Q-1 What is operating System?

① An operating System is a software that acts as an interface between Computer hardware Components and the user.

② An operating System performs all the basic tasks like managing files, processes, and memory. Thus operating system acts as the manager of all the resources, i.e. resource manager.

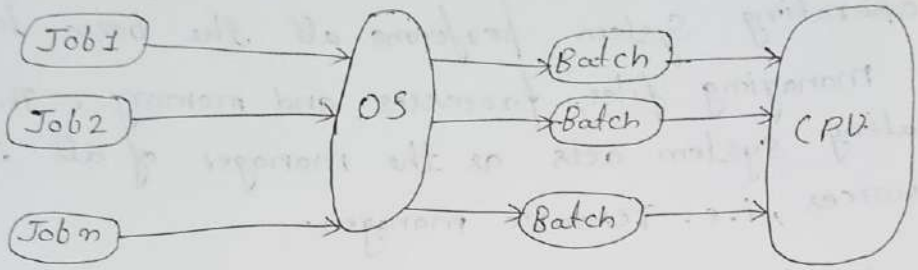
Types of operating system

Some widely used operating System are as follows –

① Batch operating System
② Time-Sharing OS / Multitasking OS
③ Distributed OS
④ Network OS
⑤ Real-Time OS
⑥ Multi processing OS
⑦ Mobile OS
⑧ Embedded OS
⑨ Desktop OS
⑩ Clustered OS
⑪ Handheld OS
⑫ Multiprogramming OS

① Batch Operating System

The users of a batch operating system do not interact with the computer directly. Each user prepares his job on an off-line device like punch cards and submits it to the computer operator. To speed up processing, jobs with similar needs are batched together and run as a group.



Advantage of Batch OS

① The idle time for the batch system is very less.
② It is easy to manage large work repeatedly in batch systems.
③ Multiple users can share the batch systems.
④ Can be feed input data in the batch processing system without using extra hardware components.
⑤ It is very difficult to guess or know the time required for any job to complete. Processors of the batch systems know how long the job would be when it is in queue.

Disadvantage of Batch OS

① Batch systems are hard to ~~debug~~ debug.

④ It is sometimes costly.
⑤ The other jobs will have to wait for an unknown time if any job fails.
⑥ Batch processing System's online sensors are often not available.
⑦ Time-varying process characteristics.
⑧ If anyone's job halts, then increase the workload for predicting time.
⑨ Due to any mistake, any job can enter into an infinite loop.
⑩ If your protection System is not well then, anyone's job can affect pending jobs.
⑪ Computer operators must be trained for using batch Systems.

Examples
Payroll System, Bank Invoice System, transactions Process, Daily Report, Research Segment, Billing System

② Time Sharing OS

Time-sharing is a logical extension of multiprogramming. The CPU executes multiple jobs by switching, among them, but the switches occur so frequently that the users can interact with each program while it is running. An interactive Computer provides direct Communication between the user and the System. The user gives instructions to the OS or a program directly, using

Network operating System are those OS which is specially that are designed to power smart phones, tables, and wearable devices.

Network operating system is an OS that has special function for Connecting Computers and devices into a local area network or Inter-network.

There are two basic types of network OS:

① Peer-to-Peer Network operating System

Allow users to share network resources saved in Common, accessible network location.

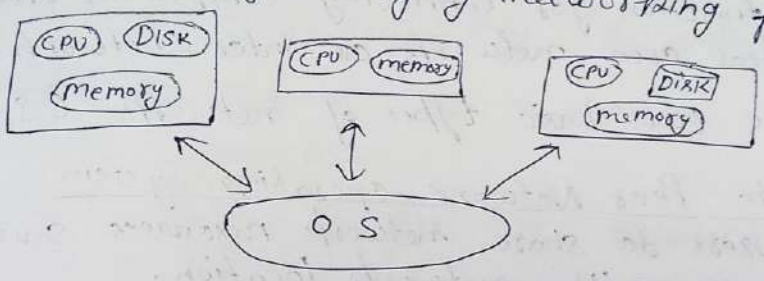
② Client/Server Network operating System

Provides users with access to resources through a server. All functions and applications are unified under one file Server that Can be used to execute individual client actions regardless of Physical location.

Advantages

① Highly Stable Centralized Servers.
② Security Concerns are handled through Servers.
③ Allows Companies to Scale their Computing resource to handle increased demand without having to buy new hardware.
④ client-Server System Can be quikly reconfigured to meet the changing needs of an organization. More reliable and easier to maintain than dedicated Server System.

machine. A part of the distributed operation System is installed on each machine to make their Communication possible. Distributed OS are much more Complex, large, and sophisticated than Network operating System because they also have to take care of varying networking protocols.



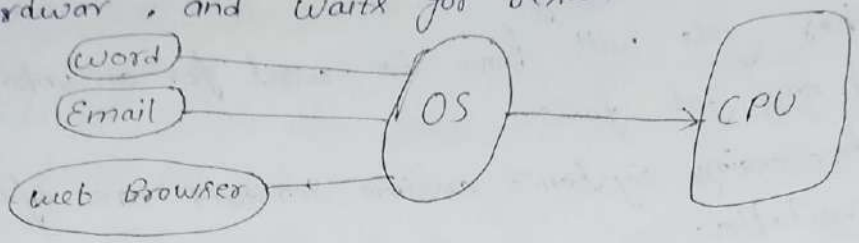
Advantage

1. Electronic mail increase the data exchange speed.
2. Since resources are being shared, Computation is highly fast and durable.
3. Delay in data processing reduce.
4. Failure of one will not affect the other network Communication, as all systems are independent from each other.
5. These system are easily scalable as many systems can be easily added to the network.
6. This type of system is fault tolerant.

Disadvantage

1. Costly setup
2. If the server is failed, then the whole system will fail.
3. Complex Software is used for such a System.

hardwar, and waits for results.



Advantage of Time-Sharing OS

① Each task gets an equal opportunity.
② Fewer chances of duplications of Software.
③ CPU idle time can be reduced.
④ The time-sharing operating system provides effective utilization and sharing of resources.
⑤ This System reduces CPU idle and response time.

Disadvantages

① Reliability problem.
② one must have to take care of security and integrity of user programs and data.
③ Data Communication problem.

Examples of Time-Sharing OS

Multics, Unix, Windows 2000 Server, window NT Server, Linux

③ Distributed OS

The distributed operating System is not installed on a Single machine, it is divided into parts, and these parts are loaded on different

Disadvantages

① Limited tasks.
② Use Heavy System resources.
③ Complex Algorithms.
④ Device drives and interrupt Signals
⑤ Thread Priority

Example

Scientific experiments, medical imaging systems, industrial Control Systems, weapon systems; robots, air traffic Control Systems ..

⑥ Multiprocessor OS

multiprocessor operating System utilizes multiple processors, which are connected with physical memory ; Computer buses , Clocks , and peripheral devices.

The main objective of using multiprocessor OS is to consume high Computing power and increase the execution speed of the System.

Four major Components, used in the Multiprocessor operating System :—

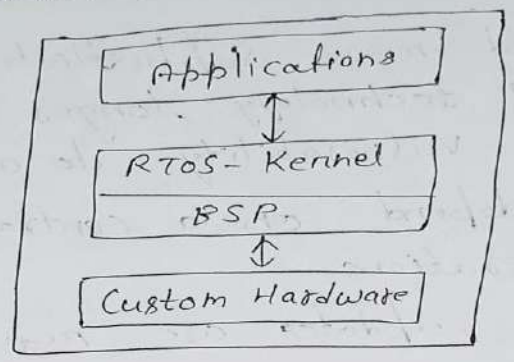
①CPU
② Input /Output Devices
③ Input Output Processor
④ Memory Unit

Advantage

① Great Reliability
② Improve Throughput

② Soft Real-Time Systems

These OSs are for applications where time-constraint is less strict.



Advantages

1. Maximum Consumption
2. Task shifting.
3. Focus on Application
4. Error Free
5. Memory Allocation
6. Priority-Based Scheduling
7. Abstracting Timing Information
8. Code Reuse
9. Idle Processing
10. Easier testing
11. Promotes Team Development
12. modularity
13. Improved Efficiency

Disadvantage

① Less secure than dedicated Server System.
② more challenging to scale than dedicated Server system.
③ These OS need more sophisticated management and networking technology, longer startup times, and increased vulnerability to attack.
④ User has to depend on a central location for most operations.
⑤ Maintenance and updates are required regularly.

Examples

Microsoft Windows Server 2003, Microsoft Server 2008, UNIX, LINUX, Mac OS X, Novell Netware, and BSD etc.

⑤ Real-Time OS

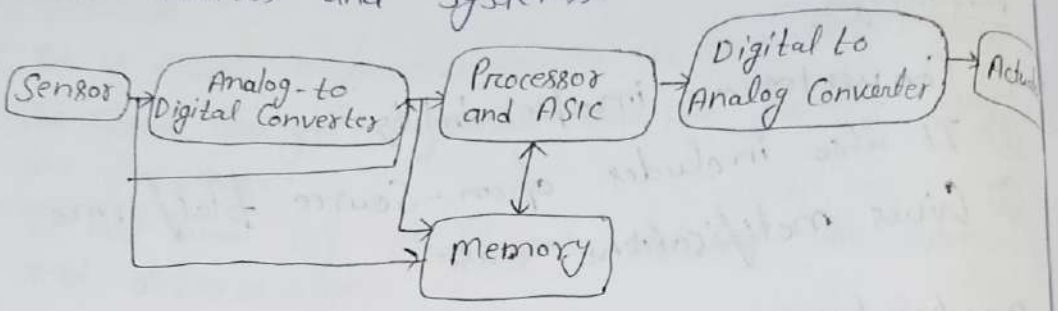
These type of OS Server real-time Systems. The time interval required to process and respond to inputs is very small. This time interval is called response time.
Real-time Systems are used when there are time requirements that are very strict.

Two types of Real-Time OS

① Hard-Real Time Systems

These OS are meant for applications where time Constraints are very strict and even the shortest possible delay is not acceptable.

Embedded operating Systems are built into internet of things devices. They are also part of many other devices and systems.



Advantages

① The OS is often low-cost.
② The OS tends to use few resources, including minimal power.
③ The performance is generally trouble-free.

Disadvantages

① The OS can usually only run a single or very few applications.
It is difficult to modify the OS once you establi a framework and build it into the device.
Trouble-shooting the OS when there are issues can be difficult.

Examples

① Windows Mobile/CE
② Symbian
③ Linux-based OSes.

Some extent.

It combines the power of a computer and the experience of a hand-held device.

Advantages

① Convenience interoperability.
② It also includes open-source platforms.
③ Gives notifications ease.

Disadvantage

① Instability
② It also includes poor battery quality.
③ Not sufficient Computational power

Example

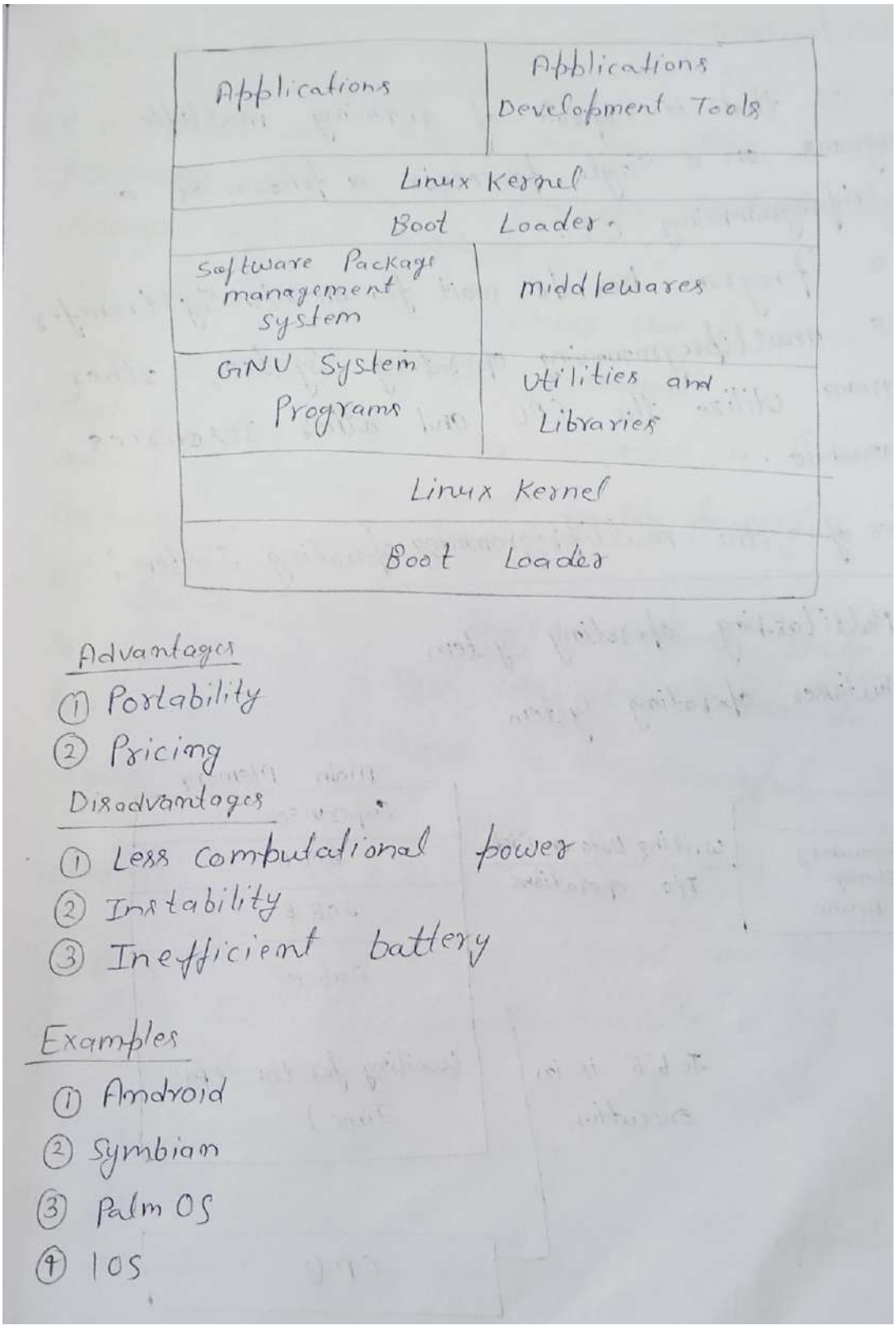
Android, IOS, Harmony OS, PalmOS

⑧ Embedded OS

An embedded operating System is a specialized OS for embedded systems. It aims to perform with certainty specific tasks regularly that help the device operate.

An embedded OS often has limited features and functions.

The OS may performs only a single actions that allows the device to work, but it must execute that action consistently and timely.



Advantages

1. Portability
2. Pricing

Disadvantages

1. Less computational power
2. Instability
3. Inefficient battery

Examples

1. Android
2. Symbian
3. Palm OS
4. IOS

Advantages

① High Availability
② Cost efficiency
③ Additional Scalability
④ Fault Tolerance
⑤ Performance
⑥ Processing Speed

Disadvantages

① Cost - effective
② Required Resources
③ Maintenance.

Example

Oracle provides a Linux-based operating System that is clustered.

⑪ Handheld operating System

Handheld Systems include personal Digital Assistants, and Connectivity to a network such as the Internet. They are usually of limited size due to which most handheld devices have a small amount of memory, include slow processors, and feature small display screens.

many handheld devices has a memory in a range of 512 KB to 8MB. As a result, the OS and applications must manage memory efficiently.

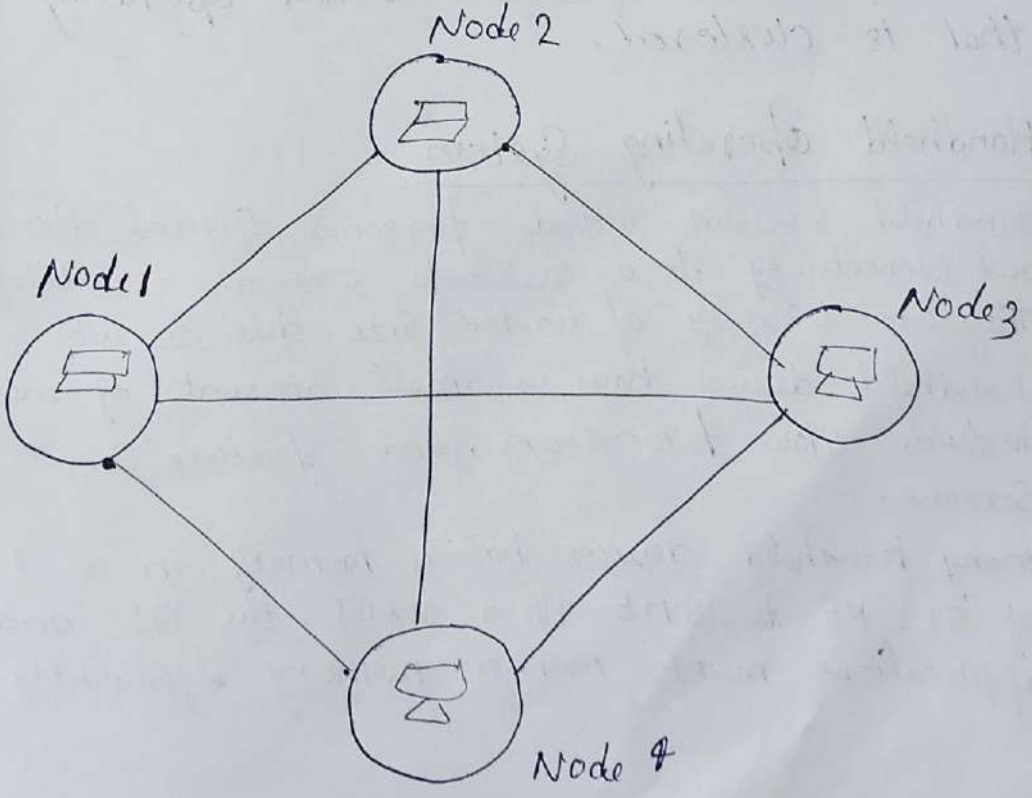
(10) Clustered OS

① Cluster systems are similar to parallel systems. Both use multiple CPUs. The primary difference is that clustered system are made up of two of more independent systems linked together.

② They have independent Computer systems and shared storage media, and all system work together to complete all tasks.

Software Cluster ⇒ Allows all the systems to work together.

Hardware Cluster ⇒ Facilitates high-performance disk sharing among systems.



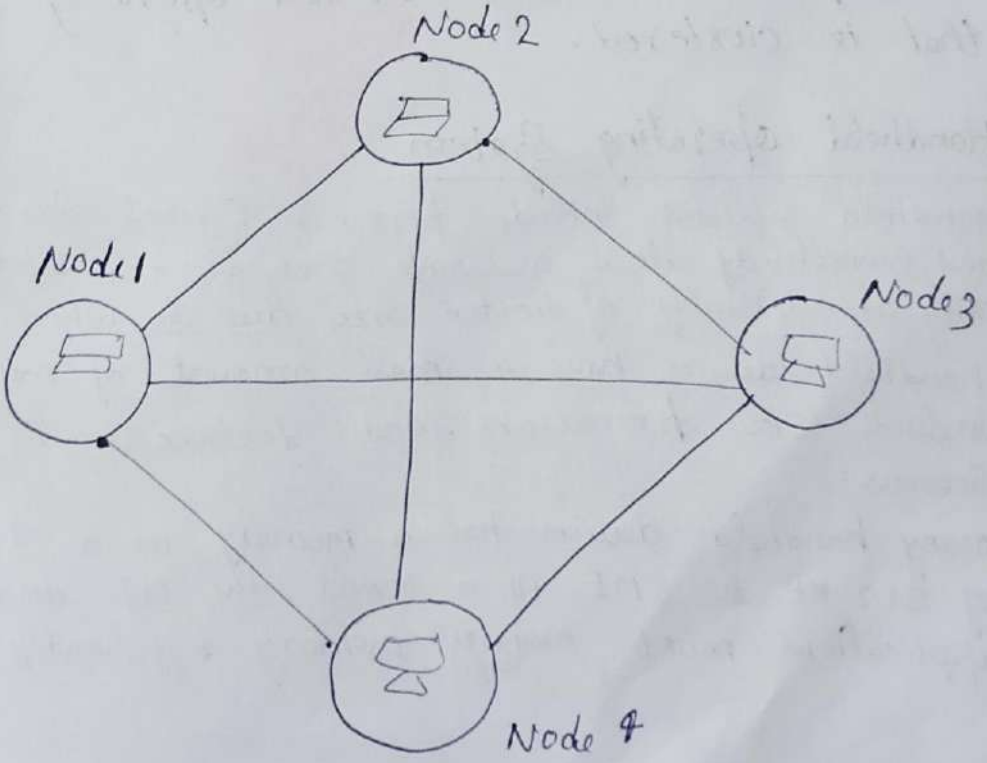
(10) Clustered OS

① Cluster Systems are similar to parallel Systems. Both use multiple CPUs. The primary difference is that clustered System are made up of two of more independent Systems linked together.

② They have independent Computer Systems and shared storage media, and all system work together to complete all tasks.

Software Cluster ⇒ Allows all the Systems to work together

Hardware Cluster ⇒ Facilitates high-performance disk sharing among Systems.



Disadvantages

① Network Congestion as multiple requests from the clients can block the network traffic.

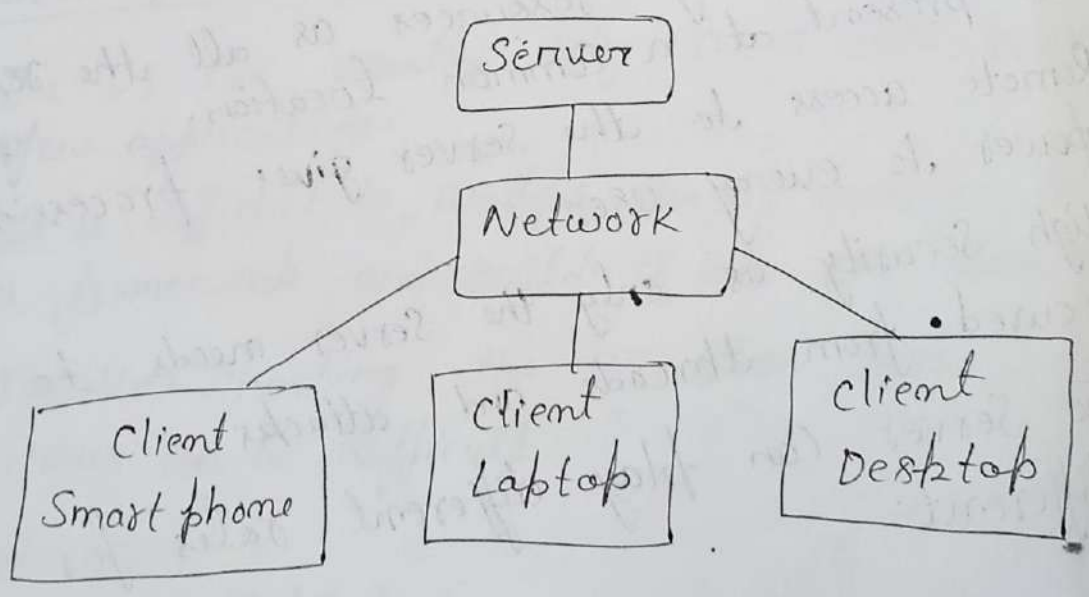
The architecture of request and response is not robust enough for heavy processing

If the Server fails, all the desktop Systems Connected over the network fail.

The operating System architecture is highly costly.

Examples

Windows, Linux, Unix, MAC OS, MS-DOS, Solaris, Ubuntu, Fedora, QNX



⑨ Desktop OS

① The Control program which operates in the machine of a user is referred to as a desktop System. It is also called as a client OS.

② The client can be said as a Computer in a network where the user performs some task or activity over the network. Such OS do not have Complete Control over the resources but use the network to access them.

③ These Computer System only use the network to execute task such as downloading a file from the network or browsing the internet.

Advantages

① Centralization of resources as all the resources are present at a common location.

② Remote access to the server gives processing power to every user.

③ High Security as only the server needs to be secured from threads and attacks

④ The Server can play different roles for the different.

Disadvantages of Multiprogramming OS

① Multiprogramming OS have to use CPU Scheduli

② Sometimes; processors requiring long CPU time have to wait for other jobs to finish.

③ While a program executes, there cannot be any interaction b/w it and the user.

④ It is highly complicated and sophisticated.

⑤ The harder task is to handle all processes and tasks.

⑥ Memory management is required because all type of tasks are stored in the main memory.

Examples

MS-Excel, google Chrome, Firebox browser, window o/s, UNIX o/s, XENIX, MP/M, ESGviev macOS, Linux distributions and media players.

Multi user operating System

⇒ A multiuser OS enables several users to share processing time on one powerful central Computer through different terminals.

⇒ The operating System achieves this by quickly switching among different terminals.

⇒ Each of these terminals receives a limited amount of processor time on the powerful core Computer.

⇒ The operating system switches among these terminals so rapidly that each user would seem to be having Consistent access to the powerful core Computer.

Advantage of Multiprogramming OS

(1) Resources utilization is efficient and even.

(2) Total time required to execute a job reduced.

(3) Multiprogramming OS supports multiple users on the Computer System

(4) CPU throughput is high and also supports multiple interactive user terminals.

(5) The System is fast because all the jobs run parallel amongst themselves.

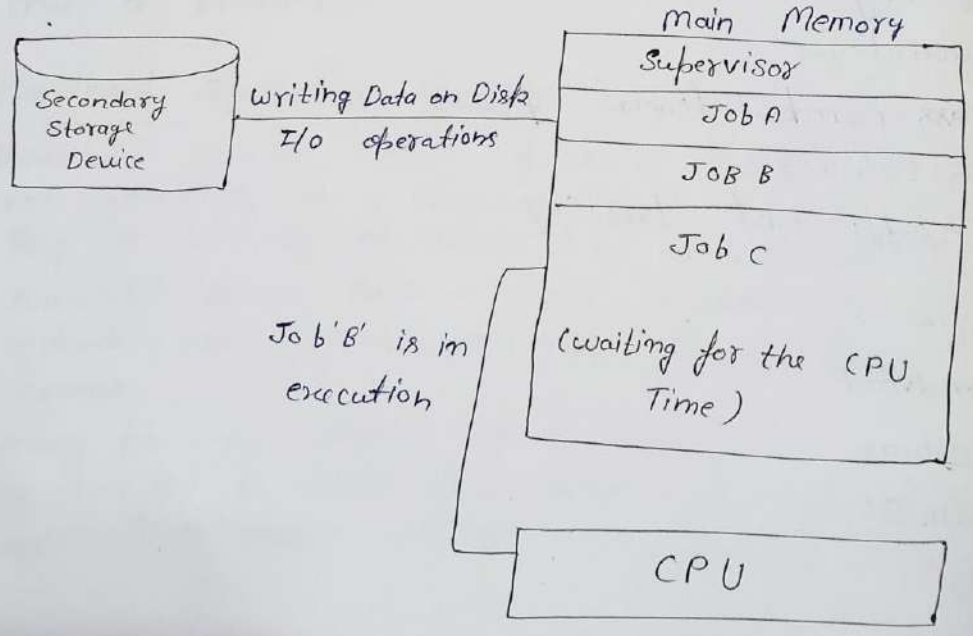
(12) Multiprogramming OS

An OS that is capable of running multiple programs on a single processor is known as a multiprogramming OS.

If a program has to wait for an I/O Sys transfer in a multiprogramming operating System, other programs utilize the CPU and other resources meanwhile.

Types of the multiprogramming operating System :-

1. Multitasking operating System
2. Multiuser operating System



② The task view feature lets the user switch between multiple workspaces at once by displaying all the open windows.

③ Two separate user interface are for mouse and keyboard.

④ Multifactor authentication technology for higher security like BIN, PIN etc

② Ubuntu

⇒ Ubuntu is a linux base OS that comes with everything that you are looking for in an OS.

⇒ It is perfect for organization. it is backed by Canonical which is a global software company and the leading Ubuntu service providers.

Features

① Ubuntu is an open source software which allows it to be freely downloaded used and shared by its users.

② It comes with a built in firewall and virus protection by making it with the most secure OS around.

③ you get five security patches and updates.

③ MAC OS

⇒ The MAC OS has been stible of almost all Apple devices as we can remember it has evolved with time to include the features that first and

Q-1 Comparison of various operating System?

Ans Top operating system that are used world wide now a days is :

1. MS Window
2. Ubuntu
3. Mac OS
4. Fedora
5. Solaris
6. free BSD
7. Chrome OS
8. Cent OS
9. Debian
10. Delfin

(i)- MS windows –

⇒ Windows is the most popular and familiar operating System on this list from window 95 all the way to the windows 10. It has been the goto operating s/w that is feuling the Computer Systems worldwide.

⇒ It is user friendly and Startup & resumes operation fast the latest version have more built in security

Features

1. A robust user interface which helps in easier navigation with a start menu on the left side by listing out options and representing applications.

foremost define innovation.

⇒ The occasional free upgrade by its developers.

Features

① The new darkmode gives your desktop interface a more dramatic look which is easier on the eyes.

② Prevents websites from tracking your MAC by making your profile more anonymous online.

③ A dynamic desktop which helps to automatically organize your desktop files.

④ Fedora

⇒ Fedora is another Linux based system which gives Ubuntu's open source feature a run for the money.

⇒ Fedora is reliable user friendly and makes a powerful operating system for any laptop or desktop.

Features

① A sleek new user interface that allows the developers to focus on their code.

② It offers a complete opensource toolbox with language tools and utilities.

⑤ Solaris

⇒ Solaris is a UNIX based operating system which was originally developed by Sun microsystems in the mid 90's.

① Advance networking, Compatibility and security features which are still missing in many OS.

② Advanced embedded platforms catering to higher -end intel - based ~~applica~~ appliances.

③ Easy to install using CD ROM.

⑦ Chrome - OS

⇒ Chrome OS is another linux Kernel based operating Software that is designed by google's As it is derived from the free chromium OS.

Features

① An integrated media player that enables the users to play MP3 view JPEG and handle other multimedia files while offline.

② Remote application access and virtual desktop access.

③ Chrome OS is designed to be compatible with all the Android applications.

④ with Chrome OS it is possible to run linux applications.

⑧ Cent OS

⇒ The cent OS is another Community driven open Source free Software that allows robust platform management.

⇒ It is best for developers who are looking for an operating System that simply helps them to performs their coding tasks.

it was named as oracle Solaris after oracle aquired Sun microsystem.

Features

① Provides the most advanced security features in the world Sun as process and user rights management theory allowing you to secure critical data.

② It offers indisputable performance advantage for web database and java based services.

③ Delievered high performance networks without any modification.

④ It allows for Scalability, interopen ability data management and security that are all critical for buisness.

⑤ Free BSD

⇒ It is Best for Networking, internet and intranet Server Compatibility.

⇒ Price = free

⇒ Free BSD as the name suggests is a free UNIX based open source Software. It is Compatible with a variety of platforms and mainly focuses on features such as speed and stability

⇒ It was built in the University of California by a large Community.

Feature

Features

① Extensive resource for Coders looking to build, test and realese their Codes.

② Advanced networking, Compatibility and Security features that are still missing in many os today.

③ It allows for Seamless interoperability by Soluing hundreds of hardware and Software problems.

④ It provides the most advanced Security features in the world such as process and user rights management there by allowing you to secure mission Critical data.

⑨ Debian

⇒ Debian is again a linux Kernel based free open Source OS. It Comes with over 59000 packages and is a pre Compiled Software build in a nice format.

Features :-

① Faster and lighter than the other OS irrespective of the processor speed.

② It Comes with inbuilt ~~Comfony~~ Security firewall to protect valuable data.

③ Easy to install through any medium.

④ Debian might not be the most versatile of the operating System but its free open Source feature moves it Something that you Should try.

Current Mobile operating System

These operating Systems often run a top baseband or other real-time operating Systems that handle hardware aspects of the phone.

1) Android

⇒ Android is based on a modified Linux Kernel mobile operating System developed by Google. The base system is open-Source, but the apps and drivers which provide functionality are increase becoming closed-Source. Besides having the largest installed base worldwide Smartphones, it is also the most popular operating System for general purpose Computers, even though Android is not a popular OS for regular personal Computers. Although the android operating System is free and open source, in devices much of the Software bundled with it is proprietary Software and closed-Source.

⇒ Androids releases before 2.0 were used exclusively on mobile phones.

⇒ Android 2.X releases were mostly used for mobile phones but also Some tablets.

⇒ Android 3.0 was a ~~tables~~ tablets-oriented release and does not officially run on mobile phones.

⇒ Both phone and tablets Compatibility merged with Android 4.0.

(10) Deepin

⇒ Deepin is an open source operating system based on debian's stable branch. It features DDE → (Deepin desktop Enviornment).

Features

1. User friendly and Robust Aemthetics.
2. Advanced Security features.
3. Simple installation procedure.
4. Deepin Can very well quality as its own little rich OS. It is free and improwen upon many ShortComing of Debian with more modifications.
5. It will Compete with the top operating System like window, mac in no time.

⇒ Current Android Version is Android 13 released on August 15, 2022.

② Android One

⇒ Android one, a Successor to Google Nexus, is a Software experience that runs on the unmodified Android OS.

Android one versions follow those of the android open Source project starting from Android 5.0 "LolliPop".

③ Blackberry Secure

⇒ Blackberry OS is developed by Black Berry based on android open Source project.

④ Calyx OS

⇒ Calyx OS is an System for Smart phones base an android with free and open - Source Softwa

⇒ It is produced by the Calyx Institute as part of mission to "defined online privacy, Security and accessibility".

⑤ Color OS

⇒ Color OS is a custom front-end touch interfa based on the android open Source project.

⇒ Developed by OPPO electronics Corp. in 2016.

⇒ OPPO officially released Color OS with every OP and realme device an released an official ROM fo the one plus one

(11) Flyme OS

⇒ Flyme OS is developed by Meizu Technology an open-source OS based on android open source project.
⇒ Mainly install on Meizu Smart phones MX series, also has officials ROM support for a few android devices.

(12) Fun touch OS

⇒ Fun touch OS is Custom user interface by VIVO.
⇒ Fun touch OS 10.5 had a redesigned UI that resembled stock androids.

(13) Graphene OS

⇒ Varient of android for Pixel hardware.

(14) Hi OS

⇒ HiOS is android based OS developed by Teeno mobile.
⇒ Allows wide range of user customization without requiring rooting the mobile device.
⇒ bundled with utility application that allow users to free up memory, freeze applications, limit data accessibility to applications among others.
⇒ Comes with feature like Launcher, private safe, Split Screen and LockScreen notification.

(15) HTC Sense

⇒ HTC Sense is a software suite developed by HTC. primarily on the Company's android based devices.

⑥ Copperhead OS

⇒ Copperhead OS is a Security - hardened of Android.

⑦ Divest OS

⇒ Divest OS is a soft fork of Lineage O.S. includes monthly updates, FOSS FOCUS, Deblobbing, security, and privacy focus.

⑧ EMUI

⇒ Huawei EMUI is a front-end touch interface developed by Huawai Technologies and sub brand Honor based on android open Source project.

⇒ Huawei and Honor devices pre installed EMUI.

⑨ Iele

⇒ Iel is an OS forked from the Lineage OS.

⇒ Iel targets android smart phone device and uses Micro G as a replacement for Gogle play Services.

⑩ Fire OS

⇒ Amazon Fire OS is a mobile OS forked from android and produced by Amazon for its fire range of Tablets, Echo and Echo Dot, and other Content delivery devices like Fire TV.

⇒ Fire OS Primarily centers on content Consomption with a Customized User interface and heavy ties to Content available from Amazon's own Storefronts and Services.

(16) iGOO UI

⇒ iGOO UI is Custom User interface that is based on Vivo's Funtouch OS.

⇒ The UI mostly resembles its predecessor but with a customized UI on top of the Funtouch OS.

(17) Indus OS

⇒ Indus OS Custom mobile operating System developed by the Indus OS team based in India.

⇒ Indus OS is available on Micromax, Intex, Karbonn, and other indian Smartphone brands.

(18) LG UX

⇒ LG OS is front-end user interface developed by LG Electronics featuring full touch user interface.

⇒ LG UX is used internally by LG for Sophisticated feature phones and tablet Computers.

(19) Lineage OS

⇒ Lineage android distribution is a Custom mobile OS. It serves as a Successor to the highly popular Custom ROM.

(20) Magic UI

⇒ Magic UI is touch interface developed by Honor

⇒ Magic UI is based on EMUI, almost identical to EMUI.

(30) Red Magic OS

⇒ Red magic OS is mobile OS developed by ZTE and Nubia for Red magic devices.

(31) Replicant OS

⇒ Replicant is mobile OS based on android with all proprietary driver's and bloated closed. Software removed.

(32) TCL UI

⇒ Custom user interface developed by TCL tech for their in-house Smart phone based on android.

(33) VOS

⇒ VOS is Custom android UI developed by BQ Aquaris and Vsmart.

(34) XOS

⇒ XOS formerly XUI is android based mobile OS developed by Infinix mobile.

⇒ Comes with utility applications that allow users to protect their privacy, improve speed, enhance their experience etc.

⇒ Comes with features like XTheme, Scan to recharge, Split Screen and X managers.

(35) Xperia UI

⇒ Sony Xperia user interface developed by Sony mobile based on android.

⇒ Allows devices to allow desktop like functionality by connecting mouse, keyboard, monitor.

⇒ Announced "Linux on Galaxy" which allows users to use the standard Linux distribution on Dex Plateform.

(26) Origin OS

⇒ Developed by Vivo based on android.

⇒ Currently only available in china.

(27) Oxygen OS

⇒ developed by one plus based on android to replace Cyanogen OS.

⇒ Focused on stabilizing and maintaining stock android functionalities.

(28) Pixel UI

⇒ Google Pixel UI or Pixel Launcher developed by Google based on android.

⇒ Unlike Nexus phones where shipped with stock android this UI come with first generation Pixel modified.

⇒ only available on pixel family devices.

(29) Realme UI

⇒ realme UI is mobile OS developed by Realme based on OPPO Color O.S.

(21) MIUI

⇒ Mi User Interface developed by chinese electronic Company Xiaomi based on android open Source project.

⇒ Mostly found in Xiaomi and Mi and Redmi Series.

(22) My OS

⇒ My os formerly Mi Favor developed by ZTE for their flagship Smartphones based on android.

(23) My UI

⇒ My UI formerly My UX is Custom Android UI developed by Motorob for their devices.

⇒ look like Stock android ux until My UI 3.X.

(24) Nubia UI

⇒ Nubia UI is a Custom UI developed by ZTE and nubia based on android.

(25) One UI

⇒ One UI formerly called TouchWiz and Samsung Experience is front-end touch interface developed by Samsung Electronics in 2008 with full touch.

⇒ Used internally by Samsung for Smartphones, tablets, features phones.

⇒ Similar to MS Continuum, Samsung Dex allowed high end galaxy devices to Connect into docking station.

(44) Smart Feature OS

⇒ Custom Version of Kai OS that was developed and used by HMD Global for Kai OS line of Nokia feature phone.

⇒ Main difference between Stock Kai OS and Smart feature OS is mainly on atheistic such as icon and some UI element.

(45) Fuchsia

⇒ Fuchisia is a capability-based, real-time OS currently being developed by google

⇒ Fuchia is based on a new micro kernel called "Zirom".

⇒ a small OS intended for embedded Systems.

⇒ Capability to run on universal devices from embedded Systems to Smartphones, tablets and PCS.

(46) Lite OS

⇒ Lite OS is light weight open source real time OS which is part of Huawei's "1+2+1" Internet of things Solution.

⇒ Similar to android things and Samsung Tizen

⇒ Features lightweight, low-power, fast-response, multi Sensor Collaboration, multi protocal inter Connect Connectivity.

principle user interface.

(41) Sailfish OS:

⇒ Sailfish is from Jolla. Capable to adapt in several layers third party S/w.

(42) Tizen

⇒ Tizen is Linux Kernel based mobile OS hosted by Linux foundation, with support from Tizen association, guided by Technical Steering group composed of Intel and Samsung.

⇒ OS for Smartphone, Tablets, In Vehicle info-Infotainment devices, wearable and Smart TVs.

⇒ Main Components are the Linux Kernel and WebKit runtime.

⇒ Stating that the future belongs to HTML5 based applications.

(43) Kai OS

⇒ Kai OS from Kai based on Firefox OS.

⇒ Unlike most mobile OS which focus on Smart phone, Kai OS developed for feature phones. giving these access to more advanced technologies usually found on Smartphone. such as app store, wifi like Capabilities.

⇒ differed from standard android UI instead of bottom part app dock, they were located at four corners of the home screen while middle of the screen consisted of the widget.

(36) Zen UI

⇒ Zen UI is front-end user interface developed by ASUS. featuring full touch interface.

⇒ Used by ASUS for android phones and tablet computers.

⇒ Comes with preloaded apps like Zen Link.

(37) ZUI

⇒ ZUI is a custom OS originally developed by Lenovo Subsidiary ZUK Mobile. later took over by Lenovo.

⇒ Based on android open source project.

(38) Wear OS

⇒ Wear OS is a version of google's Android OS designed for Smart watches and other wearables.

(39) One UI Watch

⇒ User interface by Samsung for their wear OS based Smart watch.

(40) Chrome OS

⇒ Chrome OS is designed by Google based on the Linux Kernel and uses the Chrome web browser as

to allow in experienced users to install the operating system on third-party devices without damaging their hardware.

(56) iOS

⇒ iOS was created by Apple Inc.
⇒ Has the second largest installed base worldwide on Smartphones.
⇒ It is close-source and proprietary, and built on open-source Darwin OS.
⇒ Used for iphone, ipod Touch, iPad and second and third generation Apple TV.

(57) iPad OS

⇒ IPad OS is a tablet OS created by Apple Inc.

(58) Watch OS

⇒ Is a OS System for Apple watch. Features focus on convenience, such as being able to place phone calls, send texts, health, fitness and heart rate tracking.

(59) Bridge OS

⇒ Mobile OS created by Apple Inc. Use exclusively with T series Apple Silion processors and operates OLED touch screen Strip.

(60) Kindle firmware

⇒ mobile OS specially design for Amazon Kindle e-readers.
⇒ It is based on Custom Linux, Kernel, manufactured under Amazon brand.

(50) Manjaro ARM

⇒ Mobile OS with Plasma mobile desktop enviornment that running on pine phone.

(51) Mobian

⇒ A mobile Debian focused for Pine phone.

(52) Plasma Mobile

⇒ Plasma varient for smartphones
⇒ Runs on wayland and Compatible with Ubuntu touch applications, Pure OS applications, Android applications

(53) Post market OS

⇒ based on the Alpine Linux distribution.
⇒ Intended to run on order phone hardware.

(54) Pure OS

⇒ Pure OS is Debian GNU/Linux derivative OS developed by purism.
⇒ Aims to saperate CPU from the baseband processor and include hardware kill switches for phone's wi-fi, Bluetooth, Camera, microphone and baseband processor.

(55) Ubuntu touch

⇒ Open Source mobile version of Ubuntu OS.
⇒ Can run on Pure GNU/Linux base phones.
⇒ UB Ports. instances Serves as

⇒ Enabling IOT terminals do quick by access do network.

⇒ Makes intelligent H/w development easier.

(47) Open Harmony

⇒ Open Harmony is open-source version of Harmony OS developed and donated by Huawei to openAtom Foundation.

⇒ Supports devices running a mini system with memory as small as 128 KB, or standard System with memory greater than 128 MB.

⇒ Based on Lite OS Kernel.

⇒ Provide rich-kernel mechanisms, more comprehensive POSIX, Unified driver framework, H/w driver Foundation.

⇒ offers Unified access to device developers and friendly development experience for application developers.

(48) Fedora Mobility

⇒ Under developing mobile OS by Fedora project that are porting Fedora to run on portable devices such as phones and tablets.

(49) Lume OS

⇒ Modern implementation of the palm/HP web OS interface.