Special English

COMPUTER APPLICATIONS

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Computer Applications

Cassell
London

Cassell Ltd.
1 St Anne's Road, Eastbourne
East Sussex BN21 3UN

First published 1980
Reprinted 1982

ISBN 0 304 30553 7

Humby, Edward
Computer applications. — (Special English).
1. English language — Text-books for foreigners
2. Readers — Computers
I. Title II. Robinson, Philip, *b. 1926*
III. Series
428'.6'4 PE1128

ISBN 0-304-30553-7

Printed and bound in Great Britain at
The Camelot Press Ltd, Southampton

Grateful acknowledgement for permission to use photographs reproduced in this book is also made to the following: (numbers refer to pages in this book)

IBM UK Ltd (4, 24); British Steel Corporation (8, 12); Fisher Controls Ltd (20, 55); Lloyds of London (39, 40); Baroness International (48, 70, 82); *Which Computer*? magazine (51); Philips Ltd (80).

Preface

The Special English series introduces titles on a wide range of technical subjects that will be of interest to students of English as a second language. Each volume illustrates the special English of a particular trade or profession in both its spoken and written forms. It is not possible, of course, for books of this size to cover the subject matter exhaustively, so the authors have concentrated on those topics and activities that should have the widest appeal. The conversations which are the basis of each chapter or unit are deliberately written in the colloquial and idiomatic speech used by technicians and specialists as they go about their everyday activities.

It must be emphasised that these books are *not* primarily intended to teach the subject matter itself, although the technical content is accurate in every respect. Nor are they intended to teach the introductory stages of English. It is assumed that the reader is already familiar in his own language with the subject matter of the book, and has a good grounding in the basic grammatical patterns and vocabulary of English. He will use these books to improve his knowledge of English within the framework of a technical vocabulary that is of interest to him either privately or professionally.

The authors in this series each have their individual approach, but all the volumes are organised in the same general way. Typically, each book is based on a series of situational dialogues, followed by narrative passages for reading comprehension. Exercises give the student practice in handling some of the useful and more difficult patterns, as well as lexical items, that occur in each unit. Tape recordings of the dialogues and selected exercises may be used either in the language laboratory or for private study. Each volume is provided with a glossary of technical terms, with i.p.a. equivalents as used in the latest edition of the *Advanced Learner's Dictionary of Current English*.

Introduction

This book is the third to deal with aspects of computer technology, in the *Special English* series.

The first, *Computers*, introduced the reader to concepts involved in hardware and software, and described the work of a variety of computer personnel.

The second, *Computer Programming*, concentrated on the work of one of the key figures, the Programmer.

The present book has a wider scope. It shows how the computer is now affecting everybody's life, both at work and play, and solving problems in fields as diverse as aircraft design and medicine, retail grocery and banking, universities and pig farms, and the development of North Sea oil. The computer, in fact, is nowadays so widely used, in government and commerce and industry, that it would be impossible to describe all its applications. A selection has therefore been made of those which were considered the most important, or typical, or interesting. All the applications described have been based on real installations. The authors wish to express their thanks to Digital Equipment Corporation and International Computers Ltd for permission to use information from their files.

Like other books in the *Special English* series, this one is designed primarily to teach English in the context of a particular occupation. Each unit includes a Dialogue, in which members of different professions talk to a computer executive; a Reading and Comprehension passage; and Exercises for structural practice and comprehension. At the end of the book there are Keys to the Exercises, and a Glossary of technical terms (which are asterisked on their first occurrence in the text). The International Phonetic Alphabet is used as a guide to pronunciation. Colloquial expressions are footnoted.

The tape recording that accompanies the book may be used by the teacher in a classroom or the language laboratory. The recorded material is available as a cassette. For the student

working alone, this will provide a model for pronunciation as well as a means of taking dictation for practice in spelling. The exercises have pauses for student response, but there are no pauses in the dialogue. This has been done to provide the maximum amount of recorded material. Most tape recorders are now equipped with a pause button which enables the listener to stop the tape after each sentence and repeat it aloud before proceeding to the next one. If pauses are required for language laboratory work, a copy may be made and the pauses inserted (the length should suit the requirements of the students).

Contents

Unit 1 **Living with Computers**

Dialogue

Stephen Conway, a systems engineer with a computer manufacturer, has been told to see the Director of Marketing.

Director: I want to thank you personally, Stephen, for undertaking this assignment. Your manager has discussed the details with you and he's assured me of your ability to handle it. We want to produce a film about the work of selected customer installations. Your job in the next six months is the identification of the most suitable applications and the preparation of a script.

Stephen: I must say the itinerary looks pretty formidable. I understand the idea is to find a spread of interesting applications that typify the uses to which computers are put nowadays? What tendencies do you want me to spotlight?

Director: Well, today's processor on a silicon* chip that is cheap, small and robust has revolutionized the use of computers. Look for all the new peripherals*. Peripherals, together with memory devices and several computers with interfaces* that communicate with non-computer hardware*, can all be linked by a common unibus* to provide tailor-made* systems.

Stephen: So no two computer rooms will look alike?.

Director: Computer rooms themselves with special air conditioning are becoming things of the past. We don't take work to the computer so much any more; we put the computer where the work is done. You'll find computers in the classroom, on the

factory floor, in the railway signal-box and on the ship's bridge. That's the message.

Stephen: With new customers for computers each day, there should be applications that represent all the stages in the history of computer usage.

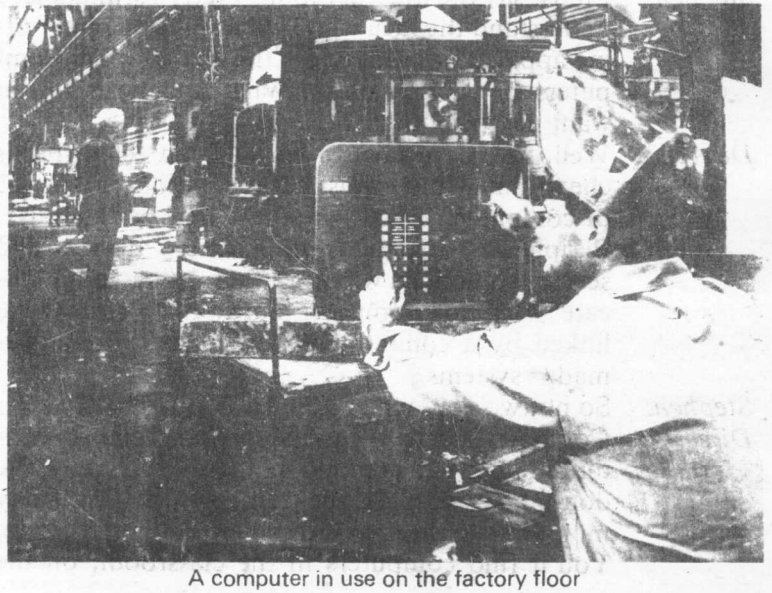
Director: Precisely, from the giants with millions of words of storage to the micro-computer plugged in to my television, from the single-program batch processor* to the transaction-oriented user*, from the operator with a keyboard* monitor* to the MOP* installation working through communication networks*.

It's going to be a pretty exhausting time for you.

Stephen: But very interesting! In my present job it would take years to acquire the experience I'll get on this tour.

I've been talking to the Personnel Manager about a career in Publicity. This exercise and involvement in the film-making will be invaluable for that sort of career. I'm grateful for the opportunity.

Director: Well, I wish you the very best of luck, Stephen.



A computer in use on the factory floor

EXERCISE 1: COMBINATION

Example:

Prompt: Stephen was quite capable. The Director said that was clear.
Response: The Director said it was clear that Stephen was quite capable.

Now you try:

1. I shall acquire more experience. I'm sure that's true.
2. This exercise will be invaluable. You agree that's obvious.
3. Many will have minicomputers. That's only to be expected.
4. The film should depict the wide variety of applications. I feel that's desirable.
5. I shall be transferred to Publicity. I trust it's certain.
6. The silicon chip started a revolution. I suppose it was inevitable.
7. No two computer rooms will look alike. We're agreed on that.
8. The computer is where the work is. I expect you'll find that.

EXERCISE 2: NOUN SUBSTITUTION

Example: He's assured me *that you are able.*
He's assured me *of your ability.*

Try to replace the parts of the following sentences in italics using the appropriate noun. The nouns you need have all appeared in the dialogue.

1. We are glad you have undertaken *what we have assigned you.*
2. You will see examples of computers and *the way they are used.*
3. Take special note of the new *ways they are being applied.*
4. You've noticed *how they tend* to become independent.
5. You will visit a number of *places where they are installed.*
6. He has promised *that I will be involved* in the film-making.
7. Your job is to take care of *the way it is prepared.*
8. You may find *how to identify them* difficult.

'Computers have supported man's journeys to the moon': physicists testing the operation of a computer-controlled telescope

EXERCISE 3: THE INFINITIVE

Notice that in English the *to* part of the infinitive is sometimes included and sometimes omitted. It depends on the verb it is following. We say: I *want to express* my appreciation but equally naturally: I *must express* my appreciation. In the following cases see if you can decide whether the *to* form is the correct one or if *to* should be omitted.

1. I want you { *to visit* / *visit* } all the customers.
2. I hope they will allow you { *to collect* / *collect* } the material you need.
3. They may let you { *to see* / *see* } their computer rooms.

4. We could have made each customer { *to describe* / *describe* } his configuration.
5. We would like the film { *to depict* / *depict* } the great variety of installations.
6. You could let the film { *to depict* / *depict* } the great variety of installations
7. I shall get him { *to sign* / *sign* } an undertaking to transfer you.
8. I shall make him { *to offer* / *offer* } you that opportunity.

Note: Some verbs which take *to* are:
allow, decide, like, promise, refuse, try, want.
Some verbs which do not take *to* are:
do, hear, help, let, make, see.

Reading and Comprehension

Computers were first developed by mathematicians for their own use and for scientists in universities and Government research establishments. Larger memories and faster arithmetic units have made possible technological advances undreamt of fifty years ago. They have guided man to the depths of the oceans and supported his journeys to the moon.

With the development of satisfactory input/output devices*, the demand from business and commercial users exceeded that from the scientific user. The computer took over the data* processing functions of tabulators*, sorters*, verifiers* and interpreters*. Early computers were first used in business with single programs processing the batched data. But as CPU* speeds outstripped those of the peripherals, operating systems* were developed to handle several programs apparently simultaneously. Peripheral usage was optimised by scheduling, and data for the slower peripherals was offlined*. Later operating systems supported configurations in which scores of users could simultaneously interact with the computer in multi-access (MAC)*. Their terminals* could be close to the computer, or at a distance, communicating by telephone, radio or satellite. Such systems, relating to common databases* have moved the user away from his batch disciplines. His work is event-driven* and he works in realtime*.

As the hardware gets cheaper, the criterion of throughput* gets less importa·it than prompt response. It becomes economical for the d ɔctor or the pilot to have his own microcomputer* which may be idle for much of its time, so long as it is there when he needs the vital patient diagnostics, or the revised flightpath*. We can seriously consider using the minicomputer* as a watchdog, patiently monitoring*, for example, the film processing plant, but making quick adjustments as soon as it spots a move toward an undesirable variation in temperature, intensity or tone.

The computer is in use in home, office, school, factory and the armed service establishments. We can use it as we choose. Will it be for the enrichment of life for everyone? Are we capable of living up to its possibilities?

EXERCISE 4: COMPREHENSION

1. When does throughput become less important than prompt response?
2. In a film processing plant what might a computer be monitoring?
3. Who first developed computers?
4. What caused the increased demand from business users?
5. What enabled several programs to be handled at once?
6. What made possible advances not dreamt of fifty years ago?
7. What could a microcomputer provide for the pilot?
8. How can terminals operate at a distance from the computer?

EXERCISE 5: EITHER...OR

Two items linked by *either...or* should be of the same type. For example, both should be nouns, both clauses or both adjectives. Use this fact in completing the sentences with the following words:

a) through radio channels
b) a faster arithmetic unit
c) as an improved tabulator
d) com ·ial people
e) for data processing
f) set at a distance
g) reach the moon
h) in transaction oriented

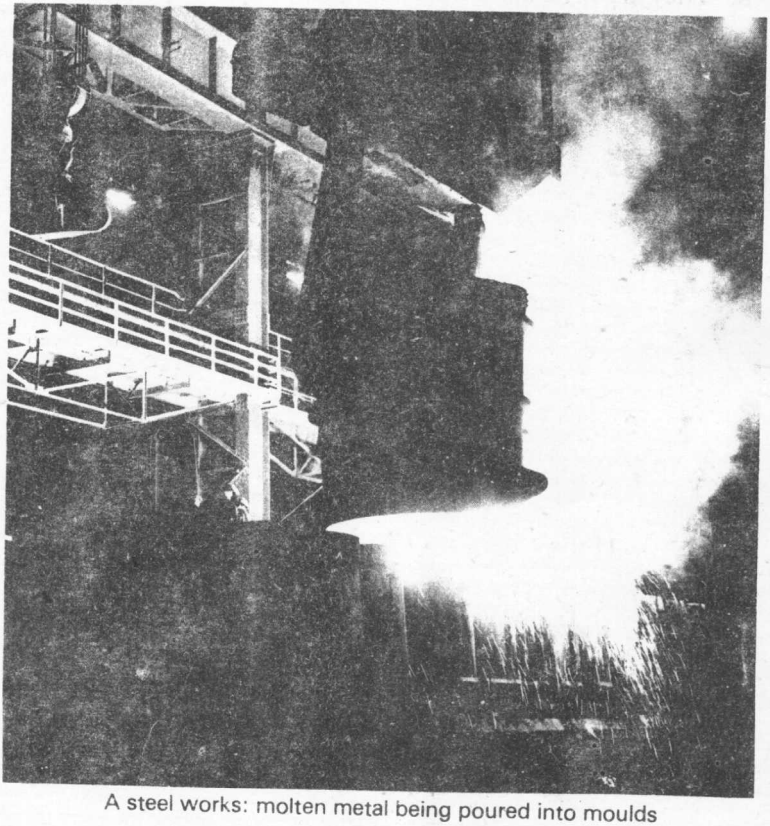
1. The terminals may either be close to the computer or _____.
2. The same computer can be used either for scientific work or _____.
3. You will find them working either in batch processing or _____ mode.
4. Either a larger memory or _____ will improve performance.
5. The machine is regarded either as a fast arithmetic engine or _____.
6. The remote terminals communicate either by telephone or _____.
7. One marvels at a device which can either plumb the depths of the ocean or _____.
8. They are invaluable to either scientists or _____.

Unit 2 **Steelmaking**

Dialogue

Stephen is being shown over a steel mill by Gareth.

Stephen: Now I can see why I had to dress up in this gear[1]. I



A steel works: molten metal being poured into moulds

feel a lot safer under the helmet. The noise and the brilliant colours will be splendid for the film but they are a bit frightening when you're as close to them as this.

Gareth: You get used to the din and the smell.

Stephen: Tell me, what's that thing that looks like a giant ladle?

Gareth: That's just what it is. It holds 200 tonnes of molten steel and 20 tonnes of slag. Watch as it tilts. It has to pour at just the right speed, so getting the angle right is a problem in complex geometry. Temperature, mixture and volume all affect the quality and cost of the steel produced. Nowadays that's all worked out by computer.

Stephen: We'll see the computer this afternoon, won't we?

Gareth: You'll see many computers at the rolling mills. Each rolling machine has its own dedicated* micro-computer checking the thickness of the steel as it leaves each roller and adjusting the speeds and pressures to keep the thickness within tolerance*.

Stephen: All without human intervention?

Gareth: Not entirely. There is a VDU* at each operator station* showing current readings and even a graphical cross-section of the steel sheet. All the micros[2] are connected to the main computer which calculates tendencies, checks with standards and logs* all the events.

Stephen: I suppose the computer is programmed in this kind of realtime situation to take immediate action if a catastrophe seems imminent?

Gareth: Well, yes, it is, but because of continuous monitoring, the changes in behaviour of the machines are constantly examined, so that remedial action can be taken long before a catastrophic situation is reached.

Stephen: Unless the computer breaks down!

Gareth: No way. There are actually two computers with data duplicated on their discs*. Normally they'll be doing

[1]gear: clothes or equipment for a special purpose
[2]micros: abbreviation for micro-computers

different jobs but in the event of a malfunction in one, the other will take over the critical task of controlling the mill.

EXERCISE 1: THE IMPERATIVE

Gareth hadn't told Stephen what the thing was that looked like a ladle; so Stephen gave an instruction: *Tell me, what's that thing that looks like a giant ladle?* See if you can give the appropriate imperative (instruction) for the following prompts.

1. Stephen hasn't put his safety helmet on.
2. Gareth hasn't taken Stephen to see the rolling mill.
3. Stephen hasn't thought what would happen if the computer broke down.
4. Stephen hasn't looked at the operator's VDU.
5. Gareth hasn't switched to the other computer.
6. Stephen is frightened by the noise.
7. Stephen isn't watching the action of the rollers.
8. Gareth is standing too close to the molten steel.

EXERCISE 2: AFFECT, EFFECT

These words are often confused.
Affect as a verb means *to produce a change in.*
Effect as a verb means *to cause, to bring about.*
Effect as a noun means *that which is caused or brought about.*
Use the right one in the following sentences.

1. Temperature and volume _____ the quality of the steel.
2. The computer will _____ big changes in the mill.
3. It had quite an _____ on production.
4. I hope you won't feel any bad _____ from the noise.
5. Don't let what the operator said _____ your report.
6. Your film will have a great _____.
7. We shall try to _____ similar modifications to our equipment in the North.
8. There's no doubt microcomputers will _____ all our lives.

EXERCISE 3: PARTICLE OR PREPOSITION

Stephen sits on the computer. — *on* is a preposition
Stephen *switches on* the computer. — *on* is a particle