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**Cybersecurity**

**Online class**

**Data Encapsulation.**

Data Encapsulation is defined as the appending and prepending of protocol information, as data is processed from the application layer to the physical layer.

As the packet travels through the TCP/IP protocol stack, the protocols at each layer either add or remove fields from the basic header. When a protocol on the sending host adds data to the packet header.

The main reason for encapsulation is for data to adapt to different protocols and transmission media e.g. *if a packet has an IP header attached, it can be routed on an IP network.*

Types of Encapsulation

* Authentication.
* Internet Protocol.
* Authentication Protocol.
* Intranets.
* Transmission Control Protocol.
* Link Control Protocol.
* Point-to-Point Protocol

In short what happens during encapsulation is that multiple layers of information are added to enclose the original data, then, new data is formed after each layer is added then layers carry the information/ instructions to help the receiver recover the original data.

*In data encapsulation, data goes through the OSI layer.*

*E.g.*

* *In the application layer using http e.g. the website will send some data to the client*
* *In transport layer instead of http, tcp will be used*
* *In the network layer, the IP will be used in front of the TCP layer*
* *In the data link layer, and Ethernet header will be used*
* *In physical layer, e.g. if using UTP cable the data will be sent as an electrical signal*

**Decapsulation** reverses the process by removing the info, so a destination device can read the original data.