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CHANNELIZATION

- ★ Channelization is a multiple-access method in which the available bandwidth of a link is shared in time, frequency, or through code, between different stations.

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MULTIPLEXING

- ★ Multiplexing in computer networking means multiple signals are combined together thus travel simultaneously in a shared medium.
- ★ Multiplexing = Sharing the bandwidth.

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VARIOUS MULTIPLE ACCESS METHODS

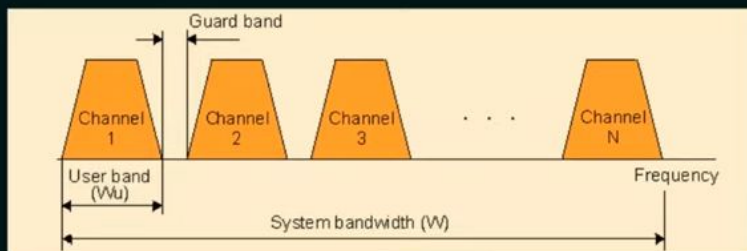
- ★ Frequency Division Multiple Access (FDMA)
- ★ Time Division Multiple Access (TDMA)
- ★ Code Division Multiple Access (CDMA)

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FDMA

- ★ In FDMA, the available bandwidth of the common channel is divided into bands that are separated by guard bands.
- ★ The available bandwidth is shared by all stations.
- ★ The FDMA is a data link layer protocol that uses FDM at the physical layer.



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TDMA

- ★ In TDMA, the bandwidth is just one channel that is time shared between different stations.
- ★ The entire bandwidth is just one channel.
- ★ Stations share the capacity of the channel in time.

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CDMA

- ★ In CDMA, one channel carries all transmissions simultaneously.
- ★ CDMA differs from FDMA because only one channel occupies the entire bandwidth of the link.
- ★ It differs from TDMA because all stations can send data simultaneously; there is no time sharing.

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CDMA

The assigned codes have two properties:

1. If we multiply each code by another, we get 0.
2. If we multiply each code by itself, we get 4 (the number of stations).

Example:

$$\text{Data} = (d_1 c_1 + d_2 c_2 + d_3 c_3 + d_4 c_4) \times c_1 = 4 \times d_1$$

