Q. What is UDP? Explain the services provided by UDP?

UDP stands for User Datagram Protocol. It is one of the core protocols in the Internet Protocol suite and operates at the transport layer. UDP is a connectionless protocol, which means it does not establish a direct, reliable connection between the sender and receiver.

The services provided by UDP include:

1. *Unreliable delivery*: UDP does not guarantee delivery of data packets. It simply sends the packets from the sender to the receiver without any acknowledgement or retransmission mechanism.
2. *Low overhead*: UDP has a smaller header size compared to TCP (Transmission Control Protocol), another commonly used transport protocol. This reduced overhead makes UDP faster and more efficient in terms of network resources, especially for small, time-sensitive packets.
3. *Connectionless communication*: UDP is connectionless, meaning that it does not require a pre-established connection before sending data. Each UDP packet is treated independently and can be sent to any destination without setup.
4. *Simple protocol*: UDP is a simple and straightforward protocol with minimal functionality. It does not include features like flow control or retransmission mechanisms found in TCP.
5. *Usage in real-time applications*: UDP is commonly used in real-time applications, such as VoIP (Voice over IP), video conferencing, online gaming, and streaming media.