Session Layer

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Session Layer

Session Layer is one of the Seven Layers of OSI Model. Physical layer, Data Link Layer and Network Layer lack some services such as establishment of a session between communicating systems. This is managed by Session Layer which particularly behaves as a dialog controller between communicating system thus facilitating interaction between them.

Topics discussed in this section:

Design issues in Session Layer
Remote procedure call.

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Dialog Control –
Session layer allows two systems to enter into a dialog exchange mechanism which can either be full or half-duplex.

Managing Tokens –
The communicating systems in a network try to perform some critical operations and it is Session Layer which prevents collisions which might occur while performing these operations which would otherwise result in a loss.

Synchronization   –
Checkpoints are the midway marks that are added after a particular interval during stream of data transfer. These points are also referred to as synchronization points. The Session layer permits process to add these checkpoints.For example, suppose a file of 400 pages is being sent over a network, then it is highly beneficial to set up a checkpoint after every 50 pages so that next 50 pages are sent only when previous pages are received and acknowledged.

Design Issues with Session Layer

Establish sessions between machines

The establishment of session between machines is an important service provided by session layer. This session is responsible for creating a dialog between connected machines. The Session Layer provides mechanism for opening, closing and managing a session between end-user application processes, i.e. a semi-permanent dialogue. This session consists of requests and responses that occur between applications.

Enhanced Services

Certain services such as checkpoints and manangement of tokens are the key features of session layer and thus it becomes necessary to keep enhancing these features during the layer's design.

To help in Token management and Synchronization

The session layer plays an important role in preventing collision of several critical operation as well as ensuring better data transfer over network by establishing synchronization points at specific intervals. Thus it becomes highly important to ensure proper execution of these services.

Remote Procedure Call

A remote procedure call is an interprocess communication technique that is used for client-server based applications. It is also known as a subroutine call or a function call.

A client has a request message that the RPC translates and sends to the server. 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 the client. 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 –

1. The client stub is called by the client.
2. The client stub makes a system call to send the message to the server and puts the parameters in the message.
3. The message is sent from the client to the server by the client's operating system.
4. The message is passed to the server stub by the server operating system.
5. The parameters are removed from the message by the server stub.
6. Then, the server procedure is called by the server stub.

RPC Process
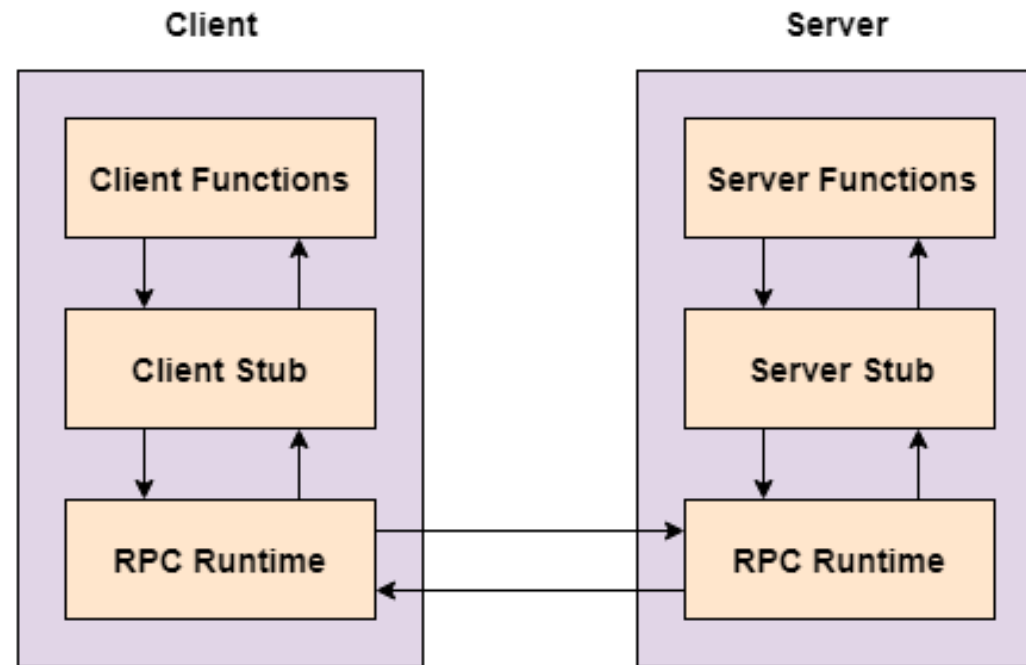
Advantages of Remote Procedure Call

Some of the advantages of RPC are as follows –

1. Remote procedure calls support process oriented and thread oriented models.
2. The internal message passing mechanism of RPC is hidden from the user.
3. The effort to re-write and re-develop the code is minimum in remote procedure calls.
4. Remote procedure calls can be used in distributed environment as well as the local environment.
5. Many of the protocol layers are omitted by RPC to improve performance

Some of the disadvantages of RPC are as follows –

1. The remote procedure call is a concept that can be implemented in different ways. It is not a standard.
2. There is no flexibility in RPC for hardware architecture. It is only interaction based.
3. There is an increase in costs because of remote procedure call.

Thank You