CLASS ASSIGNMENT- 2

CN

Q.1] List the design issues of Session layer.

→ ① The Session layer is level five of the seven level OSI Model. It responds to service requests from the presentation layer and issues service request to the transport layer.

② The Session layer provides the mechanism for opening, closing and managing a session between end user application processes. i.e. Semi permanent dialogue.

③ Session layers are commonly used in application environments. that make use of remote procedure calls (RPCs). An example of Session layer protocol is X.225 or ISO 8327.

④ In case of a connection loss this protocol may try to recover connection. If a connection is not used for a long period, the session layer protocol may close it and re-open it. It provides for either full duplex or half duplex operation and provides synchronisation points in the stream of exchanged messages.

List of Session layer services

① Authentication — It is act of establishing or confirming something as authentic, that is, that claims made by or about thing are true. This might involve confirming the identity of a person, the origins of an artifact or assuring that a computer program is trusted one.

⊙ Permission or Access Control:- One famous use of authentication and authorization is access control. A computer system supposed to be used only by those authorized most attempts to detect and exclude the unauthorized. Access to it is therefore usually controlled by insisting on an authentication.

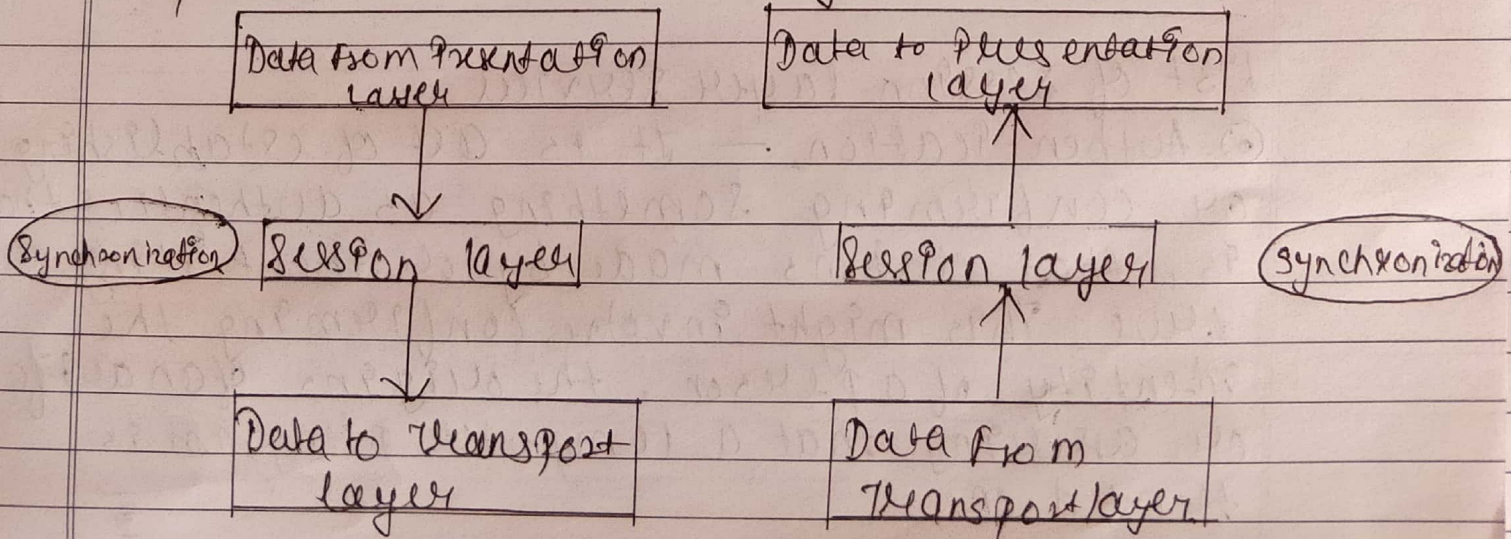
⊙ Check Points:- Session layer is responsible for creating several checkpoints, checkpoints are also treated as recovery points. i.e. in case of failure the system rollback to its previous checkpoint configuration or action.

Functions of session layer:-

① Dialog control:- This layer allows two systems to start communication with each other in half duplex and full duplex

② Token Management - This layer prevents two parties from attempting the same critical operation.

③ Synchronization - This layer allows a process to add checkpoints that considered as synchronization points into data stream.



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Design issues with session layer

→ To allow machines to establish sessions between them in a seamless fashion.
→ Provide enhanced services to the user
→ To manage dialog control.
→ To provide services such as Token Management and Synchronization.

The session layer resides above the transport layer and provides "value added" services to the underlying transport layer services.

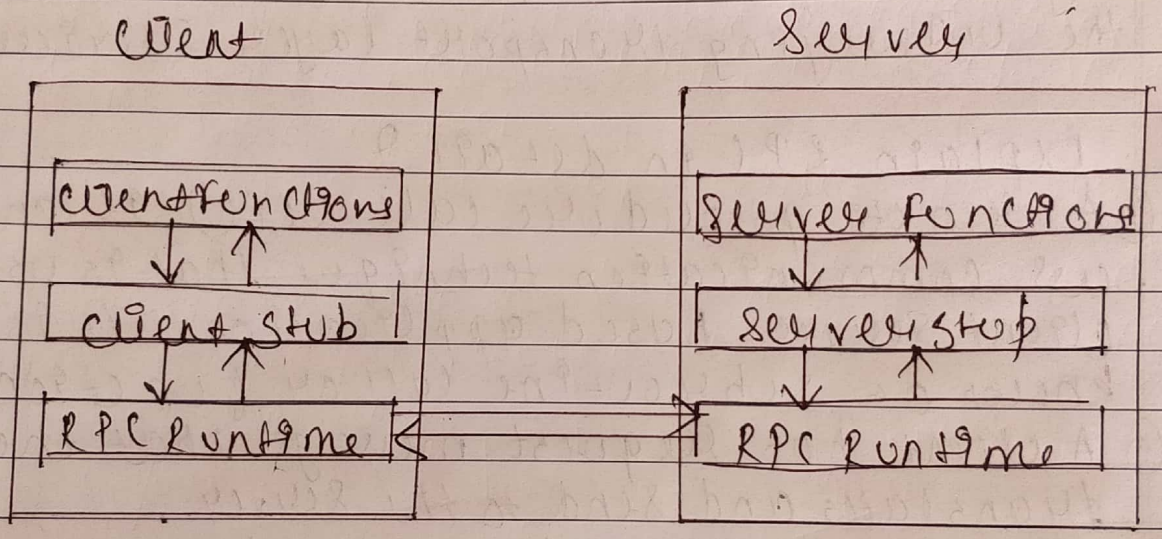
Q.2] Explain RPC in detail ?

→ ① A remote procedure call (RPC) is an interprocess communication technique that is used for client server based applications. It is also known as subroutine call or function call.
② A client has request message that the RPC translates and send to the server.
③ This request may be a procedure or a function call to a remote server. When the server receives the request, it sends the required response back to client.
④ The client is blocked while the server is processing the call and only resumed execution after the server is finished.

The sequence of events in a remote procedure call are given as follows:-

- The client stub is called by the client.
- The client stub makes a system call to send the message to

- The Message is sent from the client to server by client's operating system.
- The message is passed to server by clients operating system
- The parameters are removed from the message by server ~~stub~~ stub.
- Then, the server procedure is called by the server stub.



Advantages of RPC:

→ Remote procedure calls support process oriented and thread oriented Models.
→ The internal messaging passing Mechanism of RPC is hidden from user.
→ The effort to rewrite and redevelope the code is minimum in RPC
→ Many of the protocol layers are omitted by RPC to improve performance.

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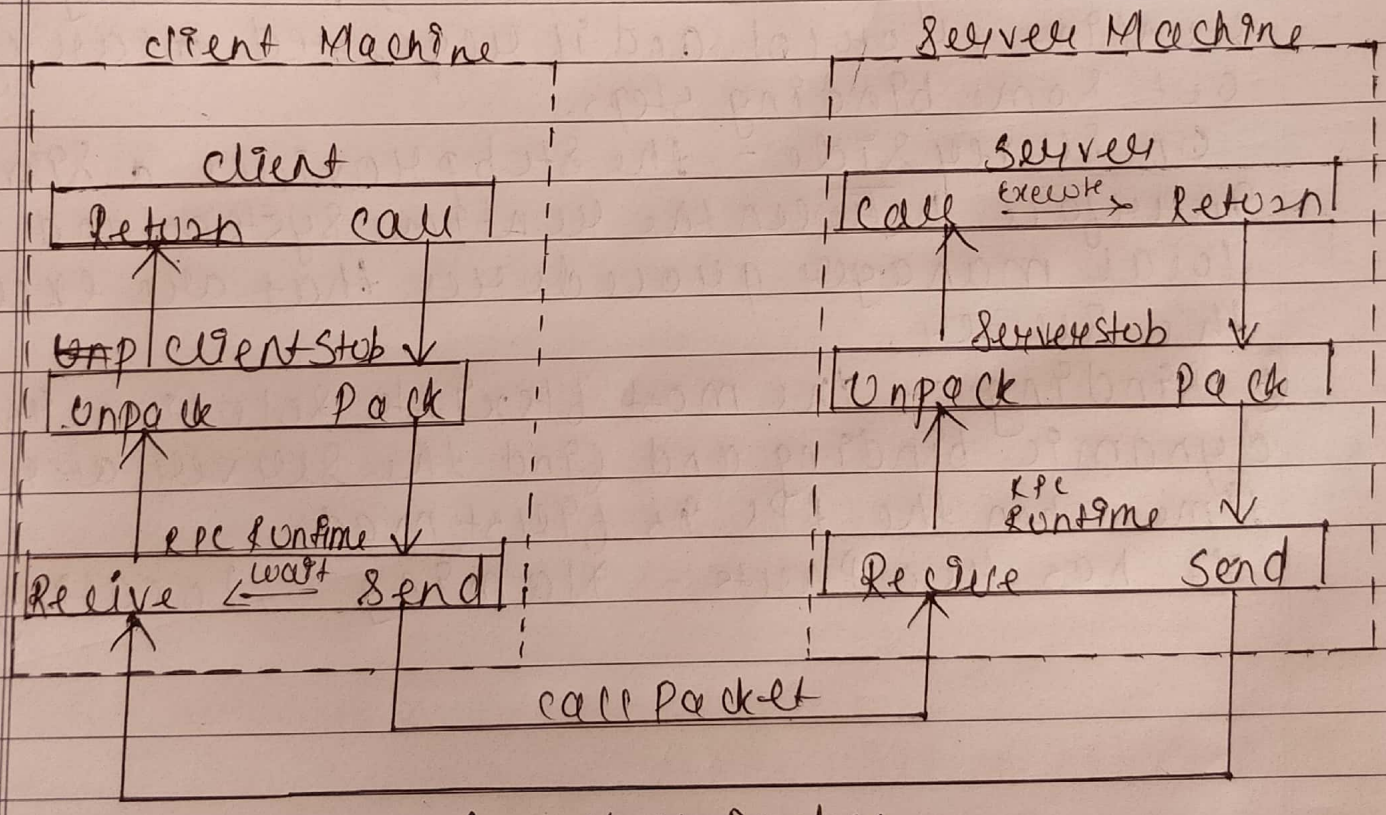
Disadvantages of RPC:

→ The remote procedure call is a concept that can be implemented in different ways. It is not standard.

→ There is no flexibility in RPC for hardware architecture. It is only interaction based.

→ There is an increase in costs because of remote procedure call.

Working of RPC:-



Implementation of RPC Mechanism.

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RPC Issues -

① RPC Runtime :- RPC runtime system is a library of routines and set of services that handle the network communications that underlie the RPC Mechanism.

② Stub :- The function of stub is to provide transparency to the programmer-written application code.

On client side - the stub handles the interface between the client's local procedure call and the runtime system, marshalling, invoking the RPC runtime protocol and if requested carrying out some binding steps.

On server side - the stub provides a similar interface between the runtime system and the local manager procedures that are executed by the server.

③ Binding :- The most flexible solution is to use dynamic binding and find the server at run time when the RPC is first made.

It has two parts - Naming, Locating.