

This course, which hopefully will supply you with some useful information, has been written using a tool, a PC (Personal Computer), whose size and power was unheard of only ten years ago. Faced with such unprecedented amounts of information at our fingertips we have to learn how to deal with it. How do we cope with a barrage of facts and figures without becoming punch drunk? This brings us to our first definition:

Information Technology (IT) is the systematic treatment of information. It concerns the collection, storage, processing, dissemination and use of information.

It would be very easy to leap in and assume that Information Technology is solely about the use of computers, for many people IT is synonymous with ‘new technology’, but information can be treated systematically using manual techniques. One of the key things to remember when dealing with information is to make appropriate use of technology – do I need to use a computer to address an envelope or would a pen be more efficient? The answer might be different if I have to address fifty envelopes in one go, or have to write the same address on lots of envelopes over a period of time.

Another term that you may have heard used in similar contexts to Information Technology is Data Processing.

### **What is the Difference Between Data and Information?**

Data means raw facts and figures that do not have meaning in their present state because they have not been processed.

Information is the result of processing data, for example by doing calculations with the data or putting it in order. Only when the data has been processed into meaningful information can action be taken and decisions made.



Hence our definition of Data Processing is – the automatic performance of operations on data, that is, using the data in some way to produce meaningful information.

Let us look further at this differentiation between data and information by considering an example. At the end of the year a bookshop has a vast quantity of raw data from the books that have been ordered and sold. The data consists of customers' names and addresses, book titles, book prices, authors' names, publishers' names and addresses, type of book etc. This data could be processed to produce information to help with the bookshop's business in the future. The data could be used to provide a customer mailing list so that the bookshop could notify past customers of promotions. The data might be analysed to find out which types of books are most popular so that they can be displayed prominently. The prices of books sold could be analysed statistically and as a result of the information produced the bookshop might decide to reduce the stock levels of books costing over £30.



**ACTIVITY 1:** The following data was collected in a survey of people looking around the forecourt of a car dealer, wanting to trade in an old car for a new one. Process it in some way to produce information. (Suggested Answers to Activities can be found at the end of the unit.)

Owner: Mr Smith Manufacturer: Volkswagen Model: Polo Mpg: 35 Age of car: 2 Mileage: 49958	Owner: Mrs Shaw Manufacturer: Renault Model: Savannah Mpg: 24 Age of car: 3 Mileage: 67823
Owner: Mr Brown Manufacturer: Fiat Model: Cinquecento Mpg: 47 Age of car: 5 Mileage: 120987	Owner: Miss Jones Manufacturer: Volkswagen Model: Polo Mpg: 37 Age of car: 6 Mileage: 33586
Owner: Mr James Manufacturer: Renault Model: 5 Mpg: 34 Age of car: 4 Mileage: 87934	Owner: Mr Parker Manufacturer: Volkswagen Model: Passat Mpg: 29 Age of car: 4 Mileage: 79896
Owner: Mrs Morris Manufacturer: Fiat Model: Uno Mpg: 31 Age of car: 2 Mileage: 15000	Owner: Mr Jones Manufacturer: Renault Model: Savannah Mpg: 22 Age of car: 1 Mileage: 30034
Owner: Miss Smith Manufacturer: Volkswagen Model: Polo Mpg: 34 Age of car: 5 Mileage: 100658	Owner: Mr Clark Manufacturer: Renault Model: 5 Mpg: 35 Age of car: 4 Mileage: 99375

## Levels of Information

Information is needed all the time in order to make decisions; which train to catch to arrive at Marylebone in time to get to the theatre by 8:30 p.m.; which candidate should get the job; do I need to order more aluminium for the extrusion press or is there still plenty in stock? Individuals make decisions for themselves and for the organisations that employ them. The success of a business depends on managers making good decisions, and this in turn depends on managers having reliable information. The sort of information required by a manager depends on their level of responsibility. Top management needs information that shows trends to enable them to make long-range plans and policy decisions. Lower-level managers need detailed information for the day-to-day operations.

## Qualities of Good Information

We have already said that information is required to assist with decision-making, but not all information is that useful. The features of good information are that it is cost-effective, timely, accurate, complete, relevant and concise.



**ACTIVITY 2:** Think of the effects of information that does not have the qualities listed above. Why do you think information should be:

- a. cost-effective
- b. timely
- c. accurate
- d. complete
- e. relevant
- f. concise?

- a.
- b.
- c.
- d.
- e.
- f.

### Where Do Computers Fit in?

We defined data processing as the automatic performance of operations on data and this is where the computer comes into Information Technology. A computer is a machine to process data and supply results. The literal definition of a computer is a device for counting or computing, so an abacus could be called a computer. A more easily-recognised modern-day definition would include the terms ‘automatic’ and ‘electronic’, that is, an automatic, electronic device for counting or computing. A computer is useful because it can process data quickly, consistently and accurately. It can deal with data of many kinds, and the solutions it produces can be solving arithmetical problems, modelling situations, storing, sorting and retrieving information.



**ACTIVITY 3:** Think about the words ‘consistent’ and ‘accurate’. Why are these useful features for a computer to possess when processing data?

Many people think of a computer as a machine with brains that allow it to think like a human being. Although in some ways this analogy can be helpful, a computer does not really have a brain and cannot think for itself. You, a mere human being, can use intelligence, logic, experience, intuition, emotion and even guesswork to arrive at a solution to a problem. A computer can only use logic. A computer can only perform a task that involves following a set of rules.

## What is a System?

And finally, one last term, used widely in Information Technology, which we should discuss in this introductory unit is Information System. You will no doubt have heard of the solar system, the blood system and the educational system, but what is a system? The dictionary definition for system starts ‘complex whole, set of connected things or parts, organised body of material or immaterial things...’ The American National Standards Institute suggests the following definition of a system: ‘In data processing, a collection of people, machines and methods organised to accomplish a set of specific functions.’ In other words an Information System is an entity consisting of any combination of people, computers, machines and working procedures which produce and handle information.

There are some generic types of information system, for example Management Information Systems and Geographical Information Systems.

A Management Information System (MIS) is a system in which defined data is collected, processed and communicated to assist those responsible for the use of resources. The information produced might be used in the areas of production and material control, marketing and distribution, personnel, financial and management accounting to assist with decision-making, planning and control.

A Geographical Information System (GIS) can be regarded as the high-tech equivalent of the map. An individual map contains a lot of information that can be used in many different ways, from locating cables and gas mains under the street to displaying the extent of de-forestation in the Brazilian Amazon. The traditional form of the map suffers from a number of problems. Maps are static and therefore difficult and expensive to keep up-to-date. Maps are inflexible, they exist as discrete sheets and inevitably your area of interest lies on the corner of four adjacent sheets! Maps can be very complex and may require an expert to extract the information of interest.

A GIS provides the facility to extract the different sets of information from a map (roads, settlements, vegetation, etc) and produce a paper map if required. A GIS provides the ability to collect and manage large volumes of complex data, and, because the data are stored on a computer, analysis and modelling become possible.

