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Midterm (1st)
[Distributed System]

(Sec-C)

Ans (1)

* Transparency : The distributed systems should be perceived as a single entity by the user or the application programmers rather than as a collection of autonomous systems, which are cooperating.

The user should be unaware of where the services are located and also the transferring from a local machine to a remote one should also be transmitted.

* Types of Transparencies :-

The implementation of a distributed system is very complex, as a number of issues have to be considered to achieve its

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final objective.

The folling following are the different transparencies encountered in the distributed systems.

(a) Access Transparency:

Client should be unaware of the distribution of the files. The files could be present on a totally different set of servers which are physically distant apart and a single set of operations should be provided to access these remote as well as the local files.

(b) Location Transparency:

Clients should see a uniform files name space. Files or groups of files may be relocated without changing their parameter.

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A location transparency name consists of information about the named object's physical location.

(c) Concurrency Transparency :- Users and applications should be able to access shared data or objects without interference between each other.
This requires very complex mechanisms in a distributed system, since there exists true concurrency rather than the simulated concurrency of a central system.

(d) Replication Transparency :- This kind of transparency should be maintained incorporated for the distributed file systems, which replicate the data at two or more sites for more reliability.
The clients generally should be not be aware that a replicated copy of

data exists.
The examples are Distributed DBMS and Mirroring of Web Pages.

(e) Failure Transparency :- Enables the concealment of faults, allowing users and application programs to complete their tasks despite the failure of hardware or software components.

(f) Migration Transparency :- This transparency allows the user to be unaware of the movement of information or processes within a system without affecting the operations of the users and the applications that are running.

(g) Perform Transparency :- Allows the system to be reconfigured to improve the performance as the load varies.

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(b) Scaling Transparency :-

A system should be able to grow without affecting application algorithms. Scaling growth and evolution is an important requirement.

The best - distributed system example implementing this transparency is the World Wide Web.

Ans (2). OSI stands for Open System Incon Interconnection. It has been developed by ISO - "International Organization of Standardization", in the year 1984.

It is 7 layer architecture with layer having specification functionality to perform.

(a) Physical layer (Layer 1) :-

The lowest layer of OSI

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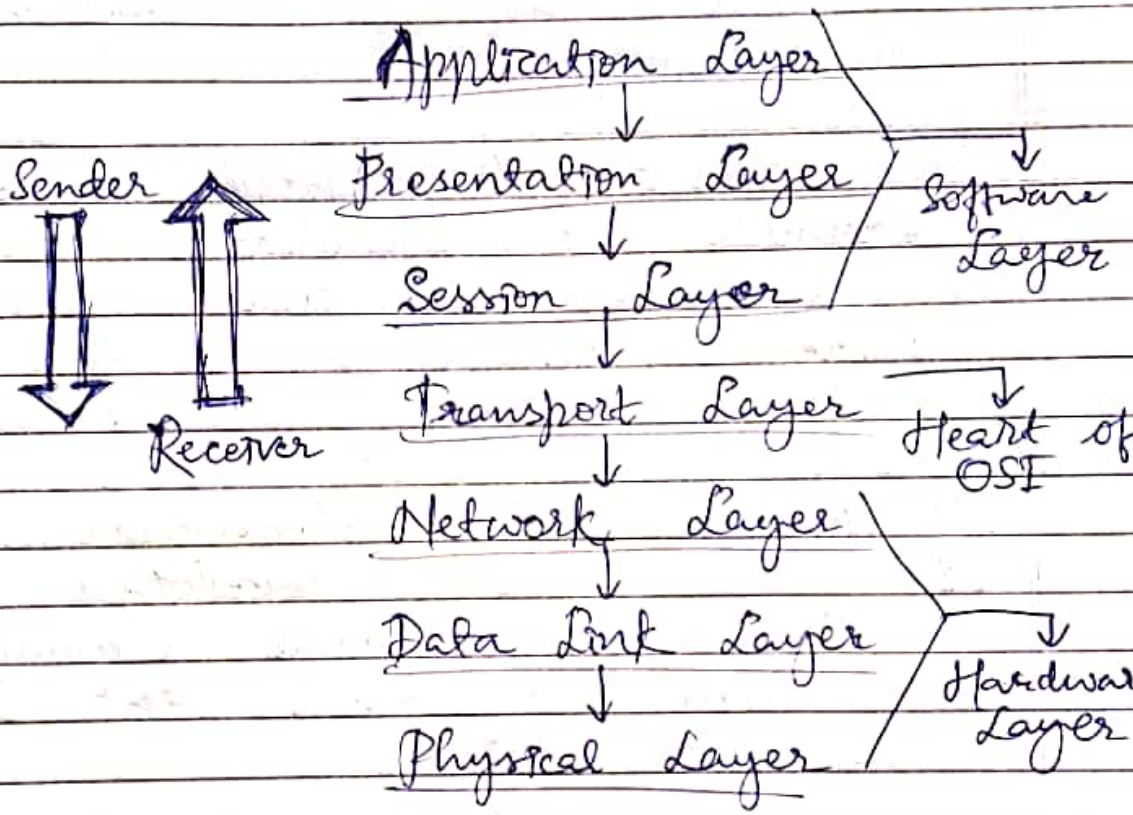
reference model is the physical layer.

It is responsible of actual physical connection between the devices.



* The function of physical layer are:-

(i) Bit Synchronization
(ii) Bit rate control.
(iii) Physical topology
(iv) Transmission mode.

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(b) Data Link Layer (Layer 2) :-

The data link layer is responsible for the node to node delievery of the message.

The functions of data link layers are :-

(i) Framing :- Framing is a function of the data link layer.
It provides the transmit a set of bits that are meanigful to the receiver.

(ii) Physical addressing.
(iii) Error control.
(iv) Flow control.
(v) Access control

(c) Network layer (Layer 3) :-

It works for the transmission of data from one host to the other located in different networks.

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* The functions of the Network layer are :-

(a) (i) Routing
(ii) Logical Addressing

(d) Transport Layer (Layer 4) :-

It ~~takes~~ provides services to application layer and takes services network layer.

The functions of Transport layer are :

(i) Segmentation & Reassembly
(ii) Service Point Addressing.

(e) Session Layer (Layer 5) :-

It is responsible for establishment of connection, maintainance of sessions, authentication and also ensures security.

* The functions of the session layer are :-

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i) Session establishment, maintainance and termination.
ii) Synchronization.
iii) Dialog Controller.

f) Presentation Layer (Layer 6) :-

It is also called Translation Layer.

* Functions of the presentation layers are :-

i) Translation : eg., ASCII to EBCDIC.
ii) Encryption / Decryption.
iii) Compression.

g) Application Layer (Layer 7) :-

At the very top of the OSI Reference Model stack of layers, we find Application layer which is implemented by the network applications.

* Functionality of Application layer are :-

i) Network Virtual Terminal.
ii) Mail Services
iii) Directory Services.

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(Sec - B)

Ans ①

(Remote Procedure Call)	(Point to Point Model)
(i) It is a library and OS department platform.	Whereas it is a java platform.
(ii) It supports procedural programming.	It supports object oriented programming.
(iii) It creates more overhead.	While it creates less overhead than other.
(iv) The parameter passed in it are ordinary, or normal data.	While in it, objects are passed as parameter.
(v) There is high provision of ease of programming in it.	While there is low provision of ease of programming in it.
(vi) It is older version of it.	Whereas it is the successor

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	version of it.
(vii) It does not support/provide security.	While it provides client level security.
(viii) It's development cost is huge.	While its development cost is fair or reasonable.
(ix) There is huge problem of versioning in it.	While there is possible versioning using RDMI.

Ans (3). Distributed Computing Environment (DCE) :-

* DCE is an architecture defined by the Open Source Software Foundation to provide an Open System Software to addressing the challenges of distributed computing.

* DCE supplies a framework and toolkit for development client/server applications.

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* Based on client server model.
* The framework includes :-
  - Remote Procedure Call (RPC) mechanism known as DCE / RPC.
  - Naming Service.
  - Time Services
  - Authentication Services.
  - Authorization Service.
  - Distributed File System.

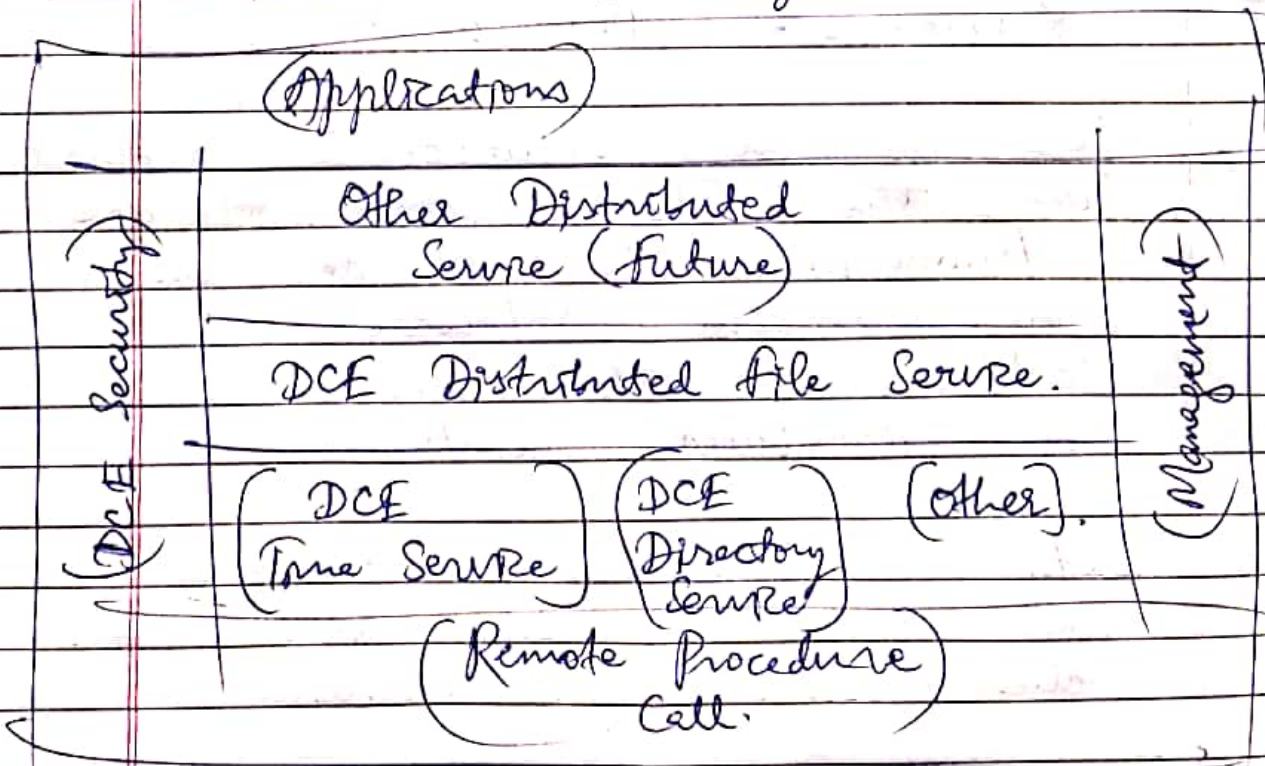

Fig. Architecture of DCE.

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Ans (4)

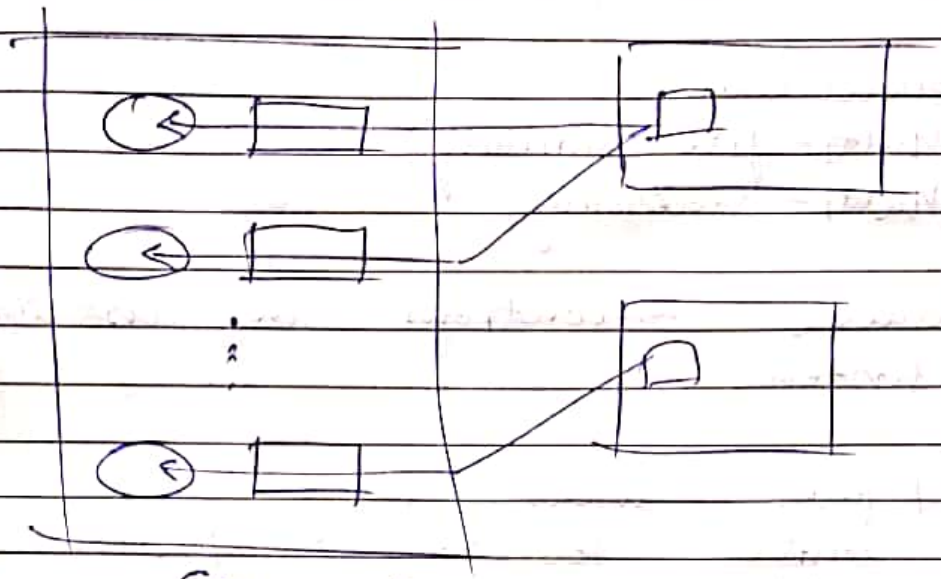

Fig. (The client - server Paradigm, concept)

In distributed system computing, the client - server paradigm refers to a model for network applications where processes play one ~~for~~ of two different roles: a server process, also called a server, is dedicated to managing access to some resources such as printers or files or a network services, while client processes, called clients,

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Ans ② Three features of OS :-

a). Concurrency
Multi-programming
Multi-processing.

Parallel executions in distributed system

1). Many users using the same resources application instructions.

2). Many sources responding to clients request.

b). Scalability :-
How the system handles growth.

Small System - two computers and a file structure on a single network
large system - current instrument.

(c) Software should not match to support growth.

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Research area for layer, high performance network.

Avoid centralization to support scalability.

Sec-A

Ans ① Peer to peer

② Server

③ Communication between two process.

④ ~~Process~~ / Program counter

⑤ Scalability.
