

Using Computers

Spreadsheet Module

Adopt Good Working Practices

Network and Viruses Task

The aim of this task is to give you a basic understanding and knowledge of network systems. To also make you become aware of computer viruses and how to overcome the fear in destroying them in order to save your PC from becoming damaged.

Read the document below and then either on your own or in pairs work through the questions at the end of this task.

Network systems

LAN and WAN

There are two distinct types of information network:

- LAN (**L**ocal **A**rea **N**etwork). This is a network that connects computers within a local confined geographical area - e.g. a single office, building or across a site.
- WAN (**W**ide **A**rea **N**etwork). This connects computers over a wide area and across countries.

There are many advantages in working on a network. It is easy to share files and resources and to group-work on specific tasks because of this. It is easy to communicate via e-mail. Software programs can be installed centrally from one powerful server computer. Resources such as printers and scanners can be shared, thus keeping equipment costs down.

The telephone network in computing

LANs usually have cables that connect the computers on the network. However WANs often use the national and international telephone systems that rely on the Public Switched Data Network (PSDN), the Integrated Service Digital Network (ISDN) and satellite communications. The purpose of these is to ensure that people and computers can communicate over standardised connection facilities using common protocols.

When a computer needs to send information to another computer using the telephone system it must have a means of converting the digital signals (that have two distinct states) from the computer, into analogue signals (not absolute values but ones that constantly change - e.g. audio tones) used by the phone line, and vice versa for incoming information. (It must modulate and demodulate.) The hardware that enables this is called a modem. The rate of signal changes when transmitting/receiving data is known as the *baud*. At very low speeds

the baud rate is equal to bits per second (bps) - e.g. 300 baud is the same as 300bps. Beyond this one baud can be made to represent more than one bit. Currently the maximum rate over the public telephone network is 56 Baud.

Fax and telex machines also use the phone system. Fax machines communicate a printed page between remote locations. A stand-alone fax machine is made up of a scanner, printer and modem with fax signalling, but electronic fax/modems are available that can be attached to a computer either internally or externally. Telex machines were the first worldwide real time data communications service to use terminals for transmitting and receiving messages. Telex messaging is now in decline.

Electronic mail

Electronic mail (e-mail) is a method of sending messages from one computer to another. You can send and receive the electronic equivalent of letters, faxes, pictures and sound. Some organisations have their own internal e-mail systems. Others are connected to the Internet in order to send and receive e-mail locally and internationally. It is a quick and efficient means of communication. It has the advantage that you can send and receive your messages when you choose (unlike telephone communication) and is cheaper because calls are charged at local rate (and sometimes even free!). In addition, you will usually be informed if your message has failed to reach its destination. E-mail messages (and any files transmitted with them) can be saved and edited by the recipient, whether text or graphics.

In order to send/receive e-mail over the Internet you will need:

- a telephone system to connect to, either dial-up (temporary) or a leased line (permanent) connection
- a modem
- communications software
- an account with an Internet Service Provider (ISP) who will register your unique e-mail address

The Internet

The Internet is made up of interconnected networks all over the world that send, receive and store information. Originally developed by the military; it became widely used for research work in academia and commerce. It is now widely used throughout all walks of life for work and leisure pursuits. Access is provided, (for individuals) through ISPs. The World Wide Web (WWW) is a part of this network. It contains millions of pages of words, pictures, sounds and graphics, stored on computers connected to the Internet. It has been called an 'information superhighway'. It provides information on almost every subject. Each document on the WWW is written in HTML (Hypertext Markup Language). This commonality of language makes it easy for a web browser (software that lets you select and view web pages) to display web pages. The two most common web browsers are Internet Explorer and Netscape Navigator. The web uses the Hypertext Transfer Protocol (HTTP) to download web pages to the browser and TCP/IP (Transmission Control Protocol/Internet Protocol)

allowing information to travel between networks. Web pages can contain hyperlinks - addresses, known as URLs (Uniform Resource Locators) - to other web pages so that users can plot their own routes through the web pages depending on their area of interest. The WWW is now used for business, commerce and education as well as recreational pursuits. When looking for specific information on the web, if you do not know an address where you can find it, you can use a search engine. A search engine will look through its database of sites that contain the 'Key word(s)' that you are looking for and will return a list of possible suitable sites. There are also search directories that set out information in subject categories.

Computer Viruses

A computer virus is a destructive program that is buried within an existing program. They are written by people with programming skills who want to cause widespread problems for computer users. Once the infected program is run, the virus coding is activated and attaches copies of itself to other programs. Infected programs copy the virus to other programs. In this way it can quickly spread causing severe damage to computers and networks. A virus cannot attach itself to data. To protect against viruses, always know the source of your software. When downloading software from the Internet always save it and virus check it before running it. Antivirus utilities are available and are a good 'insurance' investment. If you are unfortunate enough to have a virus on your computer - close down the computer and restart it using a write-protected boot disk and then run a virus utility. Virus site which may be of interest; McAfee, Norton and PC-Cillin.

Questions

- 1 Explain the terms LAN and WAN. What are the advantages of group working?
- 2 What is the internet?
- 3 How do you search for information on the world wide web?
- 4 Do you know of any interesting web sites that you could share with the group? If yes, please state.
- 5 List 2 advantages and 2 disadvantages of using electronic mail in relation to postal mail.
- 6 Using the internet as a research tool, find out the different types of viruses available and how they affect a PC. Name them and then see if you can obtain a set of virus names due to appear in the future.
- 7 Make a list of things that you should and should not do to protect your computer from viruses and hackers.
- 8 Carry out a simple survey in your class to establish who:
 - has a computer at home
 - has an antivirus software running on their computer
 - regularly update their antivirus software and how frequently
 - have had viruses in their computer system