Course Name: A Level (1st Sem) Subject: CO

Topic: Interfaces and ADT Date: 09-06-20

Tasks of interfaces:

1. Clock Management
2. Data Interpretation
3. Notification and Acknowledgement

Clock Management: To check whether the clocks of both ends are equally paced or differently. If clocks are differentially paced, asynchronous transfer is needed.

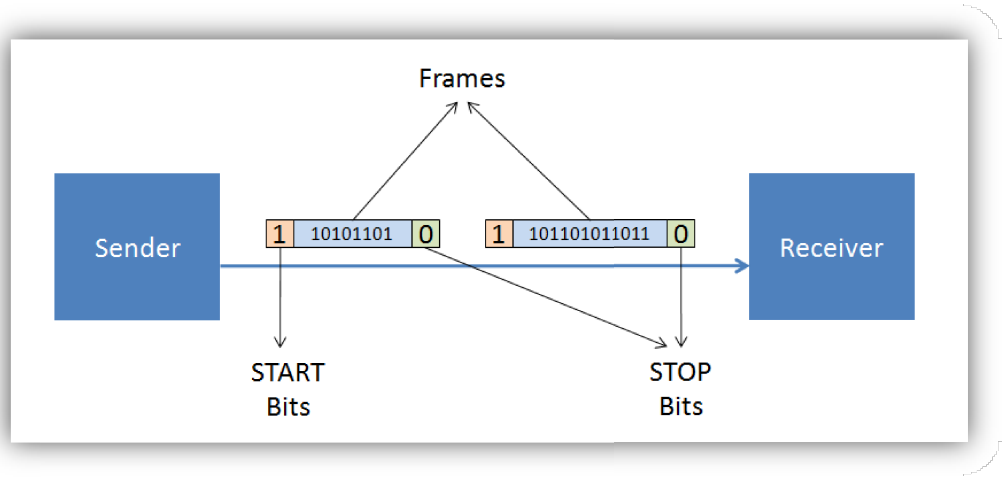
Data Interpretation: Every CPU has two registers for I/O transfer INPR and OUTR. These registers are ideal for Text (7-bit ASCII + 1-bit Parity), but not that perfect for other types of data. Interface works here to calibrate these issues and makes Graphic/Audio/Video data to be handled by CPU.

Notification and Acknowledgement: Interfaces use two interesting methods called strobe and handshaking to enable an agreement in between. This facilitates acknowledgement or assurance about the transfer.

ADT (Asynchronous Data Transfer): The kind of transfer in which clocks of both stations are working differently, is known as asynchronous transfer.

As an example, if sender has a sending speed of 10bps and receiver has a receiving speed of 15bps, there can be a serious lack of understanding between them. This state is called asynchronous state.

The remedy is to add a START and a STOP bit in the frame to notify when the frame starts and when it ends.

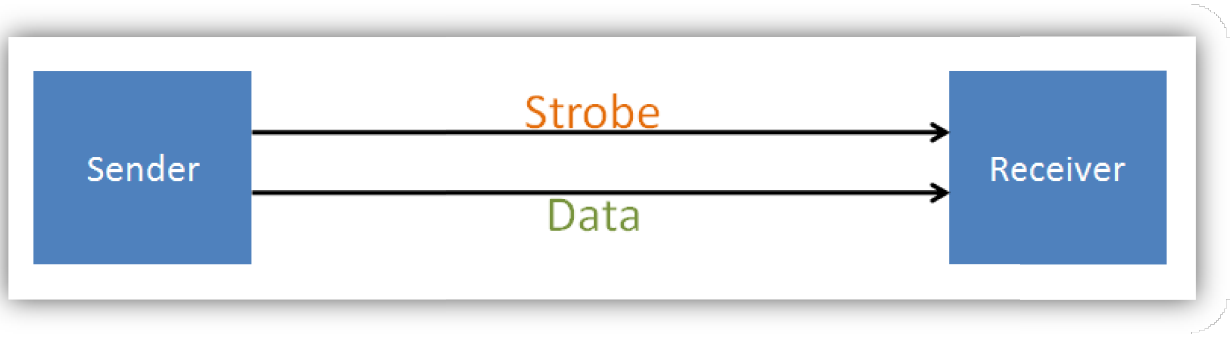


Though default bits for START and STOP are '0' and '1' respectively but in some cases, STOP bits can be a group of bits like- '010' or '011' etc.

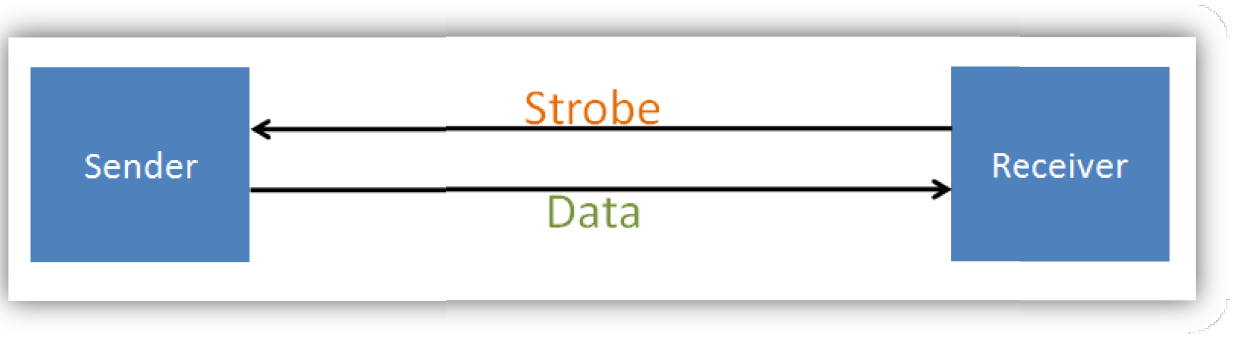
Strobe Control: Strobe is a kind of control for managing the way devices transfer. The control here is in reference to a supposed clock on which transmission has to be done. Though transmission is always from source to destination, strobe can be of following two types-

1. Source Initiated Strobe
2. Destination Initiated Strobe

Source Initiated Strobe: Sender first sends a control message (strobe) to the destination about the clock at which it will send. Then after at that clock transfer starts.



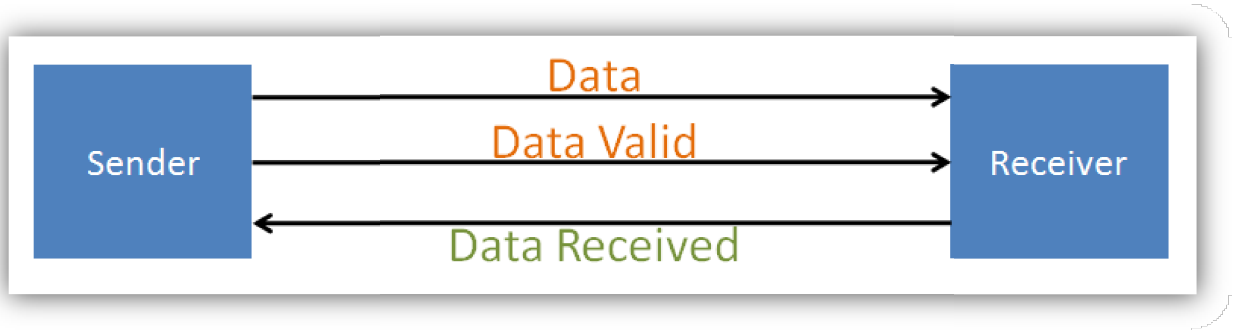
Destination Initiated Strobe: Control comes from destination about the clock at which it will receive. Then after transfer start at that clock.



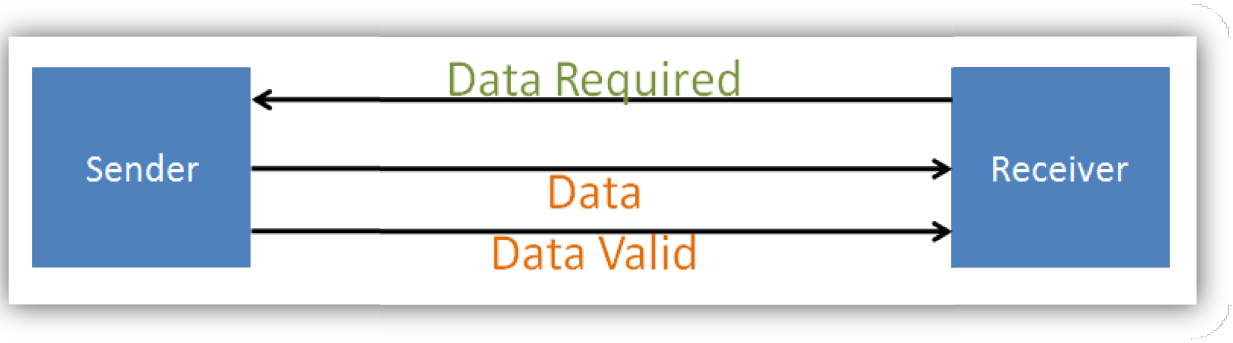
Handshaking: Handshake method is a refinement of strobe control. In this method both stations follow a kind of request/acknowledgement hypothesis. The two types of this method are as under-

1. Source Initiated Handshake
2. Destination Initiated Handshake

Source Initiated Handshake: In source initiated handshaking, three lines are used. Data is placed on data line but receivers start receiving when data valid line goes 1. After receiver has received, it makes the data received line '1' which confirms sender that the data has been received completely.



Destination Initiated Strobe: In this method, receiver start the session by sending '1' in data required line. It makes a confirmation on sender's side that receiver is ready to receive. It puts data on the data line, puts '1' on data valid line. Finally receiver starts receiving.



Assignment:

1. Differentiate between Strobe and Handshake.
2. Briefly describe ADT.