UNIT 1

WHAT IS A COMPUTER?

A computer is a machine with an intricate network of electronic circuits that operate switches or magnetize tiny metal cores. The switches, like the cores, are capable of being in one of two possible states, that is, on or off; magnetized or demagnetized. The machine is capable of storing and manipulating numbers, letters and characters. The basic idea of a computer is that we can make the machine do what we want by inputting signals that turn certain switches on and turn others off, or that magnetize or do not magnetize the cores.

The basic job of computers is the processing of information. For this reason, computers can be defined as devices which accept information in the form of instructions called a program and characters called data, perform mathematical and/or logical operations on the information and then supply results of these operations. The program, or part of it, which tells the computers what to do and the data, which provide the information needed to solve the problem, are kept inside the computer in a place called memory.

Computers are thought to have many remarkable powers. However, most computers, whether large or small have three basic capabilities. First, computers have circuits for performing arithmetic operations, such as: addition, subtraction, division, multiplication and exponentiation. Second, computers have a means of communicating with the user. After all, if we couldn't feed information in and get results back, these machines wouldn't

be of much use. However, certain computers (commonly minicomputers and microcomputers) are used to control directly things such as robots, aircraft navigation systems, medical instruments and etc.

Some of the most common methods of inputting information are to use punched cards, magnetic tape, disks and terminals. The computer's input device (which might be a card reader, a tape drive or disk drive, depending on the medium used in inputting information) reads the information into the computer.

For outputting information, two common devices used are a printer which prints the new information on paper, or a CRT display screen which shows the results on a TV-like screen.

Third, computers have circuits which can make decisions. The kinds of decisions which computer circuits can make are not of the type: 'Who would win a war between two countries?' or 'Who is the richest person in the world?' Unfortunately, the computer can only decide three things, namely: Is one number less than another? Are two numbers equal? and, Is one number greater than another?

A computer can solve a series of problems and make hundreds, even thousands, of logical decisions without becoming tired or bored. It can find the solution to a problem in a fraction of the time it takes a human being to do the job. A computer can replace people in dull, routine tasks, but it has no originality; it works according to the instructions given to it and cannot exercise any value judgments. There are times when a computer seems to operate like a mechanical 'brain', but its achievements are limited by the minds of human beings. A computer cannot do anything unless a person tells it what to do and gives it the appropriate information; but because electric pulses can move at the speed of light, a computer can carry out vast numbers of arithmetic-logical operations almost instantaneously. A person can do everything a computer can do, but in many cases that person would be dead long before the job was finished.

UNIT 2

COMPUTER'S CHARACTERISTICS

Computers are machines designed to process, electronically, specially prepared pieces of information which are termed data./ Handling or manipulating the information that has been given to the computer, in such ways as doing calculations, adding information or making comparisons is called processing. Computers are made up of millions of electronic devices capable of storing data or moving them, at enormous speeds, through complex circuits with different functions.

All computers have several characteristics in common, regardless of make or design. Information, in the form of instructions and data, is given to the machine, after which the machine acts on it and a result is then returned. The information to the machine is the input; the internal manipulative operations, the processing; and the result, the output/ These three basic concepts of input, processing and output occur in almost every aspect of human life whether at work or at play. For example, in clothing manufacturing, the input is the pieces of cut cloth; the processing is the sewing together of these pieces and the output is the finished garment.
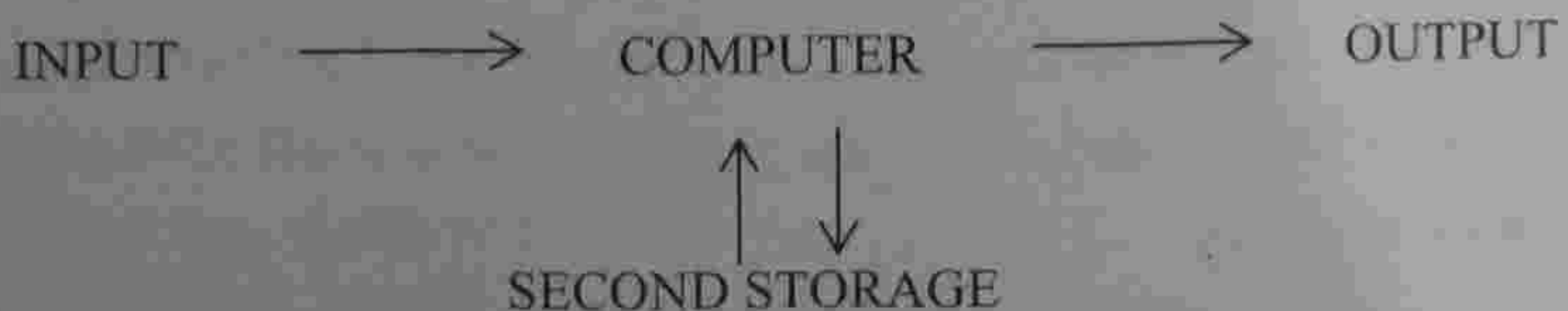
INPUT $\longrightarrow$ COMPUTER $\longrightarrow$ OUTPUT

$\uparrow\downarrow$

SECOND STORAGE

Figure in the previous page shows schematically the fundamental hardware components in a computer system./The centerpiece is called either the computer, the processor, or, usually, the Central Processing Unit (CPU). The term 'computer' includes those parts of hardware in which calculations and other data manipulations are performed and the high-speed internal memory in which data and calculations are stored during actual execution of programs, Attached to the CPU are the various peripheral devices such as keyboards and mice (two common examples of input devices). When data or programs need to be saved for long periods of time, they are stored on various secondary memory devices or storage devices such as magnetic tapes or magnetic disks.

Computers have often been thought of as extremely large adding machines, but this is a very narrow view of their function. Although a computer can only respond to a certain number of instructions, it is not a single-purpose machine since these instructions can be combined in an infinite number of sequences. Therefore, a computer has no known limit on the kinds of things it can do; its versatility is limited only by the imagination of those using it.

In the late 1950s and early 1960s when electronic computers of the kind in use today were being developed, they were very expensive to own and run. Moreover, their size and reliability were such that a large number of support personnel were needed to keep the equipment operating. This has all changed now that computing power has become portable, more compact and cheaper.

In only a very short period of time, computers have greatly changed the way in which many kinds of work are performed. Computers can remove many of the routine and boring tasks from our lives, thereby leaving us with more time for interesting, creative work. It goes without saying that computers have created whole new areas of work that did not exist before their development.

✓ 1. By adding the ending -er and -est to words of one syllable examples:

	ABSOLUTE	COMPARATIVE	SUPERLATIVE
Adjectives	new	newer	newest
	old	older	oldest
	big	bigger	biggest
Adverbs	soon	sooner	soonest
	late	later	latest

✓ 2. By placing the words more and most in front of words with three or more syllables:

	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. Words 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. Most of the remaining words take **more** and **most** in front of them:

	ABSOLUTE	COMPARATIVE	SUPERLATIVE
-y	happy	happier	happiest
	funny	funnier	funniest
-ly	early	earlier	earliest
	friendly	friendlier	friendliest
-ow	shallow	shallower	shallowest
	narrow	narrower	narrowest
-le	able	abler	ablest
	gentle	gentler	gentlest
-er	clever	cleverer	cleverest

✓N. B. Two-syllable adverbs ending in **-ly** take **more** or **most** example

quickly	more quickly	most quickly
slowly	more slowly	most slowly
badly	more badly	most badly

	ABSOLUTE	COMPARATIVE	SUPERLATIVE
Remaining descriptive two-syllable words	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

4. Some common two-syllable adjectives can have either type of formation:

ABSOLUTE	COMPARATIVE	SUPERLATIVE
common	commoner	commonest
	more common	most common
handsome	handsomer	handsomest
	more handsome	most handsome
polite	politer	politest
	more polite	most polite
quiet	quieter	quietest
	more quiet	most quiet

5. There are a small number of adjectives and adverbs that form The comparative and superlative using a different stem. These irregular comparisons are as follows:

	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

2. Use in sentences

There are many reasons for using comparisons in discourse, they may be used to show: a. *equivalence*; b. *non-equivalence*; c. *one item compared with others*; and d. *parallel increase*.

Equivalence

The following words or constructions are used to show equivalence (i.e. the same).

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	*compare to/with*	

Examples

1. Third-generation computers can do a thousand times **as many** calculations

carefully.

In these *flash-cards*, direct under the word, you will find other forms of the same word. These words have the same general meaning; they represent the different parts of speech of the word. For each of the forms, the part of speech is given. Also you can observe two examples of using the keywords and other parts.

The keyword is then, defined in clear, easy to understand English.

(arbitrary) ✓   adj. an action or decision made with little thought,
n. arbitrariness   order or reason
                syn. haphazard

Her choice of clothing seemed arbitrary.
The teacher arbitrarily decided to give the class a test.

astounding ✓   adj. very surprising
v. astound   syn. astonishing

The scientists made an astounding discovery.
The fans were astounded by their team's success.

astute   adj. very intelligent, smart, clever
n. astuteness   syn. perceptive

He was an astute worker, finishing in half the time it took the others to finish.
They astutely have determined that there could be no chance to finish on time.

petition ✓   v. to make a request
n. petition   syn. appeal

Canada petitioned the United Nations to consider its case.

(۲) The student's petition was denied.

relinquish   v. to give up control

n. relinquishment   syn. abdicate

The troubled executive relinquished his control of the company.

The relinquishment of his claim to the building will allow the building to be sold.

resilient   adj. strong enough to recover from difficulty or disease

n. resilience   syn. tenacious

She has a resilient personality and will soon feel better.

The doctor was surprised by his patient's resilience.

tempt   v. to make it attractive to do something wrong

adj. tempting   syn. entice

n. temptation   /əL/

The idea of getting rich quickly tempted him to invest his life savings.

Desserts are more tempting when one is on a diet.
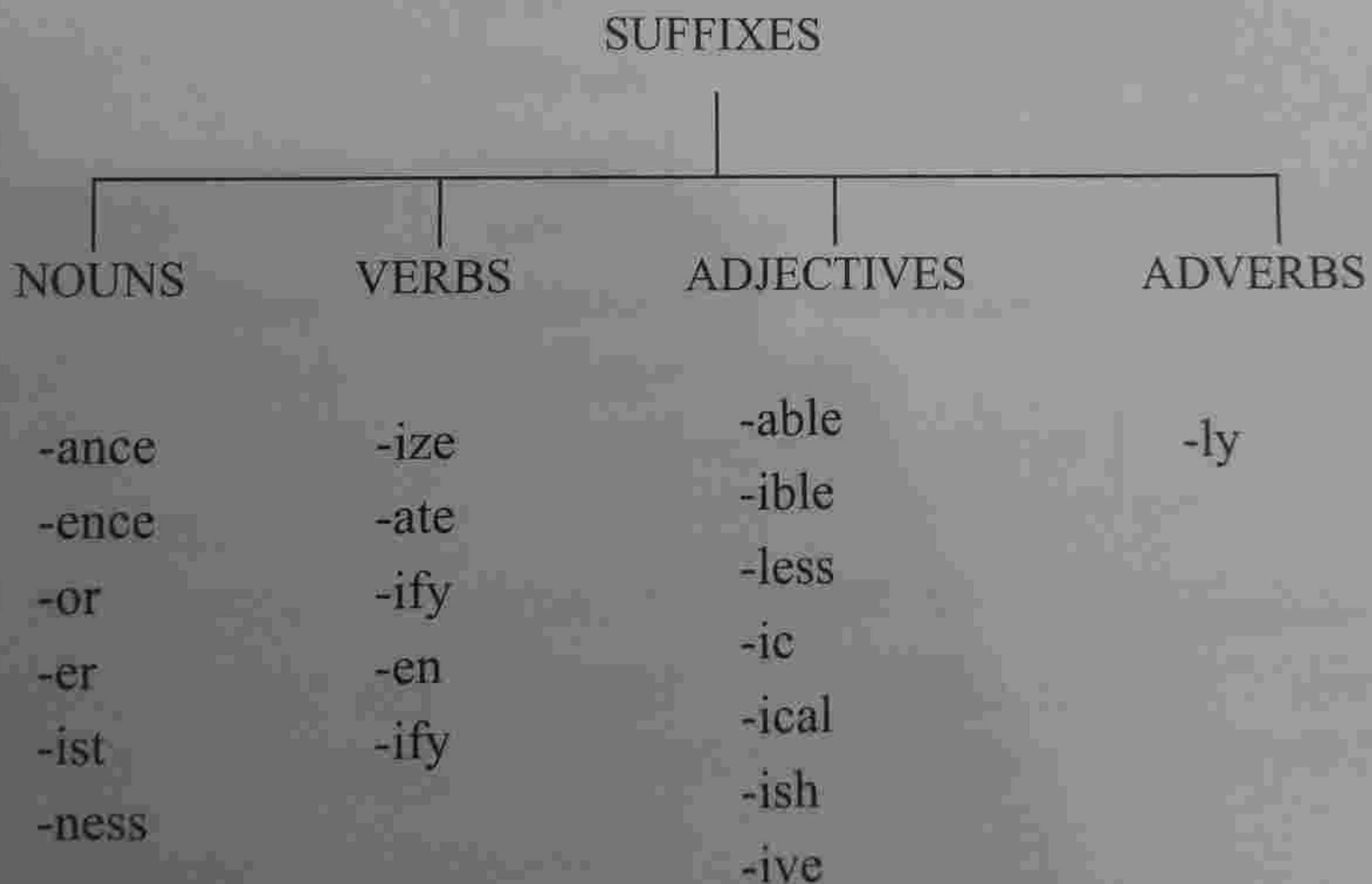
baffle) ✓   v. to confuse to a point at which no progress can be

adj. baffling   made

n. bafflement   syn. puzzle

The causes of many harmful diseases have baffled doctors for centuries.

That was a baffling question.

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** ('the person who programs'). Both prefixes and suffixes are referred to as affixes.

Prefixes usually change the meaning of the word; for example, un-changes a word to the negative. **Un**magnetizable means 'not capable of being magnetized'. Suffixes, on the other hand, change the word from one part of speech to another. For example, **-ly** added to the adjective quick gives the adverb quick**ly**. Let us now consider some suffixes and their usual meanings.

SUFFIXES

NOUNS	VERBS	ADJECTIVES	ADVERBS
-ance	-ize	-able	-ly
-ence	-ate	-ible	
-or	-ify	-less	
-er	-en	-ic	
-ist	-ify	-ical	
-ness		-ish	
		-ive	

Exercise 1

Study the following tables and try to find additional examples. Use your dictionary if necessary.

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
-ation, -tion	the act of	execution
-ist, -yst	a person who	analyst, typist
-ness	condition of	cleanliness
-ion	action/state	conversion
-ing	activity	multiplexing
-ment	state, action	measurement
-ity	state, quality	electricity
-ian	pertaining to	electrician
-ism	condition/state	magnetism
-dom	domain/condition	freedom
-ship	condition/state	relationship, partnership, friendship
-ary		binary

Verb-forming suffixes

SUFFIX	MEANING	EXAMPLES
-ize		computerize
-ate	to make	automate, activate, calculate
-ify		simplify
-en		harden, widen, lengthen

Adverb-forming suffix

SUFFIX	MEANING	EXAMPLES
-ly	in the manner of	electronically, logically, comparably, helpfully

Adjective-forming suffixes

SUFFIX	MEANING	EXAMPLES
-al, -ar, -ic, -ical	have the quality	computational, logical, circular magnetic, automatic, electrical,
-able, -ible	capable of being	comparable, divisible
-ous, -ious	like, full of	dangerous, religious
-ful	characterized by	helpful
-less	without	careless
-ish	like	yellowish
-ed	having	computed, punched
-ive	quality of	interactive
-ing	to make or do	programming, coding, processing, multiplexing

Exercise 2

Read the following sentences and underline all the suffixes. Then try to find out what parts of speech the words are.

1. The systems analyst provides the programmer with the details of the data processing problems.

2. CRT terminals are very useful interactive devices for use in offices because of their speed and quietness.

3. The new microcomputer we purchased does not have a Fortran compiler. It is programmable Basic only.

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appealing
v. appeal
n. appeal

adj. attractive or interesting, able to move feelings
syn. alluring

Working abroad is appealing to many people.
Through his speeches, the candidate appealed to the voters.

celebrated
adj. acclaimed, well-known and popular
syn. renowned

The celebrated pianist will give a concert this weekend.
San Francisco is celebrated for its multicultural makeup.

contemporary
n. contemporary

adj. modern, up-to-date; also a person living at the same time as another person
syn. current

Contemporary architecture makes very good use of space.
Cervantes was a contemporary of Shakespeare.

frail
n. frailty

adj. weak in health or in body
syn. fragile

The frail wings of the newborn bird could not lift it off the ground.
One of the frailties of human beings is laziness.

alter   v. to change or make different
n. alteration   syn. modify
adj. alterable
adj. altered
adv. Alterably
Will the storm alter its course and miss the coast?
Gloria hasn't made any alterations to her plans.

anticipate   v. to think about or prepare for something ahead of
adj. anticipatory   time
adj. anticipated   syn. predict
n. anticipation

No one can anticipate the results of the games.
They planned their vacation with anticipation.

conform   v. to follow established rules or patterns of behavior
n. conformity   syn. adapt
n. conformist

You must conform to the rules or leave the club.
She has always been a conformist.

vital   adj. of great importance; full of life
n. vitality   syn. indispensable

Money is vital to the success of the program.
His intense vitality was easily observable.