Layering in Computer Networks

Layering:

1. Layering means decomposing the problem into more manageable components (layers).
2. Advantages:
   1. It provide more modular design
   2. Easy to troubleshoot (concentrate on the layer that has the problem)

Protocols:

1. It is a set of rules that governs data communication.
2. The protocol in each layer governs the activities of the data communication.

Layered architectures:

1. The OSI Model
   1. OSI: Open System Interconnection
   2. It is a model for understanding and designing a network architecture that is flexible, robust, and interoperable.
   3. Developed by the International Standards for Organizations (IOS)
   4. The OSI model is not a protocol
   5. It is only a guideline and hence it is referred to as the OSI reference model.
   6. The purpose of the OSI model is to show how to facilitate communication between different systems without requiring changes to the logic of the underlying hardware and software.
   7. The OSI model was never fully implemented.
2. TCP/IP Model
   1. TCP/IP: Transmission Control Protocol/Internet Protocol
   2. The TCP/IP protocol suite was developed prior to the OSI model
   3. Therefore, the layers in the TCP/IP protocol suite do not exactly match those in the OSI model
   4. TCP/IP is a hierarchical protocol made up of interactive modules, each of which provides a specific functionality.