Course: BBA Part III

Paper: XVII

Topic: OSI Reference Model

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Date: 21/08/2020

OSI Reference Model

OSI or Open System Interconnection model was developed by International Standards Organization (ISO). It gives a layered networking framework that conceptualizes how communications should be done between heterogeneous systems. It has seven interconnected layers. The seven layers of the OSI Model are a physical layer, data link layer, network layer, transport layer, session layer, presentation layer, and application layer

The physical layer, data link layer and the network layer are the network support layers. The layers manage a physical transfer of data from one device to another. Session layer, presentation layer, and application layer are the user support layers. These layers allow communication among unrelated software in dissimilar environments. Transport layer links the two groups.

- OSI stands for **Open System Interconnection** is a reference model that describes how information from a software application in one computer moves through a physical medium to the software application in another computer.
- OSI consists of seven layers, and each layer performs a particular network function.
- OSI model was developed by the International Organization for Standardization (ISO) in 1984, and it is now considered as an architectural model for the inter-computer communications.
- OSI model divides the whole task into seven smaller and manageable tasks. Each layer is assigned a particular task.

- Each layer is self-contained, so that task assigned to each layer can be performed independently.

Characteristics of OSI Model:

- The OSI model is divided into two layers: upper layers and lower layers.
- The upper layer of the OSI model mainly deals with the application related issues, and they are implemented only in the software. The application layer is closest to the end user. Both the end user and the application layer interact with the software applications. An upper layer refers to the layer just above another layer.
- The lower layer of the OSI model deals with the data transport issues. The data link layer and the physical layer are implemented in hardware and software. The physical layer is the lowest layer of the OSI model and is closest to the physical medium. The physical layer is mainly responsible for placing the information on the physical medium.

The main functions of each of the layers are as follows −

- **Physical Layer** − Its function is to transmit individual bits from one node to another over a physical medium.
- **Data Link Layer** − It is responsible for the reliable transfer of data frames from one node to another connected by the physical layer.
- **Network Layer** − It manages the delivery of individual data packets from source to destination through appropriate addressing and routing.
- **Transport Layer** −It is responsible for delivery of the entire message from the source host to destination host.
- **Session Layer** − It establishes sessions between users and offers services like dialog control and synchronization.
- **Presentation Layer** − It monitors syntax and semantics of transmitted information through translation, compression, and encryption.
- **Application Layer** − It provides high-level APIs (application program interface) to the users.