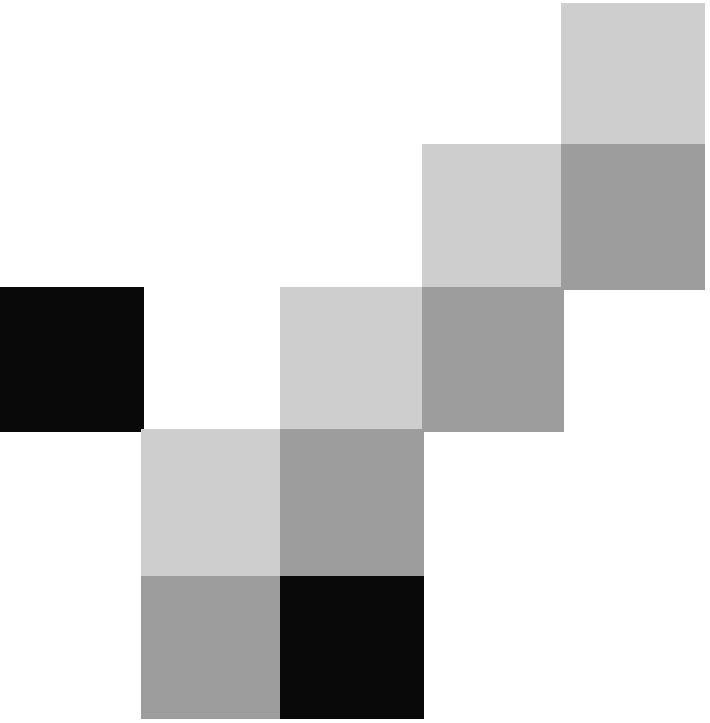


English for Computer Science and Engineering

Unit 1

Personal Compuers

legitimize	authorize, legalize
dominant	controlling, important
convenience	comfort, ease
cumbersome	uncomfortable
miniaturized	tiny, very small
to take up	occupy
permanent	lasting, invariable
state-of-the-art	modern

Personal Compuers

configuration	formation, structure
dock	connect two computers using an electrical wire
expand	grow larger
slot	narrow opening
footprint	surface area taken by a particular hardware device
to gain ground	to become more successful

Personal Compuers

courier	messenger
stylus	light pen
poised to	ready to move
insurance	to guarantee safety
tickler	to-do list
to distinguish from	differentiate, recognize
souped-up	more powerful
crunching	chewing
to fall short	be less than enough

Personal Compuers

to set apart	separate
precision	exactness, accuracy

Groceries Online

slogan	motto, getting phrase used in advertising
glimpse	brief view
virtual	computer simulated
pioneer	pathfinder
aisle	walkway (between rows of seats)
to transmit	to send out electronic signals
grab	take tightliy and suddenly
cart	carriage
fraction	part of a whole

Groceries Online

redeem	get sth back
hassle	inconvenience

Language focus A

Contextual reference

Transitional markers are words used to link ideas together so that the text is easier to read. When pronouns such as *it, they, them, I, he, she, which, who, whose, that, such, one,* and demonstrative adjectives such as *this, that, these* and *those,* are used as transitional markers, they refer to a word, or words, mentioned earlier in the sentence or paragraph. Their function is to take your thoughts back to something that has already been mentioned. Other words which are often used to refer backwards are *the former, the latter, the first, second,* etc., *the last.*

Sample paragraph:

A computer, like any other machine, is used because it does certain jobs better and more efficiently than humans. It can receive more information and process it faster than any human. The speed at which a computer works means it can replace weeks or even months of pencil-and-paper work. Therefore, computers are used when the time saved offsets their cost, which is one of the many reasons they are used so much in business, industry, and research.

Exercise 1

Using the sample paragraph as a model, draw a rectangle around the word, or words, that the circled words refer to. Then join the ○ and the ▭ with arrows.

Modern accounting firms use spreadsheet software to do complicated calculations. They can provide their clients with an up-to-date report whenever it is needed. This software has many functions and can be integrated with other software. The spreadsheet's basic component is a cell. This may contain a formula which performs a mathematical operation. It could also contain a label or data. The former describes the information on the worksheet. The latter is the information itself.

The worksheet is the basic work area of a spreadsheet program. It is made up of cells arranged in rows and columns. The number of these varies depending on the software you are using. You can change the width and format of cells. Such parameters are usually quite easy to change with just a few keystrokes.

Exercise 2

Using the line reference given, look back at the reading passage in Unit 1, page 6, and find the reference for the words in *italics*.

1 anyone can make *them* (line 25)
2 the ideas that *they* put (line 34)
3 *This* was a graphical interface (line 37)
4 *it* became the standard machine (line 44)
5 *these* are operating systems (line 50)
6 *it* has become a minor player (line 68)
7 *this* could be upgraded (line 76)

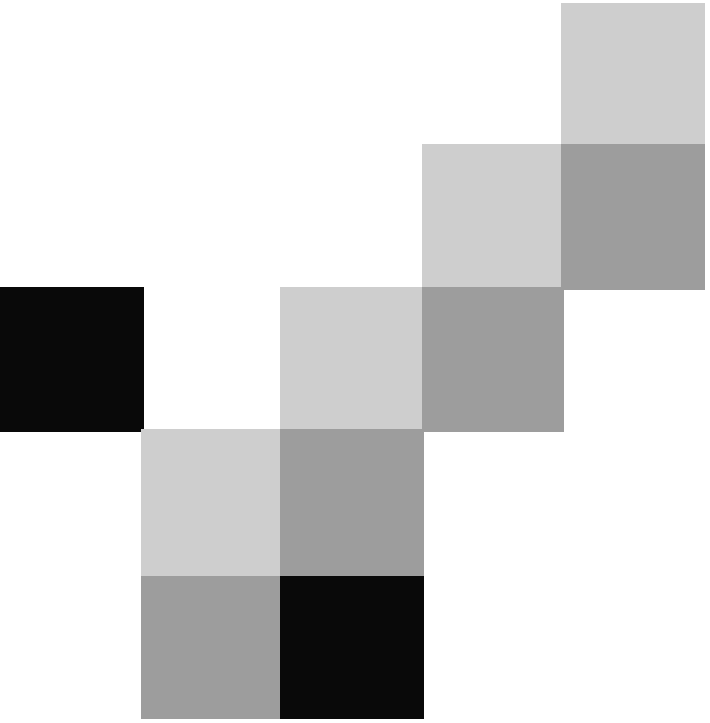
The American Heritage Dictionary Pronunciation Key

EXAMPLES	AHD		EXAMPLES	AHD
p**a**t	ă		b**oo**t	o͞o
p**ay**	ā		**ou**t	ou
c**are**	âr		**p**o**p**	p
f**a**ther	ä		**r**oa**r**	r
bi**b**	b		**s**au**ce**	s
chur**ch**	ch		**sh**ip, di**sh**	sh
dee**d**, mill**ed**	d		**t**igh**t**, stopp**ed**	t
p**e**t	ĕ		**th**in	th
b**ee**	ē		**th**is	*th*
fi**f**e, **ph**ase, rou**gh**	f		c**u**t	ŭ
ga**g**	g		**ur**ge, t**er**m, f**ir**m, w**or**d, h**ear**d	ûr
hat	h		**v**al**ve**	v
which	hw		**w**ith	w
p**i**t	ĭ		**y**es	y
p**ie**, b**y**	ī		**z**ebra, **x**ylem	z
p**ier**	îr		vi**s**ion, plea**s**ure, gara**g**e	zh
ju**dge**	j		**a**bout, it**e**m, ed**i**ble, gall**o**p, circ**u**s	ə
ki**ck**, **c**at, pi**que**	k		butt**er**	ər
lid, need**le** 1	l(nēd´l)			
mu**m**	m			
no, sudde**n**1	n(sŭd´n)			
thi**ng**	ng			
p**o**t	ŏ		**FOREIGN**	**AHD**
t**oe**	ō		*French* f**eu**, *German* sch**ö**n *French* **oeu**f, *German* zw**ö**lf	œ
c**augh**t, p**aw**, f**o**r, h**o**rrid, h**oa**rse 2	ô		*French* t**u**, *German* **ü**ber	ü
n**oi**se	oi		*German* i**ch**, *German* a**ch**, *Scottish* lo**ch**	KH
t**oo**k	o͝o		*French* bo**n** (bô N) 3	N

Note 1. In English the consonants *l* and *n* often constitute complete syllables by themselves.

Note 2. Regional pronunciations of *-or-* vary.In pairs such as **for, four; horse, hoarse;** and **morning, mourning,** the vowel varies between (ô) and (o͞o). In this Dictionary these vowels are represented as follows: **for** (fôr), **four** (fôr, fo͞or); **horse** (hôrs), **hoarse** (hôrs, ho͞ors); and **morning** (môr´ning), **mourning** (môr´ning, mo͞or´-).Other words for which both forms are shown include **more, glory,** and **borne.** A similar variant occurs in words such as **coral, forest,** and **horrid,** where the pronunciation of *o* before *r* varies between (ô) and (o͝o).In these words the (ôr) pronunciation is given first: **forest** (fôr´ist, fo͝or´-).

Note 3. The Dictionary uses ᴺto reflect that the preceding vowel is nasalized. In French four nasalized vowels occur, as in the phrase *un bon vin blanc:* **AHD** (œᴺ bôᴺ vɑ̃ᴺ bläᴺ)



English for Computer Science and Engineering

Unit 2

Putting Word Processing to Work

versatile	multi-purpose
form letter	standard letter that is sent to a number of people
boilerplate	standard text
accumulate	gather, collect
eventually	finally, in the end
will	who you want your money and property to be given to after you die
uncontested	without opposition
bankruptcy	state of being unable to pay back debts
estate	everything that is left after one dies

Putting Word Processing to Work

to observe	study; monitor, supervise
to opt	choose
retrieve	bring back, fetch
wealth	a large amount of money, property
essentially	basically, mainly

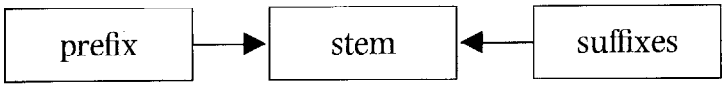
E-Mail Etiquette

Etiquette	the formal rules for polite behaviour
paycheck	check that is given as a salary payment
effective	successful
vocal	pertaining to the voice
inflection	change in tone of the voice
embarrassing	confusing, cause anxiety
tenent/ tenet	principle belief
conclude	finish

Language focus B

Word formation: prefixes

When you are reading, you will come across unfamiliar words. It is often possible to guess the meanings of these words if you understand the way words in English are generally formed.



An English word can be divided into three parts: a prefix, a stem, and a suffix. *Pre-* means 'before'. A prefix, therefore, is what comes before the stem. Consider, as an example, the prefix *de-* (meaning 'reduce' or 'reverse') in a word like **de**magnetize (meaning 'to deprive of magnetism'). A suffix is what is attached to the end of the stem. Consider, as an example, the suffix *-er* (meaning 'someone who') in programm**er** ('a person who programs').

Suffixes change the word from one part of speech to another. For example, *-ly* added to the adjective *quick* gives the adverb *quickly*. Prefixes, on the other hand, usually change the meaning of the word. For example, *un-* changes a word to the negative. **Un**magnetizable means 'not capable of being magnetized'.

Let us now consider some prefixes, their usual meanings, and how they change the meanings of English words.

Prefixes

Negative and positive	Size	Location	Time and order	Number
un-	semi-	inter-	pre-	mono-
non-	mini-	super-	ante-	bi-
in-	micro-	trans-	fore-	hex-
dis-		ex-	post-	oct-
re-		extra-		multi-
		peri-		

Exercise 1 Study these tables. Try to find additional examples, using your dictionary if necessary.

1 **Negative and positive prefixes:**

	Prefix	Meaning	Examples
Negative	un-	not	unmagnetized
	in-	not	incomplete
	im-	not	impossible
	il-	not	illegal
	ir-	not	irregular, irrelevant
	non-	not connected with	non-programmable,
	mis-	bad, wrong	misdirect
	mal-	bad, wrong	malfunction
	dis-	opposite feeling	disagree
	dis-	opposite action	disconnect
	anti-	against	antiglare
	de-	reduce, reverse	demagnetize, decode
	under-	too little	underestimate
Positive	re-	do again	reorganize
	over-	too much	overload

2 **Prefixes of size:**

Prefix	Meaning	Examples
semi-	half, partly	semiconductor
equi-	equal	equidistant
mini-	small	minicomputer
micro-	very small	microcomputer
macro-	large, great	macroeconomics
mega-	large, great	megabyte

3 **Prefixes of location:**

Prefix	Meaning	Examples
inter-	between, among	interface, interactive
super-	over	supersonic
trans-	across	transmit, transfer
ex-	out	exclude, extrinsic
extra-	beyond	extraordinary
sub-	under	subschema
infra-	below	infra-red
peri-	around	peripheral

4 **Prefixes of time and order:**

Prefix	Meaning	Examples
ante-	before	antecedent
pre-		prefix
prime-	first	primary, primitive
post-	after	postdated
retro-	backward	retroactive

5 **Prefixes of numbers:**

Prefix	Meaning	Examples
semi-	half	semicircle
mono-	one	monochromatic
bi-	two	binary
tri-	three	triangle
quad-	four	quadruple
penta-	five	pentagon
hex-	six	hexadecimal
sept(em)-	seven	September
oct-	eight	octal
dec-	ten	decimal
multi-	many	multiplexor

6 **Other prefixes:**

Prefix	Meaning	Examples
pro-	before, in advance	program
	forward	progress
auto-	self	automatic
co-	together, with	co-ordinate
con-		connect

Exercise 2

Read the following sentences and circle the prefixes. For each word that has a prefix, try to decide what the prefix means. Refer back to the table if you need help.

1 Floppy disks are inexpensive and reuseable.
2 If a printer malfunctions, you should check the interface cable.
3 The multiplexor was not working because someone had disconnected it by mistake.
4 Improper installation of the antiglare shield will make it impossible to read what is on the screen.
5 After you transfer text using the 'cut and paste' feature, you may have to reformat the text you have inserted.
6 You can maximize your chances of finding a job if you are bilingual or even trilingual.

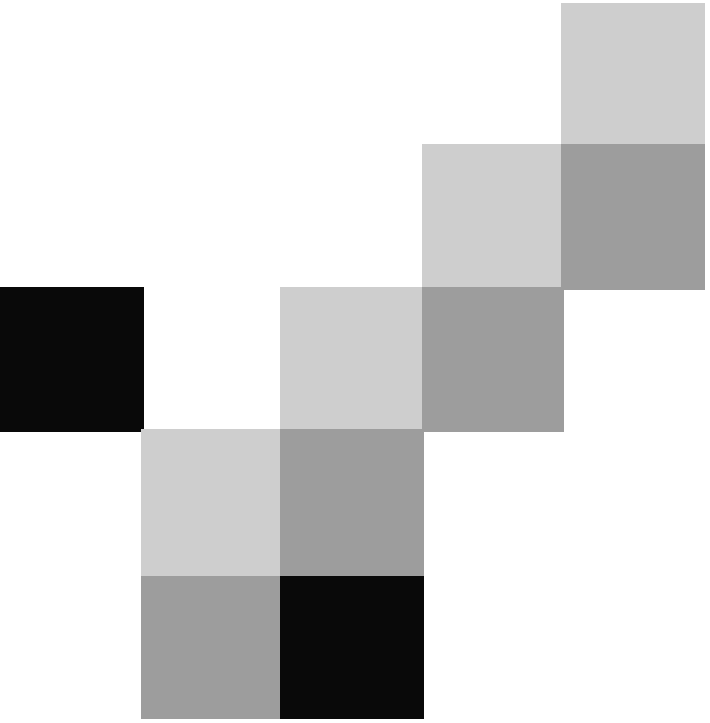
7 Peripheral devices can be either input devices (such as keyboards) or output devices (such as printers).
8 Your pay rise is retroactive to the beginning of June and you will receive a bi-annual bonus.
9 The octal and hexadecimal systems are number systems used as a form of shorthand in reading groups of four binary digits.
10 As the results are irregular, the program will have to be rewritten.

Exercise 3

Fill in the gaps with the correct prefix from the following list.

auto	de	dec	inter
maxi	mega	micro	mini
mono	multi	semi	sub

1 Most people prefer a colour screen to a _____chrome screen.
2 _____script is a character or symbol written below and to the right of a number or letter, often used in science.
3 A _____byte equals approximately one million bytes.
4 Once you finish your program, you will have to test it and _____bug it to remove all the mistakes.
5 The introduction of _____conductor technology revolutionized the computer industry.
6 If a computer system has two or more central processors which are under common control, it is called a _____processor system.
7 The _____imal system is a number system with a base of 10.
8 When the user and the computer are in active communication on a graphics system, we refer to this as _____ active graphics.



English for Computer Science and Engineering

Unit 3

Spreadsheet: The Magic Matrix

grid	network of crisscrossed bars
accountant	someone whose job is to keep and check financial accounts, calculate taxes etc
primary	first, original
instructor	teacher, educator
alternative	optional
confine	limit, restrict
profit	benefit, privilege, financial gain
loss	failure to keep, defeat
statement	declaration, printed record of account activity

Spreadsheet: The Magic Matrix

demography	study of the statistical characteristics of a population
inventory	stock, list of assets
budget	financial plan
highlight	stress, emphasize
content	all that is inside of something
designated	intended, chosen
illustrate	demonstrate, exemplify, clarify, depict
currency	money, prevalence

Spreadsheet: The Magic Matrix

rectangle	parallelogram with four right angles
dozen	twelve items, group of twelve
outfit	equip
scroll	move on-screen text or images horizontally or vertically
magnify	enlarge, increase the size of, exaggerate

Simulation by Spreadsheet

simulation	imitation
in response to	act of pretending
frustration	disappointment, anxiety and depression
amazed	surprised, astonished
milestone	important event
explanation	description
capital	assets, wealth
foolproof	guarded against every possible mistake

Simulation by Spreadsheet

negotiate	to succeed in getting past or over a difficult place on a path
loan	something borrowed
stock	the capital raised by a corporation through the issue of shares entitling holders to an ownership interest
bond	certificate of debt
means	method, way
arithmetic	mathematics
labor	work-force, workers, working class

Language focus C

Word formation: suffixes

We have already seen how prefixes can change the meaning of a word. Let us now consider some suffixes, their usual meanings, and how they change the meanings of English words.

Suffixes

Nouns	Verbs	Adjectives	Adverbs
-ance	-ize	-able	-ly
-ence	-ate	-ible	
-or	-fy	-less	
-er	-en	-ic	
-ist	-ify	-ical	
-ness		-ish	
		-ive	

Exercise 1

Study these tables and try to make additional examples. Use your dictionary if necessary.

1 **Noun-forming suffixes:**

Suffix	Meaning	Examples
-ance	state	performance
-ence	quality of	independence
-er, -or	a person who	programmer, operator
	a thing which	compiler, accumulator
-ist, -yst	a person who	analyst, typist
-ian	pertaining to	electrician
-tion, -ation	the act of	compilation
-ness	condition of	readiness
-ion	action/state	conversion
-ing	activity	multiplexing
-ment	state, action	measurement
-ity	state, quality	electricity
-ism	condition/state	magnetism
-dom	domain/condition	freedom
-ship	condition/state	relationship, partnership

2 **Verb-forming suffixes:**

Suffix	Meaning	Examples
-ize/-ise	to make	computerize
-ate		automate, activate, calculate
-ify		simplify
-en		harden, widen

3 **Adverb-forming suffix:**

Suffix	Meaning	Examples
-ly	in the manner of	electronically, logically, comparably, helpfully

4 **Adjective-forming suffixes:**

Suffix	Meaning	Examples
-al	having the quality of	computational, logical
-ar		circular
-ic		magnetic, automatic
-ical		electrical
-able	capable of being	comparable
-ible		divisible
-ous	like, full of	dangerous
-ful	characterized by	helpful
-less	without	careless
-ish	like	yellowish
-ed	having the quality of	computed
-ive		interactive

Note: Words ending in *-ing* are formed from verbs. The *-ing* form may be used as a noun, part of a noun phrase, or part of a verb.

Examples:

1 ***Programming*** *is an interesting job.* (noun)
2 ***Programming*** *in C is interesting.* (part of noun phrase)
3 *He is* ***working*** *as a programmer.* (part of verb)

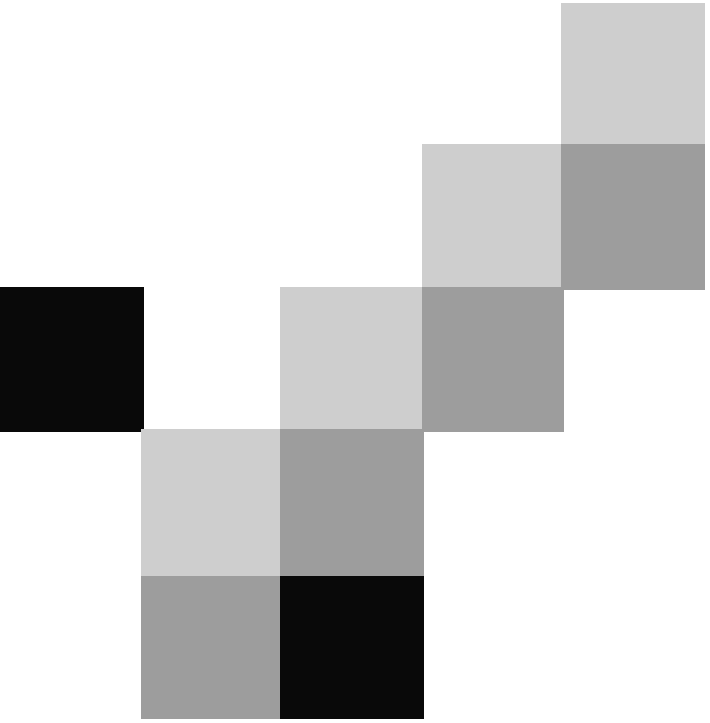
Exercise 2

Read the following sentences and circle the suffixes. Underline the stem if it can be used on its own. The first one has been done for you.

1 A programm(er) designs, writes, and tests programs for perform(ing) various tasks on a comput(er).
2 A systems analyst studies organizational systems and decides what action needs to be taken to maximize efficiency.

3 Laser printers are preferable to other types of printing devices because of their speed and quietness.
4 The microcomputer we have purchased does not have a FORTRAN compiler. It is programmable in BASIC only.
5 We have found that operators who have the freedom to take short breaks during the day greatly improve their performance.
6 The number of shipments will increase over the coming months.
7 We decided to computerize the entire plant to give each division more independence.
8 Spooling is a way of storing data temporarily on disk or tape until it can be processed by another part of the system.
9 Turning your office into a paperless environment may be expensive at the beginning but can produce big savings in the long run.
10 Software developers are producing increasingly sophisticated applications for a growing global market.

Now, for each word that has a suffix, indicate what part of speech the word is (e.g. noun, verb, etc.).



English for Computer Science and Engineering

Unit 4

Processor Design

thereby	because of that	در نتیجه
throughput	rate of transfer	گذردهی، توان عملیاتی
realize	understand	دریافتن
significantly	in an important manner	به طور اهم
burden	load	بار
proponent	supporter, advocate	طرفدار
simultaneously	concurrently	به طور همزمان
portion	part, piece	بخش
net	final (about weight, profit)	خالص

Processor Design

referred to	mentioned	ارجاع داده شده
massively	enormously	زیاد ، بیش از حد
capacity	volume which can be contained or received	ظرفیت-گنجایش
challenge	difficult and stimulating task	چالش
confront with	face	مواجه شدن با
suit	fit, match	مناسب بودن
attempt	try,effort	تلاش کردن
mimic	imitate	تقلید کردن
incredible	unbelievable	باورنکردنی

Processor Design

equivalent	equal in worth or value	معادل
sphere	globe,orb	جسم کروی محدوده، حوزه
crop	harvest, produce	محصول
rotation	set order in which events take place	گردش
forecast	foretell, predict	پیش بینی کردن
fluctuation	instability, change	نوسان
outperform	exceed in performance	برتری یافتن
accurate	precise, exact	دقیق
live up to	fulfill someone's expectations	براورده نمودن انتظارات

Processor Design

crowd	public	ازدحام

Should PC Ownership Be an Entrance Requirement for Colleges?

tighten	make tight	محکم کردن
competitive	tending to compete	رقابتی
prerequisite	prior condition	پیش نیاز ، لازمه
admission	permission to enter	پذیرش
versatile	multi-purpose	متنوع
stand-alone	be one of a kind	مستقل
lounge	lobby	سالن استراحت
bibliography	list of source materials	کتاب شناسی
correspond with	related to	مرتبط با

Language focus D

Organizing information

A paragraph is a group of related sentences that develop an idea. In nearly every paragraph, there is one idea that is more important than all the others. The main idea of the paragraph is usually found at the beginning.

Sample paragraph 1:

> All computers, whether large or small, have the same basic capabilities. They have circuits for performing arithmetic operations. They all have a way of communicating with the person(s) using them. They also have circuits for making decisions.

In sample paragraph 1, the first sentence, *All computers, whether large or small, have the same basic capabilities.* expresses the main idea of the paragraph.

All main idea sentences have a topic and say something about the topic.

Example:

> *All computers* [topic], *whether large or small, have the same basic capabilities* [about the topic].

In some of your reading, finding main ideas may serve your needs but, in much of your studying, you need to understand details. It is sometimes more difficult to understand details than main ideas. You will find it helpful if you think of details as growing out of the main idea. In sample paragraph 1, there are three major details growing out of the main idea. These are the major details:

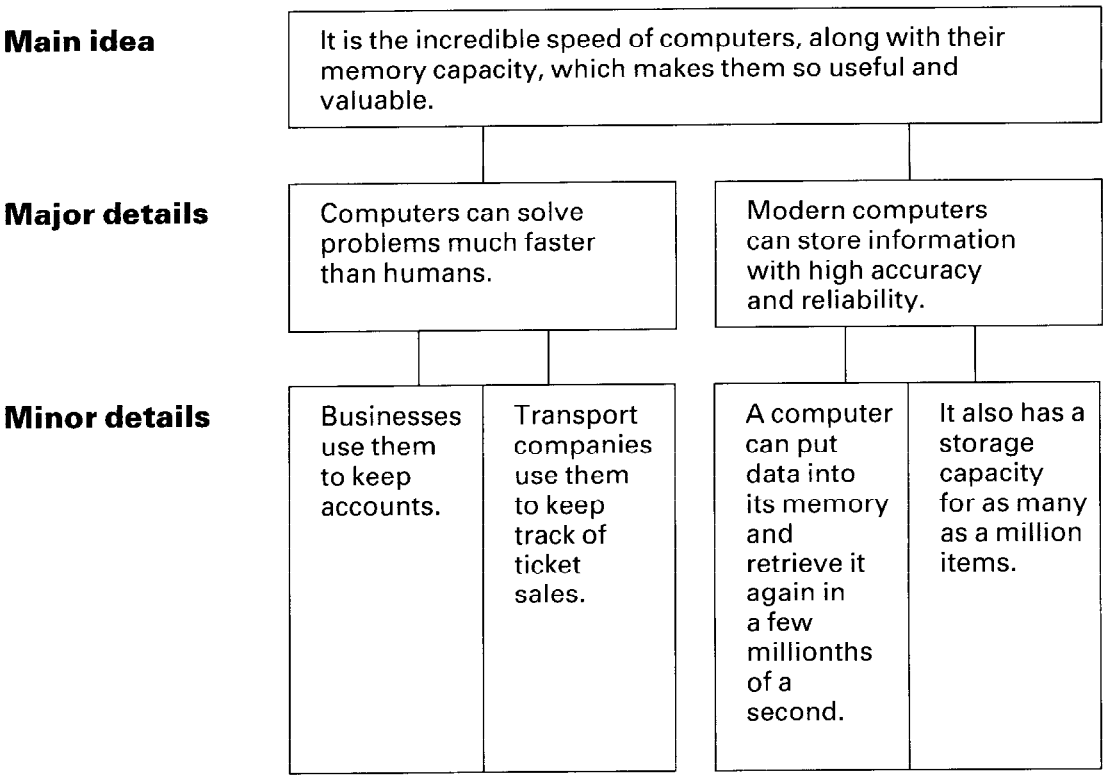
1 *They have circuits for* ***performing arithmetic operations***.
2 *They all have a way of* ***communicating with the person(s) using them***.
3 *They also have circuits for* ***making decisions***.

A major detail often has minor details growing out of it. These minor details tell more about a major detail, just as major details tell more about a main idea. In studying, you often find a paragraph that has many small details that you must understand and remember. Breaking up a paragraph of this kind into its three components: the main idea, major details, and minor details will help you to understand and remember what it is about.

Sample paragraph 2:

> It is the incredible speed of computers, along with their memory capacity, which makes them so useful and valuable. Computers can solve problems in a fraction of the time it takes man. For this reason, businesses use them to keep their accounts, and airline, railway, and bus companies use them to control ticket sales. As for memory, modern computers can store information with high accuracy and reliability. A computer can put data into its memory and retrieve it again in a few millionths of a second. It also has a storage capacity for as many as a million items.

If you were to organize this paragraph into its three components, it would look like this:

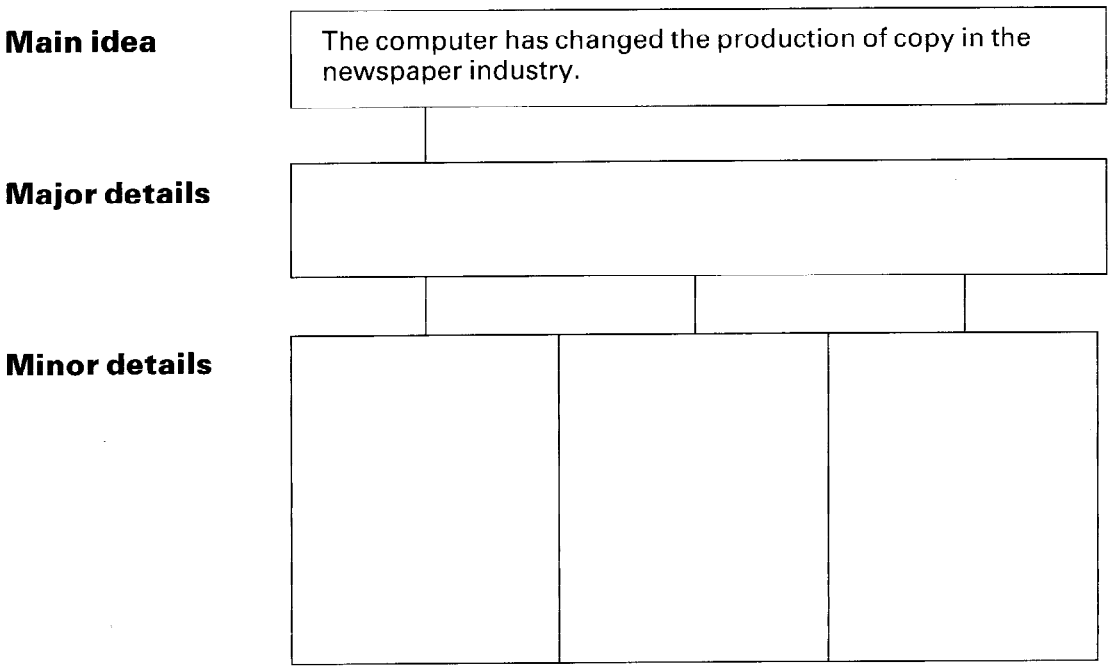


In making a block diagram you don't have to write every word in the main idea sentence or in each of the detail sentences.

Exercise 1

Practise finding the main idea, major details, and minor details by completing the block diagram after reading the following paragraph.

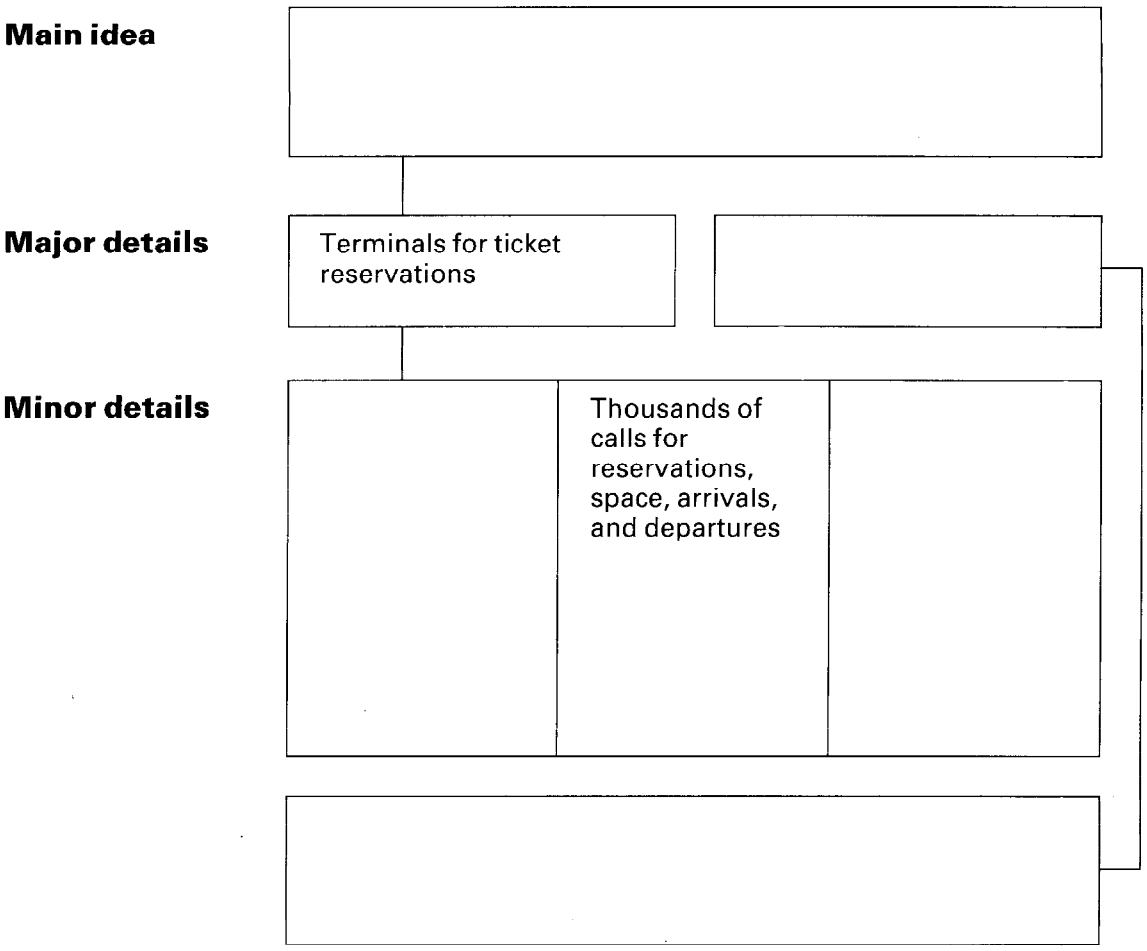
The computer has changed the production of copy in the newspaper industry. There are three steps involved in the process: input, correction, and output. First, the computer numbers each story, counts words, and gives a listing of the length of each story. Then, a page is made up, advertisements are placed in, the copy is shifted or deleted, and corrections are made. Finally, the computer hyphenates words, and the result of all this is a newspaper page.

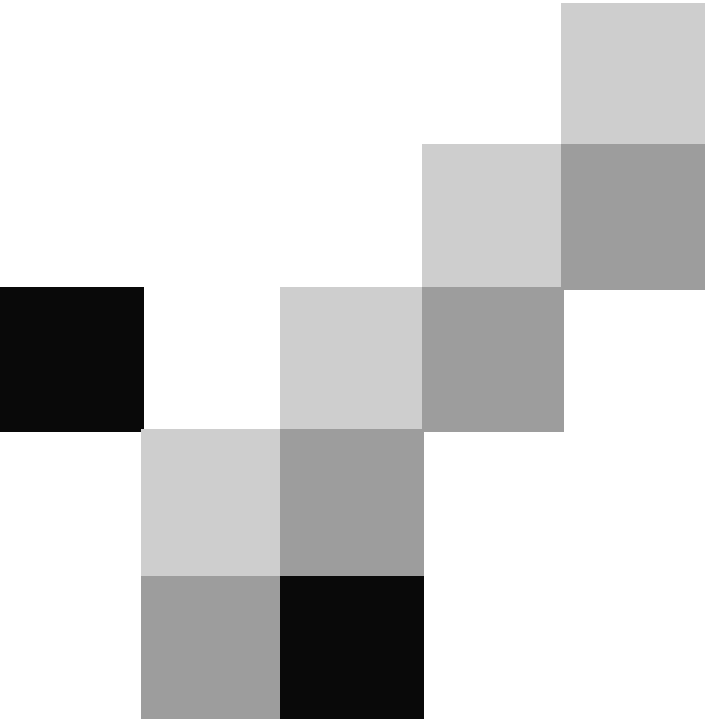


Exercise 2

Practise finding the main idea, major details, and minor details by completing the diagram after reading the following paragraph.

Railway companies use large computer systems to control ticket reservations and to give immediate information on the status of their trains. The computer system is connected by private telephone lines to terminals in major train stations, and ticket reservations for customers are made through these phone lines. The passenger's name, type of accommodation, and the train schedule is put into the computer's memory. On a typical day, a railway's computer system gets thousands of telephone calls about reservations, space on other railways, and requests for arrivals and departures. A big advantage of the railway computer ticket reservation system is its rapidity because a cancelled booking can be sold anywhere in the system just a few seconds later. Railway computer systems are not used for reservations alone. They are used for a variety of other jobs including train schedules, planning, freight and cargo loading, meal planning, personnel availability, accounting, and stock control.





English for Computer Science and Engineering

Unit 5

Optical Laser Disks: High-Density Storage

predict	foretell	پیش بینی نمودن
eventually	finally, in the end	نهایتا
obsolete	ancient, useless	فرسوده ،منسوخ
beam	ray of light	شعاع،پرتو
score	cut, make a notch	خط انداختن، شیار ایجاد نمودن
pit	hole	حفره
deflect	deviate	،منکسر کردن ،شکستن
double	multiply by two	مضاعف نمودن
burst	erupt, break open	منفجر شدن

Optical Laser Disks: High-Density Storage

seam	line where two pieces are stitched together	شکاف ،درز لباس
decline	refuse, go down, decrease	،تنزل کردن ،کاستن
impractical	unpractical, not useful	غیر عملی ،نشدنی
warehouse	wholesale store, storehouse	انبار ، مخزن
distant	remote, far apart	دوردست
periodical	magazine, journal	مجله ،نشریه دوره ای
loan	borrowed money	وام
stabilize	make stable	استوار کردن
spinoff	byproduct,offshoot	محصول جانبی، شاخه

Optical Laser Disks: High-Density Storage

compact	dense, condensed	فشرده
alter	change, modify	تغییر دادن
bump	blow, stroke	ضربت
land	top layer , surface	سطح کوچک صاف،
detector	sensor	آشکار ساز ، کشف کننده
analogous	similar	مشابه
device	apparatus	دستگاه
jukebox	machine which contains a collection of records and plays by inserting coin	جعبه گرامافون
poised to	ready	آماده

Optical Laser Disks: High-Density Storage

tremendous	huge, enormous	چشمگیر،مقدار زیاد،شگرف
commercially	relating to buying and selling	از لحاظ تجاری
peripheral	external, outer	دستگاه جانبی
proprietary	of an owner, of property	اختصاصی
cartridge	removable unit containing a data storage medium	قاب نوار
retailer	selling goods to final consumers	خرده فروش
pursue	chase after, follow	تعقیب کردن

Electronic Publishing: Saving the Trees

enthusiastic	excited, intensely interested	مشتاق ،علاقه مند
manual	handbook	راهنما
correspondence	exchange of letters, similarity	تشابه، مکاتبات
partially	partly	اندکی
retrieve	find information and display it as output	بازیابی

Language focus E

Making comparisons

Formation

The regular comparative and superlative forms of descriptive words (adjectives and adverbs) are shown below:

1 **Words of one syllable add the ending *-er* and *-est*.**

Examples:

	Absolute	Comparative	Superlative
Adjectives	new	newer	newest
	old	older	oldest
	big	bigger	biggest
Adverbs	soon	sooner	soonest
	late	later	latest

2 **Words with three or more syllables are preceded by *more* and *most*.**

Examples:

	Absolute	Comparative	Superlative
Adjectives	interesting	more interesting	most interesting
	convenient	more convenient	most convenient
	beautiful	more beautiful	most beautiful
Adverbs	easily	more easily	most easily
	carefully	more carefully	most carefully

3 **Adjectives with two syllables may be like 1 or 2 above in that they will add the ending *-er* and *-est* if they end in *-y* or *-ly*, *-ow*, *-le* and *-er*.**

Examples:

	Absolute	Comparative	Superlative
-y	tiny	tinier	tiniest
	speedy	speedier	speediest
-ly	early	earlier	earliest
	friendly	friendlier	friendliest
-ow	shallow	shallower	shallowest
	narrow	narrower	narrowest
-er	clever	cleverer	cleverest

4 **Most of the remaining two-syllable adjectives take *more* and *most* in front of them.**

Examples:

Absolute	Comparative	Superlative
careful	more careful	most careful
careless	more careless	most careless
boring	more boring	most boring
awful	more awful	most awful
complex	more complex	most complex

5 **Some common two-syllable adjectives can have either type of formation.**

Examples:

Absolute	Comparative	Superlative
common	commoner/ more common	commonest/ most common
gentle	gentler/ more gentle	gentlest most gentle
quiet	quieter/ more quiet	quietest/ most quiet

6 **Two-syllable adverbs ending in *-ly* take *more* and *most*.**

Examples:

Absolute	Comparative	Superlative
quickly	more quickly	most quickly
slowly	more slowly	most slowly
badly	more badly	most badly

7 **A small number of adjectives and adverbs have an irregular comparative and superlative form.**

Examples:

	Absolute	Comparative	Superlative
Adjectives	bad	worse	worst
	far	further/farther	furthest/farthest
	good	better	best
	many	more	most
Adverbs	badly	worse	worst
	far	further/farther	furthest/farthest
	little	less	least
	much	more	most
	well	better	best

Use in sentences

Comparisons may show equivalence, non-equivalence, the highest degree of something, and parallel increase.

1 **Equivalence: the following words or constructions are used to show that things or people are similar in some way.**

as ... as	are similar	each
as many ... as	equal to	either
as much ... as	is like	all
the same ... as	similar/ly	both
similar to	equal/ly	alike
the same	compared to/with	

Examples:

1 *Here, the term 'processor' is* ***equivalent to*** *the central processing unit.*
2 *Laptops are* ***as*** *powerful* ***as*** *microcomputers.*
3 *Some companies have* ***as many*** *computers* ***as*** *employees.*
4 *Some companies use* ***both*** *disks* ***and*** *conventional filing systems for storing data.*
5 *A computer virus is* ***like*** *a virus in the human body. It can do a lot of damage.*
6 *Many word-processing programs are* ***similar*** *in that they share certain common functions.*

2 **Non-equivalence: the following words and constructions are used to compare or contrast things or people that are separate from each other.**

not as ... as	greater than	unequal(ly)
...-er than	not as many ... as	unlike
more ... than	not as much ... as	not the same as
fewer ... than	not equal to	not all
less ... than		

Examples:

1 *A mainframe* ***is larger*** *and* ***more*** *expensive* ***than*** *a microcomputer.*
2 *Learning to use a computer is* ***not as*** *difficult* ***as*** *learning to program.*
3 *A fax board costs* ***less than*** *a fax machine.*
4 ***Unlike*** *factory-sealed software, pirated versions may contain viruses.*
5 *Desktop publishing is* ***the same as*** *electronic publishing.*
6 *You can save money with a network because you will need* ***fewer*** *printers.*

3 **The highest degree: the following words and constructions are used to compare one member of a group with the whole group (superlative).**

the ...-est	the most ...	the least ...

Examples:

1 *This is* ***the most popular*** *package on the market today.*
2 *BASIC is probably* ***the least difficult*** *programming language to learn.*
3 ***The best*** *programs are those adapted specifically to your own needs.*

4 **Parallel increase: the following words and constructions are used to show parallel increase (two comparatives).**

the ...-er, the more ...	the more ..., the ...-er	the ...-er, the less ...

Examples:

1 ***The more memory*** *your computer has,* ***the more data*** *it can store.*
2 ***The bigger*** *your computer system,* ***the less time*** *you spend waiting.*
3 ***The more*** *training you give to your employees,* ***the better*** *they will perform.*

Exercise 1

The following sentences express computer capabilities and limitations. Decide whether the sentences express equivalence, non-equivalence, or the superlative, then underline the words expressing the comparison. The first one has been done for you.

1 *equivalence* Speeds for performing decision-making operations are comparable to those for arithmetic operations.
2 _____ Even the most sophisticated computer, no matter how good it is, must be told what to do.
3 _____ A computer can perform similar operations thousands of times, without becoming bored, tired, or careless.
4 _____ For example, modern computers can solve certain classes of arithmetic problems millions of times faster than a skilled mathematician.
5 _____ One of the most important reasons why computers are used so widely today is that almost every big problem can be solved by solving a number of little problems.
6 _____ Finally, a computer, unlike a human being, has no intuition.

Exercise 2

Read the following sentences taken from previous units. Decide whether the sentences express equivalence, non-equivalence, or the superlative, then underline the words expressing the comparison.

1 _____ Digital Research have continued to develop their operating system, DR/DOS, and it is considered by many people to be a better product than Microsoft's. (Unit 1)
2 _____ For the last generation, Silicon Valley and Tokyo have been working to design computers that are ever easier to use. (Unit 2)
3 _____ There is one thing, however, that has prevented the machines from becoming their user-friendliest: ... (Unit 2)
4 _____ Clipboard PCs – which, as their name suggests, are not much bigger than an actual clipboard – replace the keyboard with a liquid crystal display (LCD) screen and an electronic stylus. (Unit 2)
5 _____ When the computer finds the closest match, it encodes the character in memory and displays it on the screen as if it had been typed. (Unit 2)
6 _____ There are a handful of clipboard computers now on the market, including GRIDPad, which is sold in the US; Penvision, manufactured by NCR and sold around the world; and Sony's Palmtop and Canon's Al Note, both sold only in Japan. (Unit 2)
7 _____ I'm frequently asked which online service is 'best' but, the answer is, there is no best. (Unit 3)

8 _____ They tend to judge all other online services based on this first service – often preventing themselves from seeing the advantages of a specific service. (Unit 3)

9 _____ Each offers one or more products or features that either do not exist elsewhere or are superior to the same features on other services. (Unit 3)

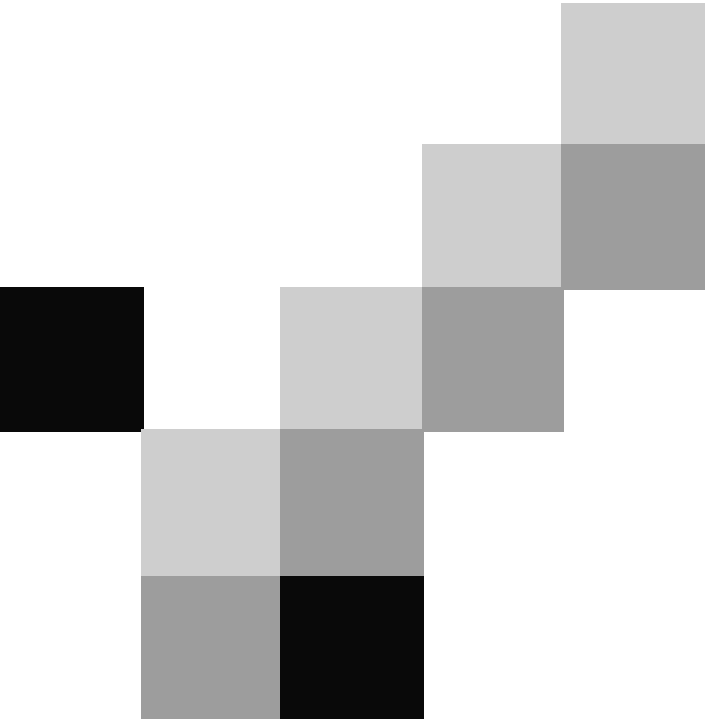
10 _____ Judge it based on what it offers and how it meets your needs – not in comparison to what you're used to using. (Unit 3)

Exercise 3

Refer back to the table of word-processing packages (Unit 5, page 58) and write ten sentences comparing the products advertised.

Examples:

Upword is more expensive than JustWrite.
Ami Pro 2.0 has the largest spell check dictionary.



English for Computer Science and Engineering

Unit 6

Magnetic Stripes and Smart Cards

badge	tag, sign	امضاء و علامت برجسته و مشخص
appropriate	suitable, fitting	مناسب
confidential	secret	محرمانه
authorization	official permission	اجازه ،اختیار
permit	allow	اجازه دادن
chronological	arranged according to the dates on which events occurred	بترتیب وقوع ،ترتیب زمانی وقوع
nonvolatile	stable	غیر فرار
replacement	substitute	جایگزین

Magnetic Stripes and Smart Cards

purchase	buy	خریداری نمودن
deduct	subtract from a total	کم کردن ،کسرکردن ،وضع کردن
inevitable	unavoidable	اجتناب ناپذیر
recognition	acknowledgment, identification	تشخیص،شناسایی
discrete	separate, individual	گسسته ، جدا ، مجزا
catch up with	overtake	پیشی گرفتن
off-the-shelf	standard, mass-produced	تولید انبوه
visually	by means of vision	دیداری
extremely	very, highly	بشدت

Magnetic Stripes and Smart Cards

complex	complicated	پیچیده
eyesight	sight, seeing	دید،بینایی
digitize	convert analog data into digital data	دیجیتالی کردن
identify	recognize	تشخیص دادن
drop off	disappear, become less	کاهش یافتن
roll	cylindrical object, scroll	طاقه، رول، لوله
once	when	هنگامی
merchandise	goods, stock, trade	کالا، تجارت کردن

Magnetic Stripes and Smart Cards

customer	client	مشتری
train	learn	آموزش دادن
expand	grow larger	بسط یافتن ،منبسط شدن
permanent	fixed, invariable	دائمی
handheld	small enough to be held in the palm of one's hand	دستی
soft	not firm; smooth	نرم ،ملایم
solid-state	consisting of semiconductor materials	نیمه هادی
stock	supply of goods, inventory; share	موجودی ،ذخیره
clerk	minor office worker	دفتردار،کارمند دفتری

Magnetic Stripes and Smart Cards

routinely	ordinarily	معمولی
inventory	stock, list of assets	موجودی ، دارایی
slate	fine grained rock that is easily split into thin layers	ورقه، صفحه، سنگ لوح
alphanumeric	consisting of letters and numbers	حرفی عددی
signature	signing of one's name	امضاء
participant	partaker	شرکت کننده

Point-And-Draw Devices

navigate	steer, journey	هدایت کردن
command	order, direction,control	فرمان
effectiveness	efficiency, productivity	اثر،تاثیر،کارایی
instance	example	مورد،نمونه
particular	special, unusual	ویژه ،خاص
accordingly	therefore; correspondingly	نتیجتا

Language focus F

Time sequence

In activities such as scheduling, doing routine activities, and conducting and describing experiments, it is important to recognize the sequence of events. As we know, events do not simply occur in isolation, they occur either before, during, or after other events. This time sequence may be chronological, logical, or causal. The following tables show examples of time relaters.

1 **Before given time-references:**

	Time relaters		
Adjectives	earlier former	preceding previous	
Adverbials	already prior before	earlier first formerly originally	previously so far yet
	before that before then	up to now/then until now/then	in the beginning (long) ago

Examples:

1 *The memory storage capacity of* ***earlier*** *computers was not as large as those of today.*
2 *When the first digital computer was developed, the first analog computer had* ***already*** *been in use for some time.*
3 ***Up to now****, voice recognition technology has not been developed for mass marketing.*

2 **Simultaneous with given time-references:**

	Time relaters	
Adjectives	contemporary	simultaneous
Adverbials	at present at this point now/then today for the time being at the moment at that time	meantime meanwhile in the meantime when at the same time

Examples:

1 ***At that time*** *many new computer programs were being developed for use in businesses.*
2 *Computers may soon take over many daily tasks, but* ***in the meantime*** *ordinary people must continue to do them themselves.*
3 *Computer magazines keep us informed about* ***contemporary*** *issues in the computing world.*

3 **After given time-references:**

	Time relaters		
Adjectives	following	later	next
Adverbials	afterwards after that eventually	since by the time	by the end soon next

Examples:

1 ***Since*** *the development of the chip, computers have become cheaper and more compact.*
2 *You should have a good idea of the various applications of computer software* ***by the time*** *you finish reading this book.*
3 *Although initial versions of word-processing programs were not very complex,* ***later*** *versions were much more sophisticated.*

Sample paragraph:

Computers, as we know them *today*, have not been around for a long time. It was not *until* the mid-1940s that the first working digital computer was completed. But *since* then, computers have evolved tremendously. Vacuum tubes were used in the first-generation computers only to be replaced by transistors in the second-generation computers *at the beginning* of the early1960s. *By the end* of the 1960s, transistors themselves were replaced by tiny integrated circuit boards and, consequently, a new generation of computers was on the market. Fourth-generation computers are *now* produced with circuits that are much smaller than *before* and can fit on a single chip. *Even now*, new technologies are being developed to make even better machines.

Exercise 1

Read the following paragraph and, as you read, underline the time relaters.

During the seventeenth and eighteenth centuries, many easy ways of calculating were devised. Logarithm tables, calculus, and the basis for the modern slide rule were invented during this period. It was not until the early 1800s that the first calculating machine appeared and, not too long after, Charles Babbage designed a machine which became the basis for building today's computers. A hundred years later, the first analog computer was built, but the first digital computer was not completed until 1944. Since then, computers have gone through four generations: digital computers using vacuum tubes in the 1950s, transistors in the early 1960s, integrated circuits in the mid-60s, and a single chip in the 1970s. In the 1980s, we saw computers become smaller, faster, and cheaper. Earlier this decade, computers became portable, from laptops to palmtops. At the rate computer technology is growing now, we can expect further dramatic developments before the end of the century.

Exercise 2

Read the following sentences which come from previous units. Underline the time relaters and indicate whether they refer to before, during, or after the given time reference. The first one has been done for you.

1 *after* Since then, over seventy million PCs made by IBM and other manufacturers have been sold. (Unit 1)

2 _____ Over this period, PCs have become commodity items. Since IBM made the design non-proprietary, anyone can make them. (Unit 1)

3 _____ Ten years later, in 1991, IBM were making PCs with 16Mb of memory, expandable to 64Mb, running with a processor speed of 33MHz. (Unit 1)

4 _____ Large companies are considering running major applications on PCs, something which, ten years ago, no one would have believed possible of a PC. (Unit 1)

5 _____ When the computer finds the closest match, it encodes the character in memory and displays it on the screen as if it has been typed. (Unit 2)

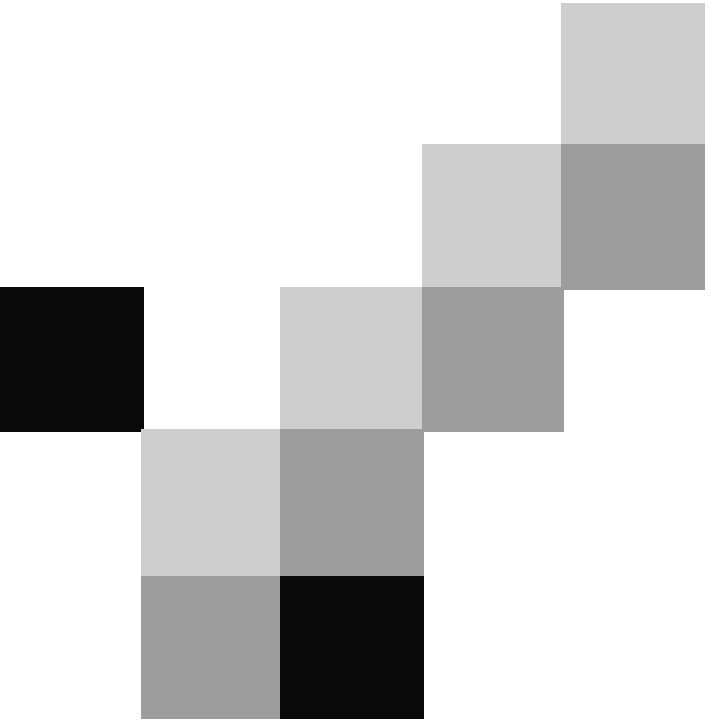
6 _____ Enter the clipboard computer, a technology that has been in development for the last 20 years but took hold in the mass market only this year. (Unit 2)

7 _____ Eventually, we're all going to be interlinked, no matter which service we use, in what DIALOG's Richard Ream calls a 'network of networks'. (Unit 3)

8 _____ Until then, most of us have to go to more than one service to find everything we need. (Unit 3)

Exercise 3

Now refer back to paragraphs 1, 2, 4, and 5 of the text entitled *Computer networks* (page 67, Unit 6). Underline all the time relaters and indicate whether they refer to before, during, or after the given time reference.



English for Computer Science and Engineering

Unit 7

Desktop Printers: Lots of Choices

cash	money in the form of coins and bank notes	نقد
receipt	bill of sale	قبض رسید،رسید
memo	reminder	یادداشت
payroll	financial sheet listing salaries	لیست حقوق
emit	send out	ساتع کردن
shutter	hinged cover for a window or door	روپوش
shade	cast a shadow upon; dim	سایه رنگ
naked eye	bare eye	چشم غیر مسلح
injection	the forceful insertion of a substance under pressure	تزریق

Desktop Printers: Lots of Choices

chamber	room	اتاق
squirt	shoot out	فواره زدن
droplet	small drop	قطره کوچک
enclosure	confinement, closure of area	محفظه
expose	reveal, uncover	بی حفاظ نمودن
drum	a bulging cylindrical shape	غلطک
affect	influence	متاثر کردن
toner	ink used by laser printers	جوهر
fuse	combine by melting together	امیختن

Desktop Printers: Lots of Choices

resolution	image precision	وضوح تصویر
emerge	appear, come out	پدیدار شدن
budget-minded	minding budget	اقتصادی
routinely	usually	معمولی
generate	create, produce	تولید کردن
precision	exactness, accuracy	دقت
plotter	a type of printer	رسم کننده
tiny	very small	ظریف
pin	small needle	پایه سنجاقی

Desktop Printers: Lots of Choices

accommodate	host guests; provide lodging	منزل دادن وفق دادن،
facsimile	material sent via a fax machine	نمابرد
sophisticated	complicated	پیچیده
aura	something which emanates from a person	تجلی
demand	claim, requirement	تقاضا
transparency	being clear	شفافیت
acetate	sheet of clear plastic film	استات

Desktop Printers: Lots of Choices

capture	entrap	ضبط کردن
fade	become dim	محو شدن
panel	flat piece of wood	صفحه
reproduction	duplication	تکثیر کردن
synthesis	formation of a compound through	ترکیب کردن ، ساختن
convert	transform, change	تبدیل نمودن
flexibility	ability to bend or be bent	انعطاف پذیری
raw	unprocessed	خام

Desktop Printers: Lots of Choices

environment	surroundings	محیط
resemble	be similar to	تداعی نمودن، شباهت داشتن
phoneme	syllable; sound	صوت ، اوا

Computers: The Enabling Technology for the Disabled

profound	serious, deep	عمیق
stun	shock; astonish	حیرت زده کردن
paraplegic	paralyzed	دچار فلج ناقص
podium	platform, stage	جایگاه مخصوص
rehabilitative	designed to restore good health	بازتوان کننده
stimulation	motivation	انگیزش
intensity	strength	زیادی ،شدت
muscle	contracting body tissue	ماهیچه
portable	mobile	قابل حمل

Computers: The Enabling Technology for the Disabled

coordinate	arrange in proper order	هماهنگ کردن
gait	way of walking	گام برداشتن
stage	raised platform	صحنه
cardiac	of the heart	قلبی
pacemaker	heartbeat regulator	دستگاه تنظیم کننده ضربان قلب
attach	annex; add	اتصال
chronic	lasting (as of an illness); constant	مزمن
deformity	abnormality	بدشکلی
auditory	related to hearing	شنیداری

Computers: The Enabling Technology for the Disabled

spinal	referring to the backbone	نخاعی
therapeutic	pertaining to the treatment of a disease	درمانی
paralysis	palsy	فلج
atrophy	degeneration of a body part	تحلیل رفتن
circulation	movement of blood within the body	گردش خون
sluggish	slow, inactive	تنبل
cardiovascular	pertaining to the heart and blood vessels	عروقی
sore	inflammation, wound	جراحت
pedal	lever that is used to operate a device	پدال

Computers: The Enabling Technology for the Disabled

crank	rotate; turn a lever	هندل زدن
seek	search for	جستجو نمودن
in the meantime	meanwhile	در ضمن
thrill	excite	بهیجان اوردن

Language focus G

Listing

It is important when reading to recognize and understand the relationship in which sentences and groups of sentences combine to present information. This information may be linked by means of a connective word or marker.

Making a list, for example when enumerating, and giving instructions, indicates a cataloguing of what is being said. It is important to note that most enumerations belong to clearly defined sets. The following table is a list of the markers that can be used to show the order in which things are to be said.

1, 2, 3, etc.	
one, two, three, etc.	
first(ly), second(ly), third place	
another, next, then	
furthermore, afterwards, moreover	
lastly/finally	
to begin/start with, and to conclude	
first and foremost first and most important(ly)	mark the beginning of a descending order
above all last but not least	mark the end of an ascending order

There are many ways of showing sequential relationships. Those given in the table above are not the only ones, they are the most common ones used in listing or enumerating. The *-ly* forms are usually used when listing.

Sample paragraphs:

More and more police departments are now using sophisticated devices to help control the increasing crime rate. Some of these devices are: *firstly*, a computer terminal inside a police vehicle to answer an officer's questions, *secondly*, a computer-controlled display unit for displaying fingerprints, and *thirdly*, educational systems for police officers such as terminals, enabling them to verify changes in laws, rules, and regulations.

The computer memory of many law enforcement systems contains all kinds of information. *First and foremost*, it has data on stolen items such as cars, licence plates, and property. *Second*, it has information on missing persons and wanted fugitives. *Last but not least*, it contains information on political extremist groups and their activities.

Computers have certainly revolutionized police work by providing access to millions of items of information with the least possible delay and speeding up the process of apprehending suspicious-looking characters.

Exercise 1

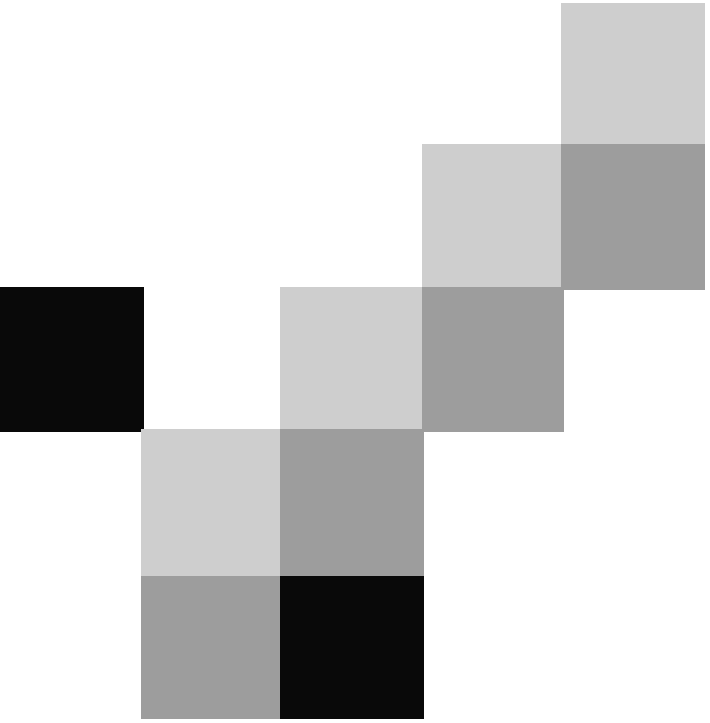
Complete the following paragraph about the various steps in the creation of a database by filling in the blanks with appropriate listing markers.

When you are creating a new database, you must [1]_____ decide how many fields you will need in your database. [2]_____, you will have to provide up to five items of information about each field. [3]_____, each field needs to have a name. [4]_____, the field type has to be defined. Character, numeric, date, and logical are some common types. [5]_____ choice to be made is the width of the field. However, some fields, such as date, have present default values. The [6]_____ step is to set the number of decimal places if the field is numeric. [7]_____, you will have to indicate whether the field is to be indexed or not.

Exercise 2

Complete the following paragraph by filling in the blanks with appropriate listing markers.

Computers can do wonders, but they can waste a lot of money unless careful consideration goes into buying them. Businessmen and women thinking of buying a computer system should [1]_____ admit they know very little about computers. [2]_____, they must realize that the computer sales people don't always know how their business works.
[3]_____, it is essential that buyers should get outside advice, not necessarily from consultants but from other executives who have had recent experience in buying a computer system. [4]_____ they should try to see systems similar to ones under consideration in operation. Because their operations will have differences that must be accommodated, they should [5]_____ find out what would be involved in upgrading a system.
[6]_____ important thing to know before buying a computer is the financial situation of the supplier because computer companies come and go and not all are financially stable. [7]_____, the prospective buyer should demand that every detail be covered in writing, including hardware and software if they are supplied by different companies. There's nothing wrong with computers themselves, it's how and why they are used that can cause problems.



English for Computer Science and Engineering

Unit 8

Special-Function Terminals: ATMs and POSs

variety	diversity, multiplicity	تنوع
badge	tag, sign	علامت برجسته و مشخص
transaction	interaction between two parties	تراکنش، معامله
response	reply, answer	پاسخ
catch on	become widespread	گرفتن
consortium	an association of companies for some definite purpose	ائتلاف چند شرکت
on the spot	immediately, in a difficult position	نقدا
transcript	written copy	سواد،نسخه رونوشت

Special-Function Terminals: ATMs and POSs

revenue	income, government income earned through taxation	منافع ،بازده
point-of-sale	computer application facilitating sales transactions and helping track inventory	نقطه فروش
establishment	foundation, permanent organization	موسسه، تاسیس
wand	optical bar code reader	دستگاه کد میله‌ای خوان
stationary	not moving, still	ثابت
contain	include, have within	حاوي بودن
identification	recognition	تعیین هویت
request	demand	تقاضا

Special-Function Terminals: ATMs and POSs

verbally	orally	شفاها
checkout	final inspection, place where one pays for purchases in a commercial establishment	وارسي
stand	position	جايگاه
pulse	throbbing, beating	ضربه ،پالس
besides	in addition to	بعلاوه
replenish	resupply, reload, restock	پركردن مجدد
restock	resupply	پركردن مجدد

Special-Function Terminals: ATMs and POSs

fasten	secure, bind, attach, close	بستن ،محکم کردن
warehouse	storehouse	انبار ، مخزن
restrict	confine	،محدود کردن
merchandise	goods, ware, stock	کالا،مال التجاره
itemize	list	جزء به جزء نوشتن
purchase	buy, procure	خریداری کردن
tax	impose a tariff, levy	مالیات، مالیات بستن

Multi-User Systems

wise	clever; smart	عاقلانه
afford	be able to pay for	استطاعت داشتن
economic	of the science of economics	اقتصادی
dumb	mute, slow	کندذهن، گنگ
inexpensive	cheap	ارزان
savings	conservation, preservation	پس‌انداز
currently	presently	در حال حاضر
compatible	consistent	سازگار

Multi-User Systems

appropriate	suitable; fitting	مناسب، در خور
extensive	comprehensive	گسترده
suitable	becoming	مناسب
ergonomy	pertaining to human engineering	فاکتورهای انسانی
prompt	done immediately	بیدرنگ

Language focus H

The passive

Passives are very common in technical writing where we are more interested in facts, processes, and events than in people. We form the passive by using the appropriate tenses of the verb *to be* followed by the past participle of the verb we are using.

Examples:

Active

1 *We sell computers.* (simple present)
2 *Babbage invented 'The Analytical Engine'.* (simple past)

Passive

1 *Computers* ***are sold.*** (simple present)
2 *'The Analytical Engine'* ***was invented*** *in 1830.* (simple past)

Facts and processes

When we write or talk about facts or processes that occur regularly, we use the present passive.

Examples:

1 *Data* ***is transferred*** *from the internal memory to the arithmetic-logical unit along channels known as buses.*
2 *The other users* ***are*** *automatically* ***denied*** *access to that record.*
3 *Distributed systems* ***are built*** *using networked computers.*

Exercise 1

Read the text below, which describes the insurance company's procedure for dealing with PC-users' problems. Fill in the gaps using the correct form of the verb in brackets.

All calls [1] _____ (register) by the Help Desk staff. Each call [2] _____ (evaluate) and then [3] _____ (allocate) to the relevant support group. If a visit [4] _____ (require), the user [5] _____ (contact) by telephone, and an appointment [6] _____ (arrange). Most calls [7] _____ (deal with) within one working day. In the event of a major problem requiring the removal of a user's PC, a replacement can usually [8] _____ (supply).

Exercise 2 Fill in the gaps in the following sentences using the appropriate form of the verb in brackets.

1 The part of the processor which controls data transfers between the various input and output devices _____ (call) the control unit.

2 The address bus _____ (use) to send address details between the memory and the address register.

3 The pixel positions _____ (pass on) to the computer's pattern recognition software.

4 An operating system _____ (store) on disk.

5 Instructions written in a high-level language _____ (transform) into machine code.

6 In the star configuration, all processing and control functions _____ (perform) by the central computer.

7 When a document arrives in the mail room, the envelope _____ (open) by a machine.

8 Once the index _____ (store), a temporary key number _____ (generate) and _____ (write) on the document.

Events

When we write or talk about past events, we use the past passive. Let us look at some examples.

Examples:

1 *COBOL* ***was*** *first* ***introduced*** *in 1959.*
2 *Microsoft* ***was founded*** *on the basis of the development of MS/DOS.*
3 *The organization* ***was created*** *to promote the use of computers in education.*

Exercise 3 Fill in the gaps in the following sentences using the appropriate form of the verb in brackets.

1 Microsoft _____ (found) by Bill Gates.

2 C language _____ (develop) in the 1970s.

3 During that period, enormous advances _____ (make) in computer technology.

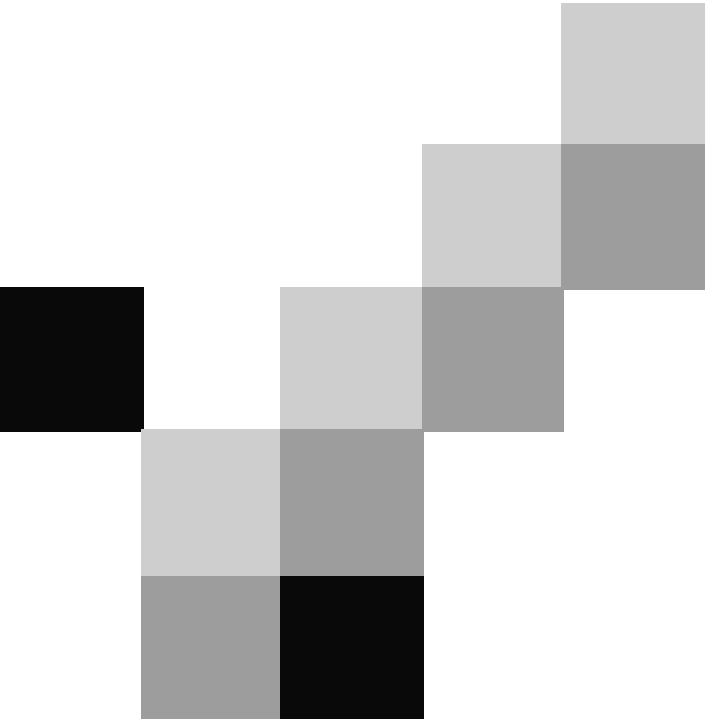
4 The following year, twice as many PCs _____ (sell).

5 In the 1980s, at least 100,000 LANs (set up) in laboratories and offices around the world.

6 The first digital computer (build) by the University of Pennsylvania in1946.

7 Last year, more software companies (launch) than ever before.

8 IBM's decision not to continue manufacturing mainframes (reverse) the year after it (take).



English for Computer Science and Engineering

Unit 9

Data Communications Hardware: Making It Happen

transmit	send, broadcast	انتقال دادن
vast	enormous, huge	پهناور،وسیع ،بزرگ ،زیاد،عظیم
array	arrangement of data elements along one or more dimensions	آرایه
trend	tendency	گرایش ، تمایل
convergence	assembly, coming together	همگرایی
evolve	change gradually	نموکردن
concentrator	a device which makes signals more intense	متمرکز کننده
hub	common point of connection for devices in a network	جعبه تقسیم شبکه
router	hardware device which directs messages across a network to their correct destination	مسیر یاب
Interface	equipment or programs which enable two different systems or programs to communicate	رابط، واسط
handle	manage, deal in	اداره کردن

Data Communications Hardware: Making It Happen

multiplexer	a device that can interleave two or more activities	تسهیم کننده
modulate	regulate, adjust	تعدیل کردن، تنظیم کردن
destination	place where one is going or sth is sent	مقصد
bolt	flash of lighting	برق صاعقه
couple	pair	زوج ،جفت
corporate	common, shared	صنفي، متحد
cyberspace	virtual space, Internet	اینترنت
assume	suppose, presume	فرض کردن
capability	ability, skill	قابلیت
hookup	system having a number of parts designed to work together	مجموعه ابزار

Data Communications Hardware: Making It Happen

transceiver	Transmitter/Receiver	دستگاه فرستنده و گیرنده
plug	electrical connector	دوشاخه
latitude	angular distance on a meridian north or south of the equator	عرض جغرافیایی
longitude	angular distance measured east or west from the prime meridian	طول جغرافیائي
pinpoint	locate exactly	با دقت اشاره کردن به
get around	go to different places	پرسه زدن
reservation	act of keeping back	رزرو
subordinate	someone under the authority of another	فرعی ، تابع
complexity	complicated quality	پیچیدگی
establish	set up, found	بنانهادن، تاسیس کردن
handshake	shake hand	دست دادن

Data Communications Hardware: Making It Happen

generic	general	عمومی، کلی
relieve	ease, alleviate	تسلی دادن ، فرو نشاندن
duty	task	وظیفه
content	component	محتوی
prompt	on-screen input	صفحه فرمان
inquiry	exploration, questioning	تحقیق، بازجویی
concentrate	focus, pay attention	متمرکز کردن
interpret	explain, clarify	تفسیر کردن، تعبیر کردن
remote	distant, located far away	دور
in turn	in order	به نوبت

Data Communications Hardware: Making It Happen

enterprise	business , company	سازمان
incompatible	inconsistent	نا سازگار
alleviate	Relieve, moderate	آرام کردن ، کم کردن
backbone	physical infrastructure of the Intern	بستر اصلی شبکه

Protecting Resources

confidence	secret; trust	محرمانگی
imply	indirectly suggest	دلالت ضمنی کردن
integrity	unity	یکپارچگی
snoop	pry into the affairs of others, meddle	تجسس کردن
wiretap	electric listening device installed in a room or on a telephone line	استراق‌سمع
disruption	upset; interruption	قطع ، شکستن
absolutely	definitely; completely	مطلقا،کاملا
crime	illegal act	جرم
abstract	intangible	انتزاعی
comprise	include; be composed of	دربرداشتن ،شامل بودن

Data Communications Hardware: Making It Happen

seldom	rarely	بندرت
overall	generally	رویهم رفته ،کلی
elusive	difficult to understand	اغفال کننده
crucial	critical, decisive	وخیم ،بسیار سخت
legitimate	legal	قانونی
saturate	soak or fill completely	اشباع کردن
privacy	confidentiality	پوشیدگي ،پنهاني

Language focus I

Giving examples

When the main aim of a text is to inform the reader about a subject, the writer will often use examples, either to explain a point or to illustrate an idea or argument. When giving examples, it is important to differentiate between the idea itself and the illustration of the idea.

Some expressions for introducing examples are shown in the table below.

for example (e.g.)	examples of	shown by
for instance	instances of	exemplifies
an example (of this)	cases of	shows
as an example	illustrations of	illustrates
such as	exemplified by	a second/third example, etc.
like	illustrated by	
including	seen in	

Examples:

1 *Office workers use many computer applications* ***such as*** *word processing, spreadsheets, and databases.*
2 *Computers have made radical changes in preparing income tax returns.* ***For example****, in some countries you can now send your income tax return on disk.*
3 *Students can make good use of computer technology at school. Essay writing,* ***for instance****, can be done using a word-processing program.*

Note: Sometimes the markers follow the example, separated by commas, as in 3 above.

Exercise 1

The list below is made up of five groups of words, consisting of five main categories and examples of each category. Find the word groups and then write sentences to show the relationship between the groups of words. Use a different marker for each sentence. One has been done for you.

trackball	*bus*	PC
mainframe	output device	*star*
microcomputer	printer	VDU
network configuration	APL	C
programming language	COBOL	*ring*
mouse	stylus	computer
input device		

Example:
Ring, bus, and star are all examples of network configurations.

Exercise 2

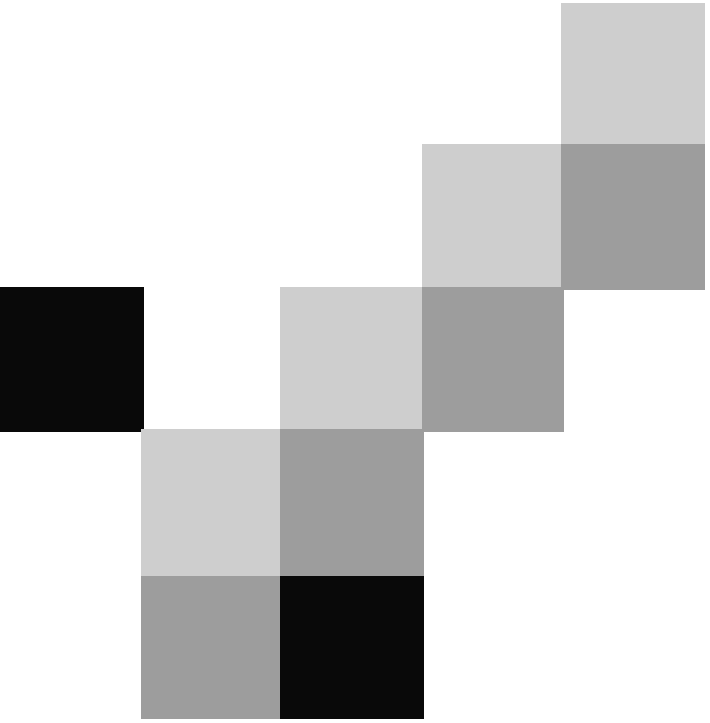
Read the following sentences. Circle the marker and underline the main idea for which the example is given. The first one has been done for you.

1 Networks also allow users in one locality to share expensive resources, (such as) printers and disk-systems. (Unit 6)
2 There are a handful of clipboard computers now on the market, including GRIDPad, which is sold in the US; (Unit 2)
3 The PC passes the query, written in a special language (e.g. Structured Query Language – SQL), to the mainframe, which then parses the query, returning to the user only the data requested. (Unit 6)
4 Here's an example of a simple virus, the Lehigh virus. (Unit 7)
5 If you use a shared PC or a PC that has public access, such as one in a college PC lab or a library, be very careful about putting floppies into that PC's drives without a write-protect tab. (Unit 7)

Exercise 3

Not all texts present examples explicitly. In some cases, markers are not used. Read the paragraph below. Circle the main idea and underline the examples of that idea.

The widespread availability of computers has in all probability changed the world for ever. The microchip technology which made the PC possible has put chips not only into computers, but also into washing-machines and cars. Some books may never be published in paper form, but may only be made available as part of public databases. Networks of computers are already being used to make information available on a world-wide scale. (Unit 1)



English for Computer Science and Engineering

Unit 10

High-Speed Wireless Communication

line-of-sight	an imaginary straight line along which an observer looks	خط دید
curvature	state of being curved	انحنا، خمیدگی
satellite	celestial body revolving around a larger body	ماهواره
eliminate	remove, omit	حذف کردن ،محو کردن
limitation	restriction	محدودیت
bounce off	bounce against and spring back	اصابت کردن و بازگشتن
avoid	prevent	اجتناب کردن
obstruction	obstacle, impediment	ممانعت
routinely	ordinarily, customarily	به طور عادی
launch	send forth	روانه کردن
relay	electronic regulation device	ایستگاه یا دستگاه تقویت

High-Speed Wireless Communication

geosynchronous	of or having an orbit with a fixed period of 24 hours	همگام با زمین
Expense	cost, price	هزینه
tremendous	huge, enormous	شگرف
capacity	capability	ظرفیت
venue	scene or setting of an event	محل واقعه
widespread	common, prevalent	شایع
temporary	impermanent	موقتی
judge	one who chooses the winner in a contest	داور
carrier	signal transmitted over a telephone line when two computers are connected	حامل
dedicate	devote to	اختصاص دادن
strict	rigid, severe	سخت ، اکید

Satelite Communications Systems

sophisticated	complicated	مشکل وپیچیده
track	follow a path	رد یابی کردن
aim	direct; intend	نشانه گرفتن ، هدف گرفتن
slight	small, unimportant	قلیل ،اندک
adjustment	tuning	تنظیم کردن
wander	move aimlessly	سرگردان‌بودن
construction	structure	ساختار
utilize	take advantage of , exploit	بکار گرفتن ، بهره‌برداری کردن
radiation	process of emitting	تشعشع

Language focus J

Explanations and definitions

Texts containing technical terminology frequently contain definitions and explanations. This is particularly the case if the text is aimed at non-experts or students of technical subjects, or if the purpose of the text is to inform specialists about new developments.

1 **Common words and expressions used in definitions or explanations are listed below.**

is/are	by ... we mean
means	by ... is meant
is taken to be	in other words
denotes	that is (to say)
is/can be defined as	

Examples:

1 *A computer* ***is*** *an electronic device.*
2 *Printers* ***are*** *output devices.*
3 *The term computer* ***refers to*** *the processor plus the internal memory.*
4 *A microchip* ***can be defined as*** *a tiny piece of silicon or similar material carrying an integrated circuit.*
5 *By peripherals* ***we mean*** *those devices attached to the computer.*

2 **Some definitions and explanations give further distinguishing characteristics by means of a defining relative clause.**

Examples:

1 *A computer is an electronic device* ***which/that processes information.***
2 *Tapes and disks are memory devices* ***which/that can be stored away for future use.***
3 *A programmer is a person* ***who/that prepares programs to solve problems.***
4 *The arithmetic-logical unit is the part of the CPU* ***where arithmetic and decision-making operations are done.***

Note: The relative pronouns used in this type of definition or explanation will be *who* or *that* for people, *when* for a period of time, *where* for a place or location, and *that* or *which* for things.

3 **Another way of defining or explaining is to use a noun, a noun phrase, or a clause separated from the rest of the sentence by commas or dashes.**

Examples:

1 *Computers – **electronic devices for processing information** – are now used in practically every aspect of life.* (noun phrase)
2 *Turnkey systems, **complete hardware/software products which are ready for use**, are available from many suppliers.* (clause)

Exercise 1

Study the following definitions. A definition usually includes three parts: the term to be defined, the group it belongs to, and the characteristics which distinguish it from other members of the group.

Term	Group	Characteristics
A core	is a ferrite ring	which is capable of being either magnetized or demagnetized.
Silicon	is a non-metallic element	with semiconductor characteristics.

Now analyse the following definitions and identify the different parts:

a by circling the term
b by underlining the group once
c by underlining the characteristics twice.

Example: *A computer is a machine with an intricate network of electronic circuits that operate switches or magnetize tiny metallic cores.*

1 Input is the information presented to the computer.
2 The term 'computer' includes those parts of hardware in which calculations and other data manipulations are performed, and the high-speed interval memory in which data and calculations are stored during actual executions of programs.
3 A 'system' is a mixture of integrated parts working together to form a useful whole.
4 Large computer systems, or mainframes, as they are referred to in the field of computer science, are those computer systems found in computer installations processing immense amounts of data.

Exercise 2

Now read the following sentences, which have all appeared in previous units, and analyse them in the same way as you did in Exercise 1.

1 The part of the processor which controls data transfers between the various input and output devices is called the control unit. (Unit 1)

2 A modem is a device which serves a dual purpose because it acts as a MOdulator (digital to analog) and a DEModulator (analog to digital) ... (Unit 3)

3 The compiler is a systems program which may be written in any language, but the compiler's operating system is a true systems program which controls the central processing unit (CPU), the input, the output, and the secondary memory devices. (Unit 4)

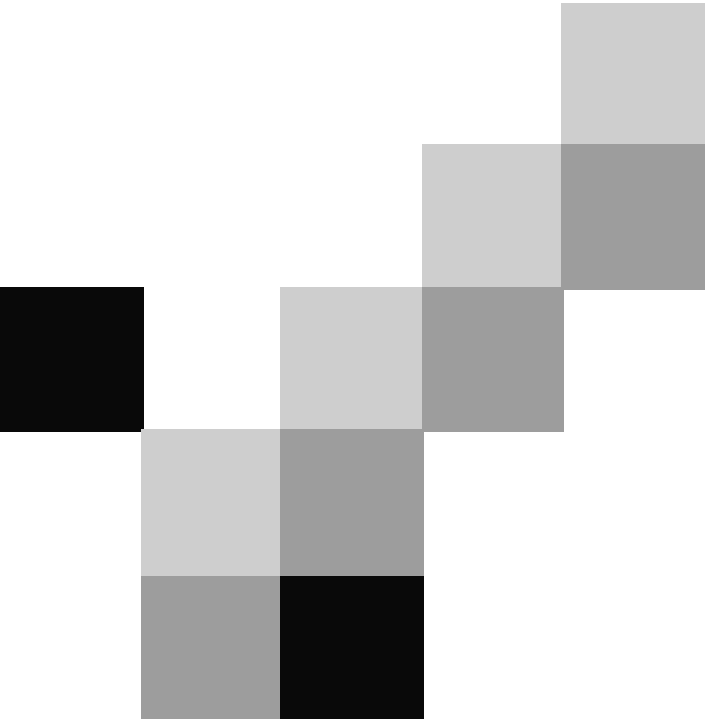
4 A variable is a quantity that is referred to by name, such as **a**, **b**, **c**, **d**, and **average** in the above program. (Unit 4)

5 A WAN is a network connected over long-distance telephone lines. (Unit 6)

6 ...a LAN is a localized network, usually in one building or in a group of buildings close together. (Unit 6)

7 A computer virus – an unwanted program that has entered your system without you knowing about it – has two parts, which I'll call the infector and the detonator. (Unit 7)

8 There are actually two kinds of antivirus programs: virus shields, which detect viruses as they are infecting your PC, and virus scanners, which detect viruses once they've infected you. (Unit 7)



English for Computer Science and Engineering

Unit 11

Networks: The WAN, MAN, LAN and TAN

classify	categorize	طبقه بندي كردن
proximity	adjacency, vicinity	نزدیکی ، مجاورت
disperse	scatter, send out	پراکنده‌کردن ، متفرق ساختن
encompass	surround, enclose	دورگرفتن ، احاطه کردن
suite	group of things that together form a set	مجموعه
coin	invent a new word or phrase	ضرب شدن، نام گذاری کردن
household	domestic establishment	خانواده، خانگی
associate	connect; unite	پیوستن
vary	alter; change	تغییر کردن

Networks: The WAN, MAN, LAN and TAN

spectrum	range of colors	طیف
constrain	force, oblige	تحمیل کردن
previous	earlier, prior	پیشین ، قبلی
mention	remind of, indicate	ذکر کردن ، اشاره کردن
embed	insert, implant	کارگذاشتن
token	symbol, sign, mark	نشانه
demonstrate	exhibit, present	نشان دادن ، شرح دادن
circulate	move around	گردش کردن
benevolent	generous, kind	نیکخواه ، خیراندیش

Networks: The WAN, MAN, LAN and TAN

contend	maintain, assert, compete	ادعا کردن، رقابت کردن
fraction	part of a whole	بخش ، قسمت
relinquish	give up, abandon	صرفنظر کردن، ترک کردن
topology	non-quantitative geometry	پیکربندی
share	apportion	تسهیم کردن
spool	send a task to memory or disk where it will be accessed for processing in the future	انباره موقتی، ذخیره سازی موقتی
accomplish	complete, perform, execute	بانجام رساندن
consolidate	unify, merge	متحد کردن

The Trend to Telecommuting

commute	exchange , travel back and forth regularly	تبدیل کردن، مسافرت کردن مداوم
stockbroker	an agent in the buying and selling of stocks	دلال سهام
certify	confirm to be true; authorize	تصدیق کردن
accountant	one who maintains financial records	حسابدار
president	head, leader	مدیر
mayor	executive head of a town or city	شهردار
interrupt	discontinue; disturb	متوقف کردن
discourage	show disapproval of	دلسرد کردن
reluctant	hesitant, unwilling	بی میل

The Trend to Telecommuting

concern	involve; worry	نگران‌بودن ، اهمیت داشتن

Language focus K

Compound nouns

The language of computing in English contains an ever-increasing number of compound nouns, that is, a group of two or more nouns which act as a single noun.

Examples:

memory capacity	*an address bus*	*an arithmetic unit*
information systems	*a bar code scanner*	

It is important to be able to recognize how such compounds are formed in order to understand what they mean.

The exact relationship between the words depends on the particular expression, but all these expressions have one thing in common: the last word in the chain says what the thing is, while the preceding word or group of words describes the thing. So when we read compound nouns, we have to start with the last word and work backwards.

Examples:

*An **address bus** is a bus dedicated to address information.*
*The **memory capacity** of a computer is the capacity of its memory.*

A large number of possible meanings can be expressed by compound nouns. For instance, the first noun or group of nouns can tell us what the second noun is made of, what it is for, or what it is part of.

1 **Material:** the first noun tells us what the second consists of.

Examples:

a silicon chip (a chip made of silicon)
a ferrite ring (a ring made of ferrite)

2 **Function:** the first noun tells us what the second noun is for.

Examples:

an address bus (a bus dedicated to address information)
an input device (a device for inputting)
an arithmetic unit (a unit which performs arithmetic functions)

3 **Part:** the second noun refers to a part of the first noun.

Examples:

a computer keyboard (the keyboard of a computer)
a monitor screen (the screen of a monitor)
a program feature (a feature of a program)

4 **Activity or person:** the second noun refers to an activity or person related to the first noun.

Examples:
computer programming (the programming of computers)
a computer programmer (a person who programs computers)

systems analysis (the analysis of organizational systems)
a systems analyst (a person who analyses organizational systems)

5 **Multiple nouns:** sometimes a compound noun will join together with one or more other nouns to give an expression that has three or four words. In such cases, it is important to examine the expression very carefully to break it into its constituent parts. The secret, as always, is to read the expression from the back towards the front.

Example:

4 3 2 1
a document-image-processing program (a program which processes images of documents)

Note: some expressions are written separately, while others are joined by hyphens. There are no clear rules for this. Sometimes you will see the same expression written in different ways in different texts.

Example:
document-image-processing program
document image-processing program
document image processing program

However, it is important to be consistent within a single text.

Exercise 1

A device that scans bar codes is called a *bar code scanner*.
What name is given to :

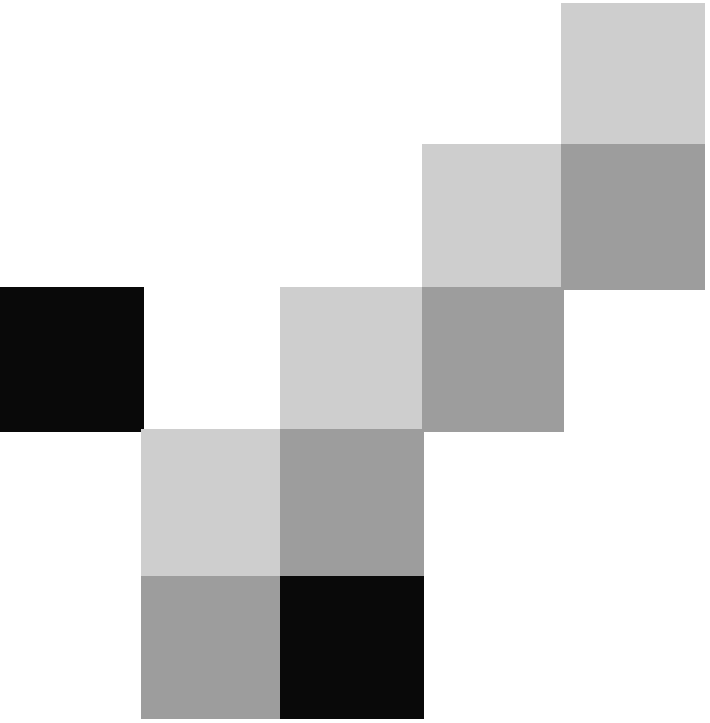
1 a unit that gives a visual display of information on a screen?
2 a device that reads magnetic cards?
3 a device that plots graphs?
4 a device that prints using a laser as the light source?
5 a unit that holds magnetic disks?
6 a device that prints using a jet of ink?
7 the rate of transmission of data?
8 a package for making presentations using multimedia?
9 a program which processes data in batches?
10 the process for the conversion of disks for computers?

Exercise 2

Using the explanations in Exercise 1 as models, write short simple explanations of the following items:

1 an input device
2 an optical character reader
3 a graphics stylus
4 a document sorter

5 a fibre optics transmission system
6 a sequence control register
7 a liquid crystal display
8 network configuration information
9 a desktop document manager
10 a multimedia editing software package



English for Computer Science and Engineering

Unit 12

Browsers: The Information Tool

get a taste of	Try, attempt	دست به کاری زدن
tap	use	بهره برداری کردن
pull together	assemble or get together	به صورت مجموعه درآوردن
frequently	regularly, often	مکررا
context	environment, background	زمینه، متن
majority	pertaining to or characterized by a majority	اکثریت
fortunately	luckily	خوشبختانه
on-demand	upon request	عندالمطالبه
element	main component	عنصر
dominant	controlling, commanding	مسلط
facilitate	make easy, assist forward	تسهیل نمودن

Browsers: The Information Tool

hierarchical	arranged according to rank	سلسله مراتبی
accommodate	settle, reside	منزل دادن، جادادن
emerge	appear, come out	ظهور کردن
cruise	travel, drive aimlessly	گشت زدن
critical	important, crucial	بحرانی، وخیم
affectionately	fondly, lovingly	مهربانانه
attribute	feature, characteristic	ویژگی

Browsers: The Information Tool

interactive	acting mutually	محاوره ای
whisk	move somewhere quickly	راندن
bullet	round character put at the beginning of a paragraph for emphasis	گلوله
submit	give in	تقدیم کردن، ثبت کردن
ultimately	eventually	نهایتا
apparent	obvious, clear	واضح

Internet Issue

frontier	pioneer	پیشگام
come along	proceed, succeed	پیشرفت کردن، جلو رفتن
inherent	intrinsic, natural	ذاتی، لاینفک
mischievous	teasing; harmful	موذی
plague	nuisance, annoyance	بلا
disrupt	disturb, upset	منقطع کردن، درهم گسیختن
assault	attack	حمله کردن

Internet Issue

plant	place seeds in ground	کاشتن
disguise	hide, conceal	جامه مبدل پوشیدن
entice	tempt	فریفتن، اغواکردن
explosion	outburst	انفجار
conduct	direct, manage	هدایت کردن، رهبری کردن، اداره کردن
plenty	abundance	فراوانی
fraud	deceit; cheating	کلاه برداری
fort	defensive structure	حصار، برج وبارو
enterprise	business, entire organization	سازمان

Internet Issue

restrict	confine	محدود کردن
deal	take care	سر وکار داشتن با
fight	battle, combat	جنگیدن
outlandish	strange	عجیب و غریب
societal	pertaining to society	وابسته به اجتماع
barrage	bombardment	رگبار
scathe	injure or damage by scorching	خسارت زدن
spam	junk mail	هرزنامه
junk	trash, garbage	آشغال

Internet Issue

unsolicited	unrequested, uninvited	ناخواسته
occasionally	sometimes, now and then, every so often, from time to time	گهگاه
rival	compete with, challenge	رقابت کردن
towering	outstanding, high	بلند مرتبه
pasture	a field covered with grass or herbage and suitable for grazing by livestock	مرتع

Language focus L

Classifying

The term 'classifying' means arranging objects in classes or groups according to shared characteristics. For example, the class of 'animals' includes all living things that can feel and move about, such as fish and birds. Each of these subgroups is also a class in its own right, having shared characteristics.

Classifying, then, is a process of bringing order out of confusion by organizing information in a logical fashion. There are often several ways of classifying the same information.

1 **From general to specific:** focusing on the large or high-level category and talking about its parts, that is from general to specific, the following expressions can be used:

is	is made up of
can be divided into	is composed of
is of	comprises
has	consists of

A general-to-specific classification will usually have singular main verbs, unless two or more things are being analysed simultaneously.

Examples:

1 *The CPU **is divided into** three parts: the control unit, the arithmetic-logic unit, and memory.*
2 *The CPU **has** three parts: the control unit, the arithmetic-logic unit, and memory.*
3 *The CPU **is made up of** three parts: the control unit, the arithmetic-logic unit, and memory.*
4 *The CPU **is composed of** three parts: the control unit, the arithmetic-logic unit, and memory.*
5 *The CPU **consists of** three parts: the control unit, the arithmetic-logic unit, and memory.*

2 **From specific to general:** what the smaller (or lower-level) components make when they are put together. This kind of classification uses the following expressions:

make up	may be
form	can be
constitute	are classified as

A specific-to-general classification will have plural verbs, because two or more lower-level categories are the focus of classification.

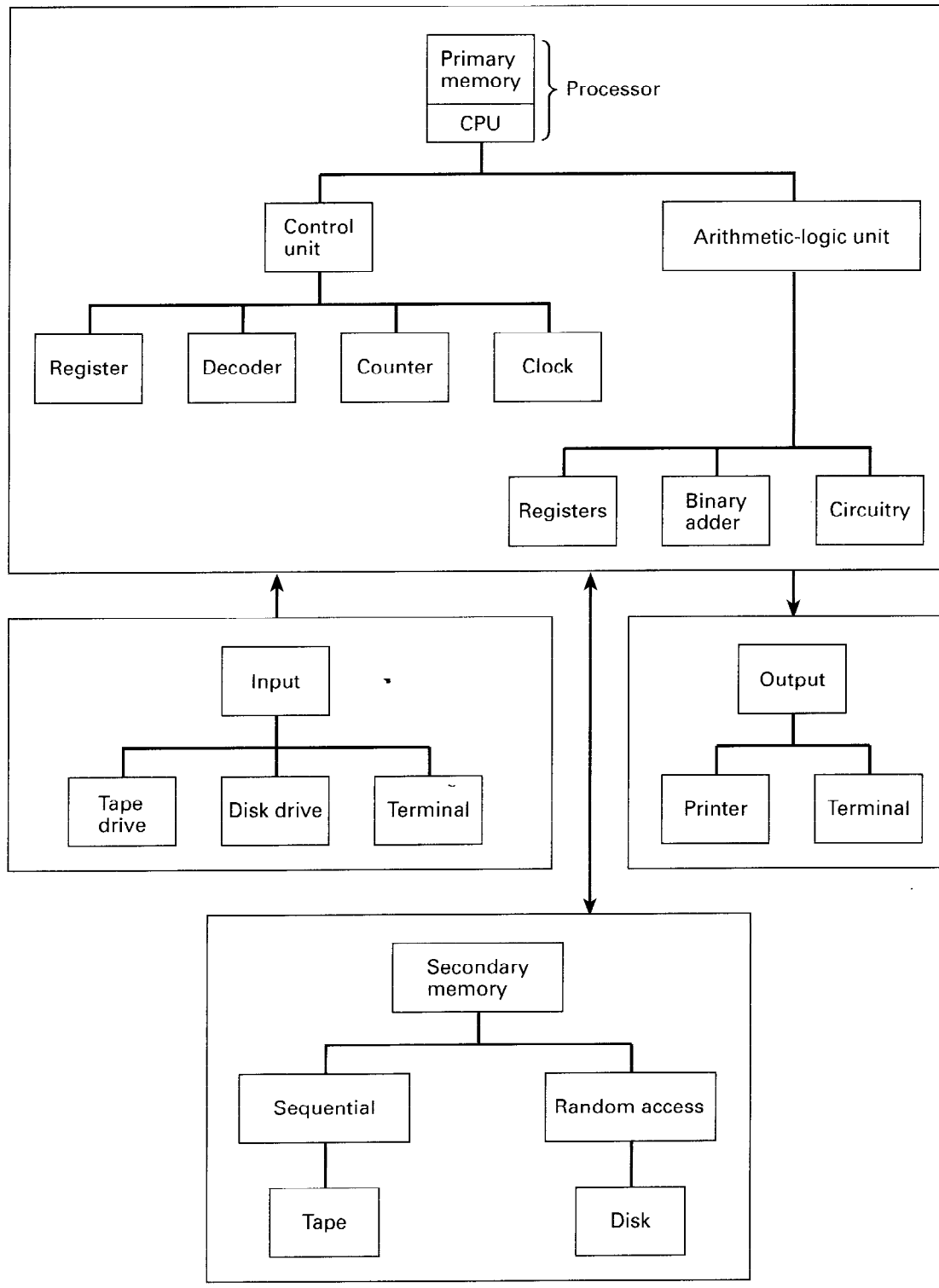
Examples:

1 *The control unit, the arithmetic-logic unit, and memory are the three parts that **make up** the CPU.*
2 *The control unit, the arithmetic-logic unit, and memory are the three parts that **form** the CPU.*

Exercise 1

Using the diagram below, complete the paragraph on the following page.

A Computer system



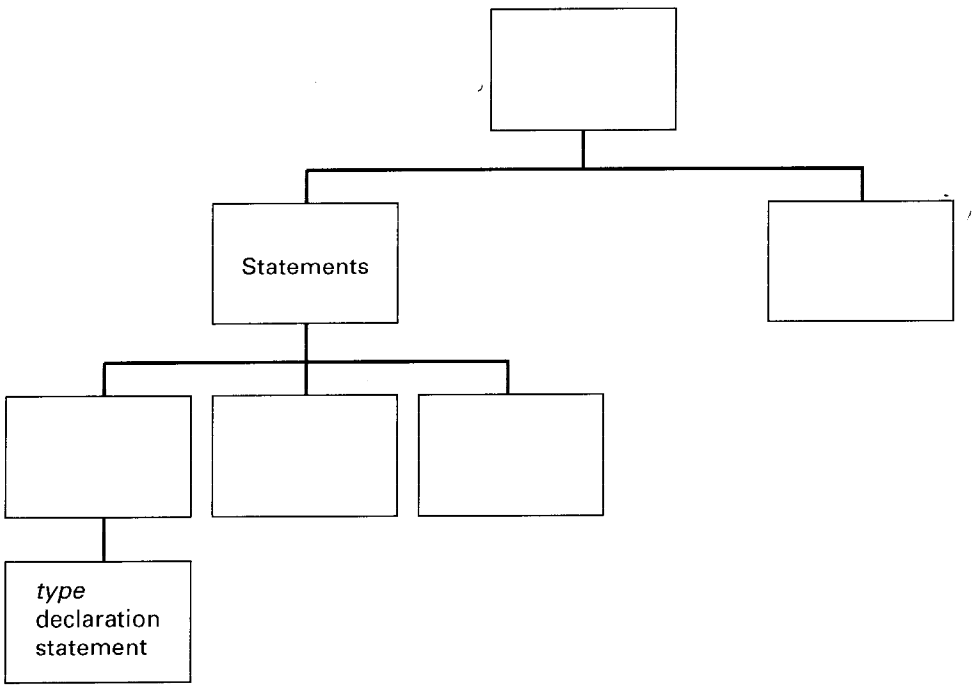
A computer, has four basic components: input, processor, memory, and output. The CPU consists of two parts: the [1] _____, which directs and controls the signals and commands inside the processor, and the [2] _____ unit, which does the arithmetic operations and the decision-making operations. While the [3] _____ is made up of a [4] _____, a [5] _____, a [6] _____, and a [7] _____, the [8] _____ is composed of [9] _____, a [10] _____, and [11] _____.

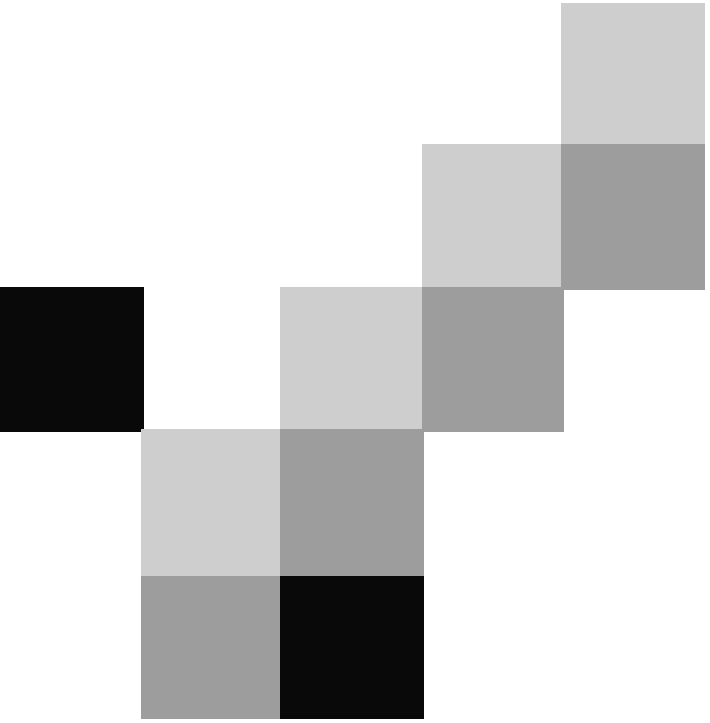
In a computer, internal memory or [12] _____ refers to the storage locations inside the computer, whereas [13] _____ refers to the storage embodied in the peripherals. [14] _____ may be divided into [15] _____ ([16] _____) and [17] _____ ([18] _____). The [19] _____ devices can be either a [20] _____, a [21] _____, or a [22] _____.

These devices enter information into the computer. After the processor has operated on it, the [23] _____ devices display the results of the computations on either a [24] _____ or a [25] _____, or store them on tape or disk for future use.

Exercise 2

Refer back to the text on C language (Unit 4, page 46) and complete the diagram.





English for Computer Science and Engineering

Unit 13

Platforms: Homes for Software

specifically	particularly	مخصوصا، به ویژه
typical	usual	معمولی
native	inborn, inherent, local	بومی، اهلی
emulate	imitate, copy	تقلید کردن
compatibility	consistency	سازگاری
expertise	proficiency, skill	خبره
specialist	having specific expertise	متخصص
insight	perception, understanding	بینش ، بصیرت
era	period of time	عصر، دوره
obsolete	no longer in use	منسوخ

Platforms: Homes for Software

conform to	follow, match, fit	پیروی کردن ، مطابقت داشتن
fleet	collection	ناوگان
entire	whole	تمام، کل
commit	perform, execute	مرتکب شدن
investment	instate	سرمایه گذاری
achieve	obtain, attain	دست یافتن انجام دادن
interoperability	ability to work together	قابلیت برقراری ارتباط
hassle	bother, inconvenience	مزاحمت

Platforms: Tailoring PCs to the Needs of Mobile Workers

tether	restrict movement with a rope or chain	افسار کردن
outlet	way out, exit	روزنه، مجرای خروج ، پریز
staple	essential element	جزء اصلی
meld	blend, merge	ادغام کردن، یکی کردن
drape across	cover with cloth	باپارچه پوشانیدن
forearm	superior limb between the elbow and the wrist	ساعد، بازو
combine	unite, join	ترکیب کردن
paramedic	person trained to provide emergency medical treatment	پزشکیار، امدادگر
symptom	sign, indication	علامت
vital	crucial, critical, necessary	حیاتی، اساسی

Platforms: Tailoring PCs to the Needs of Mobile Workers

shawl	large triangular or rectangular piece of fabric	شال
diagnoses	process of identifying conclusions from exams	تشخیص
miniature	tiny	کوچک
medic	doctor, physician	طبیب، پزشک
trackball	input device which includes a ball which may be spun in order to move the cursor	توپک (مصوب فرهنگستان)
strap	band, strip	تسمه، بند چرمی
palm	inner surface of the hand	کف دست
beam	ray of light	پرتو

Language focus M

Cause and effect

Understanding the different ways of expressing the relationship between the causes and the effects of an action is very important when you are reading English. This cause–effect relationship is commonly used in texts about computing.

Before we look at some of the ways of expressing cause and effect, note carefully this important distinction.

We can mention the cause before the effect.

Example:
(cause) (effect)
*Dust often **causes** the recording condition of disks to deteriorate.*

We can mention the effect before the cause.

Example:
(effect) (cause)
*Deterioration in the recording condition of disks **is** often **due to** dust.*

There are many different ways of expressing cause and effect.

1 **Verbs linking cause and effect:**

result	cause
produce	result in
allow	result from
prevent	bring about
enable	

Examples:

1 *The introduction of computer technology **brought about** significant changes in office routines.* (cause → effect)
2 *Computers can create artificial objects in their memories. This **allows** developers to test product design without actually creating a real prototype.* (cause → effect)
3 *The extensive use of computers in schools is **resulting in** a new generation of computer-literate students.* (cause → effect)
4 *The problems **were caused by** the volume of network traffic.** (effect ← cause)

Note: * See Language focus H for an explanation of the passive used in example 4.

2 **Connectives introducing cause:**

due to as the/a result of since because in response to as

Examples:

1 *Early computers developed quickly* ***as a result of*** *their use in military applications.* (effect ← cause)
2 *Teachers must rethink their roles* ***as*** *computer technology is creating a revolution in the classroom.* (effect ← cause)
3 ***Because*** *off-the-shelf programs do not always fit a company's needs, software often has to be specially developed.* (effect ← cause)

3 **Connectives introducing result:**

with the result that so that thus therefore consequently hence for this reason thereby

Examples:

1 *Computers can remove many of the routine and boring tasks,* ***thereby*** *leaving us with more time for interesting, creative work.* (cause → effect)
2 *Carpel tunnel syndrome is a serious medical condition.* ***For this reason****, computer users should be careful of their posture and take frequent breaks.* (cause → effect)
3 *When using an online database service, you must pay for the time you use.* ***Consequently****, you should have a good idea of what you want before you log on.* (cause → effect)

4 **Another way of showing causal relationship is by introducing the cause with *if*. Both the cause clause and the effect clause verbs are in the present tense.**

Examples:

1 ***If*** *your company has a LAN, you can share the use of a printer with your colleagues.* (cause → effect)
2 *It is easy to transport your data to another location* ***if*** *it is stored on a disk.* (effect ← cause)

Exercise 1

Read the following sentences and underline the part which expresses the *cause*.

1 Because a modem can be used for inter-computer communication, many people can now do their office work on their computer at home and transfer the files to a computer at the office.

2 Many people do not explore new software because they are comfortable with what they already have.
3 When robots malfunction, it is usually due to mistakes in the programming or the design.
4 Laser printers can be quite expensive and are therefore often shared through networks.
5 Voice-recognition systems are becoming more sophisticated. Thus, keyboards may be unnecessary in the future.

Exercise 2

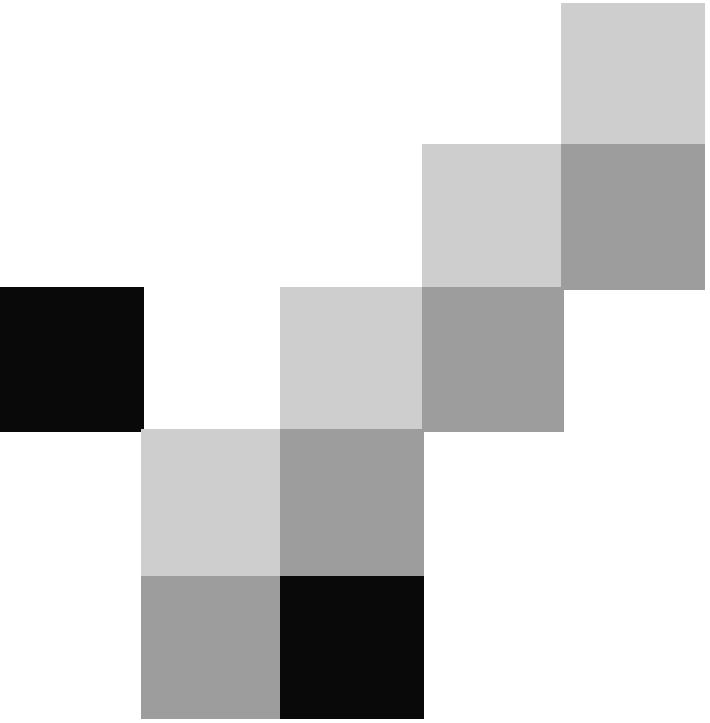
Read the following sentences and underline that part which expresses the *effect/result.*

1 Computers can remove many of the routine and boring tasks from our lives, thereby leaving us with more time for interesting and creative work.
2 Because there are many different types of printers, you must analyse your needs before making a purchase.
3 Since anyone can consult your files on a computer, it is a good idea to protect sensitive files with a password.
4 Fax boards are available to plug into your computer, so you do not have to buy a fax machine.
5 Computers have been reduced in both size and cost as a result of advances in design and technology.

Exercise 3

The sentences below have appeared in previous units. Read them again and circle the marker showing a cause–effect relationship and underline the part of the sentence that expresses the cause. The first one has been done for you.

1 By 1980, IBM decided there was a market for 250,000 PCs, (so) they set up a special team to develop the first IBM PC. (Unit 1)
2 Because of these and so many other different judgements, there can be no absolute. (Unit 3)
3 Global communication and computer networks will become more and more a part of professional and personal lives as the price of microcomputers and network access drops. (Unit 6)
4 One of the features of a computer virus that separates it from other kinds of computer program is that it replicates itself, so that it can spread to other computers. (Unit 7)
5 ...Lehigh is waiting to infect other unsuspecting computers if you boot from one of those four infected floppies. (Unit 7)
6 As they became more proficient on the computer, some showed gains in their overall self-confidence, as well. (Unit 10)
7 Robots are better at this task, not because they are faster or cheaper than humans, but because they work in a place where humans cannot. (Unit 11)
8 This automatic accuracy is particularly valuable in this kind of industry because locating and fixing mistakes is costly. (Unit 11)
9 Artificial worlds are being built up in a computer memory so that people can walk through at will, look around, and even touch objects. (Unit 12)



English for Computer Science and Engineering

Unit 14

Learning to Construct Flowcharts

represent	stand for; depict	نمایش دادن
stand for	be a symbol of	نماینده بودن
supply	equip; make up for, provide	تامین کردن
obvious	apparent	آشکار، واضح
envelope	paper wrapper of a letter	پاکت نامه،
fold	bend	تا کردن
diamond	shape having four equal sides	لوزی
branch	division	انشعاب
stamp	postage stamp	تمبر
express	declare, clarify	بیان نمودن
odometer	device for measuring distance traversed	کیلومتر شماراتومبیل

Learning to Construct Flowcharts

initialize	assign an initial value	مقدار دهی اولیه نمودن، راه انداختن
comparison	contrast	مقایسه نمودن
parallelogram	four-sided plane with the opposite sides parallel	متوازی الاضلاع
condition	situation	وضعیت
conclude	make a decision, finish	بپایان رساندن، نتیجه گرفتن
refine	purify, filter	تصفیه کردن
coupling	linking, joining	جفت شدگی
cohesion	sticking together, act of uniting	چسبندگي، همبستگی
affect	influence	متاثر کردن
withhold	hold back, refrain from giving	مضایقه داشتن، خودداری کردن

Learning to Construct Flowcharts

deduct	subtract, reason logically	کمک کردن، استنتاج کردن
encourage	support, inspire	تشویق کردن

GOTO Considered Harmful

eminent	famous, renowned	برجسته، بلند
fiddle with	engage in	سروکله زدن، درگیر بودن
notably	especially; remarkably	به طور چشم گیری، به ویژه
transfer	move from one place to another, pass on	انتقال دادن
boost	pushing forward	ترقی
mess	disorder	افتضاح
bowl	deep dish	کاسه
excessive	exceeding normal bounds, extreme	مفرط، بیش‌ازاندازه

Language focus N

Making predictions

A prediction is a statement about a particular subject in which we say what we think will happen in the future. Predictions are not always absolute, but can be expressed with different levels of certainty, according to the context in which they are made.

1 **Certainty can be expressed by:**

will (definitely, certainly) certain, sure without a doubt, without question

2 **Probability can be expressed by:**

probable, probably, likely most/highly probable, most probably most/highly likely

3 **Possibility can be expressed by:**

may (not), might (not), can, could possible, possibly, perhaps

4 **Improbability can be expressed by:**

improbable, unlikely doubtful, questionable probably not most/highly improbable/unlikely most/highly doubtful/questionable most probably not

5 **Impossibility can be expressed by:**

present or future	*past*
cannot, could not	could not
not possible, impossible	not possible, impossible

These expressions are used in sentences in different ways:

Examples:

1 *Notebook computers* ***will definitely*** *be cheaper next year.*
2 ***It is (highly) probable/likely that*** *notebook computers will be cheaper next year.*
3 *Notebook computers* ***may/might*** *be cheaper next year.*
4 ***Perhaps*** *notebook computers* ***will*** *be cheaper next year.*
5 ***It is unlikely/doubtful that*** *notebook computers will be cheaper next year.*
6 *Notebook computers* ***will most probably not*** *be cheaper next year.*
7 *Notebook computers* ***will definitely not*** *be cheaper next year.*
8 ***It is impossible that*** *notebook computers will be cheaper next year.*

Sometimes, predictions are made subject to certain conditions. In such cases, sentences typically have two parts: the *if-clause* and the *main clause.*

Examples:

1 ***If*** *the price of notebooks fall next year, I will buy one.*
2 ***If*** *the system crashes, we will lose all our latest data.*

When the *if-clause* comes second, there is no comma between the two clauses.

Examples:

1 *I will buy a notebook* ***if*** *the price of notebooks fall next year.*
2 *We will lose all our latest data* ***if*** *the system crashes.*

As with the simple predictions listed above, it is possible to express different levels of certainty about the likelihood of the condition (in the *if-clause*) by changing the tense of the verbs from the future and present forms to the more 'remote' past and conditional forms.

Examples:

1 *If the price of notebooks falls next year, I will buy one.* (The speaker thinks it is possible that the price of notebooks will fall next year and, if it does, he will buy one.)
2 *If the price of notebooks fell next year, I would buy one.* (The speaker thinks it is unlikely that the price of notebooks will fall next year but, if it does, he will buy one.)
3 *If the system crashes, we will lose all our latest data.* (The speaker thinks it is possible that the system will crash and, if it does, we will lose all our data.)
4 *If the system crashed, we would lose all our latest data.* (The speaker thinks it is unlikely that the system will crash but, if it did, we would lose all our data.)

The first form, as in sentences 1 and 3 – [(*If* + present) + *will*] – is known as the first conditional. The second form, as in sentences 2 and 4 – [(*If* + past) + *would*] – is known as the second conditional.

Exercise 1

Match the if-clauses (**1** to **6**) to the main clauses (**a** to **f**) to make complete sentences.

1	If you never read computer magazines...	**a**	...you would be able to access our bulletin board.
2	If you never back up your hard disk...	**b**	...it is unlikely that you will have a problem with computer viruses.
3	If you had a modem...	**c**	...we would have a bigger range of typefaces and fonts to choose from.
4	If you don't copy pirated software...	**d**	...you will miss important new products.
5	If I knew more programming languages...	**e**	...I would get a better job.
6	If we bought a better printer...	**f**	...you will probably lose some important files.

Exercise 2

Complete the sentences with the words below. Are the sentences first (F) or second (S) conditionals?

1 ☐ If you _____ your VDU in direct sunlight, it _____ damaged.

2 ☐ If you _____ your screen for too long, you _____ a headache.

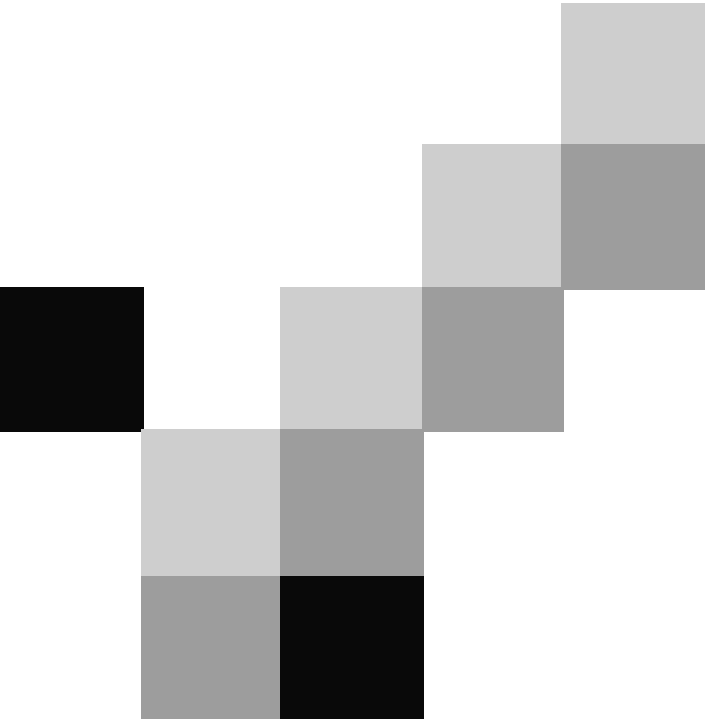
3 ☐ If you _____ to link your PCs with a mainframe, you _____ to install a network.

4 ☐ If the market for portable computers _____, prices _____ even more next year.

5 ☐ If we _____ a fax machine and e-mail facility, we _____ so many letters each day.

would not post	leave
grows	will get
will be	would need
wanted	will be reduced
look at	installed

Now make up three first conditional and three second conditional sentences of your own.



English for Computer Science and Engineering

Unit 15

Object-Oriented Software

maintenance	support	حمایت
modifiability	changeability	اصلاح پذیری
arguably	debatably, disputably	قابل بحث
abandon	give up, leave	ترک کردن
bode	be a sign or omen of	نشانه بودن (از)، حاکی بودن از
at the expense of	at the sacrifice of	به بهای
substantial	influential, important	اساسی، مهم
flashy	showy, tacky	نمایشی

Functional Requirements

performance	presentation; execution	کارایی ، اجرا
determine	conclude; cause	تعیین کردن
inspired	motivated	الهام گرفته از
presence	attendance	حضور ، وجود
optimize	improve efficiency	بهینه‌ساختن
quantify	determine quantity	براورد کردن کمیت
reliability	trustworthiness	قابلیت اعتماد
fault tolerance	ability of a system to continue operating in presence of fault	تحمل پذیری خطا