Q1. OS is a software that manages hardware and software. It provides common services for computer programs.

Three popular OS are Linux, Windows and Mac OS.

**1940’s First generation of OS**

There is no OS, only one bit at a time on rows of mechanical switches (plug boards).

**1950’s Second generation**

Punch cards, First OS was implemented on the IBM 701, these can handle only one job at a time.

***Known as SINGLE-STREAM BATCH PROCESSING SYSTEMS.***

**1960’s Third generation**

These are known as batch processing systems, performing several jobs at once. Multiprogramming -several tasks on a single hardware. Partitions of memory into several pieces came into existence.

A major change is Spooling (Simultaneous peripheral operations on a line) here instead of printing directly the output is stored in disk. Programs can run to completion faster and other programs can be initiated sooner. Timesharing is a part of multiprogramming technique. Here simultaneously interactive users became more.

**Fourth Generation.**

***LSI (Large Scale Integration) chips, circuits, and Operating Systems came into existence*.** Microprocessor technology has been evolved. Which showed the possibilities of making a desktop computer similar to the performance of mainframe computers that were made in 1970’s.

MS-DOS -by Microsoft for IBM PC, other machines using Intel 8088 CPU.

UNIX for Machines that are using Motorola 6899 CPU.

32 to 64 bit, the amount of data that a processor can handle in one attempt.

64bit is capable of handling 32 bit and 64 bit applications. On 32 bit we can’t run 64 bit.

32 bit can handle only 4GB of ram.

64 bit can handle almost unlimited ram.

**Types of Operating Systems:**

1. Real time Operating systems: used to control machines, industrial systems etc.
2. **SUST** Single User, Single Task operating systems: OS used by personal digital assistants.
3. **SUMT** Single User Multi-Tasking operating systems: Windows, Macintosh, and Linux are well known.
4. **MUMT** Multi user Multi-Tasking operating system: Unix is an example of it.

* Generations of computers PPT Slides
* Reference “(<https://www.slideshare.net/RajatMore/generations-of-computer-14065948>)”
* What is 32bit and 64bit
* Reference “(<https://www.slideshare.net/tousifirshad/what-is32bitand64bit-n>)”

Q2. LINUX Vs WINDOWS Vs MAC

|  |  |  |
| --- | --- | --- |
| **LINUX** | **WINDOWS** | **MAC** |
| Open Source | Enterprise Version | Enterprise Version |
| Community to help | Tech support | Tech support |
| Virus free | ANTI-Virus needed | Virus free |
| Just a Kernel | Complete version | Complete version |
| Works on any hardware | Limited machines | Less hardware crashes (on MAC OS) |
| Less compatibility | More compatibility | Less compatibility |
| No cost | Less cost | More cost |

* Differences between Linux, Windows and MAC
* Reference “(<https://www.slideshare.net/MeharAliZar/comparison-of-windows-linux-and-mac-os>)”

Q3. What is the difference between Linux and Unix?

|  |  |  |
| --- | --- | --- |
| **Properties** | **UNIX** | **LINUX** |
| Founder | Ken Thompson (father of B lan)  Dennis Ritchie (father of C lan) | Linus Torvalds |
| Developed by | Bell labs => AT&T American Telephone and Telegraph | Open source community |
| Major distributions | Solaris (by Oracle), AIX (IBM)  And HP-UX (by Hewlett Packard).  OSX (by apple) | Cent OS -clone of RHEL (Red hat enterprise limited),  Ubuntu and many more. |
| Usage | Developed for mainframes, used in internet servers, workstations. | Normal desktops |
| Model | Client-server Model | BASH Shell. |
| Virus | ----------------- | Only 60 -100 till date. |

* Comparative study between Linux and Unix
* Reference “(<https://www.slideshare.net/MintooJakhmola/linux-vs-unix>)”

Q 4. Various distributions of Linux? Pro’s and Con’s

Selecting the right Linux distribution needs to be selected based on the type of job that you are going to perform using that OS.

RHEL – Red Hat enterprise Linux.

Cent OS – Same as RHEL but can be installed for free.

These two are the stable ones, and most widely used.

Fedora – Less stable but has more updates frequently.

Ubuntu – Much more up-to-date revisions.

Debian – Has three functions “Stable, Testing, and Unstable”.

OpenSUSE – Different from other Linux – YaST configuration tool.

Choosing depends on

**Familiarity – Simplicity – Server Requirements – Stability.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Pros | Cons | Package management | Versions |
| RHEL & Cent OS | Stable and reliable; traditional layout. | Long release cycle, older packages. | Yum and RPM; | 5 & 6 supported,  & 7 just Released |
| Fedora | Lots of supported software. | Less stable, fast. | Yum and Rpm | Versions 19&20 supported  21 Released on 2014 |
| Ubuntu | Solid release cycle | Tends to move quickly | Apt and Deb Packages | 10.04 LTS,  12.04 LTS,  And 14.04 LTS currently supported.  16.04 New release |
| Debian | Very stable and reliable vide varieties of packages | Conservative | Apt and Deb | Stable for wheezy;  Testing on jessie;  Unstable for sid  9.3 latest version |
| Open SUSE | Stable, supports more packages. Consist of admin tools like YaST | YaST has unique sys admin tools such as YaST. | YaST and RPM | Versions 12.3 & 13.1 has support.  13.2 released in 2014  Latest release is 42.3 Leap. |

28 Types of Linux

* Linux Distributions
* Reference “(<https://www.lifewire.com/top-linux-distributions-of-all-time-4084559>)”
* Types of distributions
* Reference “(<https://www.infoworld.com/article/2687088/linux/how-to-choose-a-linux-server-distribution.html?page=2>)”
* Introduction of Linux
* Reference “(<https://www.slideshare.net/james8655206429/introduction-to-linux-ppt-40705516>)”

Q 5 What is Data Center? What are the various factors considered to plan a Data center? Discuss about few important components in Data Center?

Data center is a place where the large amount of data is stored that has been collected from the sources or organizations. It is better to have their own data center based on the size of the organization. Mostly companies lease the space.

Five key characteristics Location, amenities, network, services, security and price.

Key components to establish a data center. Environmental control, security, accountability, policies redundancy, monitoring, scalability, change management, organization, and documentation.



* Introduction to datacenter
* Reference “(<https://www.slideshare.net/heatherbrotherton/datacenter-overview-28660411>)”

Q 6 What is RAM, ROM, BIOS, POST, KERNEL?

RAM – Random access Memory – utilizes the memory for fast processing, reducing the time, access to all the hardware.

ROM – Read only memory – not changeable contains such as bios and data is saved even on shutting down the system. Ex. Time and date, has long life battery.

BIOS – Basic input and output system. Without OS manages the flow between the os and the hardware. Such as hard disk, mouse, keyboard.

POST – Power-on self-test. Is used to test the computer hardware efficiency, before every booting. BEEP code is indication of hardware failure.

Kernel- It is a bridge between the application data processing at the hardware level. Kernel is responsible for low level tasks such as disk management, task management, and memory management.

* Introduction to RAM
* Reference “(<https://www.slideshare.net/KadaiMcFadden/ram-presentation-12191837>)”
* Introduction to ROM
* Reference “(<https://www.slideshare.net/rohitladdu/romread-only-memory>)”
* Introduction to BIOS
* Reference “(<https://www.slideshare.net/JesthineNesshal/bios-basic-input-output-system>)”
* Introduction to POST
* Reference “(<https://courses.engr.illinois.edu/cs423/fa2012/boot.pptx>)”
* Introduction to Kernel
* Reference “(<https://www.slideshare.net/atamonim/kernel-os>)”

**7. What is Virtualization? Discuss about Vmware/Virtualbox/Xen?**

**Answer:**

In computing, **virtualization** means to create a virtual version of a device or resource, such as a server, storage device, network or even an operating system where the framework divides the resource into one or more execution environments.

**VMware** is a virtualization and cloud computing software provider based in Palo Alto, California. Founded in 1998, **VMware** is a subsidiary of Dell Technologies. EMC Corporation originally acquired VMware in 2004; EMC was later acquired by Dell Technologies in 2016. VMware bases its virtualization technologies on its bare-metal hypervisor ESX/ESXi in x86 architecture.

**VirtualBox** or VB is a software virtualization package that installs on an operating system as an application. **VirtualBox** allows additional operating systems to be installed on it, as a Guest OS, and run in a virtual environment. In 2010, **VirtualBox** was the most popular virtualization software application.

**Xen** is an open source virtual machine monitor for x86-compatible computers. XenSource Inc. and Virtual Iron Software Inc. promoted **Xen** as the primary open source competitor to commercial virtualization products such as VMWare.

* Virtualization and hypervisors
* Reference “(<https://www.slideshare.net/GauravSuri1/virtualization-and-hypervisors>)”

**8. What are the Hardware requirements for building a server?**

Answer:

**Minimum hardware requirements**

The values below refer to the minimum available hardware required to run Confluence only; for example, the minimum heap size to allocate to Confluence is 1 GB and 1 GB for Synchrony (which is required for collaborative editing). You'll need additional physical hardware, of at least the minimum amount required by your Operating System and any other applications that run on the server.

On small instances, server load is primarily driven by peak visitors, so minimum system requirements are difficult to judge. We provide these figures as a guide to the absolute minimum required to run Confluence, and your configuration will likely require better hardware.

Here is our minimum hardware recommendation:

* • CPU: Quad core 2GHz+ CPU
* • RAM: 6GB
* • **Minimum database space:** 10GB .

One of the best choices for a small business is a dedicated server built from the ground up as a file server to provide features and expansion options that a desktop computer lacks. Some server hardware decisions you will need to make include the following:

1. **Form Factor:** For small businesses, the best choice is a dedicated entry-level server in a tower configuration. 2. **Processor:** Choose a server-specific processor to boost performance and data throughput. 3. **Memory:** Buy as much memory as you can afford and look for expansion slots for future upgrades. 4. **Storage:** Look for SATA or SCSI hard disks, not IDE.

* Introduction to server
* Reference “(<https://www.slideshare.net/VineetPokhriyal/basic-server-ppt-thdc>)”

**9. What is a server? How does it differ from Desktop?**

**Answer:**

A server is a computer program that provides services to other computer programs (and their users) in the same or other computers. The computer that a server program runs in is also frequently referred to as a server. That machine may be a dedicated server or used for other purposes as well.

A desktop computer system typically runs a user-friendly operating system and desktop applications to facilitate desktop-oriented tasks. In contrast, a server manages all network resources. Servers are often dedicated (meaning it performs no other task besides server tasks). Because a server is engineered to manage, store, send and process data 24-hours a day it has to be more reliable than a desktop computer and offers a variety of features and hardware not typically used in the average desktop computer.

* Difference between server and desktop
* Reference “(<https://www.webopedia.com/DidYouKnow/Hardware_Software/difference_between_server_and_desktop.html>)”