МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

ЧЕРНІГІВСЬКИЙ НАЦІОНАЛЬНИЙ ТЕХНОЛОГІЧНИЙ УНІВЕРСИТЕТ

АНГЛІЙСЬКА МОВА

Методичні вказівки до практичних занять
для студентів 4 року денної форми навчання
напрямів підготовки 6.050102 – "Комп'ютерна інженерія"
та 6.050103 – "Програмна інженерія"

ЗАТВЕРДЖЕНО
на засіданні кафедри
іноземних мов
протокол № 7
від 25 лютого 2014 року

Чернігів 2014

Англійська мова. Методичні вказівки до практичних занять для студентів 4 року денної форми навчання напрямів підготовки 6.050102 – "Комп'ютерна інженерія" та 6.050103– "Програмна інженерія"/ Укладач: Светенок Л.К. – Чернігів: ЧДТУ, 2014. – 82 с.

Укладач: Светенок Людмила Костянтинівна, старший викладач

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Зміст

Вступ

Згідно Програми викладання англійської мови для професійного спілкування (2010 р.) вивчення іноземної мови повинно розвивати мовну компетенцію студентів, а також стратегії, необхідні для ефективної участі в процесі навчання та в ситуаціях професійного спілкування.

Методичні вказівки мають на меті допомогти студентам другого курсу денної форми навчання напрямів підготовки 6.050102 – "Комп'ютерна інженерія"та 6.050103 – "Програмна інженерія"опанувати лексику, яка може знадобитися їм під час англомовного професійного спілкування.

Вісім розділів, представлених у методичних вказівках, базуються на лексичному матеріалі, що охоплює термінологію, пов'язану з персональним комп'ютерами, прикладним програмним забезпеченням, мультимедійними засобами тощо. Тематика і зміст текстів, не лише відповідають вимогам програми, а й задовольняють професійні інтереси та потреби студентів. Частина текстів, представлених у методичних вказівках, взята з оригінальних джерел, що дає можливість студентам підготуватися до роботи з оригінальними фаховими текстами. Крім того, містяться завдання, спрямовані на розширення словникового запасу, розвиток умінь аудіювання, говоріння та письма.

У додатках представлені вправи для додаткової роботи студентів у парах (додатки А, Б), тексти для аудіювання (додаток В) та словник поширених комп'ютерних термінів і абревіатур (додаток Г).

Матеріал, вміщений у методичних вказівках, спрямований на формування у студентів лінгвістичної та фахової компетенції, дає інструменти для використання англійської мови у професійній діяльності та має привчити їх до читання оригінальної літератури за професійним спрямуванням з мінімальним використанням словника.

1 Applications Programs

1.1 Identify these applications programs
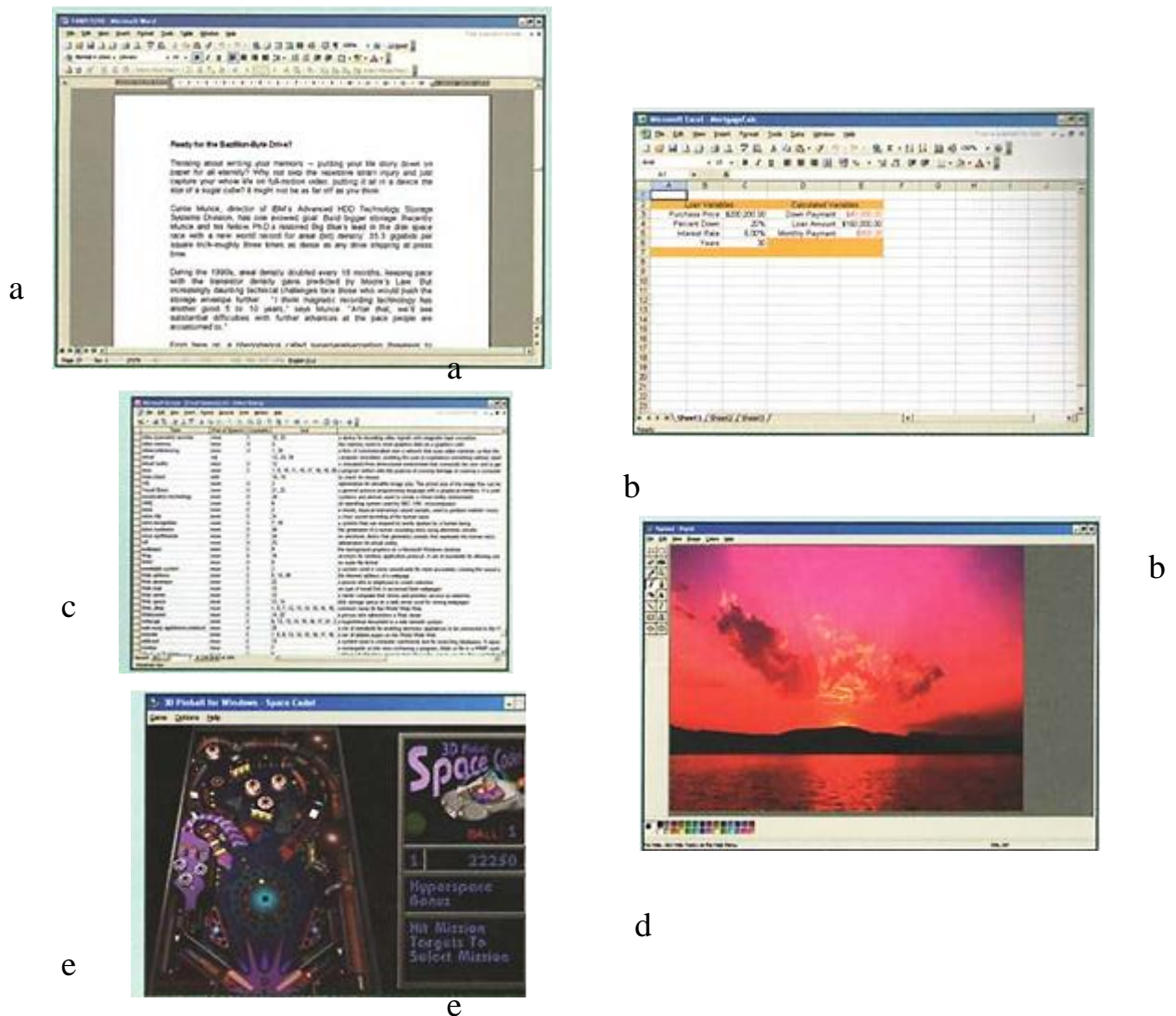
a

a

c

b

b

e

d

e

Fig. 1.1Screen displays

1.2 Conduct a survey to find out who in your class:

1. can name a spreadsheet program
2. has used a spreadsheet
3. can name a database program
4. has used a database
5. knows how to insert graphics into a document
6. can name a wordprocessing program
7. can centre a line of text
8. can disable the autocorrect

1.3 Study this diagram of a medical centre. Which applications programs will be used by the following?
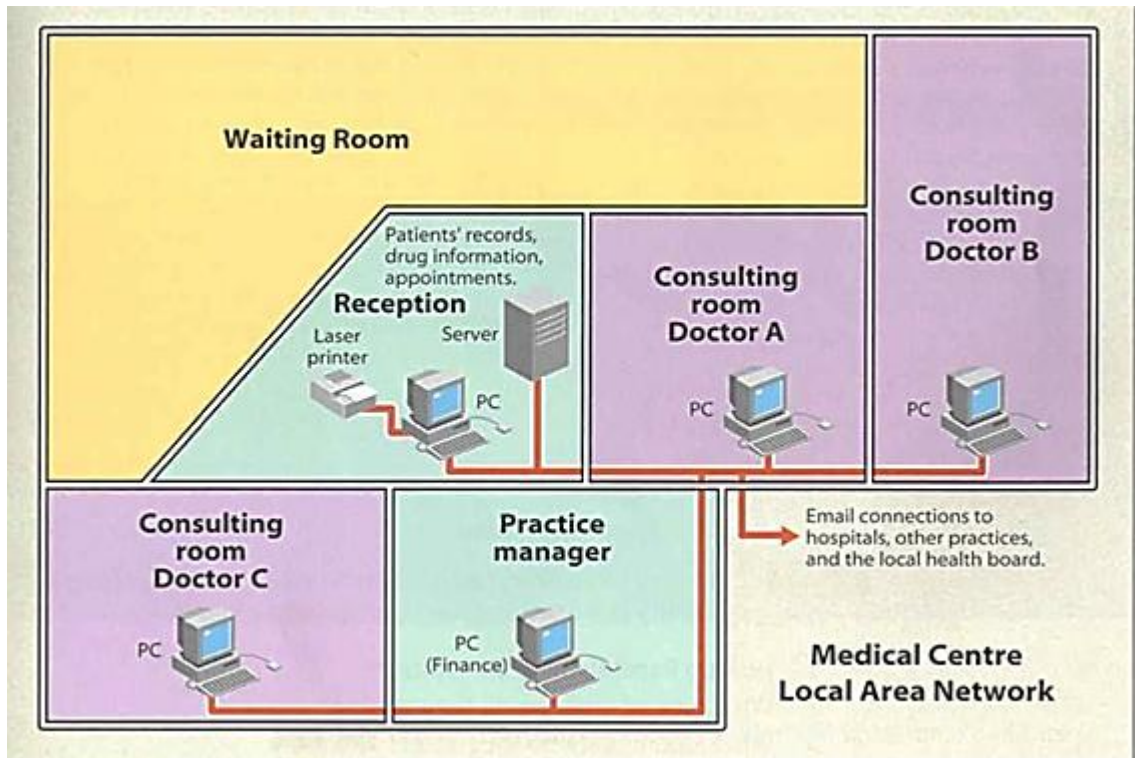
1. Reception
2. Practice Manager
3. Doctors

Fig. 1.2 Medical centre LAN

1.4 Work in groups. Read paragraph A and additional paragraphs selected by your teacher. Complete this note-taking frame for each text you read.

	B	**C**	**D**
Users			
Use			
Program types			
Data input			
Output			

Fig. 1.3 Note-taking frame

A The system consists of 5 networked PCs, one in each of the consulting rooms, onein the Practice Manager's office and the other in Reception alongside the file server. (Each PC has its own laser printer.) All users have access to Microsoft Office.

B Doctors use the system to access a numberof databases. The most important holds therecords of all the patients in the practice. Thesefiles contain personal details and the medicalhistory of the patient. The doctor can call up theappointments book prior to the consultation. Byclicking on the patient's name, they haveimmediate

6

access to that patient's records. At theend of each consultation, the doctor enters briefcase notes including the diagnosis and treatment.This database can also be used to produce statisticsfor research and reports.

Doctors can also access a drugs database on CD-ROM which provides prescribing information on thousands of drugs including their suitability for different categories of patients. Thisis updated every month. Another database is a conditions dictionary which provides information on a wide range of problems.

C Reception staff use specially tailored software developed from a database to enterall appointment dates and times for each doctor. The program generates daily lists of appointments and can be accessed by the doctors. Reception use the patient database to identify children and old people who are due to have vaccinations. They then use mailmerging to create letters asking for appointments to be made.

D The Practice Manager uses a payrollpackage based on a spreadsheet to calculatesalaries for each employee of the health centre.She enters all income and expenditure to produce practice accounts. She uses a database to produce a monthly rota of which doctors are on call in evenings and at weekends.This rota is available over the network to all users.

1.5 Exchange information with others in your group to complete notes for all the texts. Ask and answer questions like these:

1. How do Reception use the system?
2. What type of program do they use?
3. What kind of data do they enter?
4. What is the output from the program?

<div style="background:yellow">

HELP box
Instructions / complex instructions

Study this extract from an instruction manual for software for doctors in a health centre.

PATIENT BROWSER

Patient Browser allows you to find specific patients and open their records. It also allows you to identify different categories of patients.
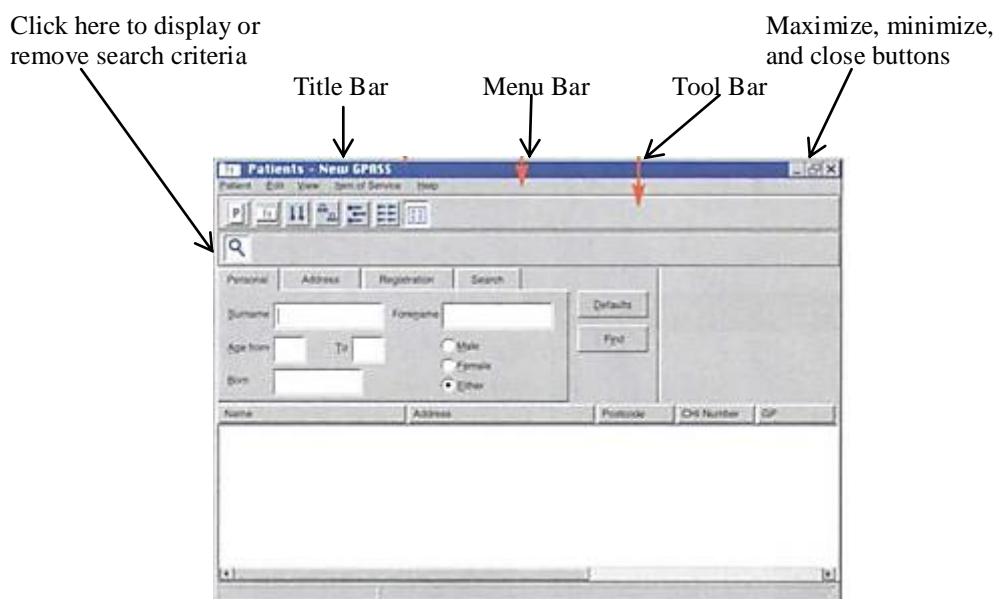
</div>

Click here to display or remove search criteria

Maximize, minimize, and close buttons

Title Bar Menu Bar Tool Bar

Fig. 1.4GPASS

1.6 Write simple instructions for identifying all male patients called Smith in the 16 to 50 age group registered with Doctors Warner and Roberts.

1.7 Complete the gaps in these instructions for finding the records of all members of the Green family living in postcode WX14 3PH and registered with any doctor in the practice.

1. First enter the search criteria by_____.
2. To_____, enter Green in the Surname box.
3. Ensure both male and female members of the family are found by_____ .
4. _____select the Address tab.
5. Having_____, enter the postcode.
6. _____choose the Registration tab.
7. Once _____, select All doctors.
8. _____, click on Find to _____

1.8 Study these versions of OfficeSuite and decide which version provides the best value for the following users. The versions are listed from cheapest to most expensive.

OfficeSuite Standard
- wordprocessor
- spreadsheet
- presentation program
- email
- PIM

OfficeSuite Small Business Edition
- wordprocessor
- spreadsheet
- DTP
- email
- PIM
- small business tools

OfficeSuite Professional	OfficeSuite Premium	OfficeSuite Developer
• wordprocessor	• wordprocessor	• wordprocessor
• spreadsheet	• spreadsheet	• spreadsheet
• database	• database	• database
• DTP	• DTP	• DTP
• presentation program	• presentation program	• presentation program
• email	• email	• email
• small business tools	• PIM	• PIM
	• small business tools	• small business tools
	• website editor	• website editor
	• image editor	• image editor
		• developer tools

1. A salesperson who wants to make presentations at conferences.
2. An administrative assistant who needs to write office correspondence and send and receive emails.
3. A programmer who wants to develop applications tailored to a company's needs.
4. A company wanting to produce its own in-house newsletter.
5. A company wishing to develop its own website.
6. A company which wants to analyse all its sales records.
7. A promotions person who wants to be able to edit complex graphics and incorporate them in brochures.
8. A company which wants to share documents on a local area network.

1.9 Work in pairs, A and B. Each of you has a review of a computergame. Find out from each other this information:
1. The name of the game.
2. The company who produce it.
3. The platform on which it's played.
4. The bad points.
5. The good points.
6. The star rating.

Student A Your game details are on page 59.
Student B Your game details are on page 61.

1.10 Work in groups. Decide which applications programs would beused and for what purpose, by the following:
1. a museum
2. publishers of a subscription-only magazine
3. police headquarters

1.11 Write your recommendations for one of the users in Task 1.10. Give reasons for each applications program you recommend.

1. 12 Specialist Reading
Application Service Providers

If your hard disk is packed to bursting point, the IT department is far too busy to fix your email problems, and your business can't afford to buy the tools that you'd like to develop the company website, then it's time to think about using an application service provider (ASP). Rather than installing software on each machine or server within your organisation, you rent applications from the ASP, which provides remote access to the software and manages the hardware required to run the applications.

There are a lot of advantages to this approach. The havoc caused by viruses makes the idea of outsourcing your email and office suite services an attractive option. It also gives you more flexibility - you pay for applications as and when you need them, rather than investing in a lot of costly software which you're then tied to for years. Not having to worry about upgrading to the latest version of your office suite or about battling with the complexities of managing an email system, leaves businesses with more time. Time to focus on what they do best.

However, there are some potential pitfalls. To use applications remotely requires a lot of bandwidth, which is only really available from a broadband connection or a leased line to the ASP itself. It is also important to ensure that the ASP will be able to provide a secure, reliable service which will be available whenever you need it.

Providing applications and storage space for vast numbers of users requires some powerful technology on the part of the ASP. This includes security controls and data storage as well as providing the physical links to customers. Forthe most part, ASPs don't own the data centres that store the information. Instead, they lease space from data storage specialists. In this way, they can be confident of meeting customers' increasing storage requirements by buying more space as it's needed.

There's a wide variety of applications available for use via ASPs. Office suite applications and email services are two of the most generic applications available through ASPs. Large, complex business applications such as enterprise resource planning tools like SAP are another popular candidate for delivery through an ASP. Other business services, such as payroll and accounting systems are also available. This is particularly beneficial to small businesses which are likely to grow quickly and don't want to deal with the problems caused by outgrowing their existing system and having to move to a high-end package. ASPs also offer a means of using specialist tools that would otherwise prove prohibitively expensive. Small businesses have the opportunity to use such tools for short periods of time as and when they need them, rather than having to buy the software as a permanent investment.

One of the major barriers for small businesses which want to make a start in e-commerce is ensuring that they have sufficient resources to cope with sudden large increases in customers. This means not only having adequate storage for all your customers' details, but ensuring that you have the technology in place to handle stock levels, efficient delivery and large volumes of traffic. It's very rare for an e-commerce business to handle all of these elements by itself, making this one of the best-established areas of ASP use. Being able to respond rapidly to changes in the

size of your customer base and the type of product that they want to order from your business, demands more flexibility than traditional software can provide.

[Adapted from 'ASP and you shell receive' by Maggie Williams,
PC Direct Magazine, November 2000]

1.12.1 Find the answers to these questions in thetext below.
1. How do you pay for the applications provided by an ASP?
   a no charge
   b charged according to use
   c single payment
2. What two main services does an ASP provide?
3. How does an ASP ensure that they have enough storage space for the changing needs of customers?
4. What types of applications are available from ASPs?
5. Why is it useful for a small business to be able to rent specialist tools from an ASP?
6. What is one of the best established areas of ASP use?

1.12.2 Re-read the text to find the answers to these questions.
1. Note the advantages and disadvantages of using an ASP.
2. Match the items in Table A with the statements in Table B.

Table A		Table B
a.	Website	1. Set of standard programs used in an office
b.	ASP	2. Facility for storing large amounts of information
c.	Virus	3. Capacity of a network connection
d.	Office suite	4. High capacity Internet connection
e.	Bandwidth	5. Self-replicating program
f.	Broadband	6. Common enterprise resource planning tool
g.	Data centre	7. Application service provider
h.	SAP	8. Collection of related webpages

1.12.3 Using information from the text, mark the following as True or False:
a. Software from an ASP must be installed locally on a user's computer.
b. You need a high bandwidth connection to use an ASP service.
c. ASPs usually use their own storage space for customers.
d. Using an ASP gives you more flexibility.
e. An e-commerce business usually provides all of the required technology itself.

2 Multimedia

2.1   Match the multimedia terms in Column A to the activities in Column B. More than one match is possible.

Column A	Column B
MIDI	watching movies
MP3	composing music on a PC
DVD	downloading music from the Internet
MPEG	using reference works like encyclopaedias

2.2 Study this diagram which explains MP3. Answer these questions:

1. How does MP3 reduce the size of music files?
2. What can you obtain from www.mp3.com?
3. How can you listen to MP3 files?
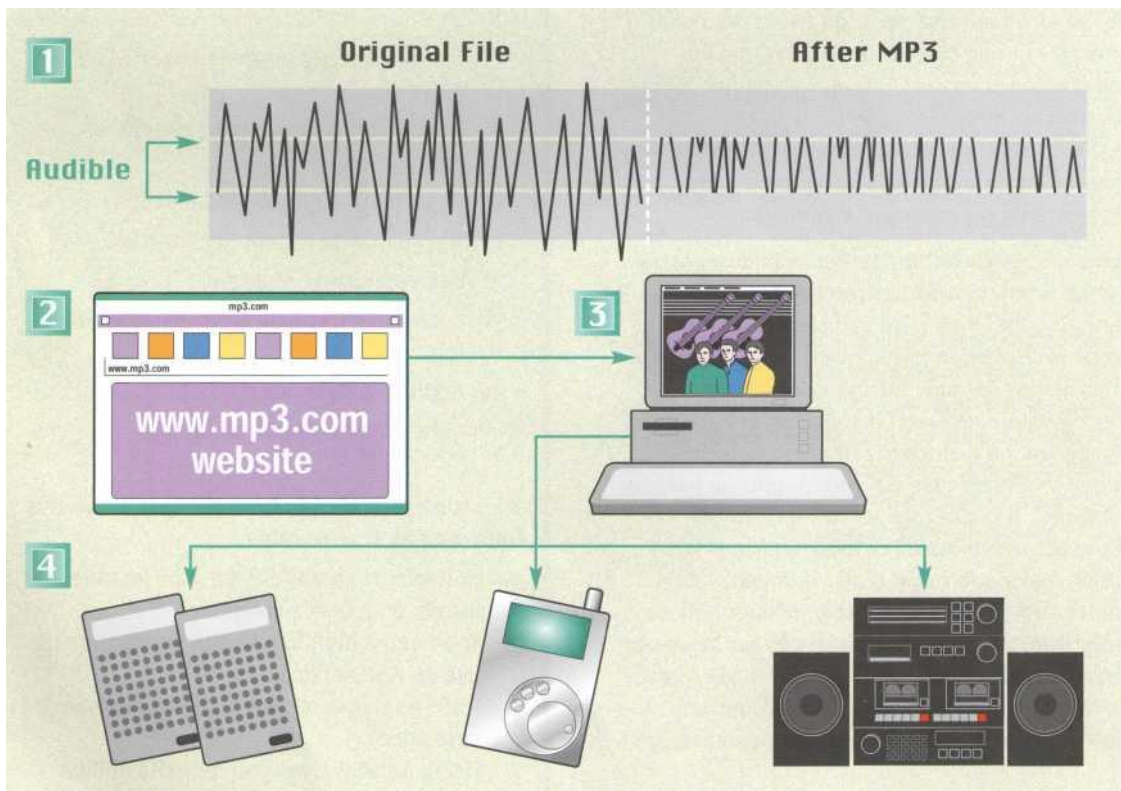
Fig. 2.1 How MP3 will transform music

2.3 Match these captions to the pictures in Fig 2.1 Consider again your answers to Task 2.2

a Once you've paid by credit card (unless it's one of the millions of free files), music is downloaded to your PC.

b The original music file is stripped of anything that is inaudible to the human ear. After MP3 has done its work, the file is reduced to roughly one twelfth that of the original recording.

c MP3 files can be listened to on your PC, a dedicated MP3 player, or your hi-fi.

d MP3 files are put on a website, where browsers can listen to samples and buy a single track or album ... or even create their own compilation.

2.4 Read this text to find the answers to these questions.
1. What does MP3 stand for?
2. What is the difference between MP3 and WAV files?
3. What kind of sound does MP3 strip out?
4. What kind of information is included in the tag?

Understanding MP3

The name comes from MPEG (pronounced EM-peg), which stands for the Motion Picture Experts Group. MPEG develops standards for audio and video compression. MP3 is actually MPEG Audio Layer 3.

MP3 competes with another audio file format called WAV. The key difference is that MP3 files are much smaller than WAV files. An MP3 file can store a minute of sound per megabyte, while a WAV file needs 11 or 12 megabytes to hold the same amount. How does MP3 achieve thiscompression? CDs and audio files don't reproduce every sound of a performance. Instead, they sample the performance and store a discrete code for each sampled note. A CD or WAV file may sample a song 44,000 times a second, creating a huge mass of information.

By stripping out sounds most people can't hear, MP3 significantly reduces the information stored. For instance, most people can't hear notes above a frequency of 16kHz, so it eliminates them from the mix. Similarly,it eliminates quiet sounds masked by noise at the same frequency. The result is a file that sounds very similar to a CD, but which is much smaller. An MP3 file can contain spoken word performances, such as radio shows or audio books, as well as music. It can provide information about itself in a coded block called a tag. The tag may include the performer's name, a graphic such as an album cover, the song's lyrics, the musical genre, and a URL for more details.

2.5 Read the rest of this text to find the answers to these questions:
1. How do you play MP3 files?
2. What does the Windows Media Player program do with an MP3 file?
3. What is a standalone player?
4. What special features can players offer?
5. What information can you obtain by clicking on the track info button?
6. What does a skin enable you to do?
7. How do you play music from a CD-ROM on an MP3 player?
8. What hardware and software do you need to make your own audio CDs?

Play MP3 Files

Most machines today have enough processing power and memory to play MP3s immediately. Simply download an MP3 file like any other and click on it in Windows Explorer. The Windows Media Player will decode the file and route the signals to your soundcard and then to your speakers.

Other MP3 features include:

Players.

Most standalone players have many features beyond Windows' default Media Player. To control what music you play, players let you group songs into

playlists and randomize the selections. To control how the music sounds, they offer spectrum analyzers, graphic equalizers, and frequency displays.

Track info.

A track info button gives you the information on the MP3 file's tag. Other buttons may take you to a music library where you can organize your MP3 files by performer or genre.

Skins or themes.

These programs are designed to change the appearance ofthe most popular players. They're akin to the wallpaper that alters the look of the Windows desktop. With a skin, a player can become a jukebox, a car dashboard, or a Star Trek tricorder. Think of them as easily interchangeable faceplates.

Rippers and encoders.

A ripper is a program that rips songs from a CD in your CD-ROM drive and turns them into WAV files. An encoder converts WAV files into MP3 files or vice versa. Many MP3 players incorporate rippers and encoders and can do both steps in one.

Recorders.

With a writeable CD-ROM drive, a recorder program lets you create your own audio CDs.

HELP box
-ingclauses cause and effect

Study this sentence.

Using MIDI, computers can communicate with synthesisers.

It contains two clauses. An *-ing*clause:

Using MIDI

and a main clause:

computers can communicate with synthesisers

We can use an *-ing*clause, as in example 1, to explain how something happens. The –*ing* clause explanation can be placed before, or after the main clause as in example 2.

2 DVD drives read DVD disks (by) using blue laser light.

We can also use *-ing*clauses to link a cause and effect.

3 A WAV file may sample a song 44,000 times a second, [cause]*creating a huge mass of information.* [effect]

2.6 Match each cause and effect. Then link them with an –ing clause.

Cause	Effect
1. Computers with MIDI interface boards can be connected to MIDI instruments.	a This permits extra information to be stored on the performer and other track details.
2. Each side of a DVD can have two layers.	b You can create your own compilation.
3. MP3 removes sounds we can't hear.	c This allows you to sample a new group before buying their CD.
4. You can download single tracks.	d This gives an enormous storage capacity.

5. Each MP3 file has a tag.	e This allows the music being played to be stored by the computer and displayed on the monitor.
6. MP3 players contain several devices.	f This enables you to change the appearance of your player.
7. You can download a skin program.	g These allow you to control the way the music sounds.
8. You can legally download some music.	h This produces much smaller files.

2.7 Explain how each of these actions happen. The explanations are available in Tasks 2.2, 2.3 and 2.4.
1. MP3 reduces the information stored.
2. You can alter the look of your MP3 player.
3. You can 'rip' the audio information from a CD.
4. You can convert a WAV file to MP3 format.
5. You can view the lyrics, notes and author data.
6. You can control how the music sounds.
7. You can access many free and legal music files for downloading.
8. You can play MP3 files through your sound system.

2.8. Work in pairs, A and B. With the help of the notes provided,explain to your partner one aspect of multimedia.

Student A Your notes are on page 59.
Student B Your notes are on page 61.
Link your notes into a text describing one aspect of multimedia.
Choose either the Student A or the Student B notes.

2.9 Study the diagram, Fig 2.2 which illustrates how MIDI operates.Then link each set of sentences into one complex sentence to form acontinuous paragraph. You may add, omit and change words.
1. Most modern music is mixed.
   This uses computers.
2. Musicians record their music into a computer system.
   This system is called a Musical Instrument Digital Interface(MIDI).
3. MIDI was developed as a standard interface.
   MIDI is for linking music synthesisers and instruments together.
4. Computers can be connected to MIDI instruments.
   These computers are fitted with MIDI interface boards.
   This allows the music to be stored on computer.
   This allows the music to be displayed on the monitor.
   The music is being played.
5. The music can be displayed as a musical score.
   The music can be edited.
   This uses all the features of a mixing desk.

6. The music can also be printed out from the computer.
   The music is being played.
7. MIDI doesn't transmit any sound.
   It transmits simple binary information.
8. The information is called a MIDI message.
   The message encodes sound as 8-bit bytes of digital information.
9. The most common messages consist of instructions.
   These instructions tell the receiving instrument to play a note for a specific duration of time.
10. The instructions also contain details of how loud to play that note.
    The instructions contain a number.
    The number indicates which instrument to play.
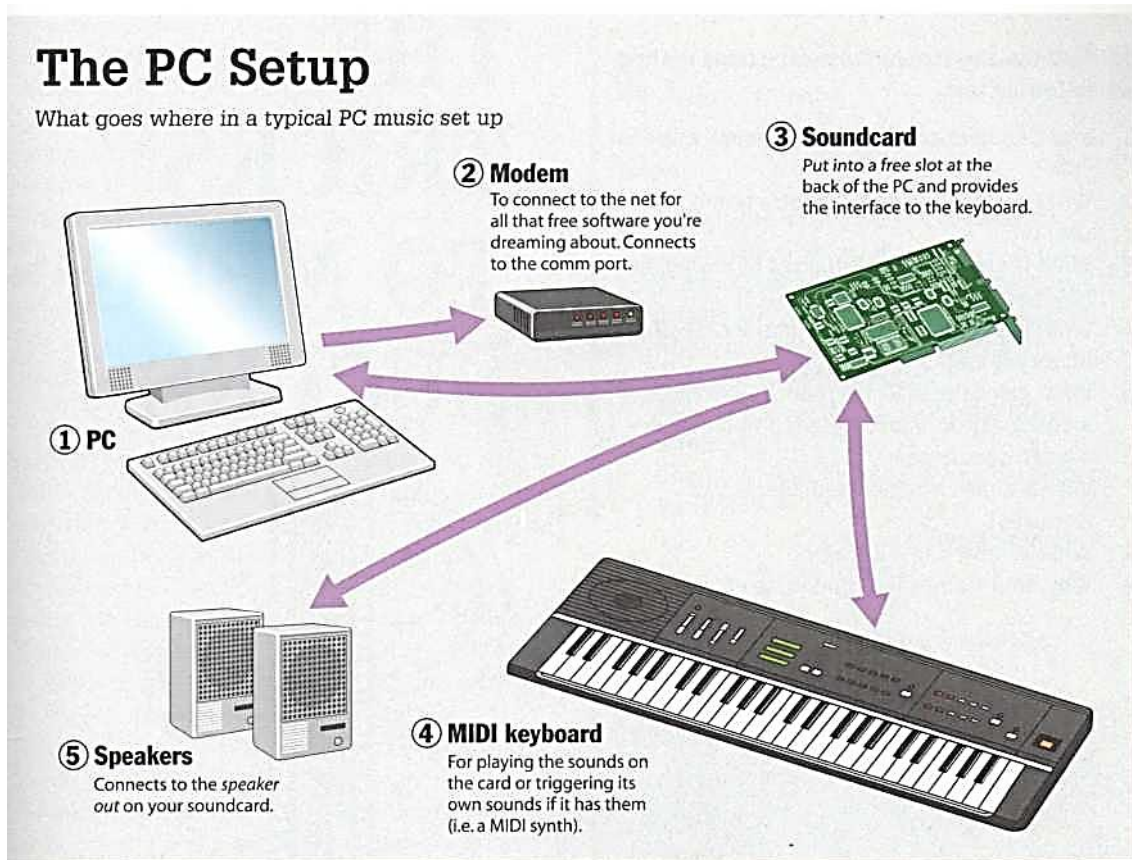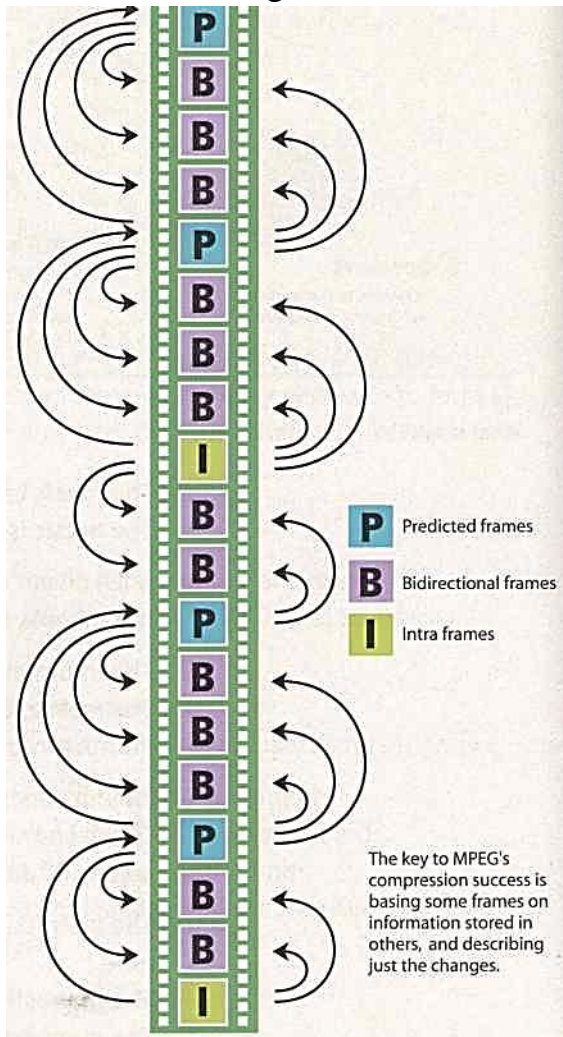   Number 67 is a saxophone.

Fig. 2.2 What is MIDI?

2.10 Specialist Reading

THE TRICKS TO MPEG'S SUCCESS

The most common system for the compression of video is MPEG. It works like this. The single data stream off the CD-ROM is split into video and audio components, which are then decompressed using separate algorithms. The video is processed to produce individual frames as follows. Imagine a sequence of frames depicting a bouncing ball on a plain background. The very first is called an Intra Frame (I-frame). I-frames are compressed using only information in the picture itself just like conventional bitmap compression techniques like JPEG.

Following I-frames will be one or more predicted frames (P-frames). The difference between the P-frame and the I-frame it is based on is the only data that is stored for this P-frame. For example, in the case of a bouncing ball, the P picture is stored simply as a description of how the position of the ball has changed from the previous I-frame. This takes up a fraction of the space that would be used if you stored the P-frame as a picture in its own right. Shape or colour changes are also stored in the P-frame. The next P-frame may also be based on this P-frame and so on. Storing differences between the frames gives the massive reduction in the amount of information needed to reproduce the sequence. Only a few P-frames are allowed before a new I-frame is introduced into the sequence as a new reference point, since a small margin of error creeps in with each P-frame.

P — Predicted frames
B — Bidirectional frames
I — Intra frames

The key to MPEG's compression success is basing some frames on information stored in others, and describing just the changes.

Between I and P-frames are bi-directional frames (B-frames), based on the nearest I or P-frames both before and after them. In our bouncing ball example, in a B-frame the picture is stored as the difference between the previous I or P-frame and the B-frame and as the difference between the B-frame and the following I or P-frame. To recreate the B-frame when playing back the sequence, the MPEG algorithm uses a combination of two references. There may be a number of B-frames between I or P-frames. No other frame is ever based on a B-frame so they don't propagate errors like P-frames.

Typically, you will have two or three Bs between Is or Ps, and perhaps three to five P-frames between Is.

[Adapted from 'The Tricks to MPEG's Success',
Windows Magazine, March 1994]

2.10.1 Find the answers to these questions in the following text.

1. Into what two components is the data stream split?
2. What information does an Intra frame contain?
3. What is stored in the P-frames following an I-frame?
4. What is stored in a P-frame in the case of a bouncing ball?
5. What gives the massive reduction in the amount of information needed to reproduce a video sequence?
6. Why is a new I-frame used after a few P-frames?
7. What is stored in a B-frame?
8. Why do B-frames not propagate errors?

2.10.2 Re-read the text to find the answers to these questions.

1 Mark the following statements as True or False:

a JPEG is the most common compression system used for video.

b P-frames only store the changes in the image.

c There is always at least one P-frame between two I-frames.

d B-frames store the complete picture information.

e There can only be one B-frame between each I and P-frame.

f There are typically about four P-frames between each I-frame.

2 Match the words in Table A with the statements in Table B.

Table A	Table B
a. **Algorithm**	1. A common type of compression used for video data
b. **l-frame**	2. A compressed video frame known as a predicted frame
c. **JPEG**	3. A compressed video frame that stores changes between the frame before it and the frame after it
d. **P-frame**	4. A formula used for decompressing components of a data stream
e. **B-frame**	5. A type of compression used for bitmap images
f. **MPEG**	6. A compressed video frame that contains the complete image information

3 Computing Support Officer

3.1 Study this screen display of Windows Explorer. Add thesetitles to the texts:

1. Toggle-box
2. Explorer pane
3. Selected icon
4. Divider
5. Guidelines
6. Navigation pane

Fig. 3.1 The screen display of Windows Explorer

3.2 Barbara is a Computing Support Officer in a large company. She's advising Clive, the Sales Director. Listen to Part 1 of the recording to find the answers to these questions:

1   What is Clive's problem?
2   What does he want to do?

3.3 These screen displays show some of the steps in Barbara's explanation. Listen to Part 2 of the recording and put them in the correct sequence.
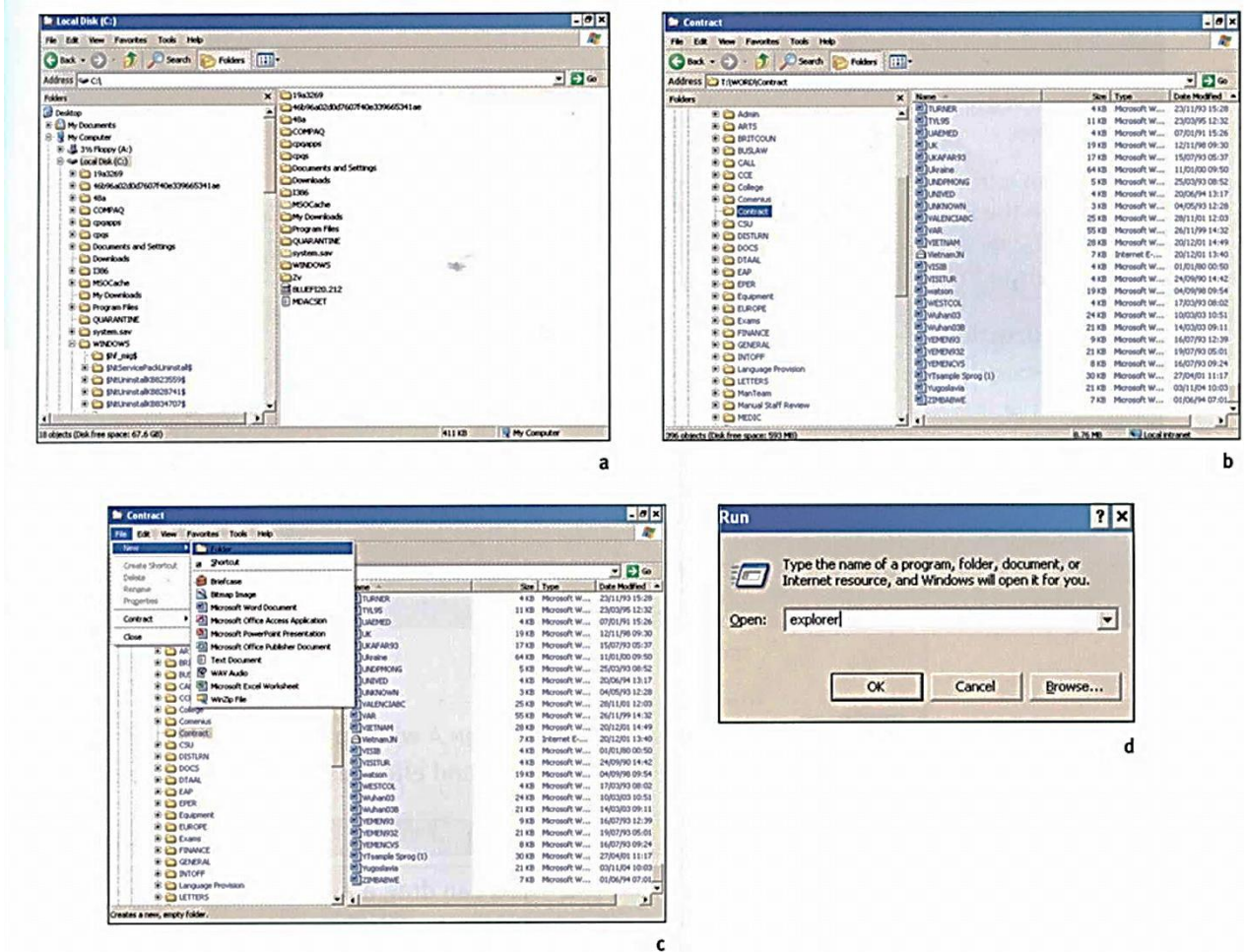
Fig.3.2 4screen displays

3.4 Listen to Part 3 to answer these questions:

1   What additional task does Clive need help with?
2   What indication is there that Contract now contains subfolders?
3   What are the subfolders called?
4   What operation is used to move files into the new subfolders?
5   What does Barbara refer to as a 'handy tool'?

HELP box
Revision: if-sentences

Study these uses of if-sentences.

Action and effect

We can use an if-sentence to link an action and its effect. For example:

1   *If you click on that* [action], *that'll just compact your C drive* .[effect].
2   *If you click on that* [action], *that opens it up and shows you all your folders* [effect].

The action is in the Present simple and the effect is in the Present simple or described using will, can, or may depending how certain it is to follow.

Polite instructions

We use the action part of if-sentences, especially in spoken English, to give instructions in a polite way.The effect part is assumed.

3 *If you bring your cursor down to the very bottom* [you'll find the Start button].

4 *If you just hit Enter* [that will activate the program].

Imagined action and effect

We can use an if-sentence to describe the possible effect of an imagined action. For example:

5 *If you spilled coffee on your keyboard* [imagined action], *you could damage it*[possible effect].

6 *If there were no other folders there* [imagined action], *you wouldn't have a little box in there* [possible effect].

To show this describes imagined, not real, events, the action is in the Past simple and the effect is described using would, could, and might depending how certain it is to follow.

3.5 Match the actions in Column A with appropriate effects from Column B. Then join each action and effect using an if-sentence.

Column A	Column B
1 you press Print Screen	a you can drag it across the screen
2 you press Ctrl + Alt + Del in Windows XP	b it would speed up the computer
	c you may lose data
3 you added more memory	d you would have more space at your desk
4 you installed a modem	
5 you used a better search engine	e you would be able to connect to a telephone line
6 you forget to save regularly	
7 you hold down the mouse button over an icon	f you can make a copy of the screen
	g you would find more relevant results
8 you used an LCD display	h it displays the Windows security dialog box

3.6Describe the effects of these actions using an if-sentence.

1. you don't virus-check floppies
2. there was a power cut while you were using your computer
3. you install a faster processor
4. you forgot your password
5. you press the delete key
6. you use a search engine
7. you double-click on an icon
8. you use power-saving options

3.7 Noun + Noun compounds Match each word from Column A with its partner from Column B to make a computing term.

Column A	Column B
1barcode	a tray
2mainframe	b program
3laser	c bus
4expansion	d pane
5search	e computer
6control	f reader
7supervisor	g bar
8task	h card
9system	i engine
10 explorer	j printer

3.8 Work in pairs, A and B. Instruct each other how to perform these computer operations in Windows or Mac OS. Take notes from your partner's instructions.

    Student A Copying a file.
    Student B Saving a file.

4 Networks

4.1 With the help of this diagram, try to describe the function of these components of a typical network system:

1a file server   5 a LAN
2a bridge   6 a gateway
3a router   7 a modem
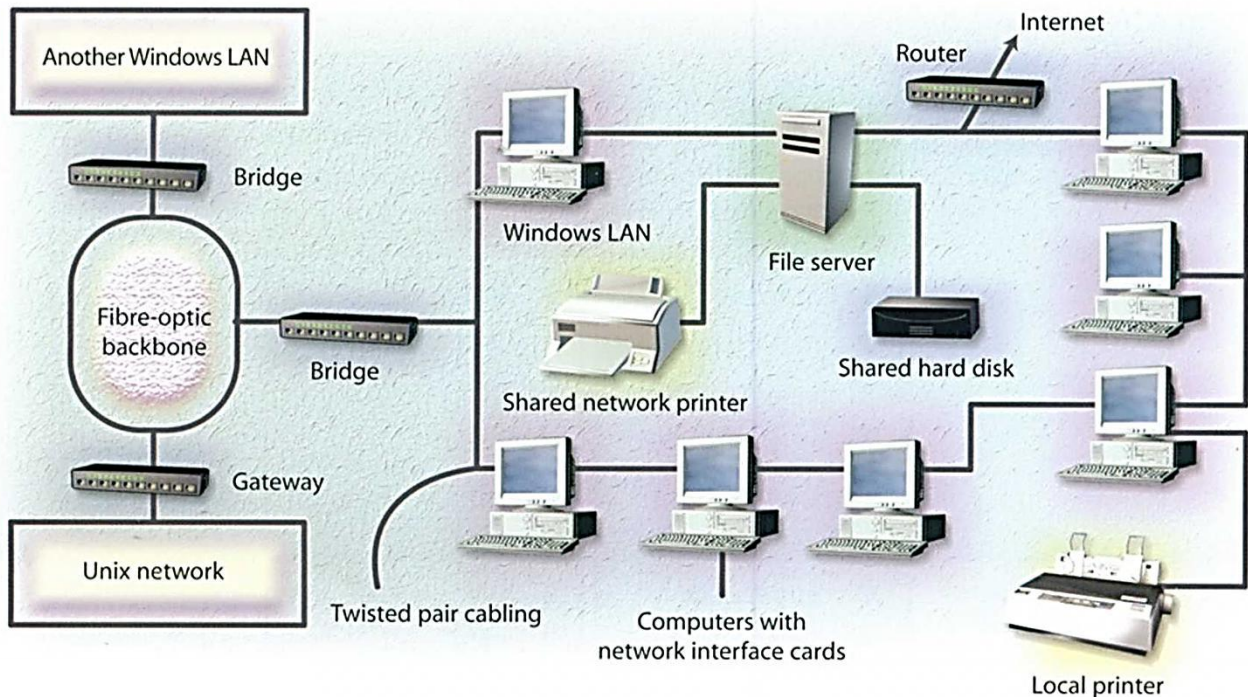4a backbone

Fig. 4.1 Components of a typical LAN

4.2 Now read these definitions to check your answers. You may also refer to the Glossary.

A bridge is a hardware and software combination used to connect the same type of networks. Bridges can also partition a large network into two smaller ones and connect two LANs that are nearby each other.

A router is a special computer that directs communicating messages when several networks are connectedtogether. High-speed routers can serve as part of the Internet backbone.

A gateway is an interface thatenables dissimilar networks to communicate, such as two LANs based on different topologies or network operating systems.

A backbone is the main transmission path, handling the major datatraffic, connecting different LANs together.

A LAN is a network contained within a small area, for example a company department.

A modem is a device for converting digital signals to analogue signals and vice versa to enable a computer to transmit and receive data using an ordinary telephone line.

4.3 Now study this text and the diagram of a wireless network setup. Match the diagram key to the components of the network.

Wireless networking

Wireless (WiFi) networks are just like fixed LANs but instead of using cables, devices are linked by radio waves.

Each computer in a wireless network requires a wireless network interface card (NIC). These can be built in or you can use plug-in adaptors. These allow each component in the network to communicate with a wireless access point (AP) to create a wireless local area network (WLAN). The APoperates like a router in a fixed LAN. It also provides a bridge which plugs into the hub of a fixed LAN allowing both fixed and wireless users to talk to each other. If your LAN is connected to the Internet, the WLAN can also use it. If not, you can connect the W'LAN to the Internet via an ADSL or cable modem.

What are the advantages of a wireless network? You don't need cabling. In older buildings, it can be expensive to install cables andaccess points. With WiFi, one access point can cover an entire floor or even a building. You can work anywhere within range of the access point. On a sunny day, you could work outside. You can make any room in the house your study. There are now WiFi hotspots in hotels, libraries and airports so you can link to a network away from home or your office.

There are disadvantages.Fixed LANs can run at 1000 Mbps. Wireless networks arc much slower and the further you arc from an access point, the slower the rate. Although there are savings on the cost of cabling, wireless NICs arc more expensive than the wired versions. Then there is the problem of interference, if a neighbour is using the same channel, and security. Other users may be able to intercept your data. Encryption programs like Wired Equivalent Privacy (WEP) can help.
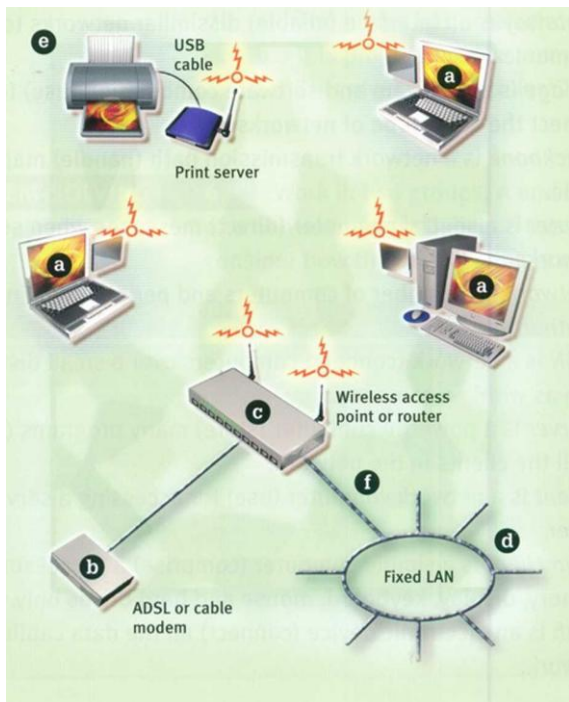
KEY TO THE DIAGRAM
1. A modem providing access to the Internet.
2. A wireless AP enabling computers to connect to the fixed LAN.
3. Computers equipped with wireless NICs.
4. A fixed LAN linking computers with cables.
5. A network printer connected to a wireless print server.
6. A data line linking fixed LAN clients to a wireless access point.

Fig 4.2Wireless network

HELP box
Relative clauses with a participle

Relative clauses with a participle are often used in technical descriptions.They allow you to provide a lot of information about a noun using as few words as possible.
Study these examples from the Task 4.3 text.

1. Computers *equipped with wireless NICs.*
2. A network printer *connected to a wirelesssprint server.*
3. A modem *providing access to the Internet.*
4. A fixed LAN *linking computers withcables.*

We can use the passive participle as in examples 1 and 2.

1. Computers equipped with wireless NICs. = computers which *are equipped*
2. A network printer *connected to a wirelesssprint server.=* a network printer *which is connected*

We can use an active participle as inexamples 3 and 4.

3. A modem providing access to the Internet. = modem *which provides access to the Internet*
4. A fixed LAN linking computers with cables. = A fixed LAN *which links computers with cables*

4.4 Complete these definitions with the correct participle of the verb given in brackets.

1. A gateway is an interface (enable) dissimilar networks to communicate.
2. A bridge is a hardware and software combination (use) to connect the same type of networks.
3. A backbone is a network transmission path (handle) major data traffic.
4. A router is a special computer (direct) messages when several networks are linked.
5. A network is a number of computers and peripherals (link) together.

6. A LAN is a network (connect) computers over a small distance such as within a company.

7. A server is a powerful computer (store) many programs (share) by all the clients in the network.

8. A client is a network computer (use) for accessing a service on a server.

9. A thin client is a simple computer (comprise) a processor and memory, display, keyboard, mouse and hard drives only.

10. A hub is an electronic device (connect) all the data cabling in a network.

4.5 Link these statements using a relative clause with a participle.

1. a The technology is here today.
   b It is needed to set up a home network.
2. a You only need one network printer.
   b It is connected to the server.
3. a Her house has a network.
   b It allows basic file-sharing and multi-player gaming.
4. a There is a line receiver in the living room.
   b It delivers home entertainment audio to speakers.
5. a Eve has designed a site.
   b It is dedicated to dance.
6. a She has built in links.
   b They connect her site to other dance sites.
7. a She designed the site using a website creation program.
   b It is called Dreamweaver.
8. a At the centre of the home of tomorrow is a network.
   b It is accessed through a control pad.
9. a The network can simulate the owner's presence.
   b This makes sure vital tasks are carried out in her absence.
10. a The house has an electronic door-keeper.
    b It is programmed to recognise you.
    c This gives access to family only.

4.6 Work in two groups, A and B. Group A, list all the advantages of a network. Group B, list all the disadvantages. Then together consider how the disadvantages can be minimised.

Group A Advantages of a network	Group B Disadvantages of a network

4.7 Transmission modes

Work in pairs, A and B. Explain to your partner how one mode of transmission between computers operates with the help of the text provided. Your explanation should allow your partner to label his/her diagram.

Student A

Your text is on page 59. Your explanation should allow your partnei to label this diagram.
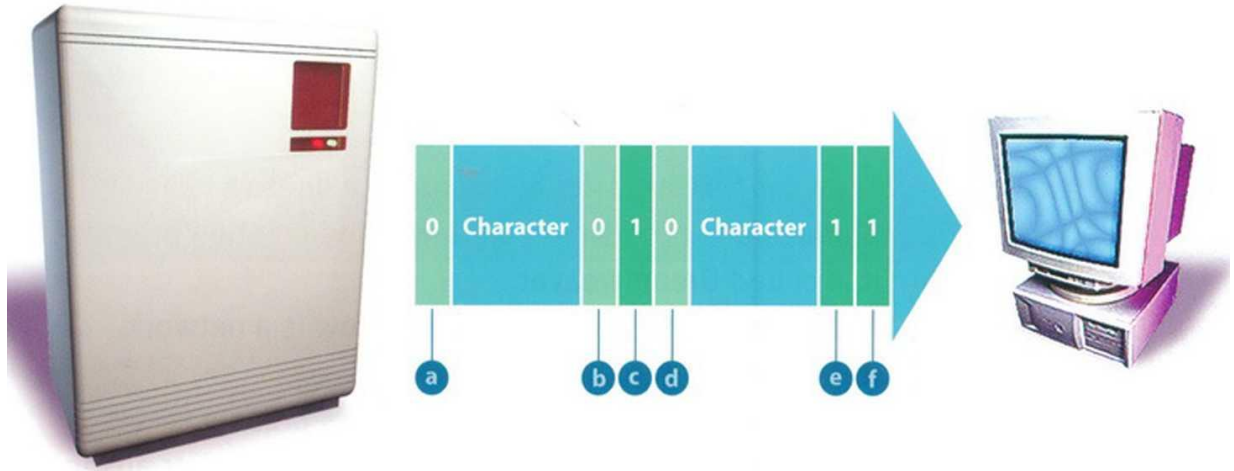

Fig 4.3Asynchronous transmission

Student B

Your text is on page 61. Your explanation should allow your partner to label this diagram.
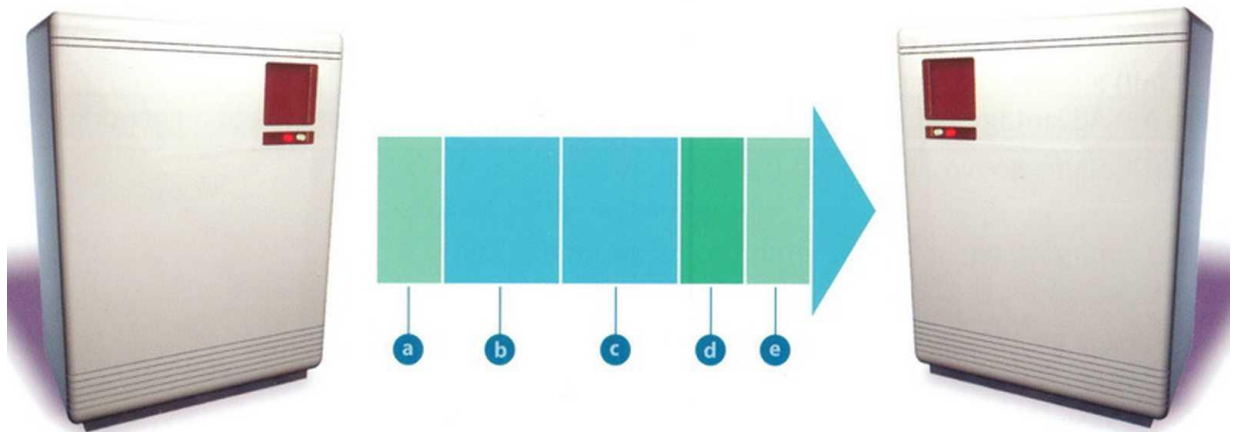

Fig 4.4 Synchronous transmission

4.8 Using the lists you compiled in Task 4.6, describe the advantages and disadvantages of networks. Try to link some of the advantages and disadvantages as in these examples.

Advantages	Disadvantages
Allow data to be shared.	Permit viruses to spread quickly.
Users can share software on the server.	Server failure means no one can work.

1. Although networks allow data to be shared, they permit viruses to spread quickly.
2. Users can share software on the server; however, server failure means that no one can work.

4.9 Specialist reading

Network Communications

1 The application layer is the only part of a communications process that a user sees, and even then, the user doesn't see most of the work that the application does to prepare a message for sending over a network. The layer converts a message's data from human-readable form into bits and attaches a header identifying the sending and receiving computers.

2 The presentation layer ensures that the
io message is transmitted in a language that the receiving computer can interpret (often ASCII). This layer translates the language, if necessary, and then compresses and perhaps encrypts the data. It adds another header specifying theis language as well as the compression and encryption schemes.

3 The session layer opens communications and has the job of keeping straight the communications among all nodes on the network. It sets boundaries (called bracketing) for the beginning and end of the message, and establishes whether the messages will be sent half-duplex, with each computer taking turns sending and receiving, or full-duplex, with bothcomputers sending and receiving at the same time. The details of these decisions are placed into a session header.

4 The transport layer protects the data being sent. It subdivides the data into segments,creates checksum tests - mathematical sums based on the contents of data - that can be used later to determine if the data was scrambled. It can also make backup copies of the data. The transport header identifies each segment'schecksum and its position in the message.

5 The network layer selects a route for the message. It forms data into packets, counts them, and adds a header containing the sequence of packets and the address of the receivingcomputer.

6 The data-link layer supervises the transmission. It confirms the checksum, then addresses and duplicates the packets. This layer keeps a copy of each packet until it receives confirmation from the next point along the route that the packet has arrived undamaged.

sending computer — receiving computer

application layer
header
presentation layer
header
session layer
header
transport layer
header
network layer
header
data-link layer
physical layer
intermediate node
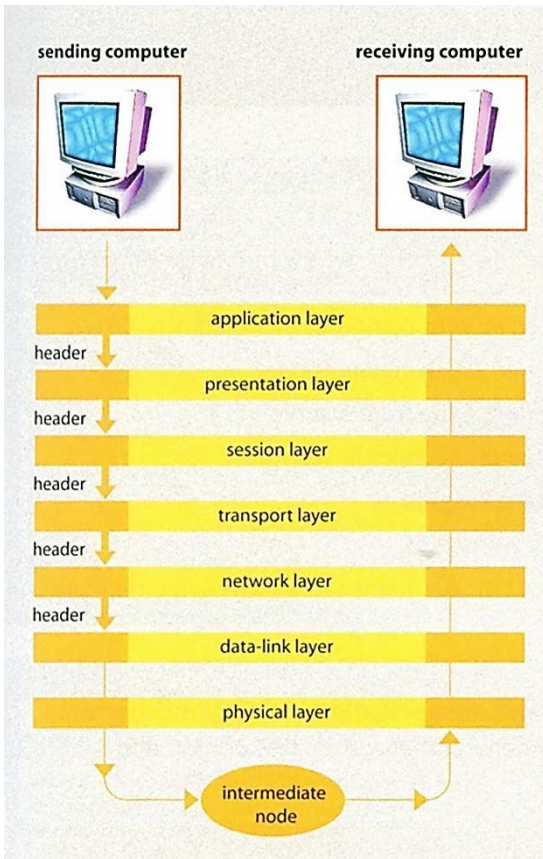
7 The physical layer encodes the packets into the medium that will carry them - such as an analogue signal, if the message is going across a telephone line – andsends the packets along that medium.

8An intermediate node calculates and verifies the checksum for each packet. It may also reroute the message to avoid congestion on the network.

9At the receiving node, the layered process that sent the message on its way is reversed.The physical layer reconverts the message into bits. The data-link layer recalculates the checksum, confirms arrival, and logs in the packets. The network layer recounts incoming packets for security and billing purposes. The transport layer recalculates the checksum and reassembles the message segments. The session layer holds the parts of the message until the message is complete and sends it to the next layer. The presentation layer expands and decrypts the message. The application layer converts the bits into readable characters, and directs the data to the correct application.

['How Computers Work' by Ron White and Timothy Edward Downs
(Ziff-Davis Press) – Extractin PC Magazine, February 1993)]

4.9.1 Find the answers to these questions in the following text.

1   Into what units is data subdivided by the following layers?
 a transport layer
 b network layer
2   What is the purpose of a transmission checksum test?
3   How long does the data-link layer keep a copy of each packet?
4   What processes can be carried out at intermediate nodes?
5   Which network communications layer is described by each of the following statements?
 a Makes sure that the message is transmitted in a language that the receiving computer can understand
 b Protects the data being sent
 c Encodes and sends the packets
 d Supervises the transmission
 e The part of a communications process that a user sees
 f Starts communications and looks after communications among network nodes
 g Chooses a route for the message
 h Makes backup copies of the data if required
 i Confirms the checksum, then addresses and duplicates the packets

4.9.2 Re-read the text to find the answers to til these questions.

1 Match the terms in Table A with the statements in Table B.

Table A	Table B
ABracketing BHalf-duplex CFull-duplex DChecksum	i Transmission mode in which eachcomputer takes turns sending and receiving ii Mathematical calculations based on the contents of data iii Set boundaries for the beginning and end of a message iv Transmission mode in which both computers send and receive at the same time

2 Mark the following statements as True or False:

a Most of the work that an application does to prepare a message for sending over a network is not seen by the user.

b ASCII is always used to transmit data, c The encryption layer compresses the message.

d The network layer keeps track of how many packets are in each message.

e The network layer keeps a copy of each packet until it arrives at the next node undamaged.

f Analogue signals are used on ordinary telephone lines.

g When a message arrives at its destination, it passes through the same seven network communications layers as when it was sent, but in reverse order.

3 Identify which layer attaches the following headers to a network transmission:

a Specifying the language, the compression and encryption schemes

b Identifying each segment's checksum and its position in the message

c Containing the sequence of packets and the address of the receiving computer

d Marking the beginning and end of the message and specifying whether the messages will be sent half-duplex or full- duplex

e Identifying the sending and receiving computers

4 Fill in the missing words in the following sentences then put the sentences in the correct order:

a The checksum is recalculated by the _____ layer which also reassembles the message

b The message is _____ and _____ by thepresentation layer.

c The message is reconverted into _____ bythe physical layer.

d The session layer then sends the message tothe next _____

e The application layer converts the bits into characters, and directs the data tothe correct _____.

f The incoming _____ are recounted by thenetwork layer for _____ and billingpurposes.

g The _____ layer confirms the arrival of thepackets, _____ them in, and calculates the _____ for each packet.

h The parts of the message are _____ by the _____ layer until the message is.

5 The Internet

5.1 Match each of the Internet services in Column A with the uses in Column B.

Column A	Column B
1 IRC	a logging on to your computer at a distance
2 MOOs	b sending and receiving messages
3 email	c downloading a file from a server
4 FTP	d chatting to other users in real-time
5 WWW	e accessing newsgroups
6 Telnet	f browsing webpages
7 Usenet	g taking part in simulations in a shared environment

5.2 Computer-Mediated Communication (CMC)

Work in groups of three, A, B, and C. Read one of these examples of CMC and complete this table.

Extract	A	B	C
Type of CMC			
Number of participants			
Topics			
Synchronous or asynchronous			
Special features of this type of CMC			

Extract A

```
Inside the lounge of the House of Language.
There is a television in the corner.
You see the following exits: east and north
Hank, Spartacus, Diana, Tony (resting)

Hank says, 'have any of you guys tried batmud? :)'
Diana says, 'no'
Spartacus says, 'what is it?'
Hank says, 'it's a virtual reality game. you'll find it at: bat.org'
Diana groans.
Diana says, 'these things are addictive. You spend *hours*on them.'
Rupert appears with a flash of lightning.
Spartacus says, 'we have a new participant. welcome Rupert!'
Rupert says, 'Thanks. How do you get to the kitchen?'
Hank says, 'type 'go kitchen'. You can find the instructions on 'help topics' '
Rupert says, 'Do you use Telnet?'
Diana says, 'use tf...it's much better.'
```

Extract B

Re: Star Wars   moviebelle   3/10/05 3.25 pm

What can I say? I enjoyed the three older films but The Phantom Menace was so cheesy and so un-Star Wars that it didn't seem to fit in with the others. I mean, it was so commercial and so inane. Maybe he was trying to appeal to the younger generation.

This is a Reply to: Msg 145 by pinkpanther

Re: Star Wars   cinemachick   3/10/05 4.18 pm

you know, most of the star war fans I know are in their thirties. lol.

OH! and Unforgiven. that's a great western. it's so not the stereotypical western! I mean, there's no good guy. it's such a kick ass movie!

This is a Reply to: Msg 146 by moviebelle.

Extract C

From: Allan Wind <allwind@ls.net>
Newsgroups: alt.fan.elvis-presley
Sent: 3 November 2005 10.51
Subject: Re: Latest all-time Top 10 albums
EG <eg@nospam.com>writes:>

>ONLINE VOTING
>http://www.ultimatecharts.com
>
>1Beatles Revolver
>2 Beatles Sgt Pepper's Lonely Hearts Club Band
>3 Elvis Presley The Sun Collection
>4 Beach Boys Pet Sounds
>5 Marvin Gaye What's Going On
>6 Michael Jackson Thriller
>7 Sex Pistols Never Mind The Bollocks
>8 Nirvana Nevermind
>9 Oasis (What's the Story) Morning Glory?
>10 Beatles The Beatles (White Album)
>
>The voting is very close

I can't say what my top fave albums are but here are some artists I enjoy. ELVIS, ORION, Buddy Holly, Roy Orbison. Keep ELVIS #1 & Jimmy "ORION" Ellis king of the soundalikes, Allan.

5.3 Compare results orally with the others in your group. Complete a table for each of the other extracts using the information the others provide.
HELP box

Warnings	
Where might you see these warnings?	
a. *Never give out your home address or phone number.*	1. computer handbook
	2. Computer Lab notice
b. *This appliance must be earthed.*	3. advice on taking part in IRC
c. *Avoid turning off main power while computer is running.*	4. technician's handbook
	5. Data protection act
d. *It is an offence to make unauthorised access to computer material.*	6. chassis of computer

e. No smoking, eating or drinking at the computer.

f. A machine which has been exposed to a moist atmosphere should be given time to dry out before being put into use.

Warnings are used to ensure safety, to prevent damage to equipment and breaches of security, and to ensure the law is not broken. The simplest warnings are basic instructions NOT to do something:

Don't do X.   *Avoid Xing.*

No Xing.   *Never do X.*

Sometimes the warning is twinned with matching good practice:

Always do Y; never do X.

Do Y rather than doing X.
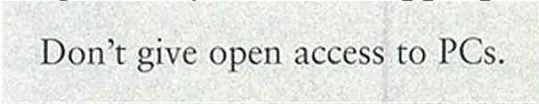
Warnings may be made stronger by using **must/must not** and in some cases **should/should not.** For example:

The wire linking a static earthing band to earth must contain a resistor of at least 1 megohm.

If there is any reason to fear the warning may not be understood, a reason for the warning may be added. For example:

Never remove ICs with a screwdriver. *The pins are very fragile.*

5.4 Rewrite each of these warnings according to the prompt. Add a reason to the warning where you think it appropriate.

1.
> Don't give open access to PCs.

Avoid …

2.
> You must not use your own programs on these machines.

Never…

3.
> No Coffee in this lab

... must not...

4.

**Avoid giving financial information
in a chat room.**

Don't…

5.

NEVER GIVE OUT YOUR PASSWORD.

Always…

6.

Don't use out-of-date anti-virus software.

Use...

7.

Never use a computer that has been standing for a
long time in a cold environment without waiting
until it has reached normal room temperature.

Always…

8.

Cards must not be removed from their anti-static
packing until required.

Never…

9.

Use an IC extraction tool; don't use a screwdriver.

... rather than ...

10.

Always ensure the power is switched off when
working on a computer.

... must not...

5.5 Translate some of the rules for computer use in your own college or university into English. Compare your translations with others in your group and agree on the best English versions.

5.6 Choosing an ISP

Read these hints on choosing an ISP. Then decide which of the options available offer the best deal to these users. Be prepared to defend your choice.

1　　a student looking for a cheap package
2　　a small business
3　　someone who enjoys online gaming
4　　someone who sends occasional emails

Using an ISP requires no new technology - all you need is a computer, a modem, a telephone line (preferably broadband), and the appropriate software (which is available free of charge when you sign up with the service).

Most of the services are very similar, but it is still worth looking around for a service that offers at least the following features:

High speed

Connection can be provided by standard dial-up using an ordinary modem or by using a broadband connection. Standard dial-up is the slowest at 56 Kbps. Broadband such as ADSL (Asymmetric Digital Subscriber Line) provides different speeds for uploading (sending data) and downloading (receiving data) ranging from 256 Kbps to 2 Mbps.

High Usage Allowance

The amount of data that you are allowed to upload or download in a given time period may be limited. Sending email, browsing the Web or downloading images does not require high usage allowances, downloading MP3 music files requires more. Online gaming and viewing video online will require a high usage allowance. Usage allowance is normally quoted as GB per month.

Good Value Packages

Various packages are available offering different options that can be paid monthly, annually, bi- annually etc. With these packages, after paying the initial fee, Internet access is usually unmetered. You can also opt for pay-as-you-go packages. Look for a package where the initial rate is reduced. You have to compare ISP offers carefully to find a package that provides what you want at the cheapest cost.

CD-ROM or Online sign up

Some ISPs require you to sign up for their service online (which obviously means you already need to have an Internet connection and some experience with setting up a dial-up networking connection). If you are a complete beginner, you'll need an ISP which can provide itssign-up software on CD-ROM that will automatically configure your computer to access the Internet.

Local rate calls

Nearly all ISPs provide local call access numbers. Any ISP that uses a national rate number or charges an initial set up or administration fee should be avoided.

Email

Having several email accounts is very useful - you can separate business and personal email for example, or provide an address for each member of your family. Many ISPs also offer only Web-based mail which is great if you need to get into your computer on the move as you can access it from any computer with Internet access.

POP3 email, however, is faster and more efficient and can be downloaded to your PC to read offline - a combination of the two is ideal.

Junk mail filtering and virus checking

Spam (unsolicited email) is very common. It fills up your storage space and is time consuming to deal with. It is also one of the main sources of viruses that attack your computer. Look for an ISP that provides good filtering services to remove junk mail and viruses before they reach your computer.

Free Web space

A decent amount of free Web space would be around 25-50Mb. This would be sufficient for most of your own personal website developments. Also check to see if there are any restrictions on your use of web space, since some ISPs will not let you use the space for commercial purposes.

Customer Support

The accessibility and quality of customer support provided by ISPs varies greatly and some ISPs make an additional charge for support.

Reliable Service

Of course all the features in the world won't make a scrap of difference if the ISP is unreliable and you find it impossible to log on. Look out for recommendations from friends and shop around.

For further details of ISPs try:
www.net4nowt.com
www.ispa.org.uk

5.7 Write an article for a newsgroup of your choice. Keep it short and choose a meaningful reference name. Pass it to another student for a reply.

5.8 If you have access to newsgroups, browse one of the groups dedicated to computing. They have the prefix comp. Write a reply to one of the articles posted there. You need not post your reply unless you are confident it will be helpful. Ask your fellow students to read it first.

5.9 Specialist Reading

How TCP/IP Links Dissimilar Machines

At the heart of the Internet Protocol (IP) portion of TCP/IP is a concept called the Internet address. This 32-bit coding system assigns a number to every node on the network. There are various types of addresses designed for networks of different sizes, but you can write every address with a series of numbers that identify the major network and the sub-networks to which a node is attached. Besides identifying a node, the address provides a path that gateways can use to route information from one machine to another.

Although data-delivery systems like Ethernet or X.25 bring their packets to any machine electrically attached to the cable, the IP modulesmust know each other's Internet addresses if they are to communicate. A machine acting as a gateway connecting different TCP/IP networks will have a different Internet address on each network. Internal look-up tables and software based on another standard – calledResolution Protocol – areused to route the data through a gateway between networks.

Another piece of software works with the IP-layer programs to move information to the right application on the receiving system. This software follows a standard called the User Datagram Protocol (UDP). You can think of the UDP software as creating a data address in the TCP/IP message that states exactly what application the data block is supposed to contact at the address the IP software has described. The UDP software provides the final routing for the data within the receiving system.

The Transmission Control Protocol (TCP) part of TCP/IP comes into operation once the packet is delivered to the correct Internet address and application port. Software packages that follow the TCP standard run on each machine, establish a connection to each other, and manage the communication exchanges. A data-delivery system like Ethernet doesn't promise to deliver a packet successfully. Neither IP nor UDP knows anything about recovering packets that aren't successfully delivered, but TCP structures and buffers the data flow, looks for responses and takes action to replace missing data blocks. This concept of data management is called reliable stream service.

After TCP brings the data packet into a computer, other high-level programs handle it. Some are enshrined in official US government standards, like the File Transfer Protocol (FTP) and the Simple Mail Transfer Protocol (SMTP). If you use

these standard protocols on different kinds of computers, you will at least have ways of easily transferring files and other kinds of data.

Conceptually, software that supports the TCP protocol stands alone. It can work with data received through a serial port, over a packet-switched network, or from a network system like Ethernet. TCP software doesn't need to use IP or UDP, it doesn't even have to know they exist. But in practice TCP is an integral part of the TCP/IP picture, and it is most frequently used with those two protocols.

[Adapted from 'How TCP/IP Links Dissimilar Machines',
PC Magazine, September 1989]

Application programs		Database and other applications address Net-BIOS		Terminal-emulator programs address FTP		Commercial email programs address SMTP
Net-BIOS program Interfaces that address TCP		Net-BIOS		FTP File Transfer Protocol software addresses TCP		SMTP Simple Mail Transfer Protocol software addresses TCP
Software that performs transmission-control delivery and recovery functions		TCP				**TCP layers**
Software that recognises Internet addresses and UDP routing		IP/UDP				**IP layers**
Network adaptor or serial-port driver software		Driver code unique to the hardware				*This diagram is based on the ISO seven-layer model for network structure. It shows the upward path through software and hardware that makes TCP/IP a viable means of data transfer between dissimilar machines linked in a network.*
Network adaptor or serial-port				RS-232C to X.25, modem, or other services		

To network

5.9.1 Find the answers to these questions in the following text

a. What purpose does the Internet address have apart from identifying a node?
b. What data-delivery systems are mentioned in the text?
c. What do IP modules need to know about each other to communicate?
d. How many Internet addresses does a gateway have?
e. What does UDP software do?
f. When does the TCP part of TCP/IP come into operation?
g. What processes are performed by TCP software to provide reliable stream service?
h. What standard protocols are mentioned which are used to deal with the data after TCP brings it into the computer?

5.9.2 Re-read the text to find the answers to these questions.

1. Match the terms in Table A with the statements in Table B.

Table A	Table B
a Internet address	i Standard used for software that routes data through a gateway
b Resolution Protocol	ii Standard used by software that moves information to the correct application on the receiving system of a network
c Look-up table	iii Standard used by software that manages communication exchanges between computers on the Internet
d Gateway	
e User Datagram Protocol	iv A 32-bit number identifying a node on an IP network
	v Stored information used to route data through a gateway
f Transmission Control Protocol	vi A device for connecting dissimilar networks

2. Mark the following statements as True or False:

a Internet addresses are an integral part of the IP protocol.
b Internet addresses can be written as a series of numbers.
c UDP software provides the final routing for data within the receiving system.
d UDP recovers packets that aren't successfully delivered.
e TCP only works with packet-switched networks.
f TCP only works when it is combined with IP.

6 The World wide Web
6.1 Study this URL (Uniform Resource Locator).
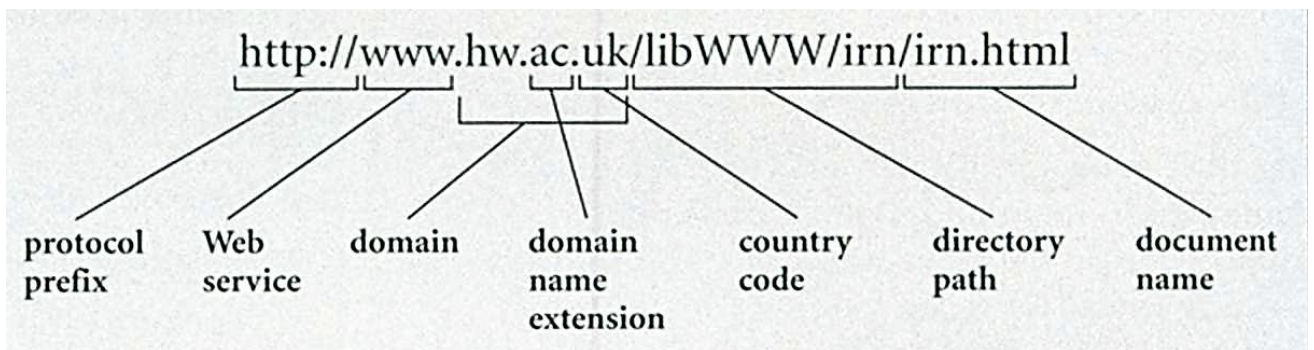
Fig 6.1Uniform Resource Locator

Which part of the address tells you:
   1   the university is in the UK?
   2   this is a webpage?
   3   the type of transmission standard your browser must use to access the data?
   4   this points to the computer where the webpage is stored?
   5   this is where the webpage is stored in the computer?
   6   this is a university?
   7   this uses the Web service?

6.2 Study these approved domain name extensions and their meanings. Then match these suggestions for new extensions to their meanings.

Extension	Meaning
.aero	aviation industry
.biz	businesses
.com (.co in UK)	commercial
.coop.	cooperatives
.edu (.ac in UK)	educational and research
.gov	government
.info	general use
.int	international organisation
.mil	military agency
.museum	museums
.name	individuals
.net	gateway or host
.org	non-profit organisation
.pro	professionals

Suggested extension	Meaning
1 .firm	a informative
2 .store	b cultural or entertainment
3 .web	c personal
4 .arts	d firm or agency
5 .rec	e online retail shop
6 .info	f Web-related
7 .nom	g recreational

6.3 ListeningStudy this diagram which illustrates how your browser finds the webpage you want. Label these items:

a. Router
b. Domain Name System (DNS) server
c. Remote Web server
d. Browser PC
e. URL
f. InternetProtocol address

Fig 6.2How your browser finds the page you want

6.4 Now listen to this recording which explains how the process works and take brief notes on each stage. For example:

Stage 1
Click on a webpage hyperlink or URL.
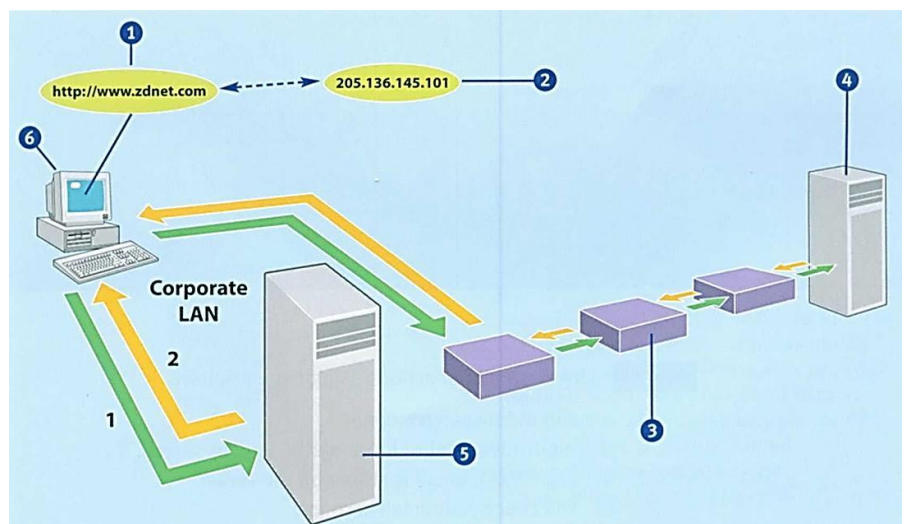The browser sends the URL to a DNS server.

HELP box
Time clauses

What is the relationship between each of these pairs of actions?
1 a You click on a URL.
   b Your browser sends it to a DNS server.
2 a The packets are passed from router torouter.
   b They reach the Web server.
3 a The packets may travel by differentroutes.
   b They reach the Web server.
4 a The individual packets reach the Webserver.
   b They are put back together again.

Each pair of actions is linked in time. We can show how actions are linked in time by using time clauses. For example:

We can use *when* to show that one action happens immediately after another action:

1 *When you click on a URL, your browser sends it to a DNS server.*

We can use *once* in place of *when* to emphasise the completion of the first action. It often occurs with the Present perfect. For example:

Once the DNS server has found the IP address, it sends the address back to the browser.

We can use *until* to link an action and the limit of that action:

2 *The packets are passed from router to router until they reach the Web server.*

We can use *before* to show that one action precedes another:

3 *The packets may travel by different routes before they reach the Web server.*

If the subjects are the same in both actions, we can use a participle:

The packets may travel by different routes before reaching the Web server.

We can use *as* to link two connected actions happening at the same time:

4 *As the individual packets reach the Web server, they are put back together again.*

6.5 Link each pair of actions using a time clause.
1.   aYou use a search engine.
      b It provides a set of links related to your search.
2.   aWith POP3, email is stored on the server.
      bYou check your email account.
3.   aYou have clicked on a hyperlink.
      bYou have to wait for the webpage to be copied to your computer.
4   aYou listen to the first part of a streamed audio file.
      bThe next part is downloading.

5   aThe graphics can be displayed gradually.

        bThe webpage is downloaded.

6   aYou receive an email message.

        bYou can forward it to another address.

7   aYou click on a hyperlink.

        bThe browser checks to see if the linked webpage is stored in the cache

8   aYou can bookmark a webpage to make it easier to find in thefuture.

        bYou find a webpage you like.

9   aYou type in a Web address.

        bYou should press the Enter key.

10   aYou click on the Home button.

        bThe browser displays your starting webpage.

6.6 Fill in the gaps in this description of buffering, a way of ensuring that Web video runs smoothly.

Streaming is a way of dealing withbandwidth problems _____[1] youdownload video from the Internet. One key to successful streaming is the process ofbuffering _____[2]you download amovie, the video player stores part of themovie in memory _____[3] playing it.Imagine the buffer as a container filled fromthe top as shown in Fig 3. _____[4] thecontainer is full, the player sends data on for playback from the bottom. Data keepscoming in _____[5] a clip plays. Theuser can view the beginning of the movie _____[6] the rest of the clip downloads. _____[7] connection slowdowns orinterruptions occur, the amount of data in the buffer decreases but as long as some remains, playback is uninterrupted. Playback continues at a steady rate _____[8] the buffer is empty.
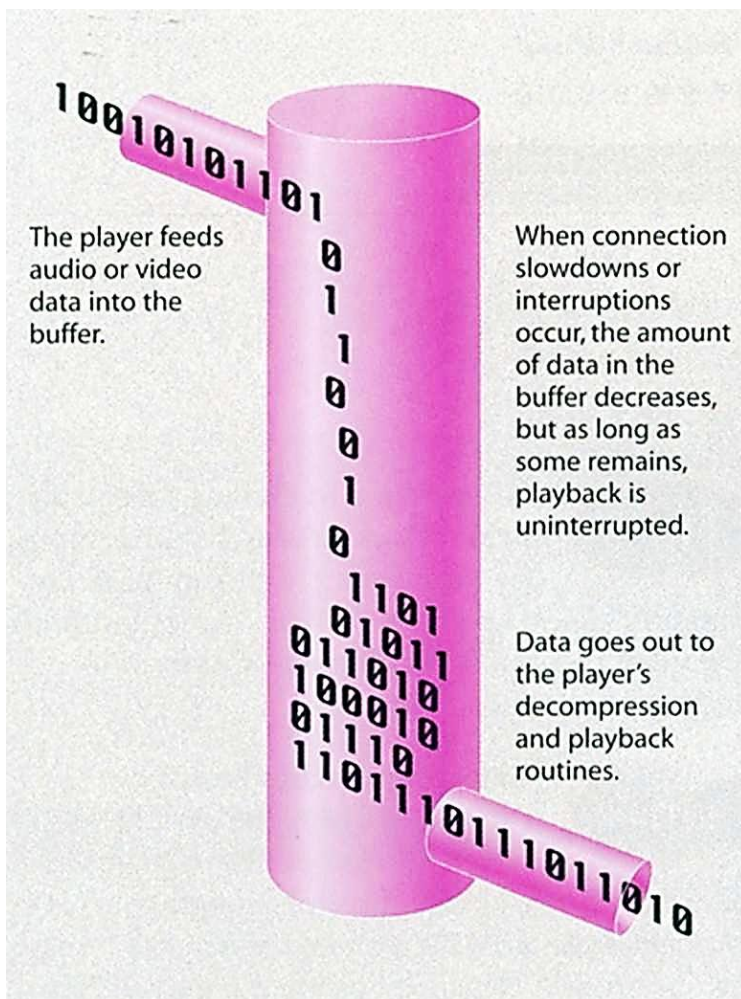
The player feeds audio or video data into the buffer.

When connection slowdowns or interruptions occur, the amount of data in the buffer decreases, but as long as some remains, playback is uninterrupted.

Data goes out to the player's decompression and playback routines.

Fig 6.3Video buffering

6.7 Search engines

Study these tips for conducting searches using Google. Then decide how you would search for the information below. Compare your answers with others in your group and together decide what would be the best search.
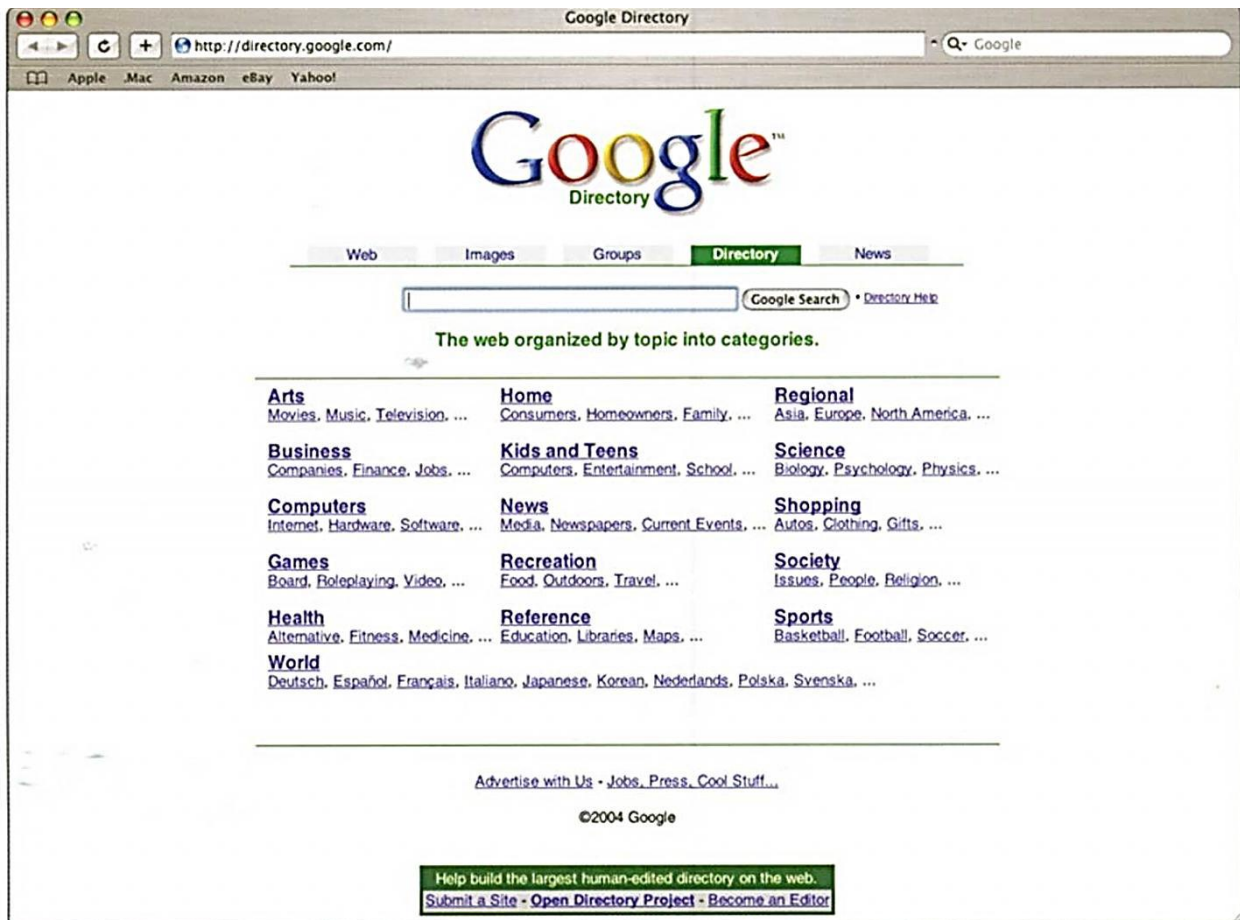
Fig 6.4Google directory pagehttp://directory.google.com

Tip 1 Choosing Keywords Choose your keywords wisely. Try the obvious first and be as specific as possible. Typing in "football" is unlikely to find information on your favourite team. Entering the exact name of the team, for example Arsenal Football Club, should get results.

Tip 2 Refining your search Google returns pages which contain all your search terms. To make your search more specific, add more terms. The order in which you type the terms will affect the results. For example, to find information about Russian landings on the moon, type "moon landings Russian".

Tip 3 "-" searches To exclude a particular item from your search, put a minus sign immediately in front of it. For example, "moon landings Russian" -American finds pages that mention Russian but not American landings.

Tip 4 Category searches Search by category to narrow down the number of relevant pages. The Coogle Web Directory shown above (directory.google.com) is a good place to start. For example, Reference > maps > region > Asia > Nepal will produce a map of Nepal.

Tip 5 Definitions Google will search for definitions online. To find a definition, type define: followed by the words you want to know about. For example, to find a definition of "dongle", type define: dongle. For technical terms you can try labs.google.com/glossary.

Tip 6 Advanced searches Use Google Advanced Search page to finetune your search. You can specify language, date, occurrences (anywhere on the page, title, URL) and other options. You can also specify words which should not appear on the page.

Tip 7 Numrange searches You can specify that your result contains numbers within a range you set. The numbers can be quantities of all kinds, prices, years, weights, etc. For example, to search for information on Celtic Football Club between 1870 and 1880, type "Celtic Football Club 1870... 1880".

Tip 8 Phrase searches Google ignores common words like 'and', 'but' and 'to'. To search for complete phrases including such words enclose your search words in double quotes (""). For example, "I have nothing to offer but blood, toil, tears and sweat."

Tip 9 "OR" searches To find pages that include either one keyword or another, insert OR between the words. For example, "alternative energy solar OR wind".

Tip 10 Image searches To search for images, select the Images option and make your search as specific as you can. You can limit your search to specific file types, for example GIF or JPEG, like this: lion filetype:jpg

1. the meaning of 'spoofing'
2. sumo wrestling in Hawaii, not Japan
3. satellite receivers between $250 and $400
4. picture of an African elephant, not Indian, in GIF
5. today's headline in the South China Morning Post, Hong Kong
6. complete this quotation, "Ask not what your country can do for you..."
7. What system do the latest DVD video recorders use?
8. recipe for hazelnut or chocolate chip brownies
9. picture of David Beckham, not Victoria
10. recent pages in English only with Inca and Peru in the title

6.8 Test your answers using Google.

6.9 Write your own description of how your browser finds the page you want. Use Fig 6.2 to help you.

6.10 Specialist Reading

Web mail systems use some of the same protocols as client/server mail. Some can access an ISP-based POP3 mailbox, allowing you to read your mail anywhere you can find a browser.
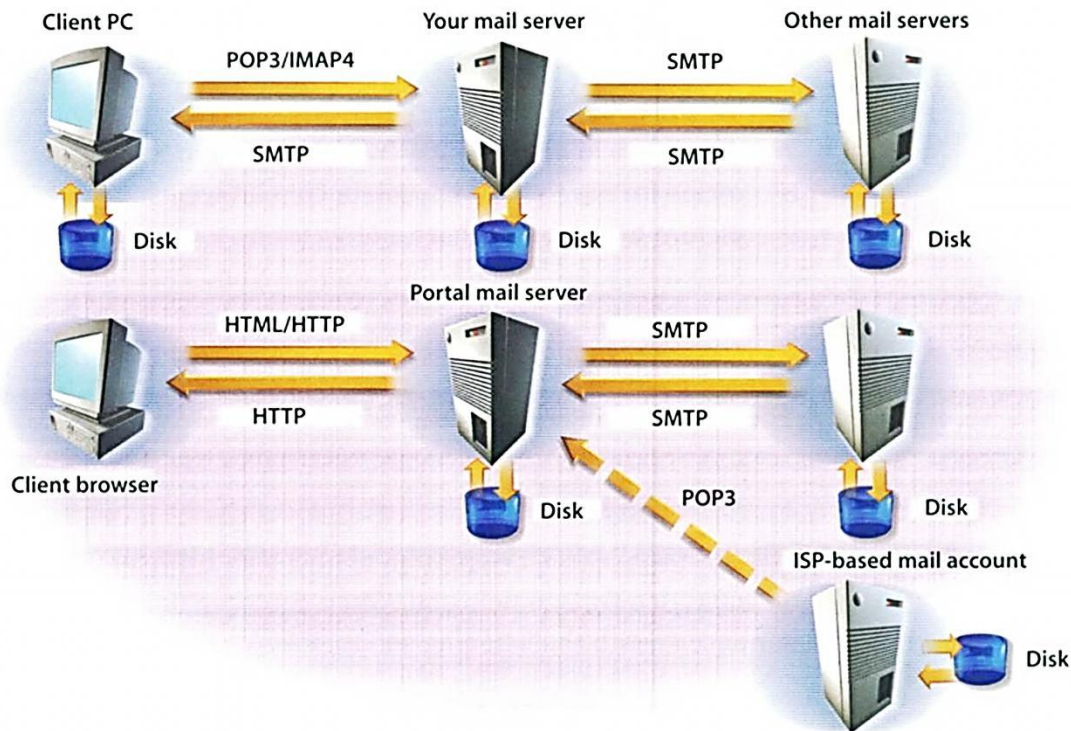
Email Protocols

Although the format of a mail message, as transmitted from one machine to another, is rigidly defined, different mail protocols transfer and store messages in slightly different ways. The mail system you're probably used to employs a combination of SMTP and POP3 to send and receive mail respectively. Others may use IMAP4 to retrieve mail, especially where bandwidth is limited or expensive.

Simple Mail Transfer Protocol

SMTP is used to transfer messages between one mail server and another. It's also used by email programs on PCs to send mail to the server. SMTP is very straightforward, providing only facilities to deliver messages to one or more recipients in batch mode. Once a message has been delivered, it can't be recalled or cancelled. It's also deleted from the sending server once it's been delivered. SMTP uses 'push' operation, meaning that the connection is initiated by the sending server rather than the receiver. This makes it unsuitable for delivering messages to desktop PCs, which aren't guaranteed to be switched on at all times.

In host-based mail systems, such as Unix and Web mail, SMTP is the only protocol the server uses. Received messages are stored locally and retrieved from the local file system by the mail program. In the case of Web mail, the message is then translated into HTML and transmitted to your browser. SMTP is the only protocol for transferring messages between servers. How they're then stored varies from system to system.

Post Office Protocol

POP is a message-retrieval protocol used by many PC mail clients to get messages from a server, typically your ISP's mail server. It only allows you to download all messages in your mailbox at once. It works in 'pull' mode, the receiving PC initiating the connection. PC-based POP3 mail clients can do this automatically at a preset interval. When you use your Web mail account to access a POP3 mailbox, the mail server opens a connection to the POP3 server just as a PC-based application would. The messages are then copied into your Web mailbox and read via a browser.

Since POP3 downloads all the messages in your mailbox, there's an option to leave messages on the server, so that they can be picked up from different machines without losing any. This does mean that you'll get every message downloaded every time you connect to the server. If you don't clean out your mailbox regularly, this could mean long downloads. When using a Web mail account to retrieve POP3 mail, be careful about leaving messages on the server – iftoo many build up, each download will take a long time and fill up your inbox. Many Web mail systems won't recognise messages you've already downloaded, so you'll get duplicates of ones you haven't deleted.

Internet Mail Access Protocol IMAP is similar in operation to POP, but allows you more choice over what messages you download. Initially, only message headers are retrieved, giving information about the sender and subject. You can then download just those messages you want to read. You can also delete individual messages from the server, and some IMAP4 servers let you organise your mail into folders. This makes download times shorter and there's no danger of losing messages.

6.10.1 Find the answers to these questions in the following text.
1. Name three different email protocols mentioned in the text.
2. Which email protocol is used to transfer messages between server computers?
3. Why is SMTP unsuitable for delivering messages to desktop PCs?
4. Name two host-based mail systems mentioned in the text.
5. Where are email messages stored in an SMTP system?
6. What happens when you use your Web mail account to access a POP3 mailbox?
7. Give an advantage and a disadvantage of having an option to leave POP3 messages on the server.
8. What are the advantages of using the IMAP4 protocol?

6.10.2 Re-read the text to find the answers to these questions.
1Mark the following statements as True or False:

a Different mail systems transfer emails in different ways.
b IMAP4 requires more bandwidth than the other email protocols.
c SMTP is used for sending emails from a PC to a server.
d SMTP delivers messages one at a time.
e SMTP does not allow a delivered message to be cancelled.
f SMTP is only one of many protocols used to send mail between servers.
g POP protocol allows the user to download one message at a time.

2 Match the terms in Table A with the statements in Table B. Table A

Table A	Table B
a SMTP b 'Push' operation c POP d 'Pull' operation e IMAP	i An email transfer process in which the connection is initiated by the sending computer rather than the receiving computer. ii A mail transfer protocol that initially only retrieves the message headers. iii An email transfer process in which the receiving computer initiates the connection. iv A simple mail transfer protocol that is used to send messages between servers. v A message-retrieval protocol that downloads all email messages at the same time.

7 Websites

7.1 What features make a good website? Make a list of the key features you look for. Then compare your list with others in your group.

7.2 Study these seven points for evaluating websites. What questions would you ask to evaluate a website on each point?
1   Design
2   Navigation
3   Ease of use
4   Accuracy
5   Up to date
6   Helpful graphics
7   Compatibility

7.3 Understanding the writer's purpose
Knowing who the writer is, what their purpose is and who they are writing for can help us to understand a text.
Study these extracts from a text. Decide:
1   What special expertise does the author have in this field?
2   Who are the intended readers?
3   What is the author's purpose?

Title:
Help Web-farers find their way.

Subtitle:
Here are nine ways to make it easy for visitors to navigate your website.

Author information:
Matt Mickiewicz is an expert in website design.

Source:
Windows Magazine, E-Business section

First paragraph:
Your website may be chock full of information about your company and its products, but if visitors to the site can't easily find their way around its pages they may never return. Besides content, the most important aspect of a website is its navigation scheme. Unfortunately, that may also be the most commonly neglected design consideration.These nine site-design pointers will help you build an effective navigation system.

7.4 Work in groups of 3, A, B and C. Summarise the advice in each text you read in one sentence.

Student A Read texts 1 to 3.
Student B Read texts 4 to 6.
Student C Read texts 7 to 9.

1   Trust Text
It's tempting to spice up pages with graphics - but sometimes even a little is too much. If possible your navigation system should be based on text links, rather than image maps or graphical buttons. Studies have shown that visitors will look at and try text links before clicking on graphical buttons.

2   Next Best ALTernative
If you must use a graphical navigation system, include descriptive ALT text captions.The ALT text will make it possible for visitors who use text browsers such as Lynx or who browse with graphics turned off, to find their way around. In addition to the graphical navigation buttons, be sure to include text links at the bottom of every page that provide a clear route to the main areas of your site.

3   Map It
A site map offers a good overview of your site and will provide additional orientation for visitors. It should be in outline form and include all the major sections of your site with key subpages listed beneath those sections. For example, you may group your FAQ, Contact and Troubleshooting pages so they're all accessible from a Support page. It's a good idea to visit a few larger sites to get some ideas on designing an effective site map.

4   Forego Frames
Avoid frames wherever possible. Most veteran browsers dislike them and they can be confusing for visitors who are suddenly presented with multiple scrollbars. If you're committed to using frames on your site, you'd better commit yourself to some extra work too, because you'll have to create a no-frames version of your site for visitors whose browsers don't support frames.

5 Consistency Counts

Don't change the location of your navigation elements, or the color of visited and not-visited links from page to page. And don't get clever with links and buttons that appear and disappear: turning things on and off is usually done as an attempt to let visitors know where they are at a site but more often than not it ends up confusing them.

6 Just a Click Away

Keep content close at hand. Every page on your site should be accessible from every other one within four clicks. You should regularly reexamine your page structure and links, and make necessary adjustments. People come to your site to find information – don't make them dig for it.

7 Shun Search

Most sites have a search function, but try to discourage its use as much as possible. Even the best search engines turn up irrelevant matches, and visitors may not know how to use yours effectively. Logical, clearly placed links are more likely to help visitors find what they want.

8 Passing Lanes

Provide multiple paths through your site so visitors aren't restricted to one style of browsing. For most sites, a pull-down navigation menu is an easy addition that offers an alternative route through your pages, without wasting space.

9 Overwhelming Options

Don't overwhelm visitors by presenting dozens of places that they can go. A large number of choices is not necessarily a good thing.

Finally, if you feel like curling up with a good book, I recommend Jennifer Fleming's *Web Navigation: Designing the User Experience* from O'Reilly &Associates.

7.5 Now exchange information orally to complete this table summarising the whole text.

Text	Advice
1	
2	
3	
4	
5	
6	
7	
8	
9	

HELP box
Giving advice

Study these examples of advice from the texts you read in Task 4.
You can use the modal verb *should:*

    *1   Your navigation system **should** be based on text links.*

You can use an imperative:

    *2   **Avoid** frames wherever possible.*

    *3   **Don't change** the location of your navigation elements.*

Note that *avoid* is followed by the *-ing* form. For example:

    *4   Avoid **using** frames.*

Had better is for advice which is close to a warning. It indicates something unpleasant will happen if the advice is not taken:

    *5   If you're committed to using frames on your site, **you'd better** commit yourself to some extra work too.*

Other ways to give advice are:

    *6   **I recommend** Jennifer Fleming's Web Navigation.*

    *7   **It's a good idea** to visit a few larger sites.*

To make advice more persuasive, you can add the reason for your advice. For example:

It's a good idea to visit a few larger sites [advice] *to get some ideas on designing an effective site map* [reason].

7.6 Evaluate any one of these sites using the seven points listed in Task 7.2 and any of the advice given on website design in this unit.

    www.environment-agency.gov.uk
    www.compaq.com
    www.abcissa.force9.co.uk/birds
    news.bbc.co.uk
    www.orange.co.uk

7.7 With the help of the texts summarised in Task 7.5, give advice on these aspects of navigation design. Use a variety of ways. Add reasons for your advice where possible.

1   text links
2   graphical buttons
3   ALT text captions
4   site map
5   frames
6   position of navigation elements
7   logical links
8   search function
9   number of links on a page

7.8 With the help of Task 5.6, give advice on these features of Internet Service Providers.

1   Initial set up fee
2   Connection speed
3   Web space
4   Access to newsgroups
5   Customer support
6   Reliable service

7.9 Work in pairs, A and B. Complete your website flowchart with the help of your partner. Do not show your section of the flowchart to your partner but do answer any questions your partner asks. Make sure all links are included in your completed chart.

Student A Your section of the flowchart is on page 60.
Student B Your section of the flowchart is on page 62**.**

7.10 Write an evaluation of one of the websites listed in Task 7.6 or a website of your choice.

7.11 Specialist Reading

XML Takes on HTML

Standard Generalized Markup Language (SGML) is the language that spawned both HTML (HyperText Markup Language) and XML (extensible Markup Language). SGML is not a true language, it is a metalanguage, which is a language from which you can create other languages. In this case, it is the creation of a markup language (a system of encoded instructions for structuring and formatting electronic document elements).

HTML is an application-specific derivation of SGML. It is a set of codes, generally used for webpages, that creates electronic documents according to rules established by SGML. HTML is a language that is all about the presentation of your information, not what the actual data is. You can, therefore, say that HTML is a presentation language.

XML is a subset of SGML, but it is also, like SGML, a metalanguage. XML defines a specific method for creating text formats for data so that files are program independent, platform independent, and support internationalisation (able to read different languages, etc.). In fact, because XML is an extensible language, you don't even have to have a browser to interpret the page. Applications can parse the XML document and read the information without any human intervention.

XML, unlike HTML, is concerned with the identity, meaning and structure of data. XML is extensible because it lets website developers create their own set of customised tags for documents. This ability to define your own tags is the main feature of XML, and it is what gives developers more flexibility.

By defining your own markup tags, you can explicitly define the content in the document. This makes XML a more intelligent markup language than HTML. For

XML – INFORMATION ABOUT INFORMATION

How the same information is marked up for HTML and XML web pages. **Source: IBM**

Rendering HTML

```
<p> <b>Mrs. Mary McGoony</b>
<br>
1401 Main Street
<br>
Anytown, NC 34829</p>
```

HTML tags describe how the data will appear on screen.

```
□                              @ BROWSER

    Mrs. Mary McGoony
    1401 Main Street
    Anytown
    NC34829
```

Rendering XML

```
<address>
<name>
<title>Mrs.</title>
<first-name>Mary</first-name>
<last-name>McGoony</last-name>
</name>
<street>1401 Main
Street</street>
<city>Anytown</city>
<state>NC</state>
<zipcode>34829</zipcode>
...
</address>
```

XML tags contain information about what the data is.

example, in HTML, you could have a paragraph tag <p> preceding a paragraph about baseball. Your Web browser sees this tag and knows to present the following text as a paragraph. All your browser knows about the text, however, is that it is text; it doesn't know that it is specifically about baseball. In an XML document, you could define a <BASEBALL> tag to refer specifically to the text in the paragraph in your document. This way, when your XML browser examines the document, the document knows what data it contains, and that makes the content moreintelligent. Search engines that make use of XML data can do a better job of finding the pages you are looking for because of the intelligent nature of XML content.

XML, by design, does not deal with how the data is displayed to the end user. Because HTML is a presentation language, XML documents use HTML tags to help handle the visual formatting of the document. Also, you can use XML in your HTML documents to provide metadata, which is data about data in the document.

XML will do to the Web and e-commerce what HTML originally did to the Internet. XML and its associated applications have the potential to blow the roof off the Internet and how we do business.

[Adapted from 'XML Takes On HTML', Smart Computing Guide Series
Volume 8 Issue 1, January 2000.
Graphic from 'Web learns new language',
Guardian Online, Thursday November 25 1999]

7.11.1 Find the answers to these questions in the following text.

1 What languages were derived from SGML?
2 What type of language is used to structure and format elements of a document?
3 Name two metalanguages.
4 What elements of data is XML (but not HTML) concerned with?
5 What is meant by the term 'extensible'?
6 What makes XML a more intelligent language than HTML?
7 What does the HTML markup tag <p> indicate?
8 Why are search engines able to do a better job with XML documents?
9 What type of website is particularly likely to benefit from XML?

7.11.2 Re-read the text to find the answers to lafl these questions.
1   Mark the following statements as True or False:

a HTML is no longer useful for creating webpages.

b SGML is more complex than XML.

c XML files can only be used on Unix systems.

d XML files can only be read by browser programs.

e HTML is a markup language.

f Internet searches will be better with XML files.

2   Match the terms in Table A with the statements in Table B.

Table A	Table B
aMetadata	i Extensible markup language
bMetalanguage	ii A coding system used for structuring and formatting documents
cHTML	
dXML	iii Data about data
eMarkup language	iv An example of a page presentation language
	v A language from which you can create other languages

8 Webpage Creator

8.1 Match these reviews of websites to their titles. Some words and parts of words have been omitted. Try to replace them.

1   Babelfish
2   Fish I.D.
3   Strangely Satisfying
4   Sheepnet
5   Download.com

Reviews of website

a _____

If you want to buy old comics, old toys such as plastic fish for your bath, nodding dogs for your car and many other strange and bizarre items, this site is for you.

b _____

Everything you ever wanted to know or didn't want to know about ***** Breeds, pictures and fascinating facts including the information that almost all

***** are either white or black. Guaranteed to raise a smile.

c _____

Trouble identifying *****? This site has pictures, quizzes, a special corner for children and a handy reference on all kinds of aquatic life. It also hosts a discussion area for all concerned with the marine environment.

d _____

Can't remember the word in English or any other major language? Try ***** for an instant translation. Easy to use. Just type in your text. Choose the
language you want and select 'Search'. You can also translate websites.
Only drawback is that you get a literal translation. Don't expect ***** to cope with slang or idioms.

e _____

Whether it's demos, full freeware or shareware products you are looking for, the chances are you'll be able to find it here. Rather usefully the site also contains all major drivers and development tools - pretty much anything you could ever want to help you get the most out of your PC really. Well worth a visit whatever it is you're looking for.

8.2 Carry out a survey of websites built by your classmates. Complete this table for at least 4 sites.

NAME _____

SITE NAME _____

TOPIC _____

SITE ADDRESS _____

WHY SPECIAL _____

LAST UPDATED _____

8.3 Listening
John lives in North Dakota. Here he talks about his website.
Listen to the recording and complete this table about his site.

SITE NAME _____

TOPIC _____

SITE ADDRESS _____

WHY SPECIAL _____

LAST UPDATED _____

8.4 Listen to the recording again to find the answers to thesequestions.
1. Why did John choose this topic?
2. Which company produces Dreamweaver?
3. What previous experience did he have of websitecreation?
4. What's the price of his 'free' domain name?
5. What do you think Yahoo! Clubs are?
6. List 4 tips he gives for other website builders.
7. List 3 website addresses he mentions.

8.5 Complete the gaps in this dialogue with *will* or *would* or the reduced forms *'ll* and*'d* where appropriate.

A What _____^{1} you do when you finish your diploma?

B I _____^{2} like to take a course in multimedia.

A How long _____^{3} that take?

B If I choose the certificate, it _____^{4} take 6 months but if Ichose the master's, it _____^{5} take a full year.

A What _____^{6} be the advantage of the master's?

B I guess I _____^{7} have better job prospects.

A When _____^{8} you decide?

B It depends on my finals. If I do well, I _____^{9} go for themaster's.

8.6 Link these statements using an appropriate time clause.

1 a You click the mouse pointer on the file.

 b It is highlighted.

2 a You cannot save a file.

 b You name it.

3 a The files are transferred.

 b The transfer is graphically displayed.

4 a Make sure you have all the details of your set up.

 b You phone the help line.

5 a The OK button is clicked.

 b The copying process begins.

6 a The percentage of file transferred is displayed.

 b Your browser downloads from the Internet.

7 a The virus is not activated.

 b You open the infected file.

8 a You repair a PC.
   b Ensure the machine is disconnected.
9 a Don't open an email attachment.
   b You have virus-checked it.
10a You add memory.
   b Change the BIOS settings.

8.7 Definitions and collocations
Fill in the gap in these definitions.

backbone	bridge	client	gateway	hub
LAN	network	router	server	switch
	thin client	wi-fi		

1. A _____ is an interface enabling dissimilar networks tocommunicate.
2. A _____ is a hardware and software combination used toconnect the same type of networks.
3. A _____ is a network transmission path handling major datatraffic.
4. A _____ is a special computer directing messages whenseveral networks are linked.
5. A _____ is a number of computers and peripherals linkedtogether.
6. A _____ is a network connecting computers over a smalldistance such as within a company.
7. A _____ is a powerful computer storing data shared by allthe clients in the network.
8. A _____ is a network computer used for accessing a serviceon a server.
9. A _____ is a simple computer comprising a processor andmemory, display, keyboard, mouse and hard drives only.
10. A _____ is an electronic device connecting all the datacabling in a network.

8.8 Link each word in column A with a word which it often occurs with from column B. In some cases, more than one link is possible.

Column A	Column B
1. bulletin	board
2. domain	button
3. file	engine
4. graphical	link
5. mobile	map
6. search	message
7. site	name
8. synchronous	page
9. text	phone
10. web	transmission

8.9 Work in pairs, A and B. You both have information about some websites. Find out if your partner can suggest a website to help you with your problems. He or she may not have an answer to all your problems.

Student A Website information and problems are on page 60**.**
Student B Website information and problems are on page 62.

8.10 Visit a website of your choice. Take notes on any special features. You may refer to these seven points for evaluating a site listed in Task 7.2, if you wish. Then make a short presentation to the class on what makes your chosen site special.

1   Design
2   Navigation
3   Ease of use
4   Accuracy
5   Up to date
6   Helpful graphics
7   Compatibility

8.11 Write a brief evaluation of the site you chose in Task 8.10. If you are unable to access a website, list the good and bad points of this home page.

m

8.12 Planning your website Study this flowchart for planning a website. Use it as the basis for a short text providing advice on website planning. Your text should have three paragraphs corresponding to the three stages in this diagram:

      1   Analysis

      2   Design and implementation

      3   Evaluation

Begin your text like this:

You need to plan your website carefully before you go ahead and create it. There are three stages to the planning process:

KEY QUESTIONS WHEN PLANNING YOUR WEBSITE

Careful planning is essential to maximise the impact of your website. It'll take some effort to achieve, but the results will be worth it.

Begin planning website

Analysis

What's the site's purpose?

Who's the target audience?

Design and Implementation

What look, feel and content will the site have?

How will it be created, rolled out and managed?

Evaluation

How do we know if the site is effective?

Begin constructing website

Fig. 8.1 Planning your website

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1. Reviews

Counter-Strike: Condition Zero

PC I Valve/Vivendi | Universal Games |★ ★ ★ ★

Counter-Strike is the world's favourite online game – it sold 1.5m copies, and introduced the concept of co-operative multiplay to an audience of hardcore gamers.

Condition Zero is the first major update to Counter-Strike and, although it offers more to those who wish to play it alone rather than online, it should still prove enormously popular. When played online, the primary improvement concerns the graphics. A number of detailed changes to weaponry, new maps and so on have been introduced. Players might find it disappointingly similar to the original.

But Condition Zero marks Counter-Strike's emergence as a credible single-player game, thanks to the introduction of Al-controlled "bots". You can play full-blown multiplayer- style games by picking a team of bots and fighting enemy bots, or work through an 18- mission single-player campaign and, as you progress, upgrade your team with improved Al- controlled team-mates.

Condition Zero's single-player mode offers a good way of acquiring the skills to prosper in competitive online first person shoot-'em ups.

Steve Boxer

2. Explain to your partner with the help of these notes what DVD disks are, how DVD disks store such large quantities of information and how that information is read.

DVD = Digital Versatile Disk
- can hold complete movie
- like CD in size and thickness
- but CD drives use red laser light, DVD drives use blue
- blue laser has shorter wavelength therefore data can be denser DVDs can be double-sided
- each side can have two layers
- top layer 4.7GB, bottom layer 3.8GB, total capacity = 17GB
- data transfer rate twice rate of CD-ROM

4. Asynchronous transmission

This method is also called start-stop transmission. In asynchronous transmission, data is sent one byte (or character) at a time. Each string of bits making up the byte is bracketed, or marked off, with special control bits. That is, a 'start' bit represents the beginning of a character, and a 'stop' bit represents its end. As a means of checking that the whole character has beentransmitted, an error check bit is generated immediately after each character.

Transmitting only one byte at a time makes this a relatively slow method. As a result, asynchronous transmission is not used when great amounts of data must be sent rapidly. Its advantage is that the data can be transmitted whenever it is convenient for the sender.

7.

'Paula's Plants':
Website overview

Fig 1a Site diagram

(Diagram labels:)
- main page (index.htm) with tool bar to links to other pages
- Contact page (contacts.htm) Provide visitors with contact points
- Product detail (product2.htm) More in-depth information
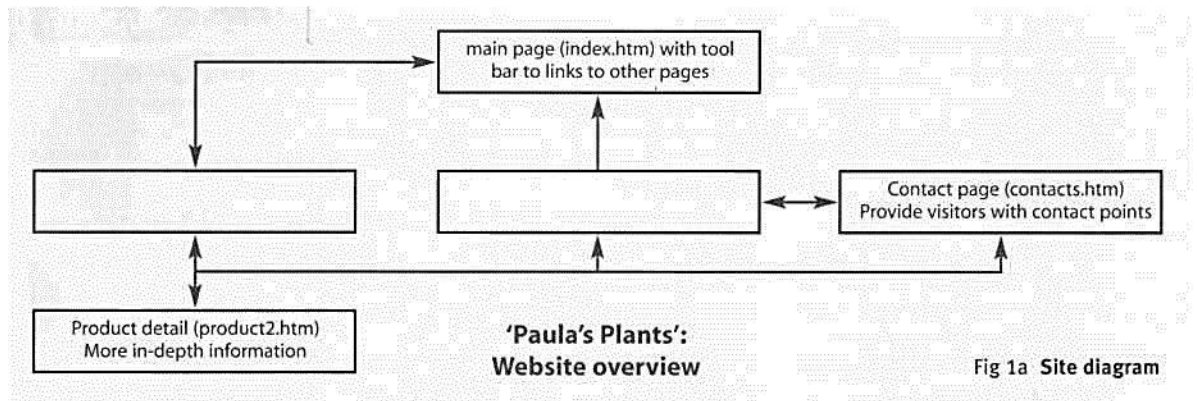
8. Problems

1. You want to brighten up your website.
2. You would like to reserve seats on the London to Edinburgh train.
3. You want some help with a project on computer security.
4. You're feeling a bit flabby and would like to take up marathon running. How can you prepare for this?

Weather Reports

Several weather-related sites can give you up-to-the-minute weather reports and precipitation radar for your city or local region or for an area in which you'll be travelling. You'll also find extended forecasts. Some weather sites provide safety tips for dealing with severe weather.
www.weather.com

Comic Strips

Everyone needs a laugh from time to time, and few things can put a smile on your face more quickly than a classic comic strip. You can check out dozens of your favourite comics and, in some cases, even send a comic strip to a friend.
www.uniteflmeclia.com
www.uexpress.com

Maps

Websites can give you detailed street maps for major cities, or they can give you a map of Interstate highways. Some sites can help you find a particular address or suggest the best method of travel to your destination. You can also print maps at many websites.
www.mapblast.com

1. Reviews

Spiderman 2

PS2, Xbox, GameCube | Activision |★★★★

Despite the fact that this game is based on a film, Spiderman 2 turns out to be one of the best action-adventure games released this year.

Activision has taken a leaf out of Grand Theft Auto's book by including an impressively modelled city (in this case,
New York) and has added a physics engine. So this version of the game not only lets you swing around with all the grace Spidey shows in the movie, but also possesses rigour: sling a
web and it will attach itself to a building and stay attached at the same point.

Spiderman has also acquired a gravity-defying super-jump and countless satisfying moves, such as the ability to run up the sides of buildings, and immobilise enemies in a web and swing them around to take out fellow baddies. Try leaving webbed baddies hanging from lamp posts.

Gloriously varied missions build up a decent storyline, evil bosses abound, and you can even deliver pizzas. Climb to the top of the Empire State Building, swallow-dive into an elegant free-fall, and defy gravity with a judiciously timed web just before you hit the ground.

Even though it is associated with a film, you should take it seriously.

Steve Boxer

2. Explain to your partner with the help of these notes what MPEG Video is and how it operates.

MPEG = method of compressing/decompressing video signals to reduce size by up to 95%

- video sequences stored in series of frames
- intraframe (l-frame) every 1 /3rd second has most important picture information
- between l-frames are predicted frames (P-frames) and bidirectional frames (B-frames)
- P- and B-frames store changes only
- P- and B-frames preserve video quality between l-frames
- Human eye can't detect information discarded

4. Synchronous transmission

Synchronous transmission sends data in blocks of characters. Start and stop bit patterns, called synch bytes, are transmitted at the beginning and end of the blocks. These start and end bit patterns synchronise internal clocks in the sending and receiving devices so that they are in time with each other. Error check bytes are included immediately after each block of charactersto ensure that the whole sequence of characters has been correctly transmitted.

This method is more complicated and expensive than asynchronous transmission. It also requires careful timing between sending and receiving

equipment. It is appropriate for computer systems that need to transmit great quantities of data quickly.

7.

'Paula's Plants':
Website overview

Fig 1b Site diagram
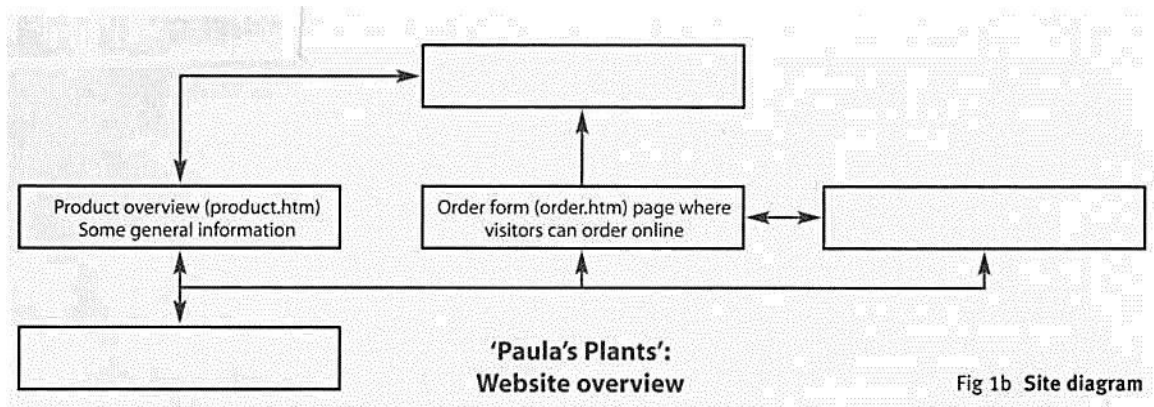
8. Problems

1. You would like to cheer up a friend.
2. You're going to rent a car in the USA and travel from Miami to New Orleans. You would like to plan a route.
3. You're going walking in the mountains this weekend. You would like to know what the chances are of rain.
4. You want to forward a video email attachment you've received to a friend and it won't go.

Travel Research
Whether you're looking for the best airline and hotel fares or researching the best travel destinations, the Web can help. Several websites also offer tips for travelling by aeroplane or with small children. Some allow you to book train tickets.
www.expedia.com
www.concierge.com
www.thetrainline.co.uk

Neon City
If you have a webpage that's looking a little dull, you might want to add some neon signs, words or tubes. Neon City produces a variety of cool neon clipart that you are free to use on your personal webpage so long as you link to the page you got the design from.
www.neoncity.co.uk

Exercise information
If your current exercise program doesn't seem to be working, consult the Web. While Web surfing doesn't qualify as exercise, you can use the Web to find information on an exercise program you'll enjoy. Some websites also help to track your progress.
www.fitnesslink.com
www.runnersworld.com

3. Interview: Computing Support Officer
Task 3.2 PART 1

Clive Erm, I've got a whole lot of files - : folder which I call 'Contract'which has just grown over the years so, er, if go into it and let you see it... these are a.. Word files. Each time a new contract has come along, I've simply added it there and it's got the label sometimes of the client, sometimes it's got a country label. It's got so enormous tha: I'm, er, it's now taking time to find things. What I want to do is to create subfolders for certain countries whe-e we have a lot of clients.

Barbara OK...

C Starting with Japan, for example, so want to have Contract as the main heading, if you like, and I want to be able to have subfolders ...

B Underneath there...

C ... underneath, certainly for Japan,Italy, Finland and Hungary, and there may be others.

Task 3.3 PART 2

B OK. So the way I'll do it is to go through Windows Explorer.

C So, OK, so how do I get into Windows Explorer?

B So let's click on Start on your status bar. The Start button and ...

C Er, sorry, where are we?

B If you bring your cursor down to the very bottom. You see that little status bar that comes up.

C Oh, right. OK.

B And there should be a Windows Explorer option ... And you don't have one!

C Erm, how odd.

B OK. Not a problem though. Instead ofclicking on Programs, you can click on Run on your Start menu and just type in the word Explorer and hit ...

C In this box? Just Explore.

B Explorer. And hit OK. And that should launch it.

C Oh, yeh.

B OK. This is Windows Explorer and if you'll notice next to where it says Windows in your C drive there's a little minus sign.

C Right ...

B If you click on that, that'll just compact your C drive.

C Single click?

B Yes. And that just gets it out of the way so now we can see all of our drives.

C Right ...

B And you store everything on DIRDATA? Is that right?

C Yes.

B So, right next to your C drive there's a little plus sign. If you click on that.

C What... ? OK ...

B That opens up and shows you all your folders.

C Why are... Does the plus indicate that there are other folders?

B Yes. If there were no other folders in there you wouldn't have a little box there. You'd just have the one folder name whatever it was.

C And what's the minus? Is that just open and close?

B Yes, basically. So expand and contract.

C OK...

B And you're storing them in Word, are you?

C Yes.

B So click on the little plus sign next to the Word folder. And that shows you all your folders in Word.

C Right...

B And now you want your Contract folder. So we can click once on Contract and you'll notice on the right-hand side it shows us all the files we have within that folder.

C Right...

B So what we can do now is... in our Explorer window click on File on the menu bar and click on the word New on the top.

C Uhuh, right ...

B And that will bring us another little box up ... And click on Folder. And that's going to create a subfolder in Contract because we had Contract highlighted.

C Ah, OK...

B And now we can give it a new name. It gives a default name of New Folder and we want to type in what we want to actually call it.

C So within ... where it says New Folder, I remove that and I put in whatever thename of the new folder is.

B Yes, you can delete that.

C So let's put in the new name 'Japan' and...

B You can either hit Enter or just click outside the box. OK and is that the only folder you want to create?

C No, I'm going to create Italy, Finland and Hungary.

B OK, so we want to make sure that we have Contract highlighted. Right now Japan remains highlighted and if you clicked File, New and Folder now it would create a folder in Japan.

C Ah, so it would create a sub-sub- folder?

B Right ...

C OK...

B So you just need to click on Contract to make sure it's highlighted and go File and there you are.

C So it's the same again. File, New,Folder.

Task 3.4 PART 3

C OK. Now if I want to start moving into that sub-folder some of these files how do I do that?

B Well how I would do it is ... You'll notice on the left hand ... on the left hand side where it's showing you all your folders... that Contract now has a little plus sign next to it...

C Right...

B ... because we've created sub-folders within Contract.

C Uhuh ...

B So if you click on the little plus sign next to your Contract folder...

C Right...

B ... it shows you your two sub-folders in there.

C Oh, yeh. OK. So Hungary and Japan.

B And on your right hand side you're still looking at all of your files that are within Contract.

C Right ...

B So now you can actually click on one of those files, hold your mouse button down, and drag it over to the subfolder ...

C OK...

B ... and that will drop it into the subfolder.

C This is one?

B Yeh. Bring it over and it'll highlight the sub-folders.

C Just over the top of Japan?

B Yes, because Japan is highlighted now that's telling you that's where it's going to go.

C So just like that. As soon as it's highlighted, that's it?

B Yeh. So if you click on to the Japan folder on the left you'll notice on the right it shows you your file there.

C Oh, right. How do I go back?

B Click on Contract again on the left.

C OK. And that's it.

B Yeh. And if you actually drag anything over there and you realise you've dragged it to the wrong place, and you're not sure if you dragged it to the right place, there is an Undo. Under Edit on the menu bar.

C Right...

B So that's a handy tool. Sometimes you drag something and then your hand twitches and you never know ...

C Right. I think I can do it.

B OK.

Task 6.4 The World Wide Web

To find the webpage you want, you have to click on a webpage hyperlink or enter a URL, a Uniform Resource Locator into a browser. The URL is the address of the page. When you do that, the browser sends the URL to a DNS server.

The DNS server is the Domain Name Server. It uses a look-up table to find the IP address of the Web server referred to in the URL. The IP address is a unique, 32-bit set of numbers. Erm, every computer on the Web has its own IP address.

Once the DNS server has found the IP address, it sends it back to the browser.

The browser then uses this IP address to send a request to the Web server. The request is sent as a series of separate data packets which include both the IP address of the Web server and the IP address of the browser computer. These data packets are first sent to a router computer, which uses the IP address of the Web server to determine the best available route for each packet.

The packets are passed from router to router until they reach the Web server. They may travel by different routes before reaching the server.

As the individual packets reach the Web server, they're put back together again.

The Web server now services the request by sending the requested webpage back to the browser computer. Again it travels as a series of separate data packets from router to router. This time the router uses the IP address of the browser computer to work out the best available path for each packet.

As the packets arrive at the browser computer, they're combined to form the webpage you requested and are displayed in your browser.

Tasks 8.3-8.4 Interview: Wepage Creator

Interviewer How long has your site been up?

John Just a couple of months. It's brand new.

I What's your site all about?

J It's called The Movie Shrine, *www.the* movieshrine.com, and it's just a site with movie reviews, strange things I've noticed about certain films, and lots of links to other movie sites.

I Why dedicate your site to this subject?

J I decided to make a site about movies because I've been a huge movie fan for a longtime. Right now, films are my biggest hobby.

I What makes your site special?

J I guess my site is just a little less formal than most of the film sites on the Internet. I've tried to make the layout unique and include material for movie fans of all types. It's for people who like movies of all kinds. There are plenty of sites for fans of particular actors or genres of movies like sci-fi, horror, films noirs and so on.

I How did you create your site?

J I created the site pretty easily using Dreamweaver, which is one of the Adobe packages.

I What was the most difficult part?

J Oh, the design. Just working out how the site would look and how the pages would link up. I'd tried to put up a couple of websites before but after constructing the main page, I'd lost interest.

I How did you get your domain name?

J I got a free domain name from *www.domainzero.com.The* price of a 'free' domain is that all kinds of advertising is sent to you by email, but that's a smalt price to pay.

I Have you registered your site on a search engine?

J No, I haven't gotten around toregistering on a search engine yet. I'm told you have to really persevere to get listed. Yahoo! just seems to swallow submissions.

I Have you included links to other sites?

J I include many links to other sites.That may be the best thing about my site, the huge number of links. I'm also in a lot of Yahoo! Clubs and I've linked to them too.

I Has anyone linked to you?

J Since my site hasn't been around for very long at all, I don't think anybody has linked to me yet except for a couple of Yahoo! Clubs.

I How long do you spend updating your site?

J As often as possible but it's difficult during the week. My studies don't leave me a lot of time and I've got other interests. And I need to watch movies sometimes! Generally the update will take from forty-five minutes to an hour.

I What sort of feedback do you get from visitors?

J I haven't really gotten much feedback so far except from people I know and they like it, or say they do! I'm hoping that after more people discover the site I'll start to get more reactions by email.

I Do you have any tips for others creating a homepage?

J Pick a topic you're really interested in. Get a good domain name. Keep your site updated - nobody likes a static site. I would look at lots of other sites for good ideas.

I What do you intend to do next with your site?

J I'm going to update the Movie Journal section and I'd like to build in new links.

I What's your favourite site?

J It would ... my favourite site would have to be the Internet Movie Database, *www.imdb.com*. That's not a very original answer but that site just has such a wealth of information about every kind of movie that it's probably my favourite.

[John's site is no longer running. He's toobusy with his studies.]

Додаток Г – GLOSSARYof computing terms and abbreviations

A

account *noun C* a registration for a user of a network system. It is used for controlling access to the system

algorithm *noun C* a set of precise rules or instructions for solving a problem

ALT text caption*noun C* text displayed in a webpage as an alternative to a graphic when the facility for displaying graphics is not available or is switched off

AltaVista*noun U* the name of a well-known search engine website

analogue signal *noun C*a type of signal that can take any value between a maximum and a minimum

anti-static *adj* prevents the build up of static electricity

anti-virus (program or software) *noun C/U*a computer program or set of programs used to detect, identify and remove viruses from a computer system

application layer*noun C* the only part of a network communications process that a user sees. It prepares a message for sending over a network by converting the message from human-readable form into bits and attaching a header identifying the sending and receiving computers

application port*noun C* a path available for a particular type of application data to enter or leave a network system

application service provider*noun C* a company that makes applications programs available over the Internet usually charging a fee for access to programs

applications(program or software)*noun C/U* a computer program designed to be used for a particular purpose, e.g. a wordprocessor spreadsheet or database program

ASCII*noun U* acronym for American Standard Code for Information Interchange. A standard character encoding scheme.

ASP *noun C*abbreviation for application service provider

asynchronous *adj*not synchronised, i.e. occurring at irregular intervals

B

backbone *noun C*the main transmission path handling the major data traffic connecting different LANs together

backend *noun C*the server part of a client-server configuration that provides a service on a network at the request of a client

backup *noun C*the process of storing a copy of data on a storage device to keep it safe / the term used for the copied data

bandwidth*noun C*the range of frequencies that can be transmitted over a communications channel

barcode*noun C* a sequence of vertical parallel lines used to give items a unique identification number

barcode reader *noun C*an optical input device that uses the reflection of a light beam to read barcode labels

batch mode *noun U*a process in which all the data is collected and processed together in a batch rather than one at a time as they become available

B-frame*noun C* the common name for a bi-directional frame in an MPEG compressed file

bi-directional frame *noun C* a type of image frame used in MPEG compression. It is situated between I and P frames and stores the differences in the image compared with the I or P frame both before and after it.

binary *noun U* a number system that only uses two digits, i.e. 1 and 0

BIOS *noun C* acronym for Basic Input Output System. A part of the operating system stored on a ROM chip that controls the input and output of data to peripherals

bit *noun C* a small unit of storage capacity. One of the eight binary digits that make up a byte. The term comes from an abbreviation of binary digit

bitmap compression *noun C* a way of reducing the size of a stored image where different digital bits or collections of bits are used to describe each element of an image (data)

block *noun C* a collection of data stored together and treated as a single unit

bookmark *verb* to store a link to a webpage to make it easier to find in the future

bracketing *verb* to set the boundaries of a message or part of a message by marking its beginning and its end with special control bits

bridge *noun C* a hardware and software combination used to connect the same type of networks or to partition a large network into two smaller ones

broadband *adj* able to carry signals transmitted over a wide range of frequencies

browse *verb* to move from webpage to webpage using a Web browser program

(Web) browser *noun C* a program used for displaying webpages

buffering *noun U* a process of temporarily storing data from a fast source so that it can be fed at a steady rate to a slower system bug /bAg/ noun C [6,20] a fault in a system

bulletin board *noun C* an electronic noticeboard system that enables users to display messages for other users to read

byte *noun C* a unit of storage capacity. A byte is made up of eight bits and stores one character, i.e. a tetter, a number, a space or a punctuation mark.

C

C drive *noun C* the first hard disk in a personal computer

cache *noun C* fast memory used to temporarily store frequently- used data to allow it to be accessed more quickly

CD (-ROM) (disk) *noun C* abbreviation for compact disk read only memory. A read only storage device in the form of a disk that is read using laser light.

CD-ROM drive *noun C* a storage device for reading CD-ROM disks

chat room *noun C* a virtual space on a website where online discussions organised around specific interests are held in real-time by users typing text messages

(left) click *verb* to press and release the (left-hand) button on a mouse

client *noun C* a network computer used for accessing a service on a server

clipart *noun U* professionally-prepared graphical images stored on a computer system

Clipboard *noun U* the name used in Microsoft Windows for the section of memory that temporarily stores data while it is being copied and pasted

CMC *noun C* abbreviation for computer mediated communication, i.e. the transfer of messages using a computer system

Commodore 64 *noun U* the model name of one of the first popular personal computers to be made available in the United Kingdom. It had a very good graphics system and was particularly suited to running computer games programs.

compatible *adj* able to operate on the same type of system or run the same software

compress *verb* to reduce to a much smaller size

compression (scheme) *noun C* the process used for reducing a file to a much smaller size

computer *noun C* a general purpose machine that can be programmed to process data in a variety of ways

computing support officer *noun C* a person whose job it is to provide support to computer users including setting up, maintaining and troubleshooting computer systems and giving technical advice

configure *verb* to adjust the settings

control bit *noun C* a data bit used to mark parts of a transmitted signal so that the transmission can be controlled, e.g. a 'start' bit marks the beginning of a character and a 'stop' bit marks its end

control bus *noun C* the set of conductors that carry the control signals between the Control Unit and other parts of a computer

Ctrl + Alt + Del *noun U* set of symbols that signify pressing the combination of the control-alternative and delete keys on a computer keyboard at the same time

cursor *noun C* a symbol on the monitor screen that indicates the point on the screen that is being used

D

data *noun U* the information processed by a computer

data centre *noun C* a facility for storing large amounts of information

data stream *noun C* the flow of data

database (program) *noun C* a type of applications program used for storing information so that it can be easily searched and sorted

data-delivery system *noun C* a system for transmitting data from one computer to another

data-link layer *noun C* the part of a network communications system that supervises the transmission. It confirms the checksum then addresses and duplicates the packets. This layer keeps a copy of each packet until it receives confirmation from the next point along the route that the packet has arrived undamaged

decode *verb* to decide what a program instruction means

decompress *verb* to remove the compression, i.e. to expand to its original size

decrypt *verb* to recover the original text from an encrypted message

default *noun C* an initial setting that can be changed by the user

desktop *noun C* the main graphical user interface background screen that displays icons for other programs

desktop (PC)/(computer) *noun C* a personal computer that is designed to be used on an office desk

dial-up networking *noun U* a communications system that allows computers to connect together using a telephone line

digital *adj* an electronic system that has only two states, e.g. off or on

digital camera *noun C*an input device for taking pictures. It has an electronic lens and uses electronics for storing the images rather than chemical film

divider *noun C*a vertical bar that divides a Windows Explorer window into two parts. One part shows the drive folders and the other part shows the filenames of the files in the selected folder.

DNS *noun C*abbreviation for domain name system

domain name *noun C*an identifier used on the Internet in place of the numerical Internet address. It identifies the host, the type and the country code, e.g. holyrood.ed.ac.uk

domain name server*noun C* a network server computer used for operating and controlling the domain name system

domain name system*noun C* a system of associating the name of a device on a network such as the Internet with its numerical address so that the name can be used by the user and the numerical address can be used by the network system

dot-matrix printer*noun C* a printer that prints by hammering pins onto an inked ribbon

doubleclick /,dAbl 'klik/verb [7]to press and release the left-hand button on a mouse two times in rapid succession

download*verb* to copy a file from a server to a client computer in a network

download *noun C*a process of copying a file from a server to a client computer in a network

drag and drop *verb*to move data from one location to another with a mouse. Holding down the mouse button while moving the mouse moves the selected data. Releasing the mouse button drops the data in the new location

driver*noun C* a systems program that controls a peripheral device

DTP*noun U* abbreviation for desktop publishing. A process of designing documents for publishing using a computer system

DVD (-ROM)*noun C* abbreviation for digital versatile disk read only memory. An optical disk storage device that can hold a large amount of video data.

<h1 style="text-align:center">E</h1>

earth*noun U* a common name for an electrical ground point or zero voltage point

e-business*noun U* common term for electronic business, i.e. business that is carried out using the Internet

e-commerce*noun U*the business of buying and selling goods and services on the Internet

email*noun C* the common name for an electronic mail message, i.e. a text message sent electronically using a computer

email address*noun C* the unique address code used to contact someone using electronic mail

email attachment*noun C* a file that is attached to an email message

email program*noun C* a computer program used for reading and sending email

encode*verb* to write information in a coded form

encoder*noun C* a computer program that converts WAV files into MP3 files or vice versa

encrypt*verb* to transform data into coded form to make it secure

Enter (key)*noun C* another name for the RETURN key on a computer keyboard. Pressing the ENTER key inserts the data into the memory of the computer

enterprise resource planning tool*noun C* a type of computer program for planning and organising business functions in an enterprise. It can help companies manage everything from sales and marketing to human resources.

Ethernet*noun U* a widely-used local area network standard that broadcasts packets of data that are addressed to particular devices on the network. Each device on the network reads the address and passes it on to the correct device.

expansion card*noun C*an electronic circuit board used for adding facilities to a computer

extensible*adj* able to be added to, e.g. in an extensible language a developer can add their own terms

extensible markup language*noun U* a metalanguage that allows developers to create their own set of customised tags that identify the meaning and structure of data. It is used for creating files that are program-independent, platform- independent and able to be used with different languages.

F

FAQ *noun C* acronym used on websites for frequently-asked question

field *noun C*a section of a database where an item of data is stored

file *nounC*a computer program or data stored on a storage device

file server*noun C*a main computer that provides a storage area for data files on a network

file transfer protocol*noun U* an Internet service that allows users to transfer files from one computer to another

floppy (disk) drive *noun C*a common magnetic storage device that reads and writes data on a floppy disk. Also known as a diskette drive.

folder *noun C*see directory

frame*noun C* a section of a webpage that acts as an independent browser window. Clicking on a link in one frame can cause a webpage to be displayed in another frame, e.g. a menu in one frame can provide links to webpages that are displayed in another frame.

freeware *noun U*computer programs that are made available to anyone who wants to use them at no cost to the user

frequency display *noun C*an electronic device for showing the frequency of a signal

FTP *noun U*abbreviation for file transfer protocol

full-duplex *adj*able to transfer data in both directions simultaneously, i.e. data can be transmitted and received at the same time

G

gateway *noun C*an interface that enables dissimilar networks to communicate such as two LANs based on different topologies or network operating systems

Gb/GB *noun C*abbreviation for a gigabyte

get listed *verb*to register the Web address of a website on an Internet search engine

GIF *noun U*acronym for graphics interchange format. A way of storing images in a compressed form

Google *noun U*the name of a popular website that provides a keyword search engine to enable user to search for relevant websites

graphic equaliser *noun C* an electronic device that uses slider controls to adjust the frequency response of an audio system

<h1 style="text-align:center">H</h1>

half-duplex *adj*able to transfer data in both directions but only in one direction at a time, i.e. data can be transmitted or received but not at the same time

hard (disk) (drive) *noun C*a common magnetic storage device that reads and writes data on metal disks inside a sealed case

header *noun C*the first section of a message that contains information about the content and transmission of the message including the sending and destination addresses

help-desk/helpline *noun C* a telephone service for helping users solveproblems that occur on computer systems

high-end package *noun C*a set of computer programs with a wide variety of complex features

high-level program*noun C* a computer program written using a high-level language

highlight *verb*to select by marking on the display

Home button *noun C*the button icon on a Web browser program that takes you to the starting webpage

host *noun C*a computer that provides a service on a network / a program that carries a virus

HTML *noun U*abbreviation for hypertext markup language. A page description language that uses a system of tags for creating web pages

hub*noun C*an electronic device at the centre of a star network topology

hyperlink *noun C*a text or image in a webpage that causes a related webpage to be displayed or another program to be started when the user clicks on the hyperlink using the mouse

hypertext markup language *noun U*a page description language that has a set of tags that can be inserted into a document to make it act as a webpage. The tags determine how the document is displayed on the screen and marks the position of hyperlinks.

<h1 style="text-align:center">I</h1>

IC*noun C* abbreviation for integrated circuit. A complete electronic circuit built on a single silicon chip

I-frame*noun C* the common name for an intra frame in an MPEG compressed file

image editor*noun C* a computer program that allows the user to make changes to images

image map*noun C* a graphic image with separate areas that contain hyperlinks to different parts of a website

IMAP *noun U*acronym for Internet mail access protocol

inbox *noun C*the folder in an email program where emails are stored when they are first received

interface *noun C* the hardware or software that connects two systems and allows them to communicate with each other

Internet (protocol) address *noun C* a 32-bit code number assigned to every node on the Internet. It consists of a series of numbers that identify the major network and the sub-networks to which a node is attached and provides a path that gateways can use to route information from one machine to another.

Internet mail access protocol *noun U* a set of standards for accessing email messages stored on an email server. Initially only message headers are retrieved. Users can then organise or delete messages on the server and download individual messages.

Internet protocol *noun U* the basic set of standards for enabling computers to communicate over the Internet

Internet service provider *noun C* an organisation that provides Internet connections for a fee

Internet (the) *noun U* the connection of computer networks across the world

intra frame *noun C* a type of image frame used in MPEG compression which contains only information in the picture itself

IP *noun U* abbreviation for Internet protocol. A part of the TCP/IP protocol used on the Internet.

IP address *noun C* abbreviation for Internet protocol address

IP-layer *noun C* the IP part of a TCP/IP system

IRC *noun U* abbreviation for Internet relay chat. An Internet service that allows user to have a conversation by sending text messages to each other in real-time.

isolation adapter *noun C* an electronic device that isolates a network system from high voltages and allows it to use the mains electricity cables for connecting computers together and transferring data

ISP *noun C* abbreviation for Internet service provider

IT *noun U* abbreviation for information technology

J

junk email *noun U* unwanted and unsolicited email that is normally advertising or trying to sell something

K

keyboard *noun C* the main electronic input device that has keys arranged in a similar layout to a typewriter

keyword *noun C* a word used to categorise documents or records in a file. Keywords can be used by a search engine to find relevant links on the Internet.

kHz *noun C* abbreviation for kilohertz. A unit of frequency equal to 1000 cycles every second

L

LAN *noun C* acronym for local area network

laser printer *noun C* a printer that prints using toner powder and laser light on a photosensitive drum

LCD *noun C* abbreviation for liquid crystal display. An electronic display device that uses liquid crystal cells to control the reflection of light

leased line *noun C*a cable connection that is rented for use in a communications system

link *noun C*a common term used for a hyperlink, i.e. the connection of a webpage to another webpage or file

local area network*noun C* computers connected together over a small area such as a company department

log*verb* to record the time that an event happened

logon*verb* to connect to a network system account normally using a password

look-up table*noun C*a method by which a program uses two sets of related records to find a required value. It is quicker than calculating the value using a formula but takes up more memory space

M

mail client*noun C* an email program that connects to an email server to send and receive email

mail server*noun C* a network service that stores email messages and enables email clients to send and receive emails

mailbox*noun C* a folder used by an email server to store a user's emails

mailmerge*noun C* a wordprocessing facility that causes a mailing list to be automatically combined with a standard letter to produce a separate copy of the letter addressed to each person on the mailing list

mains line*noun C* the main electricity supply

markup language*noun C*a set of tags that can be inserted into a document to indicate its layout and appearance

Mb/MB*noun C* abbreviation for a megabyte

megabyte*noun C* a unit of storage capacity equal to 1 048 576 bytes

megohm*noun C* a unit of electrical resistance equal to 1 million ohms

memory*noun U* the electronic part of a computer system that is used for temporarily storing the programs and data that are being used by the processor

menu bar*noun C*a row of icons on a display screen that open up menus when selected

metadata*noun U* data about data in a document

metalanguage*noun C*a language from which you can create other languages

microcomputer*noun C* a personal computer. Smaller and less powerful than a mainframe or a minicomputer

MIDI*noun U* acronym for musical instrument digital interface. A standard for connecting musical instruments to computer systems.

mixing desk*noun C* an electronic device used in audio recording that allows a number of audio inputs to be mixed together

mobile phone*noun C*a wireless telephone that operates over a wide area

modem*noun C*short for modulator/demodulator. An electronic device that converts signals to enable a computer to be connected to an ordinary telephone line.

monitor*noun C*the main output device used to display the output from a computer on a screen. See VDU.

MOO*noun C* acronym for multi-user object oriented. An Internet virtual environment developed from multi-user adventure games that allows many users to interact

mouse *noun C* a common cursor control input device used with a graphical user interface. It commonly has two or three button switches on top and a ball underneath that is rolled on a flat surface.

mouse button *noun C* a switch on a mouse that is pressed to select an object on the screen

mouse pointer *noun C* a cursor image in the shape of an arrow that is controlled by a mouse and is used for pointing and selecting icons on the screen

MP3 *noun U* abbreviation for MPEG Audio Layer 3. A Motion Picture Experts Group standard for audio compression.

MPEG *noun U* a standard video compression scheme. The term is an acronym for Motion Picture Experts Group a committee that develops standards for audio and video file formats and compression.

multimedia *noun U* the combination of text graphics animation sound and video

<div align="center">

N

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Net (the) *noun U* the common name for the Internet

Netscape Communicator *noun U* a widely used web browser package

network *noun C* a combination of a number of computers and peripheral devices connected together

network computer *noun C* a computer designed using the industry specification from Oracle and Sun Microsystems for a low-cost basic personal computer that can have an Intel processor or another type of processor and can use a Java-based operating system. It is designed for use on a multi-user network system and is managed centrally. It has no floppy disk drive, CD-ROM drive or hardware expansion slots, i.e. it is a type of thin client

network layer *noun C* the part of a network communications system that forms the data into packets and selects a route for the message

network operating system *noun C* an operating system that is used to administer and control a network allowing computers to share hardware and software while providing file security and backup facilities

newsgroup *noun C* an Internet discussion group that uses a restricted area on a server computer to display messages about a common interest

node *noun C* a network terminal or point where a computer is connected to a network

<div align="center">

O

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(Microsoft) Office *noun U* a widely-used application package developed by the Microsoft Corporation that includes programs used in a typical office, e.g. a wordprocessor and spreadsheet

office application / suite *noun C* a computer program or set of programs that are used in a typical office, e.g. a wordprocessor, spreadsheet and database

offline *adj* disconnected from a computer system or the Internet

online *adj* connected to a computer system or the Internet

output *noun U* the processed data or signals that come out of a computer system

<div align="center">

P

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(software) package *noun C* an application program or collection of programs that can be used in different ways

packet*noun C* a fixed size unit of data prepared for transmission across a network. Messages are normally divided into packets before transmission

Palm Pilot*noun U* a popular handheld personal organiser produced by 3Com

pane*noun C* a subsection of a graphical user interface window

password*noun C* a secret code used to control access to a network system

payroll package*noun C* a set of computer programs used for calculating

peripheral*noun C* a piece of equipment that is connected to the central processing unit of a computer system

P-frame*noun C* the common name for a predicted frame in an MPEG compressed file

physical layer*noun C* the part of a network communications system that encodes the packets into the medium that will carry them and sends the packets along that medium

PIM*noun C* acronym for personal information manager. A computer program that provides a variety of tools for organising work, e.g. a calendar, to do list, diary, address list, calculator, etc.

platform*noun C* a distinctive type of computer system that needs software to be written specifically for it, e.g. PC, Apple Mac, etc.

PlayStation*noun U* a games console developed by the Sony Corporation

POP*noun U* acronym for post office protocol

post*verb* to display a message in a computer newsgroup or bulletin board

post office protocol*noun U* a message- retrieval protocol used by many mail clients to get messages from a server.It only allows you to download all messages in your mailbox at once and works in 'pull' mode, i.e. the receiving PC initiating the connection

predicted frame*noun C* a type of image frame used in MPEG compression. A predicted frame only stores the differences in the image compared to the previous I frame or P frame

presentation layer*noun C* the part of a network communications system that ensures the message is transmitted in a language that the receiving computer can interpret

Print Screen (key) *noun C* the computer keyboard key that copies the current display screen image to memory or to the printer

program *verb* to write a set of instructions for controlling a computer using a computer language

programmer *noun C* a person who writes computer programs

protocol *noun C* a set of agreed standards

pull mode *noun U* a type of communication where the receiving computer initiates the connection

pull-down menu *noun C* a list of choices that appear below a menu title on a display screen when the user clicks on the menu title using a mouse

push operation *noun U* a communication where the sending computer initiates the connection

R

radar *noun U* a system of using the reflection of radio waves to detect an object and determine its location

radio button *noun C*one of a set of mutually exclusive options in a dialog box, i.e. the user can only select one, causing the others to be deselected

real-time *noun U*the immediate processing of computer data enabling interactive applications

record *noun C*a section of a database made up of related database fields

recorder (program) *noun C*a computer program that allows the user to create their own audio CDs with a writeable CD-ROM drive

reliable stream service *noun U*a data management system provided by the TCP protocol to ensure that data is transferred across a network correctly. It structures and buffers the data flow, looks for responses, and takes action to replace missing data blocks

resistor *noun C*an electronic component that reduces the flow of current in a circuit

resolution protocol*noun U* a set of standards for software used with internal look-up tables in a TCP/IP network for routing data through a gateway between networks

rip*verb* to extract songs from a CD and turn them into WAV files

ripper*noun C* a program that extracts songs from a CD and turns them into WAV files

route*noun C* the path that is used to transfer data in a network

route*verb* to move data from node to node on a network

router*noun C* an electronic device that links different networks or parts of a network. It determines the path that a signal should take to reach its destination

S

SAP*noun U* a widely used enterprise resource planning tool program

SATA*noun U* acronym for Serial ATA

save*verb* to copy a program or data to a storage device

(monitor)(display) screen*noun C*a computer output device used for displaying text and graphic images

scrollbar*noun C* the part of a graphical user interface window that allows the user to move through a document by clicking or dragging with the mouse

search engine*noun C*a program designed to find information on the World Wide Web according to data entered by theuser. Search engines are usually accessed from special websites

segment*noun C* a subdivision of data created by a network communications transport layer for which a checksum is generated

serial port*noun C* the small connector at the back of the system unit of a personal computer that is used to connect a serial device such as a serial mouse or a modem. Two serial ports labelled COM1 and COM2 are usually provided on a PC.

server*noun C* a main computer that provides a service on a network

session layer*noun C* the part of a network communications system that opens communications and has the job of keeping straight the communications among all nodes on the network. It sets boundaries for the beginning and end of a message and establishes whether the messages will be sent half-duplex or full duplex.

SGML*noun U* abbreviation for Standard Generalised Markup Language

shareware*noun U* software that is distributed freely and only paid for if the user decides to keep it

simple mail transfer protocol *noun U*a set of standards for sending email from an email client and transferring email between server computers on the Internet

simulation*noun C* a programmed virtual environment that imitates a real or planned system

site*noun C* a common name for a website

site map*noun C* a webpage that is used to show the overall layout of a website

skin*noun C* a computer program that is used to change the interface of another program, e.g. to change the screen display on an MP3 player program

SMTP*noun U* abbreviation for simple message transfer protocol

software*noun U* the programs and data used in a computer software engineering

soundcard*noun C* the electronic circuit expansion board in a computer that is used to process audio signals and connect to and control a microphone loudspeaker or headphone

spam*noun U* unsolicited email sent to large numbers of people indiscriminately usually advertising or trying to sell a product

speaker*noun C* common term for a loudspeaker. An output device for providing sound output

spectrum analyser*noun C* an instrument that plots a graph of frequency parameters for a complete frequency band

spreadsheet (program) *noun C*a type of application program with an array of cells that is used for calculating formulas

standalone *adj*not connected to a network

standard generalised markup language *noun U* the complex metalanguage from which both HTML and XML were created

Start (button)*noun C* an icon on the bottom left corner of Microsoft Windows operating system desktops that allows the user to access programs and data and to close down the system

start bit*noun C* a data bit that marks the beginning of a data block in a network transmission

Start menu*noun C* the list of choices that opens up on the display screen when the user clicks the Start button in a Microsoft Windows desktop

start-stop transmission *noun C*another name for asynchronous transmission where data is sent one byte (or character) at a time

static earthing band*noun C*a strip of material that is wound round the wrist of a repair technician and connected to earth to prevent the build up of static electricity which could destroy electronic components

status bar *noun C*a narrow band displayed across the bottom of a window in a Microsoft Windows application to display useful information for the user, e.g. number of pages in a document

stop bit *noun C*a data bit that marks the end of a data block in a network transmission

streaming *noun U*a process of downloading and storing the next part of a data signal while the first part is being used. In this way the data signal, e.g. an audio or video is fed to the slower destination device at a steady rate

string *noun C* a series of data characters which can be a mixture of letters or numbers

subfolder *noun C* a storage area that provides a subdivision of a folder so that stored files can be organised into smaller groups

sub-network *noun C* a self-contained part of a larger network

subpage *noun C* a webpage that gives further detailed information about part of the information on a main webpage

support line *noun C* a telephone line that can be used to get help with hardware or software problems. See helpdesk/helpline

surf *verb* to browse webpages on the Internet in an unplanned way

synch byte *noun C* a start or stop bit pattern that marks the beginning or end of a transmitted data block

synchronise *verb* to cause different processes to occur at the same time

synchronous *adj* occurring at regular intervals and in step with other systems usually controlled by an electronic clock circuit

synthesiser *noun C* a device that uses electronic circuits to generate sounds

system tray *noun C* a section at the far right of a Microsoft Windows task bar that holds icons for the clock and other programs that run constantly in the background

T

tab *noun C* a dialog box component that is used to switch between different sets of data

tag *noun C* a label used in a markup language such as HTML. It is attached to a piece of text to mark the start or the end of a particular function.

taskbar *noun C* a Microsoft Windows desktop component that indicates what programs are currently being used and allows the user to switch between them

TCP *noun U* abbreviation for transfer control protocol. A part of the TCP/IP protocol used on the Internet.

TCP/IP *noun U* abbreviation for transmission control protocol/Internet protocol. The official set of standards for determining the form of the signals used for transmitting data on the Internet

telnet *noun U* acronym for teletype network. An Internet service that allows a user to connect to a multi-user server using a computer as a terminal

thin client *noun C* a low-cost centrally-managed basic computer with a keyboard and display Screen processor and memory but no CD-ROM drive, floppy disk drive or expansion slots, e.g. a NetPC or a network computer (NC)

toggle-box *noun C* a screen icon in Windows Explorer that opens or closes a folder to show or hide its subfolders when the user clicks on it using a mouse

topology *noun C* the physical layout of a network

traffic *noun U* the volume of signals or data that passes through a network system

transmission control protocol *noun U* a set of standards for the delivery of error-free data in communications between computers. It comes into operation once a data packet is delivered to the correct Internet address and application port. It manages the communication exchanges and provides reliable stream service by structuring and buffering the data flow looking for responses and taking action to replace missing data blocks

transport layer*noun C* the part of a network communications system that protects the data being sent. It subdivides the data into segments and creates checksum tests. It can also make backup copies of the data

twisted-pair (cabling)*noun U* a common type of network cable that uses two wires twisted together to reduce interference from external signals

U

UDP*noun U* abbreviation for user datagram protocol

undo*verb* to restore a file to the condition it was in before the last change was made

uniform resource locator*noun C* the unique address of a webpage

Unix*noun U* a popular multi-user multitasking operating system originally designed for mainframe computers. A wide variety of versions exist

update*noun C* a change that provides the latest version

update*verb* to bring up to date, i.e. to change into the latest version

URL*noun C* abbreviation for uniform (or universal) resource locator

Usenet*noun U* an Internet service that allows users to communicate by means of newsgroups

user datagram protocol*noun U* a set of standards for creating a data address in a TCP/IP message. It is used to indicate what application the message is supposed to contact and provides the final routing for the data within the receiving system

V

verify*verb* to check for accuracy

video*noun U* signals containing picture information

virtual*adj* computer-simulated enabling the user to experience something without needing its physical presence

virtual reality*noun U*a simulated three-dimensional environment that surrounds the user and is generated by a computer

virus*noun C* a program written with the purpose of causing damage or causing a computer to behave in an unusual way

virus-check*verb* to check for viruses

W

wallpaper*noun C* the background graphics on a Microsoft Windows desktop

WAV*noun U* an audio file format

Web address*noun C*the Internet address of a webpage

Web mail*noun U* a type of email that is accessed from webpages

Web server*noun C* a server computer that stores and provides access to websites

Web space*noun U* disk storage space on a web server used for storing webpages

Web (the)*noun U* common name for the World Wide Web

Webmaster*noun C*a person who administers a Web server

webpage*noun C*a hyperlinked document in a web network system

website*noun C* a set of related pages on the World Wide Web

WEP*noun U* acronym for Wired Equivalent Privacy. A set of standards used to convert data on a wireless network to provide privacy and security

WiFi*noun U* abbreviation for Wireless Fidelity. A set of standards for radio-based wireless networks

wildcard *noun C* a symbol used in computer commands and for searching databases. It represents any character or combination of characters, e.g. using an asterisk searching for *ed would find alt words ending in ed.

(Microsoft) Windows *noun U* a graphical user interface operating system front-end to MS-DOS developed by the Microsoft Corporation. It has been gradually developed into a full operating system.

Windows Explorer *noun U* a Microsoft Windows program that allows the user to see the files and folders on all the disks attached to the computer. It can be used for general housekeeping such as moving or deleting files.

Windows Media Player *noun U* a Microsoft Windows program for playing multimedia files including audio and video

WLAN *noun C* abbreviation for wireless local area network. A network that uses radio waves to connect computers in a small area

(Microsoft) Word *noun U* a widely-used wordprocessing program developed by the Microsoft Corporation. It is a component of the Microsoft Office package

World Wide Web (the) *noun U* an information service on the Internet that allows document pages to be accessed using hyperlinks

writeable CD-ROM drive *noun C* a compact disk drive that allows the user to write data onto a CD as well as read data stored on the CD

WWW *noun U* abbreviation for the World Wide Web. The Internet service used for connecting to multimedia webpages.

X

X.25 *noun U* the International Telegraphic Union packet- switching data communications standard for connecting computers and a public network

XML *noun U* abbreviation for extensible markup language

Y

Yahoo *noun U* the name of a popular Internet search engine website