Article Side

Data Transmission Modes and Its Types

by Imran Zafar

Article published on December 13th 2011 | Data Recovery

The way in which data is transmitted from one place to another is called data transmission mode. It is also called the data communication mode. It indicates the direction of flow of information. Sometimes, data transmission modes are also referred to as directional modes.

When a person is giving a lecture, information is conveyed in one direction. Similarly, during a conversation between two persons, spoken messages are exchanged in both directions. These messages may be exchanged alternatively or simultaneously.

There are three data transmission modes.

(i) Simplex mode:

In simplex mode, data is transmitted in only one direction. A terminal can only send data and cannot receive it or it can only receive data but cannot send data.

Today, this mode of data communication is not popular, because most of the modem communications require two-way exchange of data. However, this mode of communication is used in business field at certain point-of-sale terminals in which sales data is entered without a corresponding reply. The other examples of simplex communication modes are Radio and T.V transmissions.

In computer system, the keyboard, monitor and printer are examples of simplex devices. The keyboard can only be used to enter data into computer, while monitor and printer can only accept (display/print) output.

(ii) Half-Duplex Mode:

In half-duplex mode, data can be transmitted in both directions but only in one direction at a time. In this mode, data is sent and received alternatively. It is like a one-lane bridge where two-way traffic must give way in order to cross the other.

In half-duplex mode, at a time only one end transmits data while other end receives. In addition, it is possible to perform error detection and request the sender to re-transmit information.

The Internet browsing is an example of half duplex. When we issue a request to download web document or webpage, it is downloaded and displayed before we issue another request.

(iii) Full-Duplex Mode:

In full-duplex mode, data can be transmitted in both directions at the same time on the same channel. It is the fastest directional mode of communication. The telephone communication system is an example of full-duplex communication mode.

Types of Data Transmission Modes:

There are two types of data transmission modes. These are:

(i) Parallel Transmission.

(ii) Serial Transmission.

(i) Parallel Transmission:

In parallel transmission, a group of bits of data flow at the same time (in parallel) through separate communication lines. It is very fast data transmission. The automobile traffic on a multi-lane highway is an example of parallel transmission.

Inside the computer, usually a group of bits of data flow from one component to another at the same time. If a computer uses 32-bit internal structure, then 32-bits of data can be transferred from one component of computer to another at the same time. Parallel transmission is commonly used to transfer data from computer to printer.

(ii) Serial Transmission:

In serial data transmission, a group of bits of data flow in sequential Order through single communication line. The flow of traffic on one-lane residential street is an example of serial data transmission mode. Serial transmission is typically slower than parallel transmission, because data is. sent sequentially in a bit-by-bit on a single communication line.

The telephone line system uses the serial transmission to transmit data from one location to another. In computer system, mouse also uses serial transmission to send the command signals inside the computer.

Synchronous and Asynchronous Transmissions:

Synchronous Transmission:

In synchronous transmission, data is transmitted block-by-block or word-byword at the same time. Each block may contain several bytes of data. In this mode, data is saved before sending. A large volume of data can be transmitted at a time. The data transmission is very fast. It is most commonly used by remote communication systems.

In synchronous transmission, a special communication device known as 'synchronized clock' is required to schedule the transmission of information. This special communication device or equipment is expensive.

Asynchronous Transmission:

In asynchronous transmission, data is transmitted one byte at a 'time'. The data is transmitted character-by-character as the user types it on a keyboard. In this mode, data is not saved before sending.

An asynchronous line that is idle (not being used) is identified with a value 1, also known as mark state. This value is used by the communication devices to find whether the line is idle or free.

In asynchronous transmission, a special signal is sent by sender to the receiver before sending the message. It is known as start bit. A start bit has a value of 0, also called a space state. Thus, when the line switches from a value of 1 to a value of 0, the receiver is alerted for receiving the message. The asynchronous transmission is most commonly used by microcomputers.

Article Source:
http://www.articleside.com/data-recovery-articles/data-transmission-modes-and-its-types.htm -

Article Side

Imran Zafar - About Author:
Imran Zafar writes articles about computer basics and database management such as a basics of computer, a database administrator and a Structured Query Language.

Article Keywords:
data transmission modes, types of data trensmission

You can find more free articles on Article Side. Sign up today and share your knowledge to the community! It is completely FREE!