

DRAGON USER



The Independent Dragon magazine

October 1988

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Editorial

I WAS just sitting here thinking what a nice list you/Dragon lot are. I can't think of more than three people I never want to hear from again in all the time I've been sitting at this desk(s). What is it about the Dragon that brings out the best in its type? A lovable personality? Protectiveness? A conviction that there is always one more thing you can do with it? Cheapness? Who knows? I said that Dragon users never in any mysterious way, like God, take it from me, it beats dealing with IBM.

Thanks to the folk who wrote to say that they had substantial collections of OSU, I've expanded on what was an my mind in next month's Letters page. I can't meet anyone whose colleague's dad had worked at Dragon Data. He couldn't remember the address. Now I wish he could.

The time has come to say again: don't forget the Show. The Celtic Computer Convention in Weston-super-Mare (Weston-in-Bas as it's known to its natives) on SUNDAY 4th December. Support your show, and it will support you. I'm glad to hear that nearly all the display space is booked out. This must be a good ome.

Pete Gernand is on holiday

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How to submit articles

The quality of the material we can publish in Dragon User each month will, to a very great extent, depend on the quality of the submissions that you can make with your Dragon. The Dragon computer was launched at to the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to Dragon User for publication should not be more than 5000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Paragraphs should, wherever possible, be separated printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you want to have your program in the magazine, must include a stamped addressed envelope.

Letters

This is your chance to air your views — send your tips, compliments and complaints to Letters at Alexandra Road, Hounslow, Middlesex, TW9 4HP

Cure for hiccups

JONATHAN Cartwright tells me that Brian O'Connor has written to you with information about the 'spare hiccups' (Pis. See below) in Utopia. Reference was made to it in the instructions, but what it was and what it did was not entirely clear. Jonathan later explained it to me exactly, but too late for this review.

Because of this a small part of the review is not entirely true: observe the 4th paragraph on page 16 'Should your feet fall below zero ... you will die and be sent back to the beginning of the game'. That's accurate. The game is split into five stages. Once you enter a new stage, you should hear a slight beep. From then, if you are killed, you start at the beginning of the new stage (if you have any lives left). So my statement that it is unfair is not justified.

I do apologise for any inconvenience. The ruling and all other statements will stand.

If you're looking for someone to do the Expert for a month or two, I'm available.

David Johnston
22 Dinkhurst Road
Inverness
IO2 2OT

I hear a small beep ... if I die now, I get to eat my supper again. We are up to date with Autogate Experts, thanks, but if a vacancy arises be sure I will contact you first, the-ooo. Bob is I hope seeing to your other queries. Ho, you aren't asked. Anyone can make a mistake, as the Darts said to the question.

Back to Square Five

It would like to thank Donald Morrison for his excellent review of our latest game (Utopia in DU August 1988, but would like to point out a slight inaccuracy.

Mr. Morrison says: 'the player starts at the beginning

of every month we will be shelling out a game or two, courtesy of our supplier, to the reader's who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What if you think we are, mind readers?'



Today the Dragon...

I own a lot of the Dragon because I knew nothing about computing before I bought it, but I have learned how to program in Basic and Fortran, and have gained wide experience of word processors, spreadsheets, databases etc. which has held me in good stead when computers eventually arrived in my office, an advantage which I still hold over my

fellows writers.

I receive reviews of two packages from Computers, DSI+ and Dynastart. Neither of these is new but they are still available and have not even been mentioned by your magazine for a considerable time. They may be of interest to newer readers.

Clive G. Scott, 22illery Meads
Astonabad, Surrey KT21 1SG

These days with 700k prices far towards any other machine worth purchasing, and if you have bothered to exploit your Dragon to the full, even in an unexpanded version, you are discarding a lot of knowledge and experience if you don't maintain it on the sidelines.

Listen, I know a guy who recently paid £150 — I would put that in gold stars for emphasis if I could — £150 for a complete second hand Greenleaf serial 4-track sampling system, complete with Apple 2e, dual disc drives and synth keyboard. OK, the Apple 2e in that form is a dinosaur, but think of the power you have there ... I would have killed him to get it, and I would insist of his colleagues. But there are bargains like that around if you keep your eyes open.

Your ex-Dragon, gentle reader, could be someone else's dream bargain. Think about that twice and hang about ...

One last thing ... I know it's traditional to address editors as Sir, but I've been with DU over two years now, and the only person who calls me Sir is my husband, and he doesn't get away with it.

We're getting a good column of letter this month,

of the game when a life is lost, but in fact the game 'may' be split into five sections, and if you reach a new sector and lose a life, you return to the start of that sector, not the start of the game.

He may have been reviewing a prototype of the game, as this feature was not added until late in the game's development. We agree that when this shortcoming does occur in games it is very annoying, and we asked Jonathan Cartwright to include this feature in Utopia before it was released, just for this reason.

Neil O'Connor
Pulver Software
30 Foxhill
High Oramston
Sheff
S61 6PW

HA! They're all game-soft ... in my young day you get sent back to the beginning of Asteroid Storm even if you were on your 50th screen. And it wasn't even meant to have 20 screens.

Dynamic Dream

REFERENCE Pam O'Keefe's comments on updating Dream, I have an elderly Dream on cassette. This cassette loads Dream from hex 4C80 (which uses page hex 05 (eg hex 4B00 to 4BFF)) for control fields. Note that this is the first complete page below hex 4C80.

Page 43 of the booklet that came with the cassette says that Dream is written in position independent code throughout, and so can reside anywhere in the memory map. It also says that it dynamically looks for the first complete page of Ram below itself and sets the Direct Page register (DPR) to point to it. It is a constraint with the hex 4C80 loading. In fact, the booklet is not quite correct. If Dream is loaded from the start of a page (eg hex 0000 or hex 4C00) then Dream skips a complete page. Thus for the examples given it uses page hex 7E (not 7F) and hex 6A (not 6B). Note that page hex 3F is the first

page of Ram under page 00 (which is Ram).

You can see that according to where Chassis loaded, you can get anything from one byte to 256 bytes of free space before the Dream workspace. This is important if you use Address, since Bug needs 128 bytes above the Dream space. If you load Address to start between byte 1 and byte two FF on a page (eg hex 6001 to hex 60FF) then if you use `bugspace`, points, you might overwrite Dream. Reboot chassis but Dream without Bug is safe.

Ram is correct in her guess about why Dream does search for Dragon 84K. Ram mode. It would be trivial to alter Dream to work for just the 64K mode, but I don't suppose it's worth the trouble.

About pages: Dragon machine code when loading or writing data can either 'use' its page' as one vast sheet, or as a book of pages. In this 'direct' mode the memory included in is 256 'pages' each containing 256 bytes. Both pages and bytes are numbered from 0 to 255 (see PF). The page that the Dragon uses depends on the value (0 to 255) that is loaded in to the DPR.

When in direct (page) mode Dragon needs less bytes of code and runs faster, but I can only access 256 bytes. However, it only takes 12 micro-seconds to change the page.

Dream uses Direct Page when handling its control fields.

And Newman
113 New Har Road
Abbotside
Surrey KT15 2DA

Hack and Poke?

ON the subject of commercial programs, maybe someone could help me with David Maker's Picture Maker? I can get the screen dump to work, but onlines, or on manager, parts of a screen, especially when to show during a colour screen as opposed to a black and white (Pmode) screen. Also can anybody hack it and give me a poke to put it into Pmode? I've tried, but only loading program B will touch it, and then it only loads a small program which consists of an OnLine Run and some other incomplete code.

On the subject of the Dragon world (familydragons, 3264 etc.) what about those who only use discs or tapes? Whereas it may be easy

(right), it's not, but it keeps coming to my mind. A program that does, how can someone who doesn't know anything about discs even attempt to convert one for tape operation? I am of course referring to programs printed in these articles pages.

Some advice for those of you who with Dragon/Datagraphics who have 'broken' them in some way or other. The top half of the casing must be pried away from the bottom half to gain access (difficult). Also Maglin (with J805A on P444 of the current catalogue) is a good fit for replacing the fire button ... even if it does tend to melt at 50 watt soldering power!

For those of us who work-process on Peter Whitaker's Microprocessor, pressing <SHIFT> + one of the left-hand keys enables you to jump through your text from CH to CH while in the editing mode. And it is also necessary to clear the glossary when entering any mode. I cannot speak for the glossary when entering any mode, but suspect that these hints are correct for disc users as well. Anyhow, judging from the number of letters of Peter's word processor sheet not published, perhaps we ought to install Whitaker's Microprocessor User Group!

By the way, how about selling out robot computers instead of games for the best of the month? So that serious users can get themselves some more serious utilities?

Gareth Jones
24 Logwell Court
Stanford, Kern
Northridge
AND JTB

NOT a totally silly idea, that. I'll look into it. Incidentally, one of the great unsolved mysteries in the history of the Dragon is: what happened to Peter Whitaker? We lost track of him, and it's a pity what way someone.

M1009 to HR5?

YOUR Goem in the Dumps article in November 1987 came near to my requirements, but not near enough. I have a Brother HR5 printer. Can anyone tell me how to modify the printer program for use with the HR5? I presume all I need to alter are the ESC codes in BPDC to BPBC. Your help would be appreciated.

Keep up the good work.
R F Rowley
Director
Manager
Helen
Comwell
D12 6W7

In heaven with Lucifer

I transformed a Dragon 32 since September 1983. In this time good and bad (mostly good) games have been produced. Every so often another game is hailed as the best game ever. Well, it's now time to move the best game ever tag held by *Knightslayer* to its new and rightful place on *Lucifer's Kingdom*.

After recently purchasing this incredible game from Orange Software (they deserve a mention) (Litter, mate, they're so efficient you can miss them.) I loaded the cassette into my Dragon 32 (the family computer) and what it says on the box. How came the family computer and not a Dragon? A thousand times! You should see the state of my bedroom! On loading *Lucifer's Kingdom* (which is a stupid name for it) you are presented with a screen which I can only describe as XXXX (you may have to put 'very poor') — mostly orange and black characters. Still, you can't judge a book by its cover.

The game starts automatically and you find yourself controlling a hovering, flying thing which flies two miles when you press the left joystick button. The game is in PMODE 4 and is quite honestly the best game I've played. It's fast, smooth, addictive and very frustrating. After hours of play and acting like brain numbs I got to the second of five regions. Only another 20-odd planets to conquer. I was because of July's Dragon User notice that I bought the game.

It's reassuring to find the time of the Dragon's life to encounter brilliant software and it's because of this and the continuing quality of Dragon User that I've decided not to trade my Dragon for an Amstrad (spit) and to re-subscribe for another year.

All this praise from a man whose full-time occupation is working with ICL and IBM machines. Have you ever tried

writing a shoot-em-up program in C or C++?

D J Platt
402 Winchester Road
Durham-on-Sea
Surrey
SA1 9W7

HAVE you heard of our new publication *DragonTV*? Our first issue will feature a side shoot-em-up where the player simply takes out Saturn and Jupiter. (Only one person can play it)

Hi score corner

I would be very much obliged if you were to print the following message in your magazine. It is about a new *Chuckie Egg* high score ...

Now, before I give you my hi-scores, I would like to say a few things to Andrew Whitman, whose record (unofficial) hi-score of 15,898,888. Well, Andrew, you have been beaten in to a SMALL, second! My hi-score on *Chuckie Egg* was around 12,000,000, well, well, well, it was 15,898,888! Or was it 294,785,205? Or was it 358,802,888? No! I must have been 714,732,308! I lost count of the level, but according to Andrew's score sheet, it must have been about 38,988.

Mark Haragan (age 15)
2, Chiswick Close
Rigby Road
Buck. HP18 9JH

PS If anyone beats my score, WRITE ME!

SMELLS fishy to me, this ... he says he's 15, but his spelling's better than mine and, according to my calculations, he has spent approximately 73 years obsessively playing *Chuckie Egg* ... Is he (a) Dr Patrick Moore (b) Professor Sir Randolph Blake (c) Dr Isaac Asimov? Answers on a postcard, please, along with your current top five software titles, to the usual address. You guessed it, I'm thinking of reviving the *People's Chart* — probably on an irregular basis (give the new product more time to hit the streets). Why should *Chuckie Egg* have all the fun?



New and converted from Dragonfire

DRAGONFIRE Services have a small number of The Tape Doctor cassettes, which were published by Camcop, for the Tandy CoCo/DSI DRII. The program, which helps users recover lost files from tape, received a five-Dragon review in Dragon User and was released. Priced £4.00 plus P&P the tapes have colour covers and are available while stocks last only.

New from Dragonfire is an adventure called *Hole by H E Hemmings*. Your ship is sucked into the infamous Black Hole. What happens next is up to you. priced £3.00 plus P&P.

New from the Pinter Prompt N, Dragonfire's 'interactive typewriter' program, compatible with DragonDOS and CumanaDOS 2.0. The price is

£8.00 as for the tape version. The program has a 64-character screen display, is menu-driven and is compatible with Eason and E-type typewriters.

Dragonfire is currently converting many of its programs to disc. Initially for DragonDOS and CumanaDOS. Dragonfire would like to hear from users interested in conversions to DataDOS so that they can assess demand.

The company is working on a major addition to its list for the Colour Computer Convention in December.

For more information please send stamped SAE to Dragonfire Services, 10 Perry James Close, Stearn, Gwent NP23 5BH. Postage is 50p per tape UK, £1.25 overseas.

Lee goes American

Gordon Lee's competition page featured through 'Winners and Losers' in the July 1988 edition of Scientific American when Gordon issued to readers of that August journal the challenge he issued to us in the July 1988 WEL — to construct a square of 6 by 6 digits which contained more than 100 prime numbers.

The Computer Recreations column offered some tips for constructing such a square, and offered to print any solutions which beat Gordon's.

We await the outcome, if anybody out there cracks it — tell SA as well as us, and tell them where you come from. We await the outcome.

Update to date

THE July 1988 edition of Dragon Update, the Newsletter of the National Dragon Users Group, contains a report from the Oastar Show, reviews of Lucifer's Kingdom and Utopia, a look at the CoCo 3, news, programming articles, and two appeals: one for local area members to run the NDUUG mail at the Weston Super Mare show in December, and the

other for somebody to help Paul Grade get a backup photocopies from Lincolnton to Welling.

The National Dragon User Group is a user group offering technical assistance, a forum for Dragon and Tandy users and 12 newsletters a year. For information write to Paul Grade, 6 Hanning Road, Welling, Sussex.

H C Anderson list

H C Anderson has published a new productivity list for the Dragon which is available from them at Englewood 380, DK-2770 Keston, Denmark. The list is a 10-page A5 booklet and includes hardware and disc, upgrade kits, spare parts, CG-6 and Free software,

games and utilities.

HCA are the European licensee for CG-6. Prices in the English-language list are quoted as 'ex' or 'incl' depending about VAT and outside duties should be addressed to HCA.

New Era expands

Simon Jones's New Era Publications are releasing two booklet guides to Dragon products and suppliers. The Dragon User's Handbook details every consumable currently available for the Dragon (and every computer user genuinely supporting the Dragon) according to Jones, who adds that they believe this will help in the fight against piracy by identifying software available legitimately. The price is £1.95. The Dragon Directory is a bi-monthly update which is aimed at keeping users in contact with other users/companies (and) will

detail any new software which has been released prior to publication of the directory. The price is £4.95 for two year subscriptions. New Era's present subscribers are entitled to a discount of approximately 15% on both booklets.

New Era has recently taken over the list (published) of Unique Software, who were publishing Dragon software in 1984, and hope to revive other deleted software in the future.

Inquiries to New Era Publications, c/o Simon Jones, 27 Cuttes, Meadon, Hareley, Essex CM19 4EM

Orange across the Sea

Orange Software is releasing an adventure by Gail Howland, North Sea Action.

This is a sea-man type game in which the player sends a drill down below the North Sea in search of oil and all drama. Not the most intellectually testing game, but it

has that 'one more try' quality says Graham Smith of Orange.

Orange's brochure is now a nice little A5 booklet. Write to Orange Software, The Quatt, Start Road, Nant-y-Berry, Abergavenny, Gwent NP23 5DP for information.

Starship rolls again

THE next release from Starship Software will be impossible, featuring full colour perspective graphics, music and digitised speech. The game is being finished and more details will be released shortly.

Impossible will be published by Pulse Software on cassette or DragonDOS disc for the same price. Pulse are

also planning a new text adventure, a new self-defensive database program, and a computer aided design program, CAD 9800 (probably priced at £19.99 in September).

Discounts of around 10% on many of their other programs will be available. Inquiries to Pulse Software, 26 Foxhill, High Crompton, Shaw, Oldham OL2 7HG.

Dragonsword!

Paul Grade gets his inspiration from a fruit.

HEARD about the new Official Secrets Act yet? Don't worry, it isn't likely to apply to anything you're likely to write in your Dragon, at least not unless you're really working for MI6 and trying to discover the inside secrets of Dragon User.

A lot of programmers appear to imagine that whatever they write is an Official Secret, especially in the Dragon world (Not just the Dragon world: since your Editor-advocating and spend more time writing protection routines than they do writing programs. What's all this about? Well, I'm getting a little tired of hearing people about the Dragoned Peoples who spend all their time copying programs and passing them around, thus depriving poor hard-working programmers of thousands of sales. It may well have been true once, and there are still a few more around who imagine that buying one copy of a program is about the same as a good deed, but if someone is really determined to break into protected programs they will, so what on Earth's the point of writing all these elaborate routines? Personally I was always told that the first thing one should do when buying a disc or tape was make a backup copy and keep the original in case of accident. That makes a lot of sense to me, and I'll have to spend several hours fiddling about before I can make a backup copy of a program then I'm simply not going to buy anything in the first place. I don't care how good a program may be, or what a bargain it is. I assume the right to be silent is make a backup copy, and if this involves having to break a protection routine then I refuse to buy it.

The whole thing is ridiculous. I KNOW sales are low now, but that has nothing to do with 'pirates'. It's simply that there are a lot fewer Dragon owners now than there were, and those that remain tend to be more interested in using their machines than running the latest games software. When the programming world realises this we might get software, and more to the point they might even get a few more sales.

As well as the Dragon (which is said to be a very nice Apple 2+), which as you will probably know is an equally antiquated machine, but has the advantage of an established business and educational user base and tends to be more good quality software than is available in Dragon owners. The programs aren't cheap, about eight times the price of Dragon software, for all you price-complainers, but very few of them are protected anyway, and to be countered those few that are there is a large selection of commercial copying programs. Almost every Apple disc, regardless of source, contains an instruction to make a backup and NOT use the original, and several times three in a batch of freebie programs and routines as well as

the main program, plus summaries of forthcoming releases. When was the last time you found anything like that from a Dragon software firm? It is a much better attitude, and has to be more attractive to potential customers than the paranoia about 'pirates'.

I am not defending the real pirates, those people who copy a program, change a couple of lines and then try to market it as 'original work'. That isn't just piracy, it is also theft, and there is no excuse at all for it. Likewise, I hold no brief for 'software librarians' who make copies of commercial software and then sell it in order to make a profit. The harder these types get jumped on, the better, but actual sales losses through private copying are minimal, and I think are probably no greater than sales lost through over-protectionism. Anyone selling the copies of a program in the first six months is doing as well as can be expected now. The market just isn't there any more, and more to the point, Dragon users generally now know a lot more about their machines than in the 'Good Old Days', and are quite capable of writing simple programs for themselves, which means that commercial programs have to be good in order to sell at all.

I'm not having a go at programmers. Generally they do their best to provide good material at reasonable prices, and certainly more of them are going to perish out of it. But a few of them just refuse to believe that there is a limited market, and that games sales are so low that they'll be lucky to cover the cost of the listing paper they used in writing the program. Earning money is self-delusion. Those of us left need the software, and are willing to buy it. There is still a market, but it isn't big enough for anyone to make a profit from, so what's the point in keeping it alive?

If anyone thinks I spend all my time complaining, they're wrong. I never spend more than 70% of my time away, but you want to know why. By starting a user group or a magazine. Well over half the letters that come in contain at least one complaint about something, or about usually things over which I have no influence at all, and the last of 'Why doesn't someone market some published software' or 'would it be possible to publish this magazine again' (Now that's an idea Boss Lady hasn't thought of yet. I think, as an editor-in-chief can you mean? I thought the Ladies Page was for enough, but now you mention it...) All I am really doing is replying a few of the comments and what to you, hopefully to action, but failing that a few solutions would help. Of course I add a few questions and comments of my own, but I'd be a fool to miss the chance, wouldn't I?

On the subject of questions, there's one I really must ask. I may not be the most sophisticated in the meaning of life, the

Universe, and Everything (and anyway we all know the answer to that one), but it is a question which has caused generations of Editors and writers to leave their marks in the wallpaper and increase the value of Clackers Company shares by several thousand percent. Is there anyone out there? Personally I don't believe that any of you are there at all, you're just something out of a very prolonged dream, but if there really is life on the other side of the keyboard just knock three times for yes, twice for no. Inasmuch as there really was intelligent life out there why would I get letters telling me that the writer has been a subscriber to Dragon User for several years but has only just heard about the National Dragon Users Group, from a friend? Why would I get letters from Group members asking me if Dragon User still exists? I've been giving User mentions in Update for years now, and at one stage even carrying User advertising and subscription forms. Dragon User has been mentioning the Group in almost every issue for about the same length of time, so is there really someone out there reading this, or are you all a computer malfunction? (But why are you, while sending in the subscription cheques and the latest haul of questions I can't answer?)

Enough of this rubbish. I'm being paid eventually. I hope to write serious, and probably interesting material for this prestigious magazine. I know they are intelligent because I read Peter Corneil's page too, so I can learn all about how to do deals with little very handy if I happen to get stuck in a Scandinavian night, fairly (well in a couple of pubs I know), wizards (are they the ones responsible for sunny spells), and similar everyday phenomena. These I don't understand though is why Peter's regular readership are so hooked on the now traditional Adventure magazines. Britain has a lot to answer for, I know, but surely someone could break out of the pattern? How about an Adventure program based on parking a car in London or Brighton? The hazards make more sense and demands seem positively benign. Or how about one for all ex-Apple and Hugsy Club members, based on the Story of Elaine White? Do you must have a vision? Try typing Spell-Casting Utility with a special sub-menu for putting curses on people who offend. Or, of course, there's a slight snag with that one. It's not really a utility, it could result in several people I can think of having to log rapidly to the newspaper, and our illustrious Editor might have a harder time than usual parking her becomatoc (Pleasure / ride a / sex /) but who cares? Let's have a bit more variety. Please?

Come back, Compusense!

Program: Edit +

Supplier: Compusense, PO Box 166, Green Lane, Palmers Green, London N13 5TH
Price: Unknown. Cartridge or disc.

This product comprises the screen utility Hives, which is also available on its own and Edit +, a full screen editor for Basic programs.

Hives uses a special character set to produce a 31 x 24 text display on a mode-4 screen. The display, which is similar to that of the word processor Fastcenter, can be displayed in black text on green or built backgrounds or the reverse.

APPEND 1 (replace of the normal PRINT @ command), which can still be used for a 32 x 18 display, gives access to all 1224 print positions. Various foreign character sets can be selected by extensions to the CLS command. Text can be freely mixed with graphics. Hives is not as versatile as Room-Box Writer and when combined with Fast+ consumes considerably more memory, but it is worth it for the screen editor which is a vast improvement over the Dragon line editor. Type EDIT and the screen will clear and any Basic program in memory will be displayed.

The CLEAR key is used in combination with other keys to select the various options of

the program. Auto-repeat is implemented for easier movement around the screen, which is by means of the cursor keys. The screen utilizes a word processor will not scroll when the cursor reaches the bottom of the screen but it can go up or down to scroll at a fixed rate and jump to a specified line.

The default mode is over-underline although underline can be selected if it will return to over-underline when an alteration is confirmed by pressing ENTER. Inserting into a line can be done by typing to extend the line first. If too much text is entered into a line it will beep and show an overflow marker. New lines can be added or old lines deleted.

Characters can be deleted individually at the cursor or from the cursor to the end of the line. Single or blocks of lines can be copied by placing markers and inserting into the required place in the program or moved by deleting the old block after the copy has been made. Markers will return to further copies and removal.

The program can be searched for a specified string of characters or characters selectively replaced by an alternative string. This is ideal for changing variable names.

This covers the main features of the program which I find indispensable when developing programs. This is a must for the serious programmer.

Clive G. Scott



Program: Dynafast

Supplier: Compusense, PO Box 166, Green Lane, Palmers Green, London N13 5TH
Price: Unknown. Cartridge or disc.

Dynafast comprises three programs: Dynafast, a Basic compiler, Dynamite, a program compiler and Dynafast, a cross reference utility available from an opening menu.

Dynafast compiles a basic program into a mixture of machine code and Basic, which, while not as efficient as a program written in assembler, runs much faster than a Basic program.

To gain the maximum speed advantage all integer variables should be declared at the start of the program by naming the variables and the location in memory for them to be placed in: DIM A\$(65536 B).

There are four alternative modes of compilation: Normal, Fast, Step and Print. Normal mode will display the progress of the compilation but slowed down so that it can be read. Fast processes it as fast as possible. Print directs all output to the printer while Step mode will step through each variable line is processed.

Compilation is done in 3 passes. Pass 1 displays the integer variables that have been declared. Pass 2 processes each line and indicated whether it was able to fully or partially compile the line and Pass 3 is a tidying up process. Compilation can be paused or

aborted any time.

The compiled program can be automatically saved under a specified name but the \$F\$ and \$R\$ addresses are displayed at the end of compilation and can be noted for future reference. The compiled program can now be run by typing EXEC.

Dynamite compacts a program in three passes by first deleting all redundant characters and spaces, secondly deleting all unnecessary \$F\$ and \$R\$ and finally containing as many lines as possible into one long line.

In all three programs a progress report is displayed as each line is processed.

It is advisable that the compiled program be saved under a different name because it can be difficult to read and edit.

Dynafast runs through your Basic programs and produces a table of all variables and constants together with the address they appear on which can be output to the screen or printer. The table can be restricted by setting limits in the EXEC statement: EXEC A2 will only produce a table of Basic variables.

It is invaluable for checking the variables that have been declared, particularly when modifying a program prior to compilation by Dynafast. This is a list of programs which will complement any user's collection of programming aids.

Clive G. Scott



Oranges and cream in Lucifer's land

Program: Lucifer's Kingdom
Supplier: Orange Software, The Girth, Star Road, Nant-Y-Derry, Aberystwyth, Gwynedd NP23 5BP
Price: £5.95 plus 50p postage

It's been a couple of months since I've got round to writing a review but at least now that the ink is flowing again I've got something to rave about.

Orange Software are the company providing the 'luscious' item. It's only a few months since they appeared

on the market but now they have a comprehensive list of titles, old and new, largely made up of text adventures. Lucifer's Kingdom is an arcade adventure so it's perhaps unfair to compare it with the majority of their titles but I would say it's undoubtedly the cream of their produce.

The Kingdom of Lucifer is set deep in space in the bowels of the earth as may be expected but the obvious idea of exterminating the old devil is stifled. The way to do this is

to fight your way to him by shooting down hordes of enemy vessels which speed down the conveyor, the few corners various guises, some that you can dodge and forget, some that track you, some that move vertically down the screen and others that zig-zag. Whenever they are you must know what's going to come next and how many others.

So far it sounds like a simple shoot-everything-in-sight type game. There is however a lot more to come than that. Firstly,

you have to collect crystals (not simply a matter of flying over them but shooting at flashing 'C' characters and gradually revealing them. This is not just to gather bonus points as in most games but a necessary part of the proceedings, because if you don't collect them you have to go back once the region is completed.

A region in this game is a set of several planets, a planet being a phase as, say, in

continued on page 6

Winners and Losers

Every month
Gardner-Lynch will
look at some price movements

TWO for the price of one this month as we take a quick look at the April competition before turning our attention to the more difficult task of extracting the square root of 2.

When thinking about the April competition I said to myself "Why not make it an easy one this time to give everyone a chance?" And, sure enough, we were rewarded with one of the highest entries ever, with the poor old posterer bent double beneath the weight of mail. The great surprise came upon opening them to find that mail over had in fact been hacked off at the wrong answer. The reason turned out to be the wording of the puzzle which said (among other things) "There is a 5 among the cards but it is not the card one place clockwise from K". Now this was taken by many entrants to mean that there was only one 5 amongst the cards, whereas, in the solution that I had in mind, there were two fives present. This was not intended as a deliberate attempt to mislead, indeed, by way of defense I can only quote the well-known adage:

Question: I have two coins totalling 55 pence. One of them is not a 50pence. What are the coins?

Answer: 50 pence and 5 pence. (One of them, the 5 pence, isn't 50 pence.)

Anyway, using the information given, there exists a possible set of card values which agrees with the information given, which has the value of $(A \text{ card } X) \text{ is } 3$ in three of the suits, is in two of them, and is in one of the others. The information that if you know card X , you could determine the other values, clearly indicated that it is the last of these possibilities. The fact that the exclusion of more than one nine eliminated this possibility left many entrants with only five equally likely possibilities (queens had been fewer, for various reasons), which resulted in the assignment of much entertaining logic, and a lot of argument in the results.

A slightly more difficult task was the evaluation of the square root of 2, to an accuracy of 120-decimal places. This was the competition for May; and, by contrast, the difficulty was reflected in the size of entries for computations to all those

```

1000 1 DIM A(100),C(100),B(100)
1000 2 A(0)=1:B(1)=1
1000 3 FOR N=1 TO 20
1000 4     A(N)=B(N-1)
1000 5     B(N)=A(N)+B(N-1)
1000 6     IF T=1 AND Y(N)=2 THEN A(N)=T*B(N)+A(N) ELSE
1000 7     T=1
1000 8     IF Y(N)=2 THEN A(N)=A(N)-1:GOTO 1000
1000 9     FOR I=N TO 20000
1000 10         Z(I)=I*I
1000 11     NEXT I
1000 12     NEXT N
1000 13     FOR C=N TO 100
1000 14         IF (N) THEN PRINTN=C," "
1000 15         PRINTN=C,B(N)+B(N)+A(N),Z(N)
1000 16     NEXT C
1000 17     PRINTN=C," "
1000 18     GND
1000 19 T=
1000 20
2000 2100 #####
2000 2200 ##### CALCULATION #####
2000 2300 #####
2000 2400 FOR I=N TO 20000
2000 2500     Y(I)=I*I
2000 2600     NEXT I
2000 2700     B(N)=A(N)+Y(N)+B(N-1)
2000 2800     Y(N)=Y(N)+B(N)+A(N)+B(N-1)
2000 2900     GND
2000 3000 FOR C=N TO 100 STEP 1
2000 3100     B(N)=B(N)+B(N)+Y(N)+B(N-1)+A(N)+B(N-1)
2000 3200     Y(N)=Y(N)+B(N)+B(N)+A(N)+B(N-1)
2000 3300     NEXT C
2000 3400     Y(N)=Y(N)+B(N)+A(N)
2000 3500     L=0
2000 3600     IF Y(N)=2 THEN Y(N)=1+Y(N)+B(N)+A(N)+B(N)+Y(N)+Y(N)
2000 3700     IF Y(N)=1 THEN L=L+1:GOTO 2100
2000 3800     GND

```

gallant readers who attempted this one. Incidentally, no errors crop up in the answer given on page 27 of this August issue: The 2nd decimal place should be 1 and not 2 as given, and the 4th and 4th digits have been transposed and should read "3" and not "7". (Given, I read that I did... 52). Now it will work using the multiplication routine from last February's Dragon User. The method of computation outlined in the Answer section relating to this problem utilized a technique which was intended to prevent too much repetition while running the program. Unfortunately, this resulted in a rather complex listing - which would have been more of a hindrance than a help.

d it had been published. However, in response to requests for a listing which would do the job, here is one from D.J. Gray of Cleveland, shown here in his distinctive style of presentation. (When spacing trains in is not necessary to include the spaces at the beginnings of the lines — these are there for clarity.) The Print #2 is used in lines 1120 and 1130 to send the result to the printer. To display the result on screen, these lines should be amended to just a plain PRINT command (and don't forget to include the semi-colon at the end of line 1030). The program will take about half an hour to compute the answer, but it will be worth while studying the code.

Dragonsoft

Manuscripts for review should be sent to: Dragon Door,
40 Alexander Road, Haverhill, MA 01830

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Academically, for instance, Region 1 is Epsilon with six planets visited in the order Delta, Maxima, Minima, Prolex and Lexima. That's Region 1. There are four other regions: Delta, Gamma, Beta and Alpha making a total of 30 planets to navigate and with only five lives.

Particularly devious and infuriating obstacles for the contestants are the

3-D language based objects which only allow your bullets pass if pointing upwards, if the point down to get them up you have to fire at them, immediately after the first shot they reverse again. If you can follow that it effectively tells of your bullets get good but I can assure you that you struggle after your animations fully flowing and to only have half run be accurate.

This game reminds me of *Vanguard*—an old arcade favorite of mine, which shows how highly I rate this game. One factor that *Vanguard* had that this has, is addictiveness. At first it's a bit frustrating as you try and comprehend what's happening and how to play your role in it, but after a few plays you become more and more determined to reach that next planet that you

[!\[\]\(cbd8541a32dfc32f356f5c6c994b0a21_img.jpg\)](#)
[!\[\]\(a017f927204f44da2afc19329f6c4977_img.jpg\)](#)
[!\[\]\(b6ea0cb221b83f6105efc9299160a0ba_img.jpg\)](#)
[!\[\]\(8bd9503822fe274438c253834950e608_img.jpg\)](#)

There seems to be quite a few good new games about at the moment and this is certainly one of them. If you've got a joystick in need of exercise it's cheese in the post time, because to conclude with a totally abnormal (but this one's a little one).

Abstract

DragonDOS Toolkit

D.J. Gray adapts the Premier Microsystems program for DragonDOS

FOR many people Premier Microsystems' Toolkit used in conjunction with the Delta disc controller has been a very useful addition to the Dragon's facilities. Toolkit was designed to work with a Dragon 32 and a Delta DOS disc controller which was capable of containing an extra 512Kb of memory holding the Toolkit Editor. Those people who moved to a Dragon 64 would have found that their pastime printer did not work when Toolkit was activated and those who moved to Dragon or Super DOS found that they could not install their Toolkit Editor.

The instruction manual supplied with Toolkit states that it cannot function correctly with Dragon Data's disc system as DragonDOS rather inconveniently takes the current video screen as a work area, thus defeating Toolkit, also that the Dragon Data disc cartridge contains no extra 512Kb space for Toolkit to reside.

Those statements provide quite a challenge but it has been found possible to use a Dragon 64's extra Ram to hold Toolkit and with a DragonDOS cartridge attached make Toolkit operate. The problems to overcome were:

- 1) To obtain a copy of Toolkit that can be read into a Dragon 64's memory
- 2) How to convert the extra 32K of Ram of a 64 in order to store Toolkit in the correct position
- 3) Toolkit contains a self destruct routine that is activated if it is held in Ram; this has to be defeated.
- 4) Toolkit contains command words that are identical to some within DragonDOS; these have to be changed to prevent confusion.
- 5) How can Toolkit be modified to prevent it overwriting areas occupied by DragonDOS when using the CLS, FRAME and MOVE commands.
- 6) How can the system be modified to allow a parallel printer to be used when Toolkit is used with a 64.

Toolkit when installed in conjunction with DeltaDOS resides in memory between 40000 and 4000F. This can be copied onto tape by using COPIEM "TOOLKIT" 40000,4000F 40000.

This copy can be used later to place Toolkit into the Ram of a 64.

Extra Ram

To gain control over the extra Ram in a 64 with a DragonDOS cartridge attached is quite straightforward (remember that it is not 64 words that is wanted, only access to the extra Ram). Using one of the routines that simply reads the information stored in Ram (Basic) and the DragonDOS cartridge then places it into Ram. This routine also modifies the RESET to ensure that if RESET is pressed then the system will not return to 32 mode. Later this routine is

LISTING 1

```

10 :REM *****
20 :REM *** LOADER TO PUT ROM AND DOS INTO ***
30 :REM ***      RAM OF A DRAGON 64      ***
40 :REM *****
50 : FOR I=40000 TO 4000F
60 :   FOR J=40000 TO 4000F
70 :     READ A$
80 :     POKE I,JVAL I*256+A$
90 :   NEXT J
100 : NEXT I
110 :
120 :
130 DATA 0E,00,00,1A,50,07,FF,0E,A4,04
140 DATA 07,FF,0F,A7,00,0C,0F,FF,25,F1
150 DATA 00,0C,1D
160 DATA 10,0C,03,CB,A4,00,A7,A0
170 DATA 10,0C,03,FC,25,FA,10,00,03,EB
180 DATA 10,0F,72,0A,21,07,0E,C0,1C,AF
190 DATA 39
200 DATA 12,07,FF,0F,7E,C7,06

```

```

*****
40000-4000F 40000 4000F
40000-4000F 40000 4000F
40000-4000F 40000 4000F

```

```

4020 *****
4030 * ASSEMBLY LISTING TO TURN ON *
4040 * EXTRA 32K OF RAM AND MOVE *
4050 * ROM AND DOS INTO RAM *
4060 *****
4070 ORG 20000
4080 PUT 20000
4090 GSTART LEX 000000
4100 1A50 ORCC 0000
4110 07FF0E LOOP1 STA 0FF0E
4120 A404 LDA ,X
4130 07FF0F STA 0FF0F
4140 A700 STA ,X+
4150 0C0FFF CMPL 000FFF
4160 25F1 BCS LOOP1
4170 000C1D LEAK RESET,FCR
4180 10000CB LDY 0000CB
4190 A400 LOOP2 LDA ,X+
4200 A7A0 STA ,X+
4210 100C0FC CMPL 0000FC
4220 25FA BCS LOOP2
4230 10FF72 LDY 00072
4240 0A21 LDA 0A21
4250 0700C5 STA 0000C5
4260 10AF ANDCC 00AF
4270 39 RTS
4280 12 NOP
4290 07FF0F STA 0FF0F
4300 7EC706 JMP 0C706
4310

```

modified to overcome problem number 6 and to automatically call Toolkits startup.

When called the routine in Listing one switches the bit into all RAM mode. Toolkit can be stored directly into RAM using the tape previously prepared simply CLORDM "TOOLKIT". No offset is required. Do not be tempted to EASE off the tape as you will only have to start again.

Toolkit's self-destruct routine can now be disabled. Listing two lines 50 to 160 overwrite the destruct routine with No Operation instructions (NOP) and a final Branch Always (BAA).

Toolkit contains some command words that are identical to words used by DragonDOS. To ensure that there is no confusion some minor modifications can be made. The simple rule I have used is to change the second letter of the conflicting words in Toolkit to 'D'. Any other alternative can be made to personal choice. Listing two lines 160 to 220 make the following changes to command words:

AUTO becomes ADTO
 BPPCH becomes BDPCH
 BEEP becomes BDEP
 BPP becomes BDP
 CPL becomes CDL
 FREE becomes FDESS

Toolkit uses the area allocated to graphics to store pages 11 and above. DragonDOS has however moved the position of these graphics areas so to overcome this there is a danger of overwriting DragonDOS. To avoid this it is necessary to add two patches to Toolkit that modify the commands MOVE, FRAMES and CLS. These patches are inserted using listing two, lines 230 to 290. The first patch for FRAMES and MOVES is stored between &HFA05 and &HFA0F. These patches are called by inserting two Long Branch to Subroutine commands at &HE265 and &HE26A. These branches are inserted in listing two lines 306 to 370.

Having added the patches and made the modifications it is now possible to save all the coding to disk by SAVE "TOOLKIT.UTY" &H4000,&HFA0F,&H4000. The file "TOOLKIT.UTY" is used later in listing three as the title of the program to be autrun.

The problem with a parallel printer, Dragon 64 and Toolkit is that Toolkit uses a part of RAM that a Dragon 64 looks at to determine if it is to use the serial port or the parallel port. This fools a Dragon 64 into believing it is required to send messages to the serial port when asked to output to a printer. The startup routine modifies the check bit (it is now in RAM), unfortunately though this also disables the serial port.

The final listing number three is a patch for listing one. It allows listing one to be modified so that when RUN is selected in Ram mode, modifies the print routine and LOADs and RUNs the program "TOOLKIT.UTY". The patch is carried out by saving listing one to disc (you must use the same line numbers as the listing), SAVE the patches disc (make sure the line numbers are the same as listing three), then MBR followed by LOAD "Listing 1"

LISTING 2

```

10 REM #####
20 REM 444 TOOLKIT MOBS ***
30 : REM #####
40 : REM 44 DISGABLE SELF DESTRUCT 99
50 : REM #####
60 : FOR I=0 TO 3
70 : POKE &HE402+I,&H12
80 : NEXT
90 : POKE &HE40A,&H20
100 :
110 :
120 : REM #####
130 : REM 44 CHANGE COMMAND WORDS 99
140 : REM #####
150 : POKE &HE1E5,&H44
160 : POKE &HE201,&H44
170 : POKE &HE220,&H44
180 : POKE &HE23C,&H44
190 : POKE &HE26F,&H44
200 : POKE &HE247,&H44
210 :
220 : REM #####
230 : REM 44 ADD THE PATCHES 99
240 : REM #####
250 : FOR I=&HFA05 TO &HFA0F
260 : READ A#
270 : POKE I,&H1+&H1+&A#
280 : NEXT I
290 : FOR I=0 TO 2
300 : READ A#
310 : POKE &HE265+I,&H1+&H1+&A#
320 : NEXT I
330 : FOR I=0 TO 2
340 : READ A#
350 : POKE &HE26A+I,&H1+&H1+&A#
360 : NEXT I
370 : END
380 :
390 :
400 DATA 34,03,FE,03,FE,A4,40,37,04,05
410 DATA 03,A7,40,A4,40,37,04,00,02,A7
420 DATA 4F,A4,4A,37,04,00,03,A7,A4,35
430 DATA 02,30,0F,FE,00,3F,3F
440 DATA 01,00,27,03,C3,06,00,C3,05,00,3F
450 DATA 17,14,70,17,14,AC

```

LISTING 3

```

40 : REM 444 AND PATCH TO AUTO RUN TOOLKIT 99
50 : FOR I=&HE20 TO &HE21
100 DATA 30,0C,3A
150 DATA 0A,33,30,0C,0C,0F,A4,70,01,94
210 DATA 27,34,4F,4F,4C,40,4F,54,20,53,54,50,
22,00

```


PLAYBABY

Bayline: *Honesty's* contrived answers back to the offspring

At the early days of the Dragon, some four or five years ago, there were a great many trivial programs around, both on sale in bookshops and published in the magazine. Since then the standard has improved very greatly — if you look at last year's Dragon User there are some very good utility programs and a number of machine code games, but very little trivia. The only problem is that there is still a requirement for a certain amount of trivia. This program seeks to redress the balance. It is aimed at the 2-4 year old toddler who annoys its older brothers and sisters by pressing a random key just as they were about to say that last alien and go to the top of the high score table.

Blackwell, the company has now come

any key at random and get a response. If you are slightly more sensitive you get a more interesting response. When a numerical key is pressed, the corresponding number of arguments I should have been called for the sake of being more interesting is drawn on the screen and a lamp made for each one (Figure one). If the zero is pressed a twinkling star is displayed on the screen and Twinkle Twinkle Little Star is played (Figure two). If any other key is pressed a random sound is made and the screen cleared to a random colour with the exception discussed in the article.

The program itself is fairly trivial and needs little description as the listing is well commented and there is a flow diagram in Figure 3(a). The only point of note is that

the BREAK key has been disabled by the "dirty" technique described in June 83 Dragon User. This works for this program but could have disastrous effects on some other programs so it is probably safer to switch OFF and ON again after running BreakOut.

Anyway there it is, a toddlers' introduction to computers; it will keep them quiet for at least a quarter of an hour, teach them that if you press the right key it will do what you want and also to count to 8. It's a fairly short, simple program to type in, but if you want a copy and are too lazy to type it yourself, I'll send you a copy in return for £2.25 addressed to Bernice Harcourt, 8 Towner St, Elsworth, Northampton NN4 5BN.

```

10 PLAYBACK
20 COPYRIGHT SERVICE REQUEST 1987
30 'A
40 CLE
50 CLEAR 200
60 'A
70 FOR USE 8. SANYOIC PAGES, FIRST + FORM
80S, FIRST 2 FOR STAY IN YELLOW, NEXT 2
90 FOR STAY OUTLINE
100 'A
110 FOLLOW 8
120 DID THAT?
130 PRINT " (1) YES (2) NO "
140 PRINT " PLAYED AND ENJOYED BY ANYONE "
150 PRINT " ESPECIALLY BEST? "
160 PRINT " IF ZERO IS PUSHED THUMB "
170 PRINT " THUMB LITTLE KNOB IS PLATE
180 "
190 PRINT " IF A NUMBER (1) TO (5) IS PUSH
200 "
210 PRINT " (1) NOT JAGGED AND OTHER "
220 PRINT " IF NOT OTHER KEY IS PUSHED TH
230 "
240 PRINT CHARACTER IS PUT ON THE "
250 PRINT " SCREEN AND A SOUND MADE. "
260 PRINT " THE SOUNDWAVE WILL BE DISAPPE
270 "
280 PRINT " NO PRESS-KEYS TO STOP. "
290 PRINT
300 PRINT " PLEASE PUSH ANY KEY "
310 'A
320 KEY IN DEFINES THE SHAPE OF THE APO
330S
340 'A
350 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
360 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
370 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
380 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
390 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
400 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
410 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
420 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
430 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
440 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
450 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
460 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
470 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
480 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
490 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
500 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
510 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
520 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
530 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
540 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
550 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
560 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
570 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
580 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
590 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
600 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
610 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
620 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
630 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
640 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
650 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
660 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
670 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
680 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
690 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
700 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
710 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
720 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
730 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
740 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
750 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
760 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
770 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
780 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
790 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
800 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
810 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
820 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
830 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
840 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
850 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
860 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
870 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
880 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
890 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
900 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
910 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
920 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
930 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
940 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
950 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
960 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
970 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
980 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
990 GOTO 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

```

```

1000 DATA C,C,C,C,C,C,C,C,C,C
1010 GOTO 140,F,F,F,F,C,C,C,C
1020 FOR I=1 TO 40:READ B4(1)NEXT I
1030 "A
1040 REM B4(4) STAY ON SCREEN. PAGES 5
1050 IF B4(1) THEN B4(1)=0:GOTO 1040:END IF
1060 B PAPER
1070 "A
1080 PPAGE 1:0
1090 COLOR 3
1100 PCLS
1110 GOTO 1700,1800,1900,2000,2100,2200,2300,2400,2500,2600,2700,2800,2900,3000,3100,3200,3300,3400,3500,3600,3700,3800,3900,4000,4100,4200,4300,4400,4500,4600,4700,4800,4900,5000,5100,5200,5300,5400,5500,5600,5700,5800,5900,6000,6100,6200,6300,6400,6500,6600,6700,6800,6900,7000,7100,7200,7300,7400,7500,7600,7700,7800,7900,8000,8100,8200,8300,8400,8500,8600,8700,8800,8900,9000,9100,9200,9300,9400,9500,9600,9700,9800,9900
1120 REM B4(4) STAY ON SCREEN
1130 "A
1140 REM B4(4) STAY ON SCREEN
1150 REM (END OF THE PAGE)
1160 "A
1170 FOR I=1 TO 33
1180 FOR J=1 TO 33
1190 FOR K=1 TO 33
1200 FOR L=1 TO 33
1210 FOR M=1 TO 33
1220 FOR N=1 TO 33
1230 FOR O=1 TO 33
1240 FOR P=1 TO 33
1250 FOR Q=1 TO 33
1260 FOR R=1 TO 33
1270 FOR S=1 TO 33
1280 FOR T=1 TO 33
1290 FOR U=1 TO 33
1300 FOR V=1 TO 33
1310 FOR W=1 TO 33
1320 FOR X=1 TO 33
1330 FOR Y=1 TO 33
1340 FOR Z=1 TO 33
1350 FOR AA=1 TO 33
1360 FOR AB=1 TO 33
1370 FOR AC=1 TO 33
1380 FOR AD=1 TO 33
1390 FOR AE=1 TO 33
1400 FOR AF=1 TO 33
1410 FOR AG=1 TO 33
1420 FOR AH=1 TO 33
1430 FOR AI=1 TO 33
1440 FOR AJ=1 TO 33
1450 FOR AK=1 TO 33
1460 FOR AL=1 TO 33
1470 FOR AM=1 TO 33
1480 FOR AN=1 TO 33
1490 FOR AO=1 TO 33
1500 FOR AP=1 TO 33
1510 FOR AQ=1 TO 33
1520 FOR AR=1 TO 33
1530 FOR AS=1 TO 33
1540 FOR AT=1 TO 33
1550 FOR AU=1 TO 33
1560 FOR AV=1 TO 33
1570 FOR AW=1 TO 33
1580 FOR AX=1 TO 33
1590 FOR AY=1 TO 33
1600 FOR AZ=1 TO 33
1610 FOR BA=1 TO 33
1620 FOR BB=1 TO 33
1630 FOR BC=1 TO 33
1640 FOR BD=1 TO 33
1650 FOR BE=1 TO 33
1660 FOR BF=1 TO 33
1670 FOR BG=1 TO 33
1680 FOR BH=1 TO 33
1690 FOR BI=1 TO 33
1700 FOR BJ=1 TO 33
1710 FOR BK=1 TO 33
1720 FOR BL=1 TO 33
1730 FOR BM=1 TO 33
1740 FOR BN=1 TO 33
1750 FOR BO=1 TO 33
1760 FOR BP=1 TO 33
1770 FOR BQ=1 TO 33
1780 FOR BR=1 TO 33
1790 FOR BS=1 TO 33
1800 FOR BT=1 TO 33
1810 FOR BU=1 TO 33
1820 FOR BV=1 TO 33
1830 FOR BW=1 TO 33
1840 FOR BX=1 TO 33
1850 FOR BY=1 TO 33
1860 FOR BZ=1 TO 33
1870 FOR CA=1 TO 33
1880 FOR CB=1 TO 33
1890 FOR CC=1 TO 33
1900 FOR CD=1 TO 33
1910 FOR CE=1 TO 33
1920 FOR CF=1 TO 33
1930 FOR CG=1 TO 33
1940 FOR CH=1 TO 33
1950 FOR CI=1 TO 33
1960 FOR CJ=1 TO 33
1970 FOR CK=1 TO 33
1980 FOR CL=1 TO 33
1990 FOR CM=1 TO 33
2000 FOR CN=1 TO 33
2010 FOR CO=1 TO 33
2020 FOR CP=1 TO 33
2030 FOR CQ=1 TO 33
2040 FOR CR=1 TO 33
2050 FOR CS=1 TO 33
2060 FOR CT=1 TO 33
2070 FOR CU=1 TO 33
2080 FOR CV=1 TO 33
2090 FOR CW=1 TO 33
2100 FOR CX=1 TO 33
2110 FOR CY=1 TO 33
2120 FOR CZ=1 TO 33
2130 FOR DA=1 TO 33
2140 FOR DB=1 TO 33
2150 FOR DC=1 TO 33
2160 FOR DD=1 TO 33
2170 FOR DE=1 TO 33
2180 FOR DF=1 TO 33
2190 FOR DG=1 TO 33
2200 FOR DH=1 TO 33
2210 FOR DI=1 TO 33
2220 FOR DJ=1 TO 33
2230 FOR DK=1 TO 33
2240 FOR DL=1 TO 33
2250 FOR DM=1 TO 33
2260 FOR DN=1 TO 33
2270 FOR DO=1 TO 33
2280 FOR DP=1 TO 33
2290 FOR DQ=1 TO 33
2300 FOR DR=1 TO 33
2310 FOR DS=1 TO 33
2320 FOR DT=1 TO 33
2330 FOR DU=1 TO 33
2340 FOR DV=1 TO 33
2350 FOR DW=1 TO 33
2360 FOR DX=1 TO 33
2370 FOR DY=1 TO 33
2380 FOR DZ=1 TO 33
2390 FOR EA=1 TO 33
2400 FOR EB=1 TO 33
2410 FOR EC=1 TO 33
2420 FOR ED=1 TO 33
2430 FOR EE=1 TO 33
2440 FOR EF=1 TO 33
2450 FOR EG=1 TO 33
2460 FOR EH=1 TO 33
2470 FOR EI=1 TO 33
2480 FOR EJ=1 TO 33
2490 FOR EK=1 TO 33
2500 FOR EL=1 TO 33
2510 FOR EM=1 TO 33
2520 FOR EN=1 TO 33
2530 FOR EO=1 TO 33
2540 FOR EP=1 TO 33
2550 FOR EQ=1 TO 33
2560 FOR ER=1 TO 33
2570 FOR ES=1 TO 33
2580 FOR ET=1 TO 33
2590 FOR EU=1 TO 33
2600 FOR EV=1 TO 33
2610 FOR EW=1 TO 33
2620 FOR EX=1 TO 33
2630 FOR EY=1 TO 33
2640 FOR EZ=1 TO 33
2650 FOR FA=1 TO 33
2660 FOR FB=1 TO 33
2670 FOR FC=1 TO 33
2680 FOR FD=1 TO 33
2690 FOR FE=1 TO 33
2700 FOR FF=1 TO 33
2710 FOR FG=1 TO 33
2720 FOR FH=1 TO 33
2730 FOR FI=1 TO 33
2740 FOR FJ=1 TO 33
2750 FOR FK=1 TO 33
2760 FOR FL=1 TO 33
2770 FOR FM=1 TO 33
2780 FOR FN=1 TO 33
2790 FOR FO=1 TO 33
2800 FOR FP=1 TO 33
2810 FOR FQ=1 TO 33
2820 FOR FR=1 TO 33
2830 FOR FS=1 TO 33
2840 FOR FT=1 TO 33
2850 FOR FU=1 TO 33
2860 FOR FV=1 TO 33
2870 FOR FW=1 TO 33
2880 FOR FX=1 TO 33
2890 FOR FY=1 TO 33
2900 FOR FZ=1 TO 33
2910 FOR GA=1 TO 33
2920 FOR GB=1 TO 33
2930 FOR GC=1 TO 33
2940 FOR GD=1 TO 33
2950 FOR GE=1 TO 33
2960 FOR GF=1 TO 33
2970 FOR GG=1 TO 33
2980 FOR GH=1 TO 33
2990 FOR GI=1 TO 33
3000 FOR GJ=1 TO 33
3010 FOR GK=1 TO 33
3020 FOR GL=1 TO 33
3030 FOR GM=1 TO 33
3040 FOR GN=1 TO 33
3050 FOR GO=1 TO 33
3060 FOR GP=1 TO 33
3070 FOR GQ=1 TO 33
3080 FOR GR=1 TO 33
3090 FOR GS=1 TO 33
3100 FOR GT=1 TO 33
3110 FOR GU=1 TO 33
3120 FOR GV=1 TO 33
3130 FOR GW=1 TO 33
3140 FOR GX=1 TO 33
3150 FOR GY=1 TO 33
3160 FOR GZ=1 TO 33
3170 FOR HA=1 TO 33
3180 FOR HB=1 TO 33
3190 FOR HC=1 TO 33
3200 FOR HD=1 TO 33
3210 FOR HE=1 TO 33
3220 FOR HF=1 TO 33
3230 FOR HG=1 TO 33
3240 FOR HH=1 TO 33
3250 FOR HI=1 TO 33
3260 FOR HJ=1 TO 33
3270 FOR HK=1 TO 33
3280 FOR HL=1 TO 33
3290 FOR HM=1 TO 33
3300 FOR HN=1 TO 33
3310 FOR HO=1 TO 33
3320 FOR HP=1 TO 33
3330 FOR HQ=1 TO 33
3340 FOR HR=1 TO 33
3350 FOR HS=1 TO 33
3360 FOR HT=1 TO 33
3370 FOR HU=1 TO 33
3380 FOR HV=1 TO 33
3390 FOR HW=1 TO 33
3400 FOR HX=1 TO 33
3410 FOR HY=1 TO 33
3420 FOR HZ=1 TO 33
3430 FOR IA=1 TO 33
3440 FOR IB=1 TO 33
3450 FOR IC=1 TO 33
3460 FOR ID=1 TO 33
3470 FOR IE=1 TO 33
3480 FOR IF=1 TO 33
3490 FOR IG=1 TO 33
3500 FOR IH=1 TO 33
3510 FOR II=1 TO 33
3520 FOR IJ=1 TO 33
3530 FOR IK=1 TO 33
3540 FOR IL=1 TO 33
3550 FOR IM=1 TO 33
3560 FOR IN=1 TO 33
3570 FOR IO=1 TO 33
3580 FOR IP=1 TO 33
3590 FOR IQ=1 TO 33
3600 FOR IR=1 TO 33
3610 FOR IS=1 TO 33
3620 FOR IT=1 TO 33
3630 FOR IU=1 TO 33
3640 FOR IV=1 TO 33
3650 FOR IW=1 TO 33
3660 FOR IX=1 TO 33
3670 FOR IY=1 TO 33
3680 FOR IZ=1 TO 33
3690 FOR JA=1 TO 33
3700 FOR JB=1 TO 33
3710 FOR JC=1 TO 33
3720 FOR JD=1 TO 33
3730 FOR JE=1 TO 33
3740 FOR JF=1 TO 33
3750 FOR JG=1 TO 33
3760 FOR JH=1 TO 33
3770 FOR JI=1 TO 33
3780 FOR JJ=1 TO 33
3790 FOR JK=1 TO 33
3800 FOR JL=1 TO 33
3810 FOR
```



```

1110 'A
1120 IF [A#="P"] THEN SOUND$="B" ELSE IF A
ALL[1]#="B" THEN SOUND$="B" ELSE SOUND$="B"
1130 GOTO 1030
1200 'A
1210 SET SET ANIMATE SCREEN COLOUR,PRINT
CHARACTER,IF POSSIBLE, AND MAKE SURE OF
PENDING ON CHARACTER
1220 'A
1230 CLR SCREEN-1
1240 PRINT@200,(A#)
1250 IF A#="B" THEN SOUND$="B"
1260 RETURN
1300 'A
1310 SET ANIMATE SET ANIMATE, SET ANIMATE
0.
1320 SET ANIMATE ANIMATE ANIMATE OF SOUNDS
AND SOUND ANIMATE, SOUND SET SCREEN AND
SOUND ANIMATE.
1330 'A
1340 SOUND 1.1
1350 SOUND 1.1
1360 SOUND 1.1
1370 SOUND 1.1
1380 SET ANIMATE SET ANIMATE TO POSITION ANIMATE
1390 SOUND 1.1
1400 FOR J=1 TO 10
1410 SOUND 1.1
1420 SOUND 1.1
1430 SOUND 1.1
1440 SOUND 1.1
1450 SOUND 1.1
1460 SOUND 1.1
1470 SOUND 1.1
1480 SOUND 1.1
1490 SOUND 1.1
1500 SOUND 1.1

```

Crossword

Please get your answers in to Dragon User Crossword Department by the end of the month on the front cover

The eleventh Dragon Crossword rolls crisply out of a neat white envelope, dressed to kill, and regards — the ninth Dragon Crossword, as it crawls demurely from under a pile of slowly-rotting press releases. "Don't worry, old chap," it snaps briskly, "the Editor will get around to throwing that lot away soon. You'd better freshen up, because D.O. Duns of Armagh has written to tell you that he would like a Quickbeam game, any Quickbeam game, and Patricia Hiss of Surrey (an old friend of yours) is looking for an adventure of some sort. It's a good life out here, you know."

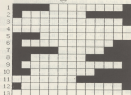
"Ha!" mutters the old Crossword. "You wait till this time next month."

The phrase is **WIRELESS**.

There will be a couple of free tapes from the Editor's Magic Bottomless Box for the first correct entries out of the hat each month. You can try telling us which tapes you'd like — we may have them.

1. Dr. Who's a famous one, so time-travel around. (6)
2. Nail the globe — Tommy was a wizard at it. (7)
3. Air speed cars make unfriendly aliens. (5,7)
4. Do call in at six to find adventure. (7,8)
5. First recipe for grand price? (7,9)
6. A City red tiger was made about his daily log. (10,11)
7. Martial art of Grasshopper? (4,7)
8. First one said, smart jewel that revealed. (7,9)
9. Learner in log, but knows things over. (7)
10. Dealing is a jobber's task, says 'faster'. (5,1,3)
11. Submarine captain might say it to have a look. (2,8)
12. Are rush takers troubled by big fish riches? (5,8)

All this month's answers are names of Dragon software. When the crossword is complete, the column marked with an arrow will spell out a phrase.



Finally enter the reference. The first letter must be C for cassette, R for record or T for printed music — or choose your own letters. Anything can follow them but you will not be able to make another entry unless one of these letters is entered. If you have made a mess up and wish to redouble entry, repeatedly enter T.

Having made the list, you need to **WRITE** it onto the disc. Of course you can enter a single file on cassette but searching for multiple files on cassette is rather a problem, and the analysis section which provides the real joy of using the program only works with hard disk. The names of the files are read from data line T000, one for each letter of the alphabet but, as you can see, I have an abundance of more letters.

The number of files depends on the size of your collection. If you put much over 100 entries per file sorting becomes rather slow. The disc system in the program is for 16,000,000.

To PCAD the file requires no special explanation so I will move on to GQRT mode. Up and down arrows here display all the entries or pressing **G** or **Removed** up and down the file quickly displaying only when you remove your finger. Pressing **T** deletes and entry while **W** adds a new space (Press **+** and go to **LIST** is actually going to the details.) **P** prints out all subsequently displayed files and **T** turns the printer off. Pressing **+** returns to the menu at the point at which you entered it while **-** takes you back to the number you are displaying.

You do not have to put new entries in a particular slot. It is probably best to amend them first, then REAO the appropriate file and then SORT. The sort routine only puts the composers' names in order but you could extend it although I might become rather slow. The routine can be seen to be working by the changing colour screens and coded printed.

Finally, here is the ANALYSIS section. This is largely self-explanatory from the instructions on the program. If you wish to modify this section for use with single file or cassette may I draw your attention to the REM in line 1090. The files for analysis are read direct from disc so you should save or clear (?) any files already on the program before entering this section.

[illegible]

170 GOTO 10

180 IF D=0 THEN D=99

190 IF D=99 THEN GOTO 200

200 IF D=0 THEN D=99999

210 IF D=0 THEN GOTO 220

220 D=0

230 FOR I=0 TO 4

240 IF D=0 THEN D=99999

250 NEXT I

260 RETURN

270 D=0

280 FOR I=0 TO 4

290 IF D=0 THEN D=99999

300 NEXT I

310 RETURN

320 IF D=0 THEN D=99999

330 PRINT D

340 RETURN

350 IF D=0 THEN D=99

360 GOTO 370

370 FOR I=0 TO 4

380 IF D=0 THEN D=99

390 NEXT I

400 GOTO 410

410 IF D=0 THEN D=99

420 GOTO 430

430 GOTO 440

440 RETURN

450 IF D=0 THEN D=99

460 IF D=0 THEN D=99

470 PRINT D

480 GOTO 490

490 GOTO 500

500 GOTO 510

510 RETURN

520 GOTO 530

530 RETURN

540 PRINT "PARTIAL SEARCH RESULTS: ENTER EITHER SEARCHED UNDER A LETTER OF ALPHABET FOR A

PARTICULAR FILE OR PRINTING TO SEARCH THE PROGRAMS IS COMPILED IN THESE LINES BUT

THROUGH ALL THE FILES FOR THE CONTENTS OF AN INDIVIDUAL TYPE OF A PARTICULAR FILE FROM 'A' TO 'Z'

550 PRINT "ENTER 'A' TO RETURN TO SEARCHES OF THE PROGRAMS' INPUT IN

560 IF D=0 THEN D=99

570 IF D=0 THEN D=99

580 GOTO 590

590 GOTO 600

600 GOTO 610

610 GOTO 620

620 GOTO 630

630 GOTO 640

640 GOTO 650

650 GOTO 660

660 GOTO 670

670 GOTO 680

680 GOTO 690

690 GOTO 700

700 GOTO 710

710 GOTO 720

720 GOTO 730

730 GOTO 740

740 GOTO 750

750 GOTO 760

760 GOTO 770

770 GOTO 780

780 GOTO 790

790 GOTO 800

800 GOTO 810

810 GOTO 820

820 GOTO 830

830 GOTO 840

840 GOTO 850

850 GOTO 860

860 GOTO 870

870 GOTO 880

880 GOTO 890

890 GOTO 900

900 GOTO 910

910 GOTO 920

920 GOTO 930

930 GOTO 940

940 GOTO 950

950 GOTO 960

960 GOTO 970

970 GOTO 980

980 GOTO 990

990 GOTO 1000

1000 GOTO 1010

1010 GOTO 1020

1020 GOTO 1030

1030 GOTO 1040

1040 GOTO 1050

1050 GOTO 1060

1060 GOTO 1070

1070 GOTO 1080

1080 GOTO 1090

1090 GOTO 1100

1100 GOTO 1110

1110 GOTO 1120

1120 GOTO 1130

1130 GOTO 1140

1140 GOTO 1150

1150 GOTO 1160

1160 GOTO 1170

1170 GOTO 1180

1180 GOTO 1190

1190 GOTO 1200

1200 GOTO 1210

1210 GOTO 1220

1220 GOTO 1230

1230 GOTO 1240

1240 GOTO 1250

1250 GOTO 1260

1260 GOTO 1270

1270 GOTO 1280

1280 GOTO 1290

1290 GOTO 1300

1300 GOTO 1310

1310 GOTO 1320

1320 GOTO 1330

1330 GOTO 1340

1340 GOTO 1350

1350 GOTO 1360

1360 GOTO 1370

1370 GOTO 1380

1380 GOTO 1390

1390 GOTO 1400

1400 GOTO 1410

1410 GOTO 1420

1420 GOTO 1430

1430 GOTO 1440

1440 GOTO 1450

1450 GOTO 1460

1460 GOTO 1470

1470 GOTO 1480

1480 GOTO 1490

1490 GOTO 1500

1500 GOTO 1510

1510 GOTO 1520

1520 GOTO 1530

1530 GOTO 1540

1540 GOTO 1550

1550 GOTO 1560

1560 GOTO 1570

1570 GOTO 1580

1580 GOTO 1590

1590 GOTO 1600

1600 GOTO 1610

1610 GOTO 1620

1620 GOTO 1630

1630 GOTO 1640

1640 GOTO 1650

1650 GOTO 1660

1660 GOTO 1670

1670 GOTO 1680

1680 GOTO 1690

1690 GOTO 1700

1700 GOTO 1710

1710 GOTO 1720

1720 GOTO 1730

1730 GOTO 1740

1740 GOTO 1750

1750 GOTO 1760

1760 GOTO 1770

1770 GOTO 1780

1780 GOTO 1790

1790 GOTO 1800

1800 GOTO 1810

1810 GOTO 1820

1820 GOTO 1830

1830 GOTO 1840

1840 GOTO 1850

1850 GOTO 1860

1860 GOTO 1870

1870 GOTO 1880

1880 GOTO 1890

1890 GOTO 1900

1900 GOTO 1910

1910 GOTO 1920

1920 GOTO 1930

1930 GOTO 1940

1940 GOTO 1950

1950 GOTO 1960

1960 GOTO 1970

1970 GOTO 1980

1980 GOTO 1990

1990 GOTO 2000

2000 GOTO 2010

2010 GOTO 2020

2020 GOTO 2030

2030 GOTO 2040

2040 GOTO 2050

2050 GOTO 2060

2060 GOTO 2070

2070 GOTO 2080

2080 GOTO 2090

2090 GOTO 2100

2100 GOTO 2110

2110 GOTO 2120

2120 GOTO 2130

2130 GOTO 2140

2140 GOTO 2150

2150 GOTO 2160

2160 GOTO 2170

2170 GOTO 2180

2180 GOTO 2190

2190 GOTO 2200

2200 GOTO 2210

2210 GOTO 2220

2220 GOTO 2230

2230 GOTO 2240

2240 GOTO 2250

2250 GOTO 2260

2260 GOTO 2270

2270 GOTO 2280

2280 GOTO 2290

2290 GOTO 2300

2300 GOTO 2310

2310 GOTO 2320

2320 GOTO 2330

2330 GOTO 2340

2340 GOTO 2350

2350 GOTO 2360

2360 GOTO 2370

2370 GOTO 2380

2380 GOTO 2390

2390 GOTO 2400

2400 GOTO 2410

2410 GOTO 2420

2420 GOTO 2430

2430 GOTO 2440

2440 GOTO 2450

2450 GOTO 2460

2460 GOTO 2470

2470 GOTO 2480

2480 GOTO 2490

2490 GOTO 2500

2500 GOTO 2510

2510 GOTO 2520

2520 GOTO 2530

2530 GOTO 2540

2540 GOTO 2550

2550 GOTO 2560

2560 GOTO 2570

2570 GOTO 2580

2580 GOTO 2590

2590 GOTO 2600

2600 GOTO 2610

2610 GOTO 2620

2620 GOTO 2630

2630 GOTO 2640

2640 GOTO 2650

2650 GOTO 2660

2660 GOTO 2670

2670 GOTO 2680

2680 GOTO 2690

2690 GOTO 2700

2700 GOTO 2710

2710 GOTO 2720

2720 GOTO 2730

2730 GOTO 2740

2740 GOTO 2750

2750 GOTO 2760

2760 GOTO 2770

2770 GOTO 2780

2780 GOTO 2790

2790 GOTO 2800

2800 GOTO 2810

2810 GOTO 2820

2820 GOTO 2830

2830 GOTO 2840

2840 GOTO 2850

2850 GOTO 2860

2860 GOTO 2870

2870 GOTO 2880

2880 GOTO 2890

2890 GOTO 2900

2900 GOTO 2910

2910 GOTO 2920

2920 GOTO 2930

2930 GOTO 2940

2940 GOTO 2950

2950 GOTO 2960

2960 GOTO 2970

2970 GOTO 2980

2980 GOTO 2990

2990 GOTO 3000

3

```

1500 IF A=0 THEN GOTO 1600
1510 PRINT "OK"
1520 GOTO 1600
1530 IF A=1 THEN GOTO 1600
1540 PRINT "OK"
1550 GOTO 1600
1560 IF A=2 THEN GOTO 1600
1570 PRINT "OK"
1580 GOTO 1600
1590 IF A=3 THEN GOTO 1600
1600 PRINT "OK"
1610 GOTO 1600
1620 IF A=4 THEN GOTO 1600
1630 PRINT "OK"
1640 GOTO 1600
1650 IF A=5 THEN GOTO 1600
1660 PRINT "OK"
1670 GOTO 1600
1680 IF A=6 THEN GOTO 1600
1690 PRINT "OK"
1700 GOTO 1600
1710 IF A=7 THEN GOTO 1600
1720 PRINT "OK"
1730 GOTO 1600
1740 IF A=8 THEN GOTO 1600
1750 PRINT "OK"
1760 GOTO 1600
1770 IF A=9 THEN GOTO 1600
1780 PRINT "OK"
1790 GOTO 1600
1800 IF A=10 THEN GOTO 1600
1810 PRINT "OK"
1820 GOTO 1600
1830 IF A=11 THEN GOTO 1600
1840 PRINT "OK"
1850 GOTO 1600
1860 IF A=12 THEN GOTO 1600
1870 PRINT "OK"
1880 GOTO 1600
1890 IF A=13 THEN GOTO 1600
1900 PRINT "OK"
1910 GOTO 1600
1920 IF A=14 THEN GOTO 1600
1930 PRINT "OK"
1940 GOTO 1600
1950 IF A=15 THEN GOTO 1600
1960 PRINT "OK"
1970 GOTO 1600
1980 IF A=16 THEN GOTO 1600
1990 PRINT "OK"
2000 GOTO 1600
2010 IF A=17 THEN GOTO 1600
2020 PRINT "OK"
2030 GOTO 1600
2040 IF A=18 THEN GOTO 1600
2050 PRINT "OK"
2060 GOTO 1600
2070 IF A=19 THEN GOTO 1600
2080 PRINT "OK"
2090 GOTO 1600
2100 IF A=20 THEN GOTO 1600
2110 PRINT "OK"
2120 GOTO 1600
2130 IF A=21 THEN GOTO 1600
2140 PRINT "OK"
2150 GOTO 1600
2160 IF A=22 THEN GOTO 1600
2170 PRINT "OK"
2180 GOTO 1600
2190 IF A=23 THEN GOTO 1600
2200 PRINT "OK"
2210 GOTO 1600
2220 IF A=24 THEN GOTO 1600
2230 PRINT "OK"
2240 GOTO 1600
2250 IF A=25 THEN GOTO 1600
2260 PRINT "OK"
2270 GOTO 1600
2280 IF A=26 THEN GOTO 1600
2290 PRINT "OK"
2300 GOTO 1600
2310 IF A=27 THEN GOTO 1600
2320 PRINT "OK"
2330 GOTO 1600
2340 IF A=28 THEN GOTO 1600
2350 PRINT "OK"
2360 GOTO 1600
2370 IF A=29 THEN GOTO 1600
2380 PRINT "OK"
2390 GOTO 1600
2400 IF A=30 THEN GOTO 1600
2410 PRINT "OK"
2420 GOTO 1600
2430 IF A=31 THEN GOTO 1600
2440 PRINT "OK"
2450 GOTO 1600
2460 IF A=32 THEN GOTO 1600
2470 PRINT "OK"
2480 GOTO 1600
2490 IF A=33 THEN GOTO 1600
2500 PRINT "OK"
2510 GOTO 1600
2520 IF A=34 THEN GOTO 1600
2530 PRINT "OK"
2540 GOTO 1600
2550 IF A=35 THEN GOTO 1600
2560 PRINT "OK"
2570 GOTO 1600
2580 IF A=36 THEN GOTO 1600
2590 PRINT "OK"
2600 GOTO 1600
2610 IF A=37 THEN GOTO 1600
2620 PRINT "OK"
2630 GOTO 1600
2640 IF A=38 THEN GOTO 1600
2650 PRINT "OK"
2660 GOTO 1600
2670 IF A=39 THEN GOTO 1600
2680 PRINT "OK"
2690 GOTO 1600
2700 IF A=40 THEN GOTO 1600
2710 PRINT "OK"
2720 GOTO 1600
2730 IF A=41 THEN GOTO 1600
2740 PRINT "OK"
2750 GOTO 1600
2760 IF A=42 THEN GOTO 1600
2770 PRINT "OK"
2780 GOTO 1600
2790 IF A=43 THEN GOTO 1600
2800 PRINT "OK"
2810 GOTO 1600
2820 IF A=44 THEN GOTO 1600
2830 PRINT "OK"
2840 GOTO 1600
2850 IF A=45 THEN GOTO 1600
2860 PRINT "OK"
2870 GOTO 1600
2880 IF A=46 THEN GOTO 1600
2890 PRINT "OK"
2900 GOTO 1600
2910 IF A=47 THEN GOTO 1600
2920 PRINT "OK"
2930 GOTO 1600
2940 IF A=48 THEN GOTO 1600
2950 PRINT "OK"
2960 GOTO 1600
2970 IF A=49 THEN GOTO 1600
2980 PRINT "OK"
2990 GOTO 1600
3000 IF A=50 THEN GOTO 1600
3010 PRINT "OK"
3020 GOTO 1600
3030 IF A=51 THEN GOTO 1600
3040 PRINT "OK"
3050 GOTO 1600
3060 IF A=52 THEN GOTO 1600
3070 PRINT "OK"
3080 GOTO 1600
3090 IF A=53 THEN GOTO 1600
3100 PRINT "OK"
3110 GOTO 1600
3120 IF A=54 THEN GOTO 1600
3130 PRINT "OK"
3140 GOTO 1600
3150 IF A=55 THEN GOTO 1600
3160 PRINT "OK"
3170 GOTO 1600
3180 IF A=56 THEN GOTO 1600
3190 PRINT "OK"
3200 GOTO 1600
3210 IF A=57 THEN GOTO 1600
3220 PRINT "OK"
3230 GOTO 1600
3240 IF A=58 THEN GOTO 1600
3250 PRINT "OK"
3260 GOTO 1600
3270 IF A=59 THEN GOTO 1600
3280 PRINT "OK"
3290 GOTO 1600
3300 IF A=60 THEN GOTO 1600
3310 PRINT "OK"
3320 GOTO 1600
3330 IF A=61 THEN GOTO 1600
3340 PRINT "OK"
3350 GOTO 1600
3360 IF A=62 THEN GOTO 1600
3370 PRINT "OK"
3380 GOTO 1600
3390 IF A=63 THEN GOTO 1600
3400 PRINT "OK"
3410 GOTO 1600
3420 IF A=64 THEN GOTO 1600
3430 PRINT "OK"
3440 GOTO 1600
3450 IF A=65 THEN GOTO 1600
3460 PRINT "OK"
3470 GOTO 1600
3480 IF A=66 THEN GOTO 1600
3490 PRINT "OK"
3500 GOTO 1600
3510 IF A=67 THEN GOTO 1600
3520 PRINT "OK"
3530 GOTO 1600
3540 IF A=68 THEN GOTO 1600
3550 PRINT "OK"
3560 GOTO 1600
3570 IF A=69 THEN GOTO 1600
3580 PRINT "OK"
3590 GOTO 1600
3600 IF A=70 THEN GOTO 1600
3610 PRINT "OK"
3620 GOTO 1600
3630 IF A=71 THEN GOTO 1600
3640 PRINT "OK"
3650 GOTO 1600
3660 IF A=72 THEN GOTO 1600
3670 PRINT "OK"
3680 GOTO 1600
3690 IF A=73 THEN GOTO 1600
3700 PRINT "OK"
3710 GOTO 1600
3720 IF A=74 THEN GOTO 1600
3730 PRINT "OK"
3740 GOTO 1600
3750 IF A=75 THEN GOTO 1600
3760 PRINT "OK"
3770 GOTO 1600
3780 IF A=76 THEN GOTO 1600
3790 PRINT "OK"
3800 GOTO 1600
3810 IF A=77 THEN GOTO 1600
3820 PRINT "OK"
3830 GOTO 1600
3840 IF A=78 THEN GOTO 1600
3850 PRINT "OK"
3860 GOTO 1600
3870 IF A=79 THEN GOTO 1600
3880 PRINT "OK"
3890 GOTO 1600
3900 IF A=80 THEN GOTO 1600
3910 PRINT "OK"
3920 GOTO 1600
3930 IF A=81 THEN GOTO 1600
3940 PRINT "OK"
3950 GOTO 1600
3960 IF A=82 THEN GOTO 1600
3970 PRINT "OK"
3980 GOTO 1600
3990 IF A=83 THEN GOTO 1600
4000 PRINT "OK"
4010 GOTO 1600
4020 IF A=84 THEN GOTO 1600
4030 PRINT "OK"
4040 GOTO 1600
4050 IF A=85 THEN GOTO 1600
4060 PRINT "OK"
4070 GOTO 1600
4080 IF A=86 THEN GOTO 1600
4090 PRINT "OK"
4100 GOTO 1600
4110 IF A=87 THEN GOTO 1600
4120 PRINT "OK"
4130 GOTO 1600
4140 IF A=88 THEN GOTO 1600
4150 PRINT "OK"
4160 GOTO 1600
4170 IF A=89 THEN GOTO 1600
4180 PRINT "OK"
4190 GOTO 1600
4200 IF A=90 THEN GOTO 1600
4210 PRINT "OK"
4220 GOTO 1600
4230 IF A=91 THEN GOTO 1600
4240 PRINT "OK"
4250 GOTO 1600
4260 IF A=92 THEN GOTO 1600
4270 PRINT "OK"
4280 GOTO 1600
4290 IF A=93 THEN GOTO 1600
4300 PRINT "OK"
4310 GOTO 1600
4320 IF A=94 THEN GOTO 1600
4330 PRINT "OK"
4340 GOTO 1600
4350 IF A=95 THEN GOTO 1600
4360 PRINT "OK"
4370 GOTO 1600
4380 IF A=96 THEN GOTO 1600
4390 PRINT "OK"
4400 GOTO 1600
4410 IF A=97 THEN GOTO 1600
4420 PRINT "OK"
4430 GOTO 1600
4440 IF A=98 THEN GOTO 1600
4450 PRINT "OK"
4460 GOTO 1600
4470 IF A=99 THEN GOTO 1600
4480 PRINT "OK"
4490 GOTO 1600
4500 IF A=100 THEN GOTO 1600
4510 PRINT "OK"
4520 GOTO 1600
4530 IF A=101 THEN GOTO 1600
4540 PRINT "OK"
4550 GOTO 1600
4560 IF A=102 THEN GOTO 1600
4570 PRINT "OK"
4580 GOTO 1600
4590 IF A=103 THEN GOTO 1600
4600 PRINT "OK"
4610 GOTO 1600
4620 IF A=104 THEN GOTO 1600
4630 PRINT "OK"
4640 GOTO 1600
465
```

[illegible]

```

1600 FOR J=2 TO 26
1610 READ B(2,J)
1620 NEXT J
1630 REM* IF YOU WISH ANY ENTRY TO BE PRINTED OUT PRESS 'Y' AFTER IT IS DISPLAYED ON SCREEN, ELSE
1640 PRESS ANY OTHER KEY FOR NEXT ENTRY. TO ABEND ONE SEARCH PRESS 'X'
1650 RETURN
1660 REM* NAMES OF FILES, ONE FOR EACH LETTER OF THE ALPHABET
1670 DATA B(1,B(2,1)),B(1,B(2,2)),B(1,B(2,3)),B(1,B(2,4)),B(1,B(2,5)),B(1,B(2,6)),B(1,B(2,7)),B(1,B(2,8)),B(1,B(2,9)),B(1,B(2,10)),B(1,B(2,11)),B(1,B(2,12)),B(1,B(2,13)),B(1,B(2,14)),B(1,B(2,15)),B(1,B(2,16)),B(1,B(2,17)),B(1,B(2,18)),B(1,B(2,19)),B(1,B(2,20)),B(1,B(2,21)),B(1,B(2,22)),B(1,B(2,23)),B(1,B(2,24)),B(1,B(2,25)),B(1,B(2,26))
1680 'DATA ROUTINE
1690 REM*
1700 DATA C(1,C(2,1)),C(1,C(2,2)),C(1,C(2,3)),C(1,C(2,4)),C(1,C(2,5)),C(1,C(2,6)),C(1,C(2,7)),C(1,C(2,8)),C(1,C(2,9)),C(1,C(2,10)),C(1,C(2,11)),C(1,C(2,12)),C(1,C(2,13)),C(1,C(2,14)),C(1,C(2,15)),C(1,C(2,16)),C(1,C(2,17)),C(1,C(2,18)),C(1,C(2,19)),C(1,C(2,20)),C(1,C(2,21)),C(1,C(2,22)),C(1,C(2,23)),C(1,C(2,24)),C(1,C(2,25)),C(1,C(2,26))
1710 REM*
1720 DATA D(1,D(2,1)),D(1,D(2,2)),D(1,D(2,3)),D(1,D(2,4)),D(1,D(2,5)),D(1,D(2,6)),D(1,D(2,7)),D(1,D(2,8)),D(1,D(2,9)),D(1,D(2,10)),D(1,D(2,11)),D(1,D(2,12)),D(1,D(2,13)),D(1,D(2,14)),D(1,D(2,15)),D(1,D(2,16)),D(1,D(2,17)),D(1,D(2,18)),D(1,D(2,19)),D(1,D(2,20)),D(1,D(2,21)),D(1,D(2,22)),D(1,D(2,23)),D(1,D(2,24)),D(1,D(2,25)),D(1,D(2,26))
1730 REM*
1740 DATA E(1,E(2,1)),E(1,E(2,2)),E(1,E(2,3)),E(1,E(2,4)),E(1,E(2,5)),E(1,E(2,6)),E(1,E(2,7)),E(1,E(2,8)),E(1,E(2,9)),E(1,E(2,10)),E(1,E(2,11)),E(1,E(2,12)),E(1,E(2,13)),E(1,E(2,14)),E(1,E(2,15)),E(1,E(2,16)),E(1,E(2,17)),E(1,E(2,18)),E(1,E(2,19)),E(1,E(2,20)),E(1,E(2,21)),E(1,E(2,22)),E(1,E(2,23)),E(1,E(2,24)),E(1,E(2,25)),E(1,E(2,26))
1750 REM*
1760 DATA F(1,F(2,1)),F(1,F(2,2)),F(1,F(2,3)),F(1,F(2,4)),F(1,F(2,5)),F(1,F(2,6)),F(1,F(2,7)),F(1,F(2,8)),F(1,F(2,9)),F(1,F(2,10)),F(1,F(2,11)),F(1,F(2,12)),F(1,F(2,13)),F(1,F(2,14)),F(1,F(2,15)),F(1,F(2,16)),F(1,F(2,17)),F(1,F(2,18)),F(1,F(2,19)),F(1,F(2,20)),F(1,F(2,21)),F(1,F(2,22)),F(1,F(2,23)),F(1,F(2,24)),F(1,F(2,25)),F(1,F(2,26))
1770 REM*
1780 DATA G(1,G(2,1)),G(1,G(2,2)),G(1,G(2,3)),G(1,G(2,4)),G(1,G(2,5)),G(1,G(2,6)),G(1,G(2,7)),G(1,G(2,8)),G(1,G(2,9)),G(1,G(2,10)),G(1,G(2,11)),G(1,G(2,12)),G(1,G(2,13)),G(1,G(2,14)),G(1,G(2,15)),G(1,G(2,16)),G(1,G(2,17)),G(1,G(2,18)),G(1,G(2,19)),G(1,G(2,20)),G(1,G(2,21)),G(1,G(2,22)),G(1,G(2,23)),G(1,G(2,24)),G(1,G(2,25)),G(1,G(2,26))
1790 REM*
1800 DATA H(1,H(2,1)),H(1,H(2,2)),H(1,H(2,3)),H(1,H(2,4)),H(1,H(2,5)),H(1,H(2,6)),H(1,H(2,7)),H(1,H(2,8)),H(1,H(2,9)),H(1,H(2,10)),H(1,H(2,11)),H(1,H(2,12)),H(1,H(2,13)),H(1,H(2,14)),H(1,H(2,15)),H(1,H(2,16)),H(1,H(2,17)),H(1,H(2,18)),H(1,H(2,19)),H(1,H(2,20)),H(1,H(2,21)),H(1,H(2,22)),H(1,H(2,23)),H(1,H(2,24)),H(1,H(2,25)),H(1,H(2,26))
1810 REM*
1820 DATA I(1,I(2,1)),I(1,I(2,2)),I(1,I(2,3)),I(1,I(2,4)),I(1,I(2,5)),I(1,I(2,6)),I(1,I(2,7)),I(1,I(2,8)),I(1,I(2,9)),I(1,I(2,10)),I(1,I(2,11)),I(1,I(2,12)),I(1,I(2,13)),I(1,I(2,14)),I(1,I(2,15)),I(1,I(2,16)),I(1,I(2,17)),I(1,I(2,18)),I(1,I(2,19)),I(1,I(2,20)),I(1,I(2,21)),I(1,I(2,22)),I(1,I(2,23)),I(1,I(2,24)),I(1,I(2,25)),I(1,I(2,26))
1830 REM*
1840 DATA J(1,J(2,1)),J(1,J(2,2)),J(1,J(2,3)),J(1,J(2,4)),J(1,J(2,5)),J(1,J(2,6)),J(1,J(2,7)),J(1,J(2,8)),J(1,J(2,9)),J(1,J(2,10)),J(1,J(2,11)),J(1,J(2,12)),J(1,J(2,13)),J(1,J(2,14)),J(1,J(2,15)),J(1,J(2,16)),J(1,J(2,17)),J(1,J(2,18)),J(1,J(2,19)),J(1,J(2,20)),J(1,J(2,21)),J(1,J(2,22)),J(1,J(2,23)),J(1,J(2,24)),J(1,J(2,25)),J(1,J(2,26))
1850 REM*
1860 DATA K(1,K(2,1)),K(1,K(2,2)),K(1,K(2,3)),K(1,K(2,4)),K(1,K(2,5)),K(1,K(2,6)),K(1,K(2,7)),K(1,K(2,8)),K(1,K(2,9)),K(1,K(2,10)),K(1,K(2,11)),K(1,K(2,12)),K(1,K(2,13)),K(1,K(2,14)),K(1,K(2,15)),K(1,K(2,16)),K(1,K(2,17)),K(1,K(2,18)),K(1,K(2,19)),K(1,K(2,20)),K(1,K(2,21)),K(1,K(2,22)),K(1,K(2,23)),K(1,K(2,24)),K(1,K(2,25)),K(1,K(2,26))
1870 REM*
1880 DATA L(1,L(2,1)),L(1,L(2,2)),L(1,L(2,3)),L(1,L(2,4)),L(1,L(2,5)),L(1,L(2,6)),L(1,L(2,7)),L(1,L(2,8)),L(1,L(2,9)),L(1,L(2,10)),L(1,L(2,11)),L(1,L(2,12)),L(1,L(2,13)),L(1,L(2,14)),L(1,L(2,15)),L(1,L(2,16)),L(1,L(2,17)),L(1,L(2,18)),L(1,L(2,19)),L(1,L(2,20)),L(1,L(2,21)),L(1,L(2,22)),L(1,L(2,23)),L(1,L(2,24)),L(1,L(2,25)),L(1,L(2,26))
1890 REM*
1900 DATA M(1,M(2,1)),M(1,M(2,2)),M(1,M(2,3)),M(1,M(2,4)),M(1,M(2,5)),M(1,M(2,6)),M(1,M(2,7)),M(1,M(2,8)),M(1,M(2,9)),M(1,M(2,10)),M(1,M(2,11)),M(1,M(2,12)),M(1,M(2,13)),M(1,M(2,14)),M(1,M(2,15)),M(1,M(2,16)),M(1,M(2,17)),M(1,M(2,18)),M(1,M(2,19)),M(1,M(2,20)),M(1,M(2,21)),M(1,M(2,22)),M(1,M(2,23)),M(1,M(2,24)),M(1,M(2,25)),M(1,M(2,26))
1910 REM*
1920 DATA N(1,N(2,1)),N(1,N(2,2)),N(1,N(2,3)),N(1,N(2,4)),N(1,N(2,5)),N(1,N(2,6)),N(1,N(2,7)),N(1,N(2,8)),N(1,N(2,9)),N(1,N(2,10)),N(1,N(2,11)),N(1,N(2,12)),N(1,N(2,13)),N(1,N(2,14)),N(1,N(2,15)),N(1,N(2,16)),N(1,N(2,17)),N(1,N(2,18)),N(1,N(2,19)),N(1,N(2,20)),N(1,N(2,21)),N(1,N(2,22)),N(1,N(2,23)),N(1,N(2,24)),N(1,N(2,25)),N(1,N(2,26))
1930 REM*
1940 DATA O(1,O(2,1)),O(1,O(2,2)),O(1,O(2,3)),O(1,O(2,4)),O(1,O(2,5)),O(1,O(2,6)),O(1,O(2,7)),O(1,O(2,8)),O(1,O(2,9)),O(1,O(2,10)),O(1,O(2,11)),O(1,O(2,12)),O(1,O(2,13)),O(1,O(2,14)),O(1,O(2,15)),O(1,O(2,16)),O(1,O(2,17)),O(1,O(2,18)),O(1,O(2,19)),O(1,O(2,20)),O(1,O(2,21)),O(1,O(2,22)),O(1,O(2,23)),O(1,O(2,24)),O(1,O(2,25)),O(1,O(2,26))
1950 REM*
1960 DATA P(1,P(2,1)),P(1,P(2,2)),P(1,P(2,3)),P(1,P(2,4)),P(1,P(2,5)),P(1,P(2,6)),P(1,P(2,7)),P(1,P(2,8)),P(1,P(2,9)),P(1,P(2,10)),P(1,P(2,11)),P(1,P(2,12)),P(1,P(2,13)),P(1,P(2,14)),P(1,P(2,15)),P(1,P(2,16)),P(1,P(2,17)),P(1,P(2,18)),P(1,P(2,19)),P(1,P(2,20)),P(1,P(2,21)),P(1,P(2,22)),P(1,P(2,23)),P(1,P(2,24)),P(1,P(2,25)),P(1,P(2,26))
1970 REM*
1980 DATA Q(1,Q(2,1
```

Phoneticode

J F Rowles second-guesses spellings for sorting

THE successful operation of data files for key names and addresses, books and authors, record collections etc, is very dependent on the sort-keys used for retrieval of data. In most cases the surname is used as the primary key for retrieval. While this operates very successfully, instances do occur where lack of consistency of the exact spelling can result in repeated attempts of all known variants or a range selection being made. Again example, consider the variations found for "Smith". A perusal of my local telephone directory revealed the following possibilities: Smith, Smeeth, Smit, Smick, Smyth and Smytha. On a simple data base this would probably involve a separate search for each of the variants (assuming you are aware of all the possibilities) or a range selection of say SMAAA to SMZZZ, which of course will select all data commencing with the letters "SM", which on a large data base could be quite extensive.

A method much used by professional data base enquiry systems is to interrogate the files for phonetically similar names where the exact spelling is unknown, or alternatively to check initially for the believed correct spelling and if no match is found then resort to phonetics. This has much to commend it in that you may be making an enquiry using the correct spelling but the original data was entered incorrectly.

While this may seem a daunting prospect to expect the simple home main to perform such a task, it is in fact fairly easy to achieve. The system detailed below is modelled on one of the systems used in the professional data handling world. It should be realised that these systems are language controlled (ie, that is, not computer), and any program encoding will only work on the language for which it was designed

and to a lesser degree on similar languages and not at all on others.

Successful phonetic encoding necessarily requires the grouping of like-sounding letters together, as follows:

1. B/P/Y
2. C/G/J/K/S/X/Z
3. D/T
4. L
5. M/N
6. R

Try saying them phonetically, as a child does for used to in my day, twice first learning the alphabet. See the similarities?

The more astute will have realised that all the vowels together with Y, H and W are missing from the above groups. These are totally unnecessary for phonetic encoding and are ignored unless they are the first letter in the word or name. Try it yourself and see. Pick any word at random, write it down, pronounce it out loud, then rewrite the word omitting these letters and attempt to pronounce it. Unless you are very untidy the second word should be recognisable to the ear. This is the basis of phonetic encoding.

How to pre-allocate. The code is assembled by retaining the first letter of the name or word to be encoded as the first character of the code. Subsequent letters are tested for consecutive duplication, only the first occurrence being retained, and these letters are then assigned a numeric character according to which of the phonetic groups they belong. The whole code is then repeated for consecutive duplication and truncated or expanded by the addition of trailing zeros to four characters long. This then forms the phonetic code of that name or word.

This may sound complex, so consider the following example:

Name to be encoded = "SMITH"

Following the rules above the first character of the code will be the first letter of the name i.e. S. The second letter is not a duplicate of the first so use the look up chart above. M falls in group 5. This is the second character of the code. Likewise for the remaining letters, I is ignored, T is in group 3 and H is ignored. The code is therefore "SSS". This is expanded to four characters by the addition of trailing zeros, so the final phonetic code for "SMITH" is "SSSS". Try this for the other variants on the name "SMITH" mentioned previously, you will find that they all encode to "SSSS". So it works for "SMITH". How about other names? Try a few you can think of — you should be pleasantly surprised. Of course there are a few names that will defy these methods but these are usually of the more exotic or historical species. (By "CHALMORQUE" which is pronounced "CHUMLEY" — it does not produce a phonetic code which is compatible with its orthographic). However for the more common names and some unusual variants on spelling the encoding works well by "MAMMATHING" and "MAMMATHING" — the phonetic codes are identical.

Now to the programs themselves. The programming for the coding has been written as a sub-routine and in its existing form is ready to append to any program you may wish. The word or name to be encoded is IN\$ and the resulting Phoneticode is CODE\$. If you plan on using this system in any great degree it would be worth considering adding the phonetic codes of your principal sort keys to your main data base to speed selection. The second listing is merely a short program to append to the main listing so that you can experiment with different words and names to find the results.

If you operate a large data base you may find that truncation of the first code to four characters results in too many selections. The cure is simply to enlarge the size of the code to five or six characters long by making the appropriate alterations to lines 6015, 6016 and 6017.

The program has been kept simple deliberately to aid transportability between different machines (rumour has it that there are other machines than the Dragon, but as yet the author is not fully convinced).

As about the machine-code experts among you will re-write the Basic program, but the object of the article was more to expose thought and experimentation than to present a ready-made machine-code routine. The addition of one of the usual "speed-up" poles in the Basic program if your Dragon is suitable will be of great benefit to those planning to use it as it stands.

```

1000 *****
1001 **** PHONETIC ENCODING ****
1002 *****
1003 *** PHONETIC CODES ***
1004 *** PHONETIC CODES ***
1005 *** PHONETIC CODES ***
1006 *** PHONETIC CODES ***
1007 *****
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1194 *****
1195 *****
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1197 *****
1198 *****
1199 *****
1200 *****

```

Expert's Arcade Arena

Written by 'The Expert' of Dragon User
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HELLO DEEPS, and welcome to the second games round-up, which features almost all of the arcade games which are still readily available from third party sources, and were not included in the original round up.

The first dozen are available from Compupipe (don't forget the new address, The Love's Docket from John Pank, and the last

five are available from Precision.

The original format has been used again, with all marks out of five, with three being the ideal speed. The overall rating is an indicator of how necessary the program is to a hardened games player.

As for categories, well, shoot-em-up games require an itchy trigger finger, collection games are for blase' blase' func-

tion clones, strategy games require a bit more thought than Da Amnag Game, Run-Box, boy, and as for adventure and sport games, well, you can mark that out for yourself.

There's no room for games this time, but you can look forward to the Superstix cheat codes and a few more, so now my time is up, I'll bug off, well.

Title	Graphics	Speed	Type	Comment	Rating
Arball	5	3	Adventure	Ed Scio's conversion is now a big hit on the Atari as well.	5
Space Week	5	2	Shoot'em up	A mixture of Rastexone and Asteroids which claims a peer second to Rastex-20.	5
Tanglewood	4	—	Adventure	Not being strictly an arcade game, this will have to receive an average rating, although it is very popular.	3
Junior's Revenge	3	3	Collection	The King 2 — city Mario has changed his name to Luigi, and is now the badde.	2
Time Bandit	3	4	Adventure	One of the first Dragon arcade adventures, which has stood the test of time.	4
Cutthroat and the Golden Chalice	2	3	Collection	A simple but quite enjoyable obstacle-course game.	2
Pinball	2	2	Strategy	An unbelievably easy game which is unfortunately the only one of its kind for the Dragon.	0
Fire Force	4	4	Shoot'em up	What more can I say.	1
Indoor Football	5	3	Sport	Without a doubt the best football game on the Dragon.	5
Superjet	5	3	Collection	A faithful copy of the arcade classic undercity, which was Mayas Smithson's best.	5
Screaming Abolite	4	3	Collection	The hardest Mario Minst clone that I've played.	3
Crusy Foots II and II	2	1-5	Sport	Great fun, and especially good in the two players mode.	3
Tim Love's Cricket	5	1	Sport	Totally realistic cricket game which is as boring as the real thing.	2
Poleball	4	4	Adventure	Buy it now that the bug has been sorted out.	5
Boulder Dash	4	3	Collection	Better than Microdeal's Stone Raster II, with the added advantage of extra screens from Paul Burgh.	4
The Balls	1	5	Collection	A hunchback type game which, due to its sheer speed, is impossible to play with a joystick.	1
Bugliver	2	3	N/A	A mediocre Frogger clone which is the only one of its type still available from the several which were made.	1
Wegas Jackpot	3	—	N/A	This game was co-written many years ago by Jason Orban. Good but a bit slower than the money-getting machines.	2


```

3140 A=PPRINT (X,Y)=128+PPRINT (X,Y+1)+64+PPRINT (X,Y+2)+32+PPRINT (X,Y+3)+16+PPRINT
(X,Y+4)+8+PPRINT (X,Y+8)+4+PPRINT (X,Y+16)+2+PPRINT (X,Y+32)+PPRINT (X,Y+64)
3150 IF A=255 THEN A=0:GOTO 3170
3160 PRINT A-2,CHR$(A):NEXT
3170 PRINT A-2,CHR$(16)
3180 Y=Y+8:IF Y=191 THEN GOTO 3110
3190 PRINT A-2,CHR$(7) ; " " ; CHR$(16)
3200 PRINT A-2:PRINT A-2, TAB (5) "PLotted USING EQUIVALENT CARTESIAN CO-ORDINATES"
      "ACOS (A/2) ,ASIN (A/2)"
3210 PRINT:PRINTTAB (7) "PRINTING COMPLETED"
3220 PRINT:PRINTTAB (2) "PRESS REQUIRED KEY IF s/p=0x16"
3230 RETURN
3240 REM VIEW DIRECTORY
3250 CLS
3260 PRINTTAB (6) "VIEW DIRECTORY"
3270 PRINTTAB (6) STR$(A),A/2:PRINT
3280 GOSUB 2540
3290 GOTO 3110 IF PEEK (1942)=CHR$(17) AND P<255 THEN 3310 ELSE IF PEEK (1942)=CHR$(17)
      AND P=0 THEN 3340
3300 K=INKEY$:IF K#"" THEN 3330 ELSE 3350
3310 PRINTTAB(2,"PRESS THE SPACEBAR TO PROCEED");
3320 K=INKEY$:IF K#"" OR K#CHR$(32) THEN 3330
3330 CLS:RETURN
3340 PRINTTAB(2,"PRESS REQUIRED KEY IF s/p=0x16");
3350 RETURN
3360 REM TUTORIAL
3370 PSET 4,1:SCREEN 1,1:CLS:COLOR 0,1
3380 SC=0:GOSUB 1090:MM=C0=0
3390 Y=105+5*Y%+10:SC=MM+50:G0=0
3400 MM="POLAR COORDINATES - TUTORIAL"
3410 GOSUB 1110:GOSUB 1150:GOSUB 1190:W=0:Y=11
3420 MM="Polar Coordinates is a method by which the location of a given point P is
      in the plane may be defined. Necesses with one Axis and a point on it called the
      Pole."
3430 GOSUB 1150
3440 LINE (95,174)-(170,174),PSET
3450 FOR T=1 TO 5
3460 CIRCLE (95,174),6,0,1,0,90,1:WAIT 150
3470 CIRCLE (95,174),6,1,1,0,90,1:WAIT 150
3480 NEXT T:MM="
3490 MM="A point in the plane is now represented by pair of numbers (R,Z), where
      R denotes its distance from the Pole"
3500 GOSUB 1190:TX=X:TY=Y
3510 W=152:Y=127:MM="(R,Z)" :GOSUB 1150
3520 X=114:Y=143:MM="R":GOSUB 1150:X=TX+8:Y=TY
3530 FOR T=1 TO 5
3540 LINE (95,174)-(170,134),PSET:WAIT 150
3550 LINE (95,174)-(150,134),PSET:WAIT 150
3560 NEXT
3570 MM="and Z is the angle formed between the x-axis and the line from the Pole to
      this point. This angle being measured anticlockwise if Z is positive or clockwise
      if Z has a negative value."
3580 GOSUB 1150:TX=X:TY=Y
3590 X=150:Y=166:MM="Z":GOSUB 1150:X=TX+8:Y=TY
3600 FOR T=1 TO 5
3610 CIRCLE (95,174),10,1,1,0,90,1:WAIT 150
3620 CIRCLE (95,174),10,0,1,0,90,1:WAIT 150
3630 NEXT
3640 MM="However, R is always taken as positive. We write P=(R,Z). The symbol ""
      standing for "" is uniquely defined by""
3650 GOSUB 1150:GOSUB 3660:GOTO 3680
3660 Y=191:MM="PRESS THE SPACEBAR TO CONTINUE":GOSUB 1150:GOSUB 1190:GOSUB 1130
3670 K=INKEY$:IF K#"" OR K#CHR$(32) THEN 3670 ELSE RETURN
3680 GOSUB 3690:GOTO 3710
3690 PCLS:Y=1:MM="TUTORIAL - CONTINUED":GOSUB 1110:GOSUB 1150:GOSUB 1130
3700 X=0:Y=1:RETURN
3710 MM="It will be seen that if either or both of these coordinates are changed,
      then the location of point P will also change accordingly, as in the folloiw
      necesses:-"

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```

3750 GOSUB 1150:Y=Y+98:X=X-7
3760 LINE 120,120+1190,1204:PSET:WAIT 150
3760 RM="P1" (2.5,350):GOSUB 3860
3760 LINE 120,120+1172,944:PSET
3760 X=X+174:Y=Y+80:RM="P1":GOSUB 3870
3770 RM="P2" (3.8,1500):GOSUB 3860
3780 LINE 120,120+1192,960:PSET
3790 X=X+166:Y=Y+80:RM="P2":GOSUB 3870
3800 RM="P3" (5.2268):GOSUB 3860
3810 LINE 120,120+162,169:PSET
3820 X=X+144:Y=Y+80:RM="P3":GOSUB 3870
3830 RM="P4" (2.3,-440):GOSUB 3860
3840 LINE 120,120+1164,157:PSET
3850 X=X+144:Y=Y+153:RM="P4":GOSUB 3870:GOTO 3860
3860 GOSUB 1150:GOSUB 1130:TOX:TRY:RETURN
3870 GOSUB 1150:X=X+98:Y=Y:WAIT 1000:RETURN
3880 GOSUB 3860:GOSUB 3870
3890 RM="A function that involves Polar Coordinates (R,Z) is called a"
3900 GOSUB 1150:X=X+98
3910 RM="POLAR FUNCTION." :GOSUB 1150:GOSUB 1130:X=X+98+20
3920 RM="For instance, R=SIN(Z) is a Polar Function. Substituting this example in
the generic formula, P(R,Z), would give us P(SIN(Z),Z)."
3930 GOSUB 1150:X=X+Y+98
3940 RM="To draw the graph of a Polar Function, we take each value of Z in some
specified range, and use this to plot the point P(R,Z) using Polar Coordinates."
3950 GOSUB 1150:X=X+Y+98+20
3960 RM="To make the plotting easier the program substitutes"
3970 GOSUB 1150:X=X+98
3980 RM="CARTESIAN COORDINATES":GOSUB 1150:GOSUB 1130:X=X+98
3990 RM="in its calculations, which is the more usual method of representing points
in a plane. The point (R,Z) in Polar Coordinates is the equivalent of (RxCOS
(Z),RXSIN(Z)) in Cartesian Coordinates, and this is what we plot."
4000 GOSUB 1150:GOSUB 3860:GOSUB 3870
4010 RM="Many interesting & complex patterns can be produced if instead of using
the basic Cartesian Coordinates (RxCOS(Z),RXSIN(Z)) we now introduce two additional
strainers, (R,Z) & plot (RxCOS(RxZ),RXSIN(RxZ))."
4020 GOSUB 1150:X=X+99+20
4030 RM="If both R & Z are given a value of 1, the program will calculate & display
the STANDARD PLOT of the chosen function. Assigning any other values to R and/or
Z will result in some quite spectacular and beautiful variations."
4040 GOSUB 1150
4050 Y=Y+150:GOTO 3860:GOSUB 1090
4060 RM="TUTORIAL ENDING":GOSUB 1110:GOSUB 1130:GOSUB 1130
4070 Y=Y+150:GOTO 3860:GOSUB 1090
4080 RM="PRESS ESC/END KEY TO PLPLOTED":GOSUB 1110:GOSUB 1130:GOSUB 1130

```

```

4090 RETURN
4100 REM FORMULAE
4110 DATA SIN(Z*2)
4120 DEF FNA(Z)=SIN(Z*2):RETURN
4130 DATA SIN(Z*2)
4140 DEF FNA(Z)=SIN(Z*2):RETURN
4150 DATA SIN(Z*2)
4160 DEF FNA(Z)=SIN(Z*2):RETURN
4170 DATA SIN(Z*2)
4180 DEF FNA(Z)=SIN(Z*2):RETURN
4190 DATA SIN(Z*2)
4200 DEF FNA(Z)=SIN(Z*2):RETURN
4210 DATA 1+SIN(Z*2)
4220 DEF FNA(Z)=1+SIN(Z*2):RETURN
4230 DATA 1+SIN(Z*2)
4240 DEF FNA(Z)=1+SIN(Z*2):RETURN
4250 DATA 1+SIN(Z*2)

```

```

4260 DEF FNA(Z)=1+SIN(Z*2):RETURN
4270 DATA 1+SIN(Z*2)
4280 DEF FNA(Z)=1+SIN(Z*2):RETURN
4290 DATA 1+SIN(Z*2)
4300 DEF FNA(Z)=1+SIN(Z*2):RETURN
4310 DATA 1+COS(Z)
4320 DEF FNA(Z)=1+COS(Z):RETURN
4330 DATA 1+COS(Z)
4340 DEF FNA(Z)=1+COS(Z):RETURN
4350 DATA 2/3
4360 DEF FNA(Z)=2/3:RETURN
4370 DATA 1+COS(Z*2)
4380 DEF FNA(Z)=1+COS(Z*2):RETURN
4390 DEF FNA(Z)=1+COS(Z*2):RETURN
4400 DATA 1+COS(RxZ)
4410 DEF FNA(Z)=1+COS(Z*2):RETURN
4420 DATA 1+COS(Z*2)
4430 DEF FNA(Z)=1+COS(Z*2):RETURN

```


discrete as is desired. These two formulas must then be converted into the findings given below in which variables B, D, and N (where appropriate) represent the step number, denominator and numerator respectively. Before the euphoric sets in at finding a method of calculating ϕ , I should point out that in a practical sense, both of these are strictly limited, as will be seen if these findings are turned by and by.

A far more useful formula is that known as the Machin Formula, as it resolves much more speedily than the test already given:

$$= \frac{1}{2} \left(\frac{1}{200} - \frac{1}{200^2} + \frac{1}{200^3} - \frac{1}{200^4} + \dots \right)$$

This formula can be adapted into a listing in a similar manner to the others and will quickly evaluate π to several decimal places. However, because of limitations in the arithmetic capacity of the Dragon, an overflow (O/E) error will soon be encountered as a result of raising 239 to a power greater than 75.

While writing this, word of go I name
 down in short account in a century old
 book that runs dollars of no record will

[illegible]

figures. The book was *A Treatise on Elementary Trigonometry* by the Rev. J. B. Mack, and the method used was a very inaccurate method of arithmetically calculating square roots to an accuracy of about 5 decimal places (the method being based on Archimedes' inscribed polygons, as outlined last month). A footnote to the account says: "The student is advised to actually work through the main details now."

and he will have the satisfaction of having himself calculated the value of π . By adapting the Machin Formula and utilizing the "string" arithmetic method of calculation referred to a number of times on this page recently, the decimal listing will come out this evaluation, and will, as J. B. Lock remarked a century ago, give the satisfaction (albeit using a computer) of having calculated the value of π .

For the competition this means we are returning to the two formulas by Wallis and Leibniz. The disadvantage, as will be readily seen, is that the value of π is computed exceedingly slowly. For example, using Wallis' formula it takes nine steps before the first digit of π — the 3 — stabilizes. The next digit, the 1, does not stabilize until the 37th step, while it takes 816 steps before the third digit — the 4 — is known with certainty. The table below lists the first three results for both of these formulas. Can you fill in the correct figure for the fourth digit?

id	step	SPs (ms)	Latency (ms)
1	step	0	7
2	step	10	26
3	step	100	627
4	step	1	1

The Answer

This is Gordon Lee's own solution to the July competition not seen 28 for results.

THE listing given here will give a reasonably accurate number in the range 1 to 100,000. Because of the way in which certain numbers are phoned when spoken, certain checks are carried out in the program — in particular, to determine if a 'and' needs to be inserted in order that the result sounds correct. For example, we say 'one thousand and one', but we drop the 'and' if we say 'one thousand four hundred'.

When dealing with a nine-digit number we can conveniently employ a variant of room calls. For instance, the nine-digit number 020 7543 2101 can be split into three three-digit segments, each of which we speak of 'ten-twenty' times, in many 'hundreds' and so many 'tens'. Each of the three digit 'legs' can be handled in the same way. This is done in the following form: 0200. Each of the three digits is extracted and the signals 0, 2, 0, and 00, D1 will be the number of '0's, '2's, '0's, and '00's' respectively. The '0's' are dropped, otherwise the remainder of the number 020 is inserted into the ending V9. Similarly, the digits representing the tens is done in the same way except that the ending TS is used which reads the tens 'Twenty', 'Thirty', 'Party' and so on. The units and tens of a natural number. The only irregularity is in handling the 'zero's'. Thus, all natural tens (less 20) are handled as though they were units (less 2210) and are read from the array 00 — i. e. 13 reads for example, 'thirteen'.

The remainder of the program relates to putting together the three segments representing the millions, thousands, and

[illegible]

units (units have meaning values under one thousand). Note some other use.

stated that his department's website was "not" affiliated with affiliated organizations (such as a company).

Dragon Answers

If you've got a technical question write to Brian Cattee. Please do not send a SAE as Brian cannot guarantee to answer individual enquiries.

Seek for the Answer

I own a Tandy 101 with disc drive and OS-9. Reading the OS-9 manual, it mentions the possibility of using tapes. This would be ideal for quick backups and may be the chance of communicating with another Dragon while running OS-9.

G. Moss
63 Pittycombe Road
Preston
Cheshire
WA6 2QA

WHAT you need is an OS-9 device driver for the cassette system. One appeared in the March 1988 issue of DR. You'll need an assembler and after knowledge of OS-9 to use it. Alternatively, perhaps someone knows of available drivers for OS-9 (public domain) and will let us know.



IBM clone

I have been thinking of getting the Dragon 32 (386) system. I have a spare IBM PC supply drive of 300K and I have been wondering which disc controller I will need to use it with the Dragon. Can you tell me which Dragon specific operating system is the closest to IBM PC-DOS?

John Edwards
32 Chesham Road
Wotton
Chesham

Pin No.

10
12
14
16

Dragon
Drive 1 Select
Drive 2 Select
-
Motor On

IBM

Motor Enable A
Drive Select B
Drive Select A
Motor Enable B

Every which way but Left . . .

OS/2Dyoplease tell me! there's a fairly simple machine code routine for scrolling the screen left, one column at a time?

I have routines for scrolling the screen in the other three directions, but cannot complete the program I am writing without left-scroll.

U R Smith
P A River Street
Winn
Herts
SG12 7AF

THE following routine will do the trick. It is relocatable, so just POINT the code/label to give in left column whenever you want and EXEC at that address.

OS-9 driver

I own a Dragon 32 computer with a Dragon Data disc drive and recently a fault has developed in the DOS. When I use any command such as DIR, the drive indicator light comes on and the OS/9DOS code is reported. My manual doesn't explain the meaning or cause of this error.

Is this a fault with the controller or drive and could it be rectified by buying SuperDOS-900?

Steve Marshall
24 Adelaide Crescent
Teyford
Bristol
BS26 2AR

THE pin connections of a PC drive are almost identical to those specified by DragonDOS (and therefore any compatible cartridge controller). That is, all add numbered pins are Ground, pin 16 'index' through to pin 32 which is 'select head 1'.

The only differences are in pins 10, 12, 14 and 16. You'll probably find that for a single drive no concerns need be made. FSP manufacturers estimate disc controller cartridges, which are available from Bob Harris at his usual address (check for price and availability). As far as Dragon OSs are concerned, it is a choice between FLEX and OS-9. Neither is much like MS-DOS, but OS-9 is probably more in structure closer to the compatibility from FLEX format again.

SCROLL TEXT LEFT

```

8C 04 00      LDX  $1034
C6 1F      LOOP1: LDB  $31
A6 01      LOOP2: LDA  1,X
A7 80      STA  ,X+
5A          DECB
36 F9      BNE  LOOP2
66 60      LDA  $96
A7 80      STA  ,X+
8C 05 00      CMPX $1536
35 EE      BLO  LOOP1
39          RTS
    
```

THE '8C' error checks for disk error. This occurs when the drive controller chip's request line sees no more than one of the 40 tracks on a disc disk. This could be due to a fault in the controller cartridge, or more likely to the drive itself. Occasionally a dirty disc connector is blamed for removing the contacts with improper alignment, available from the glossary section at the back of the manual.

If this has no effect, you'll need to get your drive serviced. In any case, replacing the DragonDOS system with a SuperDOS system will not help.

Recurring DREAMs

FINALLY, a note on the perennial saving source code from Dream. It seems many of you have the same problem and all say the same thing: patches published to networks -- well, it seems so. But there are at least three totally different versions of Dream in circulation. The patches do work, but only on the most common version. Watch this space...