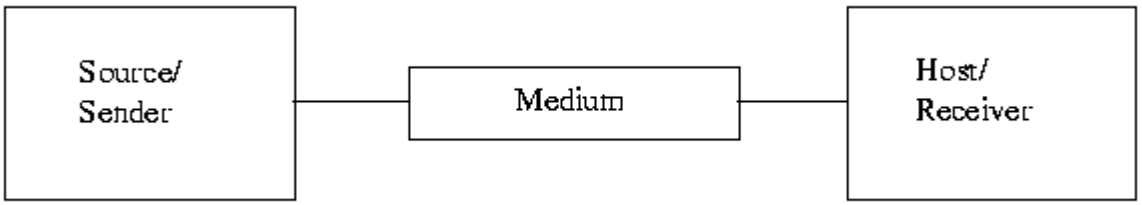
The Data Communication Model

A basic data communications system consists of 3 parts:

1. Source
2. Medium
3. Destination



Source:

It is the transmitter of data. Examples are:

- Terminal,
- Computer,
- Mainframe

Medium:

The communications stream through which the data is being transmitted. Examples are:

- Cabling,
- Microwave,
- Fibre optics,
- Radio Frequencies (RF),
- Infrared Wireless

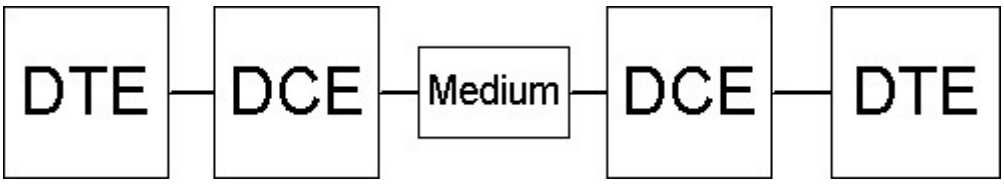
Destination:

The receiver of the data transmitted. Examples are:

- Printer,
- Terminal,
- Mainframe,
- Computer,

ii. Interfaces are needed!

Unfortunately, data communications systems are not that simple. Often the source is not able to speak the same communication language as the medium and the data communications needs to be translated into a form that the medium can understand. Data communication is further broken down into the ***Data Communication Model*** which consists of 5 parts:



Data Communications Model

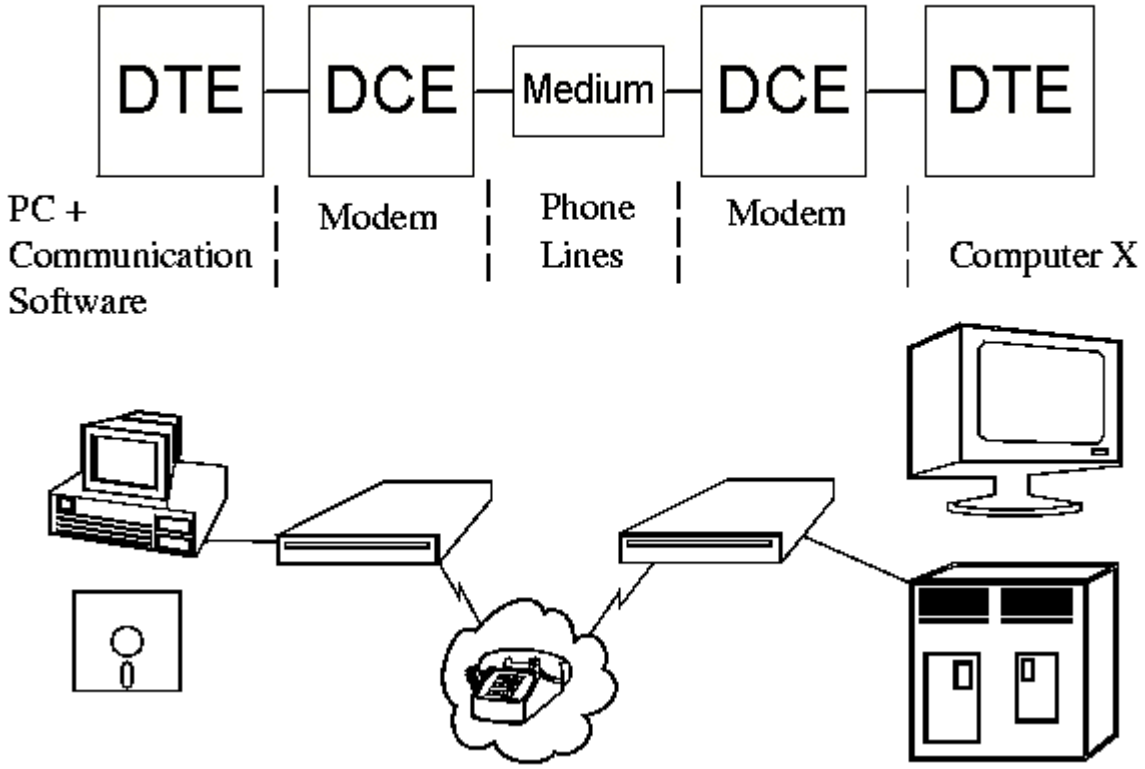
- **DTE**

  The Data Terminal Equipment (DTE) is the source and receiver's equipment which is generating the data stream. Examples of DTE devices are: PCs, terminals, end user devices.

- **DCE**

  The interface between the source and the medium, and the medium and the destination or receiver is called the Data Communication Equipment (DCE) and is a physical piece of equipment. Its job is to provide the interface from the DTE device to the medium. Examples of DCE devices are modems, channel banks, and routers.

An example of this would be your PC dialing into a Internet Service Provider (ISP):



The output of the DTE device (the PC) is an RS232 signal which is a digital communication consisting of logic ones and zeros. The medium (the phone line) is made for carrying analog communications consisting of voice transmission. The output of the PC and the requirements of the phone line are mutually incompatible. The phone line doesn't understand digital signals and the PC doesn't understand analog transmission. The DCE device (the modem) provides the conversion (the interface) so that digital data can communicate across the analog medium.