Digital computers and micro processors are being used more and more in all walks of life, in the home, school and at work.

Some golf clubs and some greenkeepers have been slow to introduce this new technology but from the feedback that I have received since introducing computers and computing to Aldwark Manor and Regional Management Courses, it is clear that greenkeepers are beginning to see how computers can be used as management tools. In this series of articles, I will be aiming to take some of the mystique out of computing and computers, explain their operation in everyday language and describe some of the software available to assist golf greenkeepers in the management of their golf course. This, the first article of a short series, will look at Hardware.

Computer Hardware

Computer hardware is all of the hard items that comprise a computer as opposed to Software which comprises the instructions that make the computer work. There are two main types of computer that can be used in the office. These are the PC clones and the Apple Mac. However, all digital computers are made from four basic components, These are:
■ Input devices, such as keyboards, mouse, microphone and joystick.
■ Output devices, such as monitor (screen, VDU), printers and loudspeakers.
■ Central processing unit (CPU)
■ Memory (Store)

These four devices are then connected together and, with luck, when power is applied, the system will start to work. Let's now look at each of the four components in more detail.
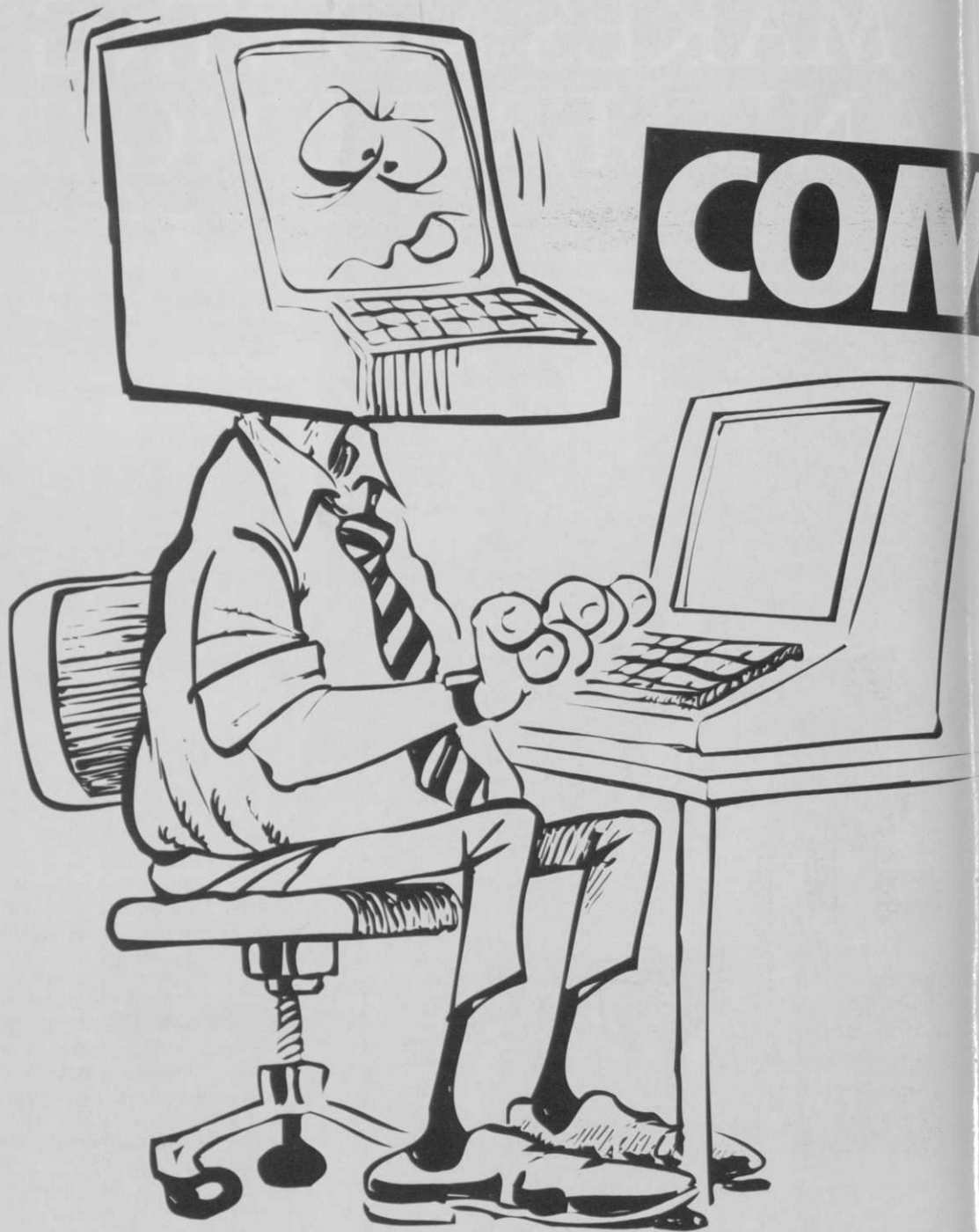
Input devices

Digital computers can use a number of input devices but I will only consider the Keyboard and mouse in this article

Keyboards

There are many types of keyboard, each with slightly different keys. However, all keyboards have keys that are common.

All keyboards are similar, using the QWERTY layout for alphabetical and numeric keys, a series of function keys, cursor and screen control keys and a numeric keypad. There are some other 'special' keys that you may have to use. These are:

a. Shift keys, normally marked with an upwards arrow are used to access 'UPPER CASE' (capital) letters and the top symbols on numerical keys eg to type a £ sign, hold down either the left or right shift key and press 3.

b. Caps lock keys, normally marked with an arrow with a bob underneath, are used to type several CAPITAL letters by locking the shift feature. Caps lock can be removed by pressing the caps lock key again.

c. Enter or return key normally marked with a reverse arrow is used to 'send' information to the processor ie. enter and to return the entry point to the left of the page and move down one line, similar to the carriage return on a typewriter.

d. Tab keys, normally marked with a left and a right facing arrow, are used to move the entry point a set distance to the right. They can also be used to move the entry point around the screen in some software applications.

e. Control keys are used for special functions.

f. Alt keys normally marked Alt are again used for special functions.

g. Back space key normally marked with a backwards facing arrow is used to move the entry point one space to the left.

h. Delete key normally marked 'del' deletes the last character typed.

Mouse

There are several types of mouse that come in different shapes, however they all operate in the same way.

Externally, the mouse consists of a button (or buttons) and a roller ball. To prevent excess wear, and a build up of dirt and or static, it is always advisable to use a mouse mat. The mouse can be used to perform three operations. These are:

a. Point. This is where you use the mouse to point at an object by tracking the mouse across its mat. Remember, if you wish to move across the screen further than the width of the mouse mat allows then pick up the mouse, move it back to the start position, replace the mouse on its mat and start again.

b. Click. Pointing and clicking the

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by KEN RICHARDSON

mouse button can initiate a software action by operating 'buttons'. However the action usually needed to begin a software application is point andDouble Click ie clicking the button (left hand button if more than one) twice.

c. Drag. The mouse can be used to drag items around the screen. This is achieved by pointing at the item with the mouse pointer, clicking and holding down the button and dragging the item to a new position.

Output Devices

Again, digital computers can use numerous output devices. This article considers monitors (screens, VDUs) and printers.

Monitors

Monitors come in different screen sizes, however, the usual office/home computer comes with a 14 inch screen. They can be monochrome (black and white) or colour and be described as being EGA, VGA, SVGA etc. Modern computers are supplied with SVGA screens and this denotes the graphics quality of the screen. Monitors are controlled by a mains on/off switch and variable controls for brightness, contrast and position of picture.

Printers

There are many types of printer but the usual types found in homes and offices are dot matrix, bubble (ink) jet and laser printers. The cheapest and noisiest printer is the dot matrix, which also has the lowest quality of print. Bubble jet printers can be used to print in black and white and colour and can give good quality results at a reasonable price. However, if you are considering printing a large amount of material then the cost of ink cartridges can be quite high. The fastest high quality print comes from laser printers but the cost can be high. Colour laser printers are very expensive for the average office or home.

Central Processing Unit

The Central Processing Unit (CPU) is the heart (or brain) of a digital computer. This unit contains the processor which could be a 386, 486 or Pentium, memory devices, control circuitry and devices to perform calculations and logical functions. The CPU can come in Desk Top, Slim Line and Tower cases depending on your needs. The CPU normally has one external control ie the on/off switch which is sometimes marked 1 for on and 0 for off. The CPU also contains input/output circuitry and connections for input output devices. These connections are sometimes called ports and can be serial ie the information is carried along one data line and parallel ie the data is carried along several (normally 16 or 32) lines. To make interconnection easier, input/output ports are individual ie it should not be possible to put the wrong socket in the wrong plug and each port is marked with an identifying symbol eg keyboard, mouse, printer, network etc.

Memory

Memory (or storage devices) are usually found within the CPU. There are three main types of memory. These are:

a. Random Access Memory (RAM). This is short term memory and is situated 'close to' the CPU which holds information(instructions and data) when software programmes are operating. Any information stored in RAM is lost when the computer is switched off. Therefore, information (data) should be stored in permanent storage if you wish to use it again.

b. Read only memory (ROM). As the name suggests, this type of memory only allows you to read information ie take information out. It will not allow you, the user, to write (store, put in) information. These devices are used to store information which has been pre-programmed by the computer manufacturer. Compact disk ROM is also pre-programmed by the manufacturer and can hold large amounts of data on interchangeable disks. Read-write CDs are available but are very expensive. However, as with most computers and peripheral devices, costs are bound to reduce in time.

c. Backing store. This is memory which is used to store information which you wish to keep permanently. The two most common types of backing store are 'floppy' disks and hard disks. Floppy disks fit into a disk drive (or drives) which is normally found on the front or side of the main processor. Although modern computers use three and a half inch disks, some older computers still use five and a quarter inch disks.

Five and a quarter inch disks are made from thin plastic and are 'floppy', hence the name, however three and a half inch disks are made from much thicker plastic and are not floppy. They are still called floppy disks to distinguish them from hard disks. Hard disks are normally situated within the CPU are not accessible to the user.

All memory devices are categorised by the amount of data which they can hold. For example, RAM is sold in multiples of Mega Bytes where Mega is one million (actually 1048576 which is 2 to the power of 20) and one Byte is eight binary digits (1s and 0s). A minimum of 4 Mega Bytes (Mb) is needed to run Windows 3.11 and a minimum of 8 Mb for Windows 95. Hard disks come in a variety of sizes eg 50 Mb, 120 Mb, 250 Mb, 50 Giga Byte (approximately 1000 Mb) etc. Most computers allow memory to be added in expansion ports but it is always best to over estimate the amount of memory needed when purchasing a computer.

This article has looked at computer hardware. The language used and the various configurations which can be used can be confusing. However, computer hardware is reletively simple to interconnect and operate. The clever part of computers is the Software that makes them work.