

# Introductory Communications

## Modem and Digital & Analogue Data

Ordinary telephone lines can transmit sound signals because they are designed for speech. These signals are in analogue form. To transmit digital data into analogue data, it must be converted so when the analogue data reaches the end of the telephone line it must be converted back to digital format for a computer to accept it. A device called a MODEM (Modulator Demodulator) does this.

## **Differences**

Analogue and digital data is very different. Digital lines are a lot more expensive to install and use compared to normal telephone lines. Modems must be purchased for use with normal telephone lines. Digital lines have a much higher bandwidth so the transmission rate for information is much quicker.

## **Advantages & Disadvantages**

There are many advantages of using common networks, such as the internet, but there are also disadvantages. Local networks can mean that software and data can be shared, and all the users can communicate with one another. However, the installation software can be quite high and there is an extra task making sure that shared resources are safe and secure. The network can fail and cause chaos, or it could operate slowly if a lot of users are logged on.

## **User IDs and Passwords**

When using a networked computer, it is important that we can only access data that is ours or that is shared. We shouldn't be able to see other users' personal data or documents. Each user then needs their own 'login' identification and password. This is recognised by the system and the password attempts to ensure that the person is who they say they are. So it is important to keep the passwords private and change it frequently. They should 'logoff' the network properly.

## Facsimile (Fax)

Fax machines are used to transmit documents which are not of personal nature. Immediate hard copies are printed at the other end, but the document cannot be sent if the fax machine is busy, and only one number can be used at one time. It is not possible to edit a fax or attach other files to it.

## Electronic Mail (E-mail)

Businesses and home users use e-mail to send personal messages or greetings, or information. It allows a person to communicate with someone else. The same message can be sent to many different people in one go, or other files can be attached to it. The mail-server will store the message online if the recipient is not on-line at the time. However, you would need to subscribe to an internet service provider to obtain an e-mail address. You would need to learn how to use the software and be computer literate.

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## Voice-Mail Systems

These are like digital answering machines, allowing people calling to leave messages. Many businesses use these to assist callers to the right department. There is also the ability to leave messages in the relevant voice mailbox. Sometimes they can be

Device	Input/Output	Uses	Advantages	Disadvantages
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impersonal and the required service may not be easy to get to.

## Tele/Video Conferencing

Teleconferencing allows groups of people in different locations to talk together over communication lines. This makes it seem as though they are around a large table.

Videoconferencing is the same except that people can see each other. Business meetings are easier to conduct if people are in different locations. This saves time and money on travelling to the meeting. It is sometimes difficult for people to exchange ideas without being face to face. The equipment is very expensive. Over a very large distance synchronising sound and vision is technologically challenging, but this is becoming less and less of a problem because of advances.

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Keyboard	Input	To enter text or number data, most commonly. Most common keyboard start with the letters 'QWERTY' and therefore they are called Qwerty keyboards.	It is fast and a skilled typist can input data very quickly.	Mistakes are easy to make, and can be very time consuming for inexperience's people. It is difficult to input data that includes diagrams and pictures.
Mouse/Touch Pad/Tracker Ball	Input	Moves a pointer on the screen and allows the user to click on items using the buttons. There is a small ball at the bottom of a mouse so when you move the mouse the ball rolls as well moving the pointer on the screen.	It is easy to communicate with the computer by choosing from menus rather than typing in commands. It is quicker and more efficient to move a mouse pointer around a document than to use the keyboards' arrow keys.	Computer newcomers have difficulty using the mouse and controlling it around the screen, and using the 'double-click' function. Mouse balls need to be cleaned regularly to make the mouse function properly.
Joystick	Scanner	Moves a pointer on the screen. This is often used in computer games.	There is an easy feel of direction due to the movement of the stick.	More arm and wrist movement is required to use the joystick and so some people find it difficult. Joysticks are not robust enough and do break easily when playing games.

# INPUT & OUTPUT DEVICES

Device	Type	Advantages
Remote Control	Input	It allows you to work for away easily

An **Input device** is used to put in **data and instructions** into the computer. For example typing text when word processing can be inputted using a **keyboard**.

An **Output device** is used to **view or to listen to the result** when a task has been done or an

		presentation and to be posted on the internet.	developing costs. You can edit the image the way you want it (e.g. bigger, smaller etc).	near with no interference in between.
Magnetic Strip Reader	Input	These are seen in many different shops where there is cash register. They can be used to read information on bankcards for example.	The card can't be damaged even after it is read many times. Data is not visible to people because it is written on the magnetic strip document, and the cards are then may be very cheap to produce. The documents and card can be read very quickly and the Internet.	be loaded to a computer or be easily deleted before the camera can be used again. breakdown.
Scanner	Input	This is another way of inputting still images. A scanner can be used to publish magazines and newspapers.	Any image can be transferred from paper to a magnetic strip document, and the cards are then may be very cheap to produce. The documents and card can be read very quickly and the Internet.	Images can take up a lot of memory space. Ordinary equipment can only read not quite or edit the data. Some other organisations and shop have begun to use

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			pay for goods with a card than with cash.	Smart Cards. These contain small chips and processors instead of magnetic strips.
Sound Sensor-Microphone	Input	This can be used to record different sound on the computer. New software can now detect voice and change it into text, which can be saved as a word-processed file. With this you can add voice to programs that you create.	Disabled people benefit from this: those without a keyboard can speak into microphone and then change it to text. Recording your own sounds can allow you to use it in a presentation and you can send sounds through the internet.	Background noise can make the quality poor. Sound sampling can take up a lot of memory space.
Midi-Instrument	Input	People linked with the music industry use a midi instrument (musical instrument digital interface) to input music made by an instrument directly onto the computer. There, it can be edited and mixed with other sounds. Latest software allows you to change it into written music for printing, etc.	Once the tune has been played, it is held by the computer and can be edited. The data stored takes up very little space.	Musical knowledge is required. To make the most of software experts or expert knowledge is required.

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Device	Input/Output	Uses	Advantages	Disadvantages
Monitor Laser Printer	Output Output	Monitors are used to display output to the user as they carry out tasks. They are used mainly where there is a lot of printing to be done.	It displays tasks as they happen. Laser printers are fast and very silent and can be changed to fit the screen, produce high quality prints.	The results on the screen will disappear once the computer is switched of. Each new screen of quite large information replaces the previous one. Repairing the printer can be very expensive. Only a limited amount of information can be displayed at any one time. Screens are very fragile as they are made of glass.

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Ink-Jet Printers	Output	Used mostly inside homes where there is not a lot of printing.	They are reasonably priced especially colour printers. They are light in weight and not too big. They are quite quiet.	They are slower than laser printers. Cartridges can easily dry out if the printer isn't used for a while. Replacing colour cartridges can be a particularly running cost.
Dot-Matrix Printers	Output	These are ideal when carbon copies are needed. This is because they are impact printers, so the head bangs onto the top of the paper; the carbon paper transfers a copy to the paper beneath the carbon paper. They are often used for invoices and delivery notes.	They produce carbon copies unlike laser and ink-jet printers. It is very cheap and reliable. The running costs are low as are the printouts.	These are very noisy, slow and they produce very poor quality output.
Plotter	Output	Often used for building plans, graphs and 3-D drawings. Also, they are used for engineers who are building bridges, machines, etc.	Drawings are of the same quality as experts. Larger paper sizes can be used.	Plotters are slow as they draw each line separately. Drawings are high quality but it is not suitable for text. They are a lot more expensive than printers. Normal plotters have a limit to the amount of detail they can produce, but there are high-density drawings for

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Device	Input/Output	Uses	Advantages	Disadvantages
Control Devices (lights, buzzers, robotic arms, motors)	Input			things like a circuit board.
Speakers	Output	A program that produces sound needs a headphone or speakers to be heard. For example a program that teaches a foreign language needs a speaker to playback.	Everyone around can hear the sound from the speaker, so it is useful for a presentation that needs to be heard.	The output can disturb others. High quality external speakers are expensive.