

# Embedded SYSTEMS

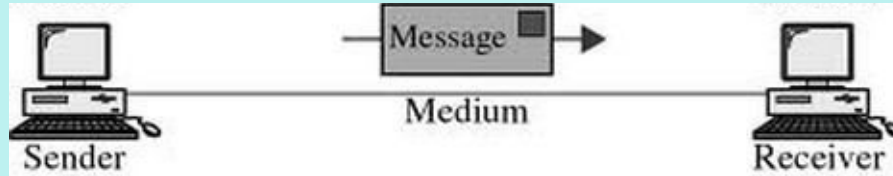
WELCOME

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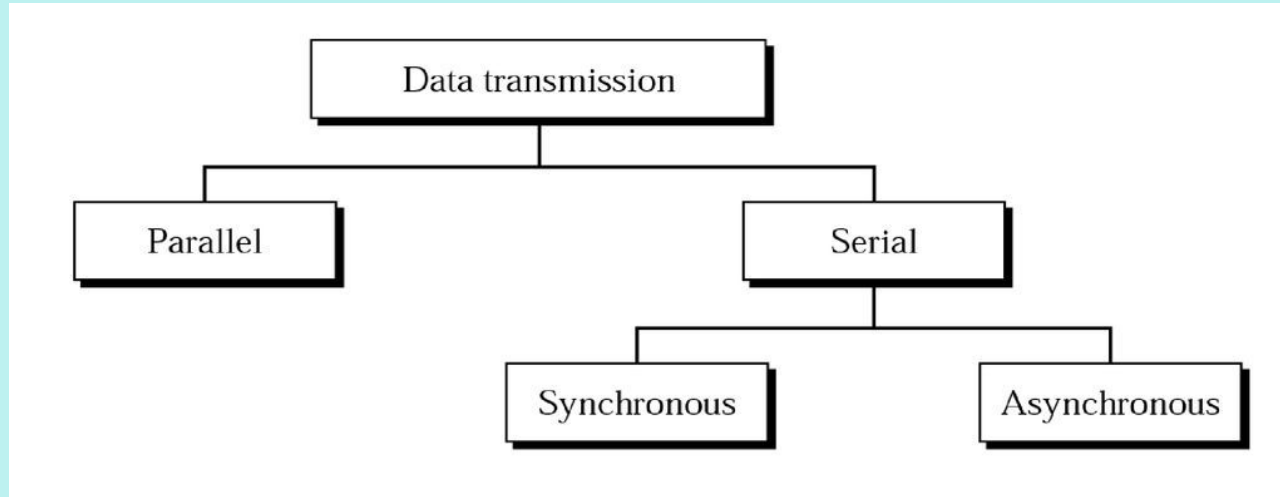
1. Data Transmission
2. Serial Communication
3. Parallel Communication
4. Differences between Serial and Parallel communication

# Data Transmission

- Data transmission is a physical transfer of data over a point - to - point or point - to - multipoint communication channel.
- Transmission channel is any physical media like cables, etc.



# Types of Data Transmission





# Serial Communication

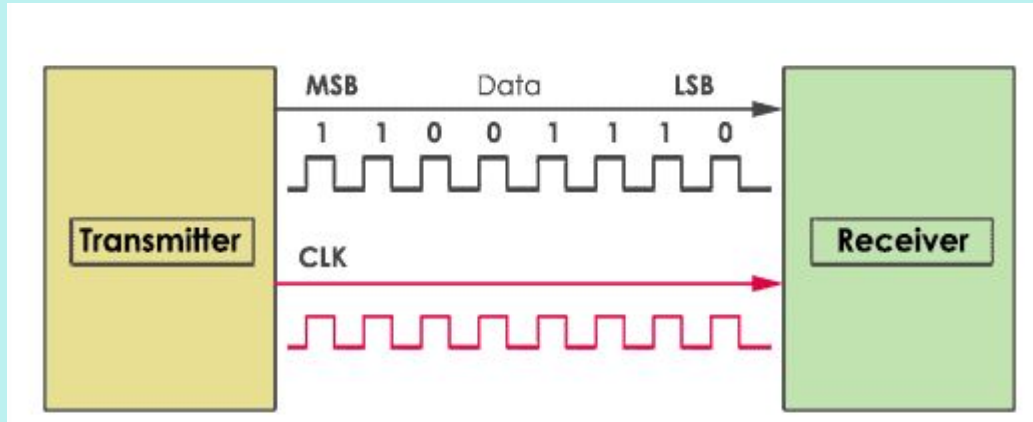


# SERIAL COMMUNICATION

Serial communication transmits data one bit at a time, sequentially, over a single communication line to a receiver.

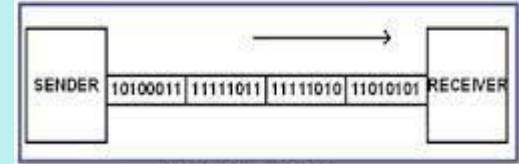
It is the simplest form of communication between a sender and a receiver.

It is time consuming.

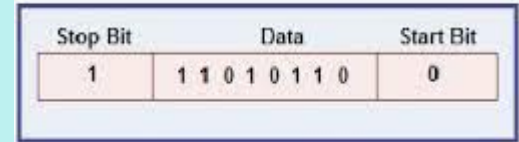


# Synchronous & Asynchronous


- **Synchronous:** In synchronous transmission, data moves in a completely paired approach, in the form of chunks or frames. Synchronisation between the source and target is required so that the source knows where the new byte begins, since there are no spaces included between the data.
- **Asynchronous:** In Asynchronous transmission data is transmitted one byte at a time. Parity bits are attached to the data being transmitted, which serves as a start indicator of the new byte.




SYNCHRONOUS



ASYNCHRONOUS



# Parallel Communication



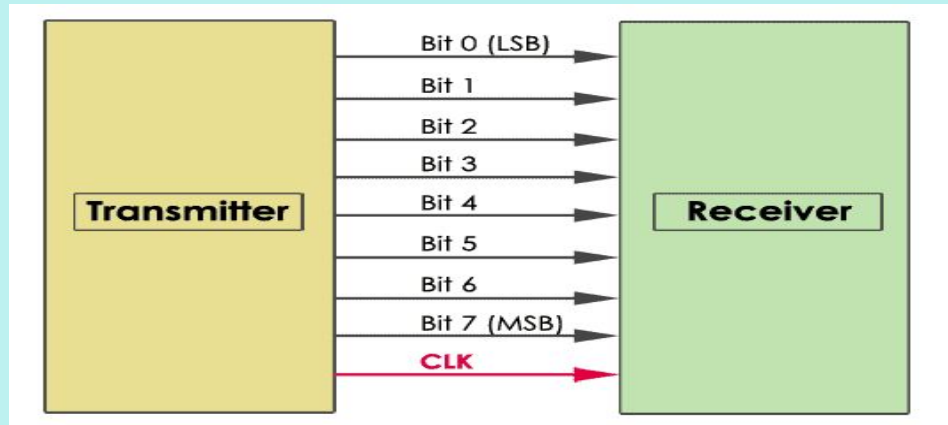


# PARALLEL COMMUNICATION

Parallel communication is a method of sending several data signals simultaneously over a transmission link at one time.

It comprises of several wired channels in parallel.

In parallel mode of transfer, there is a onetime transfer of data from source to destination.



# Differences

Serial Communication	Parallel Communication
Serial Transmission is the type of transmission in which a single communication link is used to transfer the data from an end to another.	On other hand Parallel Transmission is the transmission in which multiple parallel links are used that transmit each bit of data simultaneously.
In case of Serial Transmission only one bit is transferred at one clock pulse.	On other hand in case of Parallel Transmission, eight bits transferred at one clock pulse.
As single link is used in Serial Transmission, comparatively low cost is required for its implementation hence it is cost efficient.	On other hand multiple links need to be implemented in case of Parallel Transmission hence more cost is required and hence it is not cost efficient.
As single bit gets transmitted per clock in case of Serial Transmission, its performance is comparatively lower as compared to Parallel Transmission.	However on other hand as already mentioned that 8 bits get transferred per clock in case of Parallel transmission hence it is more efficient in performance.
As single bit gets transmitted per clock and only single link is implemented in Serial Transmission, it is more preferred for long distance transmission.	However on other hand as multiple bits get transferred and multiple links need to be implemented in case of Parallel Transmission, it is preferred only for short distance.
Already mentioned due to single link implementation circuit having Serial Transmission is less complex as compared to that of Parallel Transmission.	However on other hand due to multiple link implementation circuit having Parallel Transmission is more complex as compared to that of Serial Transmission.

THANK YOU



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