints the [username](http://www.computerhope.com/jargon/u/username.htm) associated with the current effective user ID. whoami syntax whoami [OPTION]  whoami examples  whoami  iii)ping  ping, ping6 - send ICMP ECHO\_REQUEST to network hosts  SYNOPSIS  **ping** [ **-LRUbdfnqrvVaAB**] [ **-c** *count*] [ **-i** *interval*] [ **-l** *preload*] [ **-p** *pattern*] [ **-s** *packetsize*] [ **-t***ttl*] [ **-w** *deadline*] [ **-F** *flowlabel*] [ **-I** *interface*] [ **-M** *hint*] [ **-Q** *tos*] [ **-S** *sndbuf*] [ **-T** *timestamp option*] [ **-W** *timeout*] [ *hop* *...*] *destination*  DESCRIPTION  **ping** uses the ICMP protocol's mandatory ECHO\_REQUEST datagram to elicit an ICMP ECHO\_RESPONSE from a host or gateway. ECHO\_REQUEST datagrams (``pings'') have an IP and ICMP header, followed by a struct timeval and then an arbitrary number of ``pad'' bytes used to fill out the packet.  iv)cp  cp is a Linux shell command to copy files and directories.  cp command syntax  Copy from source to dest  $ cp [options] source dest cp command options cp command main options:   |  |  | | --- | --- | | option | description | | cp -a | archive files | | cp -f | force copy by removing the destination file if needed | | cp -i | interactive - ask before overwrite | | cp -l | link files instead of copy | | cp -L | follow symbolic links | | cp -n | no file overwrite | | [cp -R](http://www.rapidtables.com/code/linux/cp/cp-r.htm) | recursive copy (including hidden files) | | cp -u | update - copy when source is newer than dest | | cp -v | verbose - print informative messages |  cp command examples Copy single file *main.c* to destination directory *bak*:  $ cp main.c bak |  |
| b) | Describe ext2, ext3 Linux file system structure in detail. |  |
| Ans. | Ext2 file system structure :  The ext2 or second extended filesystem is a [file system](https://en.wikipedia.org/wiki/File_system) for the [Linux](https://en.wikipedia.org/wiki/Linux) [kernel](https://en.wikipedia.org/wiki/Kernel_(computer_science)). It was initially designed by [Rémy Card](https://en.wikipedia.org/wiki/R%C3%A9my_Card" \o "Rémy Card) as a replacement for the [extended file system](https://en.wikipedia.org/wiki/Extended_file_system) (ext). Having been designed according to the same principles as the [Berkeley Fast File System](https://en.wikipedia.org/wiki/Berkeley_Fast_File_System) from [BSD](https://en.wikipedia.org/wiki/Berkeley_Software_Distribution), it was the first commercial-grade filesystem for Linux.[[1]](https://en.wikipedia.org/wiki/Ext2#cite_note-1)  The canonical implementation of ext2 is the "ext2fs" filesystem driver in the Linux kernel. Other implementations (of varying quality and completeness) exist in [GNU Hurd](https://en.wikipedia.org/wiki/GNU_Hurd), [MINIX 3](https://en.wikipedia.org/wiki/MINIX_3), some [BSD](https://en.wikipedia.org/wiki/BSD) kernels, in [MiNT](https://en.wikipedia.org/wiki/MiNT" \o "MiNT), and as third-party [Microsoft Windows](https://en.wikipedia.org/wiki/Microsoft_Windows) and [OS X](https://en.wikipedia.org/wiki/OS_X) drivers.  ext2 was the default filesystem in several [Linux distributions](https://en.wikipedia.org/wiki/Linux_distribution), including [Debian](https://en.wikipedia.org/wiki/Debian" \o "Debian) and [Red Hat Linux](https://en.wikipedia.org/wiki/Red_Hat_Linux), until supplanted more recently by[ext3](https://en.wikipedia.org/wiki/Ext3), which is almost completely compatible with ext2 and is a [journaling file system](https://en.wikipedia.org/wiki/Journaling_file_system). ext2 is still the filesystem of choice for [flash](https://en.wikipedia.org/wiki/Flash_memory)-based storage media (such as [SD cards](https://en.wikipedia.org/wiki/SD_card), and [USB flash drives](https://en.wikipedia.org/wiki/USB_flash_drive)), since its lack of a journal increases performance and minimizes the number of writes, and flash devices have a limited number of write cycles. However, recent [Linux kernels](https://en.wikipedia.org/wiki/Linux_kernels) support a journal-less mode of [ext4](https://en.wikipedia.org/wiki/Ext4) which provides benefits not found with ext2.  The space in ext2 is split up into [blocks](https://en.wikipedia.org/wiki/Block_(data_storage)). These blocks are grouped into block groups, analogous to [cylinder groups](https://en.wikipedia.org/w/index.php?title=Cylinder_group&action=edit&redlink=1) in the Unix File System. There are typically thousands of blocks on a large file system. Data for any given file is typically contained within a single block group where possible. This is done to minimize the number of disk seeks when reading large amounts of contiguous data.  Each block group contains a copy of the superblock and block group descriptor table, and all block groups contain a block bitmap, an inode bitmap, an inode table and finally the actual data blocks.  The [superblock](https://en.wikipedia.org/wiki/Unix_File_System) contains important information that is crucial to the booting of the [operating system](https://en.wikipedia.org/wiki/Operating_system). Thus backup copies are made in multiple block groups in the file system. However, typically only the first copy of it, which is found at the first block of the file system, is used in the booting.  The group descriptor stores the location of the block bitmap, inode bitmap and the start of the inode table for every block group. These, in turn, are stored in a group descriptor table.  Ext3 file system structure  ext3, or third extended filesystem, is a [journaled file system](https://en.wikipedia.org/wiki/Journaling_file_system" \o "Journaling file system) that is commonly used by the [Linux kernel](https://en.wikipedia.org/wiki/Linux_kernel). It is the default [file system](https://en.wikipedia.org/wiki/File_system)for many popular [Linux distributions](https://en.wikipedia.org/wiki/Linux_distributions). [Stephen Tweedie](https://en.wikipedia.org/wiki/Stephen_Tweedie) first revealed that he was working on extending [ext2](https://en.wikipedia.org/wiki/Ext2) in Journaling the Linux ext2fs Filesystem in a 1998 paper, and later in a February 1999 kernel mailing list posting. The filesystem was merged with the mainline [Linux kernel](https://en.wikipedia.org/wiki/Linux_kernel) in November 2001 from 2.4.15 onward Its main advantage over ext2 is [journaling](https://en.wikipedia.org/wiki/Journaling_file_system), which improves reliability and eliminates the need to check the file system after an unclean shutdown. Its successor is [ext4](https://en.wikipedia.org/wiki/Ext4).  The performance (speed) of ext3 is less attractive than competing Linux filesystems, such as ext4, [JFS](https://en.wikipedia.org/wiki/JFS_(file_system)), [ReiserFS](https://en.wikipedia.org/wiki/ReiserFS" \o "ReiserFS) and [XFS](https://en.wikipedia.org/wiki/XFS). But ext3 has a significant advantage in that it allows in-place upgrades from ext2 without having to [back up](https://en.wikipedia.org/wiki/Backup) and restore data. Benchmarks suggest that ext3 also uses less CPU power than ReiserFS and XFS.It is also considered safer than the other Linux file systems, due to its relative simplicity and wider testing base.  ext3 adds the following features to ext2:  A [journal](https://en.wikipedia.org/wiki/Journaling_file_system).  Online file system growth.  [HTree](https://en.wikipedia.org/wiki/HTree) indexing for larger directories. | 1M for definition,1M for its position.2M for it’s  Any two types. |
| c) | What is background process? Give any two background processes of Linux operating system.State the features of GRUB and LILO. | 2M for first sub que. And 2M for second. |
| Ans. | A background process is a program that is running without user input. A number of background processes can be running on a multitasking operating system, such as Linux, while the user is interacting with the foreground process Some background processes, such as daemons, for example, never require user input. Others are merely in the background temporarily while the user is busy with the program presently running in the foreground.  Background processes in Linux:  1.init process  2.boot process  Four features of GRUB and LILO :  LILO supports only up to 16 different boot selections; GRUB supports an unlimited number of boot entries.  LILO cannot boot from network; GRUB can.  LILO must be written again every time you change the configuration file; GRUB does not.  LILO does not have an interactive command interface. |  |
| d) | What is DHCP? Explain the working of DHCP. | 1M for definition,3M for any two ways of troubleshooting. |
| Ans. | Dynamic Host Configuration Protocol DHCP, How DHCP work,DHCP tutorials, DHCP messages. Dynamic Host Configuration Protocol (DHCP) is used to dynamically (automatically) assign TCP/IP configuration parameters to network devices (IP address, Subnet Mask, Default Gateway, DNS server etc).  Working of DHCP :  When the client computer (or device) boots up or is connected to a network, a DHCPDISCOVER message is sent from the client to the server.  When the DHCP server receives the DHCPDISCOVER request message then it replies with a DHCPOFFER message.   The client forms a DHCPREQUEST message in reply to DHCPOFFER message and sends it to the server indicating it wants to accept the network configuration sent in the DHCPOFFER message.  Once the server receives DHCPREQUEST from the client, it sends the DHCPACK message indicating that now the client is allowed to use the IP address assigned to it. The client enters the bound state during this step.   The IP  address assigned by DHCP server to DHCP client is on a lease. After the lease expires the DHCP server is free to assign the same IP address to any other host or device requesting for the same. For example, keeping lease time 8-10 hours is helpful in case of PC’s that are shut down at the end of the day.  So, lease has to be renewed from time to time. The DHCP client tries to renew the lease after half of the lease time has expired. This is done by the exchange of DHCPREQUEST and DHCPACK messages.  http://static.thegeekstuff.com/wp-content/uploads/2013/03/dhcp.png |  |
| e) | Write a short note on DNS. |  |
| Ans. | The Domain Name System (DNS) is a [hierarchical](https://en.wikipedia.org/wiki/Hierarchical) decentralized naming system for computers, services, or any resource connected to the [Internet](https://en.wikipedia.org/wiki/Internet) or a [private network](https://en.wikipedia.org/wiki/Private_network). It associates various information with [domain names](https://en.wikipedia.org/wiki/Domain_name) assigned to each of the participating entities. Most prominently, it translates more readily memorized domain names to the numerical [IP addresses](https://en.wikipedia.org/wiki/IP_address) needed for the purpose of locating and identifying computer services and devices with the underlying network protocols. By providing a worldwide, distributed [directory service](https://en.wikipedia.org/wiki/Directory_service), the Domain Name System is an essential component of the functionality of the Internet.  The Domain Name System delegates the responsibility of assigning domain names and mapping those names to Internet resources by designating [authoritative name servers](https://en.wikipedia.org/wiki/Authoritative_name_server) for each domain. Network administrators may delegate authority over [sub-domains](https://en.wikipedia.org/wiki/Sub-domain) of their allocated name space to other name servers. This mechanism provides distributed and fault tolerant service and was designed to avoid a single large central database.  The Domain Name System also specifies the technical functionality of the [database](https://en.wikipedia.org/wiki/Database) service which is at its core. It defines the DNS protocol, a detailed specification of the data structures and data communication exchanges used in the DNS, as part of the [Internet Protocol Suite](https://en.wikipedia.org/wiki/Internet_Protocol_Suite). Historically, other directory services preceding DNS were not scalable to large or global directories as they were originally based on text files, prominently the [HOSTS.TXT](https://en.wikipedia.org/wiki/HOSTS.TXT) resolver.  The Internet maintains two principal [namespaces](https://en.wikipedia.org/wiki/Namespace), the domain name hierarchy and the [Internet Protocol](https://en.wikipedia.org/wiki/Internet_Protocol) (IP) [address spaces](https://en.wikipedia.org/wiki/Address_space). The Domain Name System maintains the domain name hierarchy and provides translation services between it and the address spaces. Internet [name servers](https://en.wikipedia.org/wiki/Name_server) and a communication [protocol](https://en.wikipedia.org/wiki/Network_protocol) implement the Domain Name System. A DNS name server is a server that stores the DNS records for a domain; a DNS name server responds with answers to queries against its database. |  |
|  |  |  |
| Q.3 | Attempt Any Three | 12 |
| a) | What is GNU/GPL license? Give special configuration in /etc/inittab file. | 2M for first sub que. And 2M for second(at least two advantages) |
| Ans. | GNU/GPL License:  The GNU General Public License (GNU GPL or GPL) is a widely used[[6]](https://en.wikipedia.org/wiki/GNU_General_Public_License#cite_note-blackduck2015-6) [free software license](https://en.wikipedia.org/wiki/Free_software_license), which guarantees [end users](https://en.wikipedia.org/wiki/End_user) (individuals, organizations, companies) the freedoms to run, study, share (copy), and modify the software. Software that allows these rights is called [free software](https://en.wikipedia.org/wiki/Free_software) and, if the software is [copylefted](https://en.wikipedia.org/wiki/Copyleft), requires those rights to be retained. The GPL demands both. The license was originally written by [Richard Stallman](https://en.wikipedia.org/wiki/Richard_Stallman) of the [Free Software Foundation](https://en.wikipedia.org/wiki/Free_Software_Foundation) (FSF) for the [GNU Project](https://en.wikipedia.org/wiki/GNU_Project).  Special configuration in /etc/inittab  The /etc/inittab has some special features that allow init to react to special circumstances. These special features are marked by special keywords in the third field. Some examples:  powerwait  Allows init to shut the system down, when the power fails. This assumes the use of a UPS, and software that watches the UPS and informs init that the power is off.  ctrlaltdel  Allows init to reboot the system, when the user presses ctrl-alt-del on the console keyboard. Note that the system administrator can configure the reaction to ctrl-alt-del to be something else instead, e.g., to be ignored, if the system is in a public location. (Or to start nethack.)  sysinit  Command to be run when the system is booted. This command usually cleans up /tmp, for example. |  |
| b) | Explain vi editor in terms of : i)Exiting from vi ii)Text Insertion commands iii)Starting an editing session iv)Text deletion commands. |  |
| Ans. | 1. Exiting from vi :   The command to quit out of vi is :q. Once in command mode, type colon, and 'q', followed by return. If your file has been modified in any way, the editor will warn you of this, and not let you quit. To ignore this message, the command to quit out of vi without saving is **:q!**. This lets you exit vi without saving any of the changes.  The command to save the contents of the editor is **:w**. You can combine the above command with the quit command, or :wq and return.  The easiest way to save your changes and exit out of vi is the **ZZ** command. When you are in command mode, type ZZ and it will do the equivalent of :wq.  You can specify a different file name to save to by specifying the name after the :w. For example, if you wanted to save the file you were working as another filename called filename2, you would type **:w filename2** and return. Try it once.   1. Starting an editing session   While working with vi editor you would come across following two modes −   * **Command mode** − This mode enables you to perform administrative tasks such as saving files, executing commands, moving the cursor, cutting (yanking) and pasting lines or words, and finding and replacing. In this mode, whatever you type is interpreted as a command. * **Insert mode** − This mode enables you to insert text into the file. Everything that's typed in this mode is interpreted as input and finally it is put in the file .   The vi always starts in command mode. To enter text, you must be in insert mode. To come in insert mode you simply type **i**. To get out of insert mode, press the **Esc** key, which will put you back into command mode.   1. Text deletion commands   The following commands allow you to delete text.   |  |  |  | | --- | --- | --- | | **\*** | **x** | *delete single character under cursor* | |  | **Nx** | *delete N characters, starting with character under cursor* | |  | **dw** | *delete the single word beginning with character under cursor* | |  | **dNw** | *delete N words beginning with character under cursor;    e.g., d5w deletes 5 words* | |  | **D** | *delete the remainder of the line, starting with current cursor position* | | **\*** | **dd** | *delete entire current line* | |  | **Ndd *or* dNd** | *delete N lines, beginning with the current line;    e.g., 5dd deletes 5 lines* |  1. Text Insertion commands   The following commands allow you to insert and add text. Each of these commands puts the vi editor into insert mode; thus, the <Esc> key must be pressed to terminate the entry of text and to put the vieditor back into command mode.   |  |  |  | | --- | --- | --- | | **\*** | **i** | *insert text before cursor, until <Esc> hit* | |  | **I** | *insert text at beginning of current line, until <Esc> hit* | | **\*** | **a** | *append text after cursor, until <Esc> hit* | |  | **A** | *append text to end of current line, until <Esc> hit* | | **\*** | **o** | *open and put text in a new line below current line, until <Esc> hit* | | **\*** | **O** | *open and put text in a new line above current line, until <Esc> hit* | |  |  |  | |  |  |  | |  |
| c) |  | 2 M for definition,2M for difference |
| Ans. | RAM stands for Random Access Memory. It is also called "direct access memory". Random access means that each individual byte in entire memory can be access directly. RAM is used to store data and instructions temporarily. A program must be loaded into RAM before execution  Different between SRAM and DRAM  SRAM   * It is faster than DRAM. * It is more expensive as compared to DRAM. * It does not need to be power – refreshed. * It utilizes less power. * It holds data indefinitely as long as the computer is turned on. * It is more complex and less compact.   DRAM   * It is slower than SRAM. * It is less expensive. * It has to be refreshed after each read operation. * It utilizes more power. * It holds data dynamically not indefinitely. * It is less complex and more compact.   . |  |
| d) | Define CMOS setup. State the parts in which CMOS setup of a system is divided. Draw the sketch of any one part of CMOS setup. | 1M for definition, 1M for Second sub que. ,2M for third. |
| Ans. | In computer science, COMS often refers to chips saving basic boot information (**such as date, time and startup configuration**) of computer. Sometimes, people are confused by CMOS and BIOS. Actually, CMOS is a RAM chip that can be read and written on master board. It is a hardware configuration storing BIOS and some parameters set by users. CMOS charges from batteries on master board. Even the system powers off, the information will not be lost. CMOS RAM is only a storage device with data storage function. And various parameters of BIOS must be set through specific programs. BIOS setup utilities are integrated in chips. And by pressing specific button, users can enter BIOS setup program and set up the system conveniently. Therefore, BIOS setup utility is called CMOS setup utility sometimes.  The following details can be set up: Standard CMOS Setup: including date, time, and parameters of soft and hardware. BIOS Features Setup: including some system options. Chipset Features Setup; Power Management Setup; nP/PCI Configuration Setup; Integrated Peripherals; Other settings including hard disk auto detection, system password, loading default setup and log out.  Standard CMOS Setup:  http://www.bcot1.com/bios03.jpg |  |
| e) | Explain the different ways to perform troubleshooting in webcam. |  |
| Ans. | * Do not enter standby and then wake the system immediately, before the power light turns yellow. If you do, the webcam might not function correctly until the computer is restarted. To avoid this issue, allow the system to fully enter standby before waking up the system. * Make sure the webcam drivers and software are compatible with your version of Windows. * Make sure you install any webcam software from the CD before you plug the webcam to your computer. Without the software, the webcam might not be recognized by your computer and this can cause error messages. * If the camera does not display Connected to computer, disconnect the webcam, wait for a minute, and then reconnect your camera. * Try testing the webcam on another computer. If it functions properly on a different computer that has the same operating system, then you might need to install hardware drivers for your computer to work with the webcam. If an external webcam fails to work on several computers, your webcam might be defective. Contact the webcam manufacturer for specific diagnostic information and troubleshooting instructions. |  |
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| Q.4 | Attempt Any Three. | 12 |
| a) | Explain different types of expansion slots in terms of their features and the device support. | 2M for each slot (at least two). |
| Ans. | 1. Peripheral Component Interconnect (PCI) This high-speed slot, used in earlier *Mac OS* machines and *PCs* can be used for co-processors, multiple-processors or video compression hardware. Apple’s original version, known as *Apple RISC Bus (ARBus)*, uses a bus clock of 33 or 66 MHz, although older cards and slots only run at 33 MHz. The 33 MHz version accommodates a peak transfer rate of 133 MB/s whilst the 66 MHz variety conveys up to 266 MB/s. The bus is 32 bits wide.  Some older *PowerPC*-based *Mac OS* machines have a special slot for the use of a video card, which provides accelerated graphics or 3D graphics for games and support for DVD Video discs. This kind of slot in *G3* models runs at 66 MHz, twice the speed of other *PCI* slots, but in later machines is superseded by the faster AGP or *PCIe* forms of connection.  Cards come in 7-inch and 12-inch versions, although some slots can’t accept the larger cards. There can be up to 10 slots, accommodating up to 5 cards with 32-bit or 64-bit addressing. In practice, most machines can only take three 64-bit cards, often in addition to a 32-bit slot for video. Fortunately, you can also insert a 32-bit card into a 64-bit slot. The more common 32-bit cards and buses only use pins 1 to 62, whilst 64-bit hardware uses all the pins up to pin 94. Cards and buses may operate with 5 or 3.3 volt signalling, so key notches are provided to prevent the insertion of inappropriate cards. 2. AGP: Advanced Graphics Port This kind of expansion port, found in many modern computers, accommodates a *video card* that provides the video signals for a *monitor*. Traditionally, the display connects via a *Super Versatile Graphics Array (SVGA)*port, although more recent cards provide a *Digital Video Interface (DVI)* or *Apple Display Connector (ADC)* output for an *LCD screen*.  Unlike *PCI* slots (see below), which use a 32-bit or 64-bit data path, AGP slots provide a 64-bit connection to the processor. Cards and slots come in various speeds, as shown in below:-   |  |  | | --- | --- | | **Speed** | **Bus Clock (MHz)** | | **Standard** | **66 •** | | **2 Times (2x)** | **133** | | **4 Times (4x)** | **266** | | **8 Times (8x)** | **533** | |  |  | |  |
| b) | Define Timer. Why is it used? state and explain the types of timers. |  |
| Ans. |  |  |
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