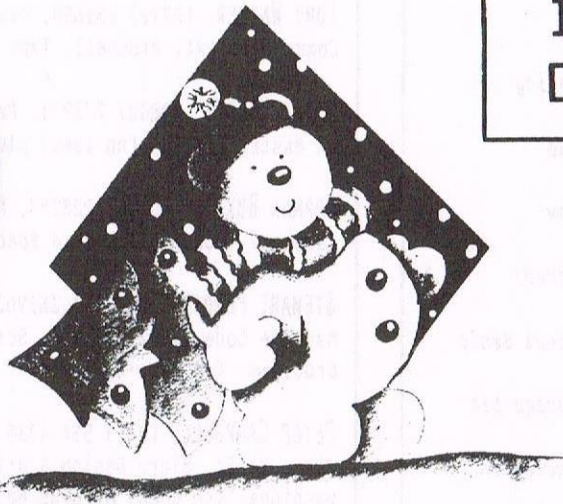


THE UK'S ONLY SERIOUS CPC MAGAZINE

Issue 61 £1.50
December 1992



*It's
Christmas!*

WE WISH YOU A
VERY MERRY CHRISTMAS
AND A HAPPY NEW YEAR



*Have a great
time*

IN THIS ISSUE:

Beginners Basic, Letters, Competitions, Machine Code, dBASE, Help-Line, Discounts, Book and Tape Libraries, Public Domain and Homegrown Software and much more...

WAAAGG

CONTENTS

2 HELP-LINE & CONTENTS	<i>Guess what ?</i>
3 THANXS AND STUFF	<i>I love to go rambling</i>
4 COMPO & DISCOUNTS	<i>Win a prize or two</i>
5 FAIR COMMENT	<i>Is it, let us know</i>
13 INSPIRATION	<i>Strategically placed?</i>
15 VERY BASIC BASIC	<i>Basically it's about Basic</i>
17 THE STACK	<i>The assembly language bit</i>
19 DBASE II	<i>JR reveals some more!</i>
21 HIGHLIGHTS	<i>Ron Izett tells all</i>
23 HARDCOPY	<i>Printers ... part three ..</i>
25 DIS(C)ORGANISED	<i>Organise your discs</i>
27 WACCI REVISITED	<i>Speed up your Basic programs</i>
38 PD LIBRARY	<i>Get yeh PD discs here mate!</i>
30 HOMEGROWN LIBRARY	<i>Why do I put these notes in!</i>
31 WHO'S WHO	<i>Who does what (and where)</i>

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The Telephone Help-Line

TONY WALKER, (0772) 651698, Preston, 10.00am to 10.00pm, Comms, Prottext, Prospell, Tape to disc, CP/M on ROM.

BRIAN NORRIS, (0832) 273973, Peterborough, a specialist on MasterFile III (no less) plus general advice.

NORMAN BUXTON, (0260) 223257, Macclesfield, Basic and farming? <<Control codes a speciality -Ed.>>

STEWART PEPIATT, (0245) 353903, Chelmsford, Basic and Machine Code, DMP2000, VDE, Scrivener and general problems. <<A Tech-Head -Ed.>>

PETER CAMPBELL, (041) 554 4735, Glasgow, OCP Art Studio, Vidi, Basic, Micro Design & Art Programs, CPC plus machines. <<A Comms Guru as well -Ed.>>

FRANK FROST, (0983) 882197, Isle of Wight, 4.00 to 10pm, VDE, CP/M and Prottext. <<He loves a chat but nobody seems to call him up -Ed.>>

PETER CERESOLE, (081) 878 0391, London, Prottext, Promerge, Utopia and Nukes (amateur status) <<Total nutter to be avoided at all costs -Ed.>>

PAUL GRAVES, (0304) 812342, Ash, All varieties of Pascal (inc Turbo, JRT & Standard). Phone between 5.00pm and 9.00pm Weekdays.

PAUL DWERRYHOUSE, (0244) 534942, Deeside, Clwyd, Basic, Bank Manager, PD Planner, Ispell, Money, Subscriptions. And a sympathetic ear. <<He's good at accounts. -Ed.>>

ROB SCOTT, (081) 552 8900, East Ham, any & all hardware problems plus tape to disc, disc to disc etc. << An electronics genius, -Ed.>> Now with extra Bonzo.

NIGEL MELLS, (0784) 250763, Ashford, Tape to disc problems, Basic programming and a general natter.

MIKE LYONS, (0942) 59942, Nr Wigan, Basic, Stop Press, Dk,tronics Speech Synth, rodos and general help.

CLIVE BELLABY, (0602) 725108, Nottingham, 8.00pm to 9.00pm, Basic, Cobol, Forth, VDE CP/M, Prottext, Promerge and WACCI. <<Dominoes a speciality. -Me.>>

CHRIS SMITH, (0252) 24721, Aldershot, Comms, BB's, Prottext, Promerge, Prospell, Utopia, Brunword and general programming problems.

PLEASE NOTE: This help-line is provided on a voluntary basis by club members to assist other club members. This service is provided to help you. Please call help-liners between 7pm and 9pm (unless stated otherwise.)

If I receive reports of this service being abused by software pirates I will close it immediately.

WACCI

Edited By: The Management

Owned By: The Club Members

Phone: 0602 725108

Conceived and Founded

By: Jeff Walker

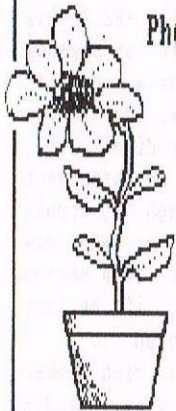
In: October 1986

Developed and expanded

By: Steve Williams

THANK & STUFF

The New
Editor



We've reached the end of another year, and what a year its been. The relaunch of WACCI, the massive expansion of the PD Libraries, the launch of the book and tape libraries, cutting the price of PD and Homegrown discs, meeting members at the All Formats Computer Fairs, producing lots of magazines (on time), organising the club, making phone calls and occasionally taking time off to talk to my wife

All in all, its been a very good year for the club, for a start, we're still here, we're growing, we still have more money in the bank than we owe to members in subscriptions.

We've had the odd problem or two or three... but we've overcome them with our positive attitude and willingness to listen to others, and to correct mistakes as we made them

WIVES, HOSPITALS AND WACCIS

I revealed in last months WACCI, that Josie would be going into hospital at the end of February 1993 and that I'd be needed to look after her after the operation, and this may affect WACCI's publication dates

Fear not, we've managed to organise the production of February and March's WACCIS to ensure that they're produced on time. To achieve this outcome, Paul (subs) Dwerryhouse has started laying out all the regular features for these issues, so that all I need to do is quickly add the 'special features' and Fair Comment and WACCI will be ready to go to the printers. Many thanks for the help Paul.

THE EARLIER THE BETTER

You can help out by getting articles for these issues in early - January would be very nice if you can manage it - pretty please and all that, you know it makes sense.

WHEN WE NEXT WACCI COMING

Provided all goes according to plan (as if it every did) the WACCI you are now reading was posted on (or around) the 12th of December - this should allow for the usual Christmas snail mail problems. WACCI 62 (January 1993) will be, I hope, posted on or around the 14th of next year.

COSTS AND DISCOUNTS

We've absorbed several small price rises over the past months, including an increase in printing charges and increased stationery charges. And of course, now that interest rates have fallen, we get less interest from the subs money bank account.

Don't panic, I'm not softening you up for an price increase - I'm just keeping you upto date. Paul is keeping a close watch on the situation to ensure that we do run into problems.

Brunning Software the Brunword word processor people have decided to withdraw the WACCI members discount.

ALL FORMATS FAIRS

If you've not been to one of the All Formats Computer Fairs to meet us, why not come along for a chat..... You can always buy some PD software whilst you are their, try out a program, discuss

what you want from WACCI, moan about the weather, talk over your problems or have a personal demonstration on how to use MicroDesign..... We'll be at the following shows:

Birmingham Sat 17 January
Leeds Sun 24 January
Nottingham Sat 30 January
London Sat 13 February
Birmingham Sun 14 February
Haydock Park Sat 20 February
Glasgow Sun 21 February

Please read this, the £1 off vouchers now form part of the All Formats Fair, you can photocopy the advert, cut out a £1 off voucher and hand it to get a discount, or you can cut up the advert page in your WACCI (if you dare.) You can make as many £1 off vouchers as you need - it's okay to do so.

OTHER NEWS AND VIEWS

CPC Attack has folded (it was nothing to do with Alan Tilling's review in WACCI 58) which is a pity because it weakens the CPC market place. Who's going to write new programs if they can't advertise them and make money!

Expect details of a new CPC scanning service to be announced shortly.

The Homegrown Disc Library is about to be revamped, discs will be either 'Games' or 'Utility' discs. This is being changed to assist members.

FINALLY

Have a very good Christmas, and a safe and happy new year. TTFN. Clive.

** COMPETITION SPOT ** COMPETITION SPOT ** COMPETITION SPOT **

DON'T CRY FOR ME

So far, we've received a total of nil entries for Compo Number Eight (which was in WACCI 59.) Maybe they are all held up in the Christmas post, or at one of the post offices that are on strike at present. Perhaps nobody has bothered to enter ... Oh well, there's still a few days to go before the closing date of the 30th November (cos this issue was sent out early to avoid problems with the Christmas post) so I may receive a late entry or two

WANTED A COMPO ORGANIZER

Organizing the competitions, thinking up a variety of different ways of stretching members minds, sorting out who's right and who's not is all taking up a lot of time that I should be to produce WACCI.

So we're looking for a willing volunteer to take over this role. If you're interested, drop us a line at the main club address

COMPETITION NUMBER NINE

This month's poser was sent in by Ian Sweeting (from the sunny south) and it is one of those lateral thinking sort of questions that has you kicking your self esteem because you didn't get the correct answer.....

You're walking along a road and you come to a fork in the road. You must take one of two paths. One leads to certain death whilst the other leads to utopia. There is nothing at all to indicate which fork is which.

However, there are two people standing at the fork. One always tells the truth and the other always tells lies. You don't know which of them is the honest person.

There is one question that you can ask either person that will guarantee you find out which fork goes where.

To win all you need to do is work out the correct question and send it to us by the 30th January 1993.

CORRECT ANSWERS AND DR WHO

If my memory is correct (it usually is - and I'm modest as well. -Ed.) This very question appeared in an episode of Dr Who. The setting was a room with two doors, and two people, one of whom always lied and the other didn't.

I think the episode was broadcast around 1969/1970 (although it could have been earlier) and Dr Who was taking on the GamesMaster in a series of challenges, as usual, if he lost the world would be destroyed

Now Trevor Wells is a club member and a Dr Who fan (he won a LP on Radio Nottingham for knowing that Dr Who had two hearts) so he may be able to throw some more light on the correct year, episode and the like.....

Now I watched that series, yes, I'm that old so I know the answer, I still can't work it out, but I do have a very good memory. Now where did I put that pen, and the cat, and where on earth did I park the car

* DISCOUNTS ** SAVINGS ** DISCOUNTS ** SAVINGS ** DISCOUNTS *

SIREN SOFTWARE, WILTON HOUSE, BURY ROAD, RADCLIFFE, MANCHESTER, M26 9UR (TEL: 061 724 7572)

10% discount on all their CPC products: including 3.5" disc drives, software and blank discs. They will also supply a copy of their 3.5" disc drive utility FREE with each disc drive ordered.

BRUNNING SOFTWARE, 138 THE STREET, LITTLE CLACTON, ESSEX, CO16 9LS (TEL: 0255 862308) - All discounts withdrawn by company.

CAMPURSOFT, 16 SLATEFIELD STREET, GALLOWGATE, GLASGOW, G31 1UA (TEL: 041 554 4735)

Campursoft discount both MicroDesign and MicroDesign plus for WACCI members. Save £3.00 on Micro design plus, yours for only £11.99. Or you can buy both packages for only £27.99 (saving over £6.00 on the individual prices.)

SD MICROSYSTEMS, PO Box 24, HOLBEACH, Lincs, PE12 7JF (TEL: 0406 32252)

10% off all Software and Consumables, whilst Hardware items will be post free. Software includes: Home Finance £14.95, Kwikfile £12.50, General Ledger £29.95, Stock Accounting £39.95, Small Trader's pack £29.95, Payroll £52.50 and more

MJC COMPUTER SUPPLIES, 2 THE ARCHES, ICKNIELD WAY, LETCHWORTH, HERTS, SG6 1UJ (TEL: 0462 670301)

Mike Cooper the big white chief and a keen CPC follower (and is a computer buff at heart.) We can expect "Special Offers" on certain items in the form of an "on-going" list of discounted products. More news on this when details have been worked out.

GOLDMARK SYSTEMS, 51 COMET ROAD, HATFIELD, HERTFORDSHIRE, AL10 0SY (TEL: 0707 271529)

Specialist software for the CPC's. Willing to give members of WACCI 10% discount off all Software and Hardware (But NOT off special offers or on disc prices). There should be an insert in this issue from GOLDMARK and please refer to same.

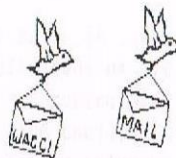
PROPAC COMPUTER GROUP, 153 PICKHURST RISE, WEST WICKHAM, KENT, BR4 0AG (TEL: 081 777 6241)

Offer you an extra £20.00 off their prices. Give Alex Kinch a ring. (Their new catalogue will be issued shortly.)

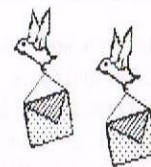
OASIS COMPUTER SYSTEMS, FAO MR R CHILLARD, 6 BRIDGEWATER ROAD, SULLY, SOUTH GLAMORGAN. (TEL: 0222 531270)

Special club members only offer: 464/664/6128 Colour Monitors £69 + £8 p&p, Green Screen Monitors £12 + £6 p&p

Fair Comment



Mike Lyons
85, Leigh Road
Hindley Green
Near Migan
WN2 4XF



BE YE OF GOOD CHEER ALL THE YEAR

Dear Clive, I wanna tell you a true story. It was back in the thirties and getting close to Christmas when this old lady was walking up the street to do her weekly shopping and she noticed a very seedy old gentleman sheltering in a doorway and taking odd bits of money from passers by.

Feeling very sorry for his plight at what should be a joyous and uplifting time, she went up to him, pressed a pound note into his hand, advised him "Never despair!" and walked on. He saluted her, replied "Of Course!" and scuttled away.

She went to her daughter's for Christmas and it was two weeks later when she went along that way again. The same old gentleman was sheltering mournfully in the same doorway but when his eyes lit upon her his face brightened up and, full of smiles, he hurried over to her.

"I've looking out for you for days", he declared. "It came in at thirty to one." And he thrust an envelope full of bank notes into her hand.

She had not realised that he was a bookie's runner.

---ooo000ooo---

The point of this is to say, "Do not despair." The poor response to competitions does not necessarily indicate lack of interest. Years ago I ran a similar sort of magazine to WACCI and the feedback from that was equally dreadful: that is, so far as the post was concerned. But many club members, when I saw them at functions would comment on the contents and show their interest.

I suggest that for every entry you get back, another member worked it out but had no great wish to send in an entry: two others either tried it and failed: three others looked at it and said to themselves " Ah! Yes. That could be done by doing": and others thought to themselves "That's interesting. I'll try it out when I have time. So please don't drop the competitions merely because few

members write in with their answers. Do keep them in at least fairly often, even if you cannot manage every month.

Incidentally, don't forget to give us all the parameters. Competition 2 - Design a Cover Page - didn't say whether you wanted a cover which would be exactly the same every month for, say, a year: or a frame which would allow you each month to insert a table of contents or a topical picture: or simply a cover for one particular month such as the Christmas Edition.

In Competition 3 Part 2 one is presumably rummaging around in pitch darkness. In good light and room to turn the socks over in the drawer there would be no problem in matching the socks. <<Err! you were supposed to realise the light was on>>

I do not really believe that in Part 3 you expected the answer to be the direct question "What is your number?" but you did not rule it out. <<Err! I thought most members would go for a long drawn out solution and not for the correct easy option.>>

I had hoped to put in an entry for Competition No 4 but we are in the throes of moving house and so I haven't time to do it for a while but I hope to give you a contribution when we are settled.

Kind Regards from Walter Pearce
Gloucester

<<Hi there Walter, by the time you read this you'll be happily settled in the new home - mainly 'cos it's a bit late going in WACCI - mainly 'cos I liked the Christmas story - and now is almost (nearly) Christmas.

Thanks for the words of wisdom, I'll engrave them on my heart (if I ever find my heart, that is) and remember to look below the surface. I suppose I really wanted to find out if the competitions were worthwhile, and you given me the answer, Yes! I always, if I can, like to know (and do) what the members want - it's their club.

Have a very merry Christmas and a more than happy New Year. Finally, do not drink and drive - we need all the members we have - Clive.>>

AN INTERESTING READ?

Dear Mike, I was interested to read Vic Baldwin's letter in issue 58, (September), and your comments at the end. Perhaps my "DISCNDEX" file might be of interest to Vic. It can do the same thing as CATLABEL or HARDCAT but has the advantage that it provides a means of storing the CAT in a file containing as many CATs as one wishes. This can then be loaded into one's favourite Word Processor and a print-out of all or any part of the file obtained. It also CATs the first five User Areas of the disc automatically.

A further advantage is that the resultant file can be searched from Protex, (or whatever), and the title of a file found in seconds. The system provides an easy means of identifying the disc on which a file is stored and my EVERYDOS program provides suitable labels. The files are suitable for any disc size or format.

I have obtained a copy of the "FIRMWARE GUIDE" from WACCI since I last wrote and I have found it to be very comprehensive. I have tried some of the programs on the disc which comes with it but I will have to persevere with these, as they are a little too advanced for an "L" plater such as I. They will clearly be of use when I get to grips with them.

Paul Dwerryhouse's review of Micro-Design Plus was most interesting and it will have to be my next purchase. As I do not yet have Micro Design, it will set me back £28 and I'll have to wait a few weeks for it but it should be worth it. I note that Campursoft have taken the trouble to make it compatible with ROMDOS, which pleases me very much. Too many otherwise good programs are virtually useless to me because of incompatibility with that excellent disc system.

Paul said that MD+ was not a "Desk Top Publishing" program but who needs DTP if he has Protex and Promerget and a Citizen 120-D printer. I find that I can do almost anything that is done with DTP programs by means of these Arnor ROMs. With the addition of Micro-Design I will have all I need

for such work. I might even have a go at designing a front cover for the magazine. Many thanks to all of the authors of the interesting articles published in WACCI.

Finally:- This file is on the disc as FAIR-COM.A10. I keep each year on a separate disc and the "A" in the tail stands for the 10th month, (HEX) and the 10 is, of course, the day date. By using this means of dating my letters, I force my CATs into chronological order on the discs.

I use a similar system in my file of church tape inserts and it works well for me. I enclose a typical insert for your perusal. If you'd like to hear one of these tapes, just let me know and it will be on it's way.

Allen Cooper
35 Drumard Drive, Lisburn
County Antrim, BT28 2HY

<<Hi, Al. Glad you still find the old mag an interesting read. Old? Well, we have passed our first half-century!

MD, (and MD+), is a superb piece of computer programming which has been further enhanced by Jess and Peter's remarkable efforts. I now have it and it's worth it's weight in platinum.

I used to use a similar system to yours for dating my *normal* mail, though I did tend to put the date before the month, (the other way is so dreadfully *continental* - or *American*, which is worse.) In any case, when I became so popular, after becoming a WACCI-ite it became necessary to use a different user area for each month to keep things nice and tidy. Even though I have this system I *still* have to have a tidy-up every six to 12 months to keep things straight - but then, if you could see my desk, you would wonder if that were possible. -Mike.>>

MICRODESIGN MAGIC

Dear Clive, I enclose a Microdesign file for possible use on the cover of WACCI (or elsewhere if you prefer.) Hope it isn't too libellous.

I enjoyed the the All Formats Fair at Haydock. Unfortunately I couldn't make the one at Leeds. Other events overtook me. I had an idea which I was going to suggest to you; I'll make it now. How do you feel about inviting members to bring unwanted software and hardware to these fairs for sale on the WACCI stall? Obviously there would be some commission in aid of club funds. But you won't want the stand overflowing with a mountain of useless junk, and you may feel that you have neither the time, the space, nor the inclination to do this. I thought it better to approach you than to write to "Fair Comment." I have to go now and play out the role of domestic

SD MICROSYSTEMS, PO BOX 24, HOLBEACH, LINCS PE12 7JF / (DEPT Z)

Serious Software for the CPC, Disc Drives, Supplies.

Page Publisher £19.95 **SPECIAL OFFER!**

Front-Runner £14.95 **NEW!**

Fast (machine code) desk-top publishing package which runs on any CPC computer with disc drive and 128K RAM. Note - the 6128 chip is not required on the 464. Type in text, load ASCII files, import BASIC screens, draw boxes, lines, shapes, rotate areas and more! The program is ICON-driven with drop-down menus and option selection by keyboard, joystick or AMX mouse. Works with any 9 or 24 pin Epson-compatible printer.

This is the DESKTOP program that CPC owners have been waiting for, allowing total control of discs by Joystick or AMX Mouse under a WIMP environment! Choose commands from drop-down menus including copy, erase, unerase, print, fast format, folders (sub-directories), with single or multiple file selection. FRONT-RUNNER is fast and compatible with 3.5" second drives and formats such as ROMDOS/RAMDOS, MS800, XFORM and our own 400K per side software. FRONT-RUNNER is the only CPC DeskTop that offers all these features and more! Available initially on disc only, we expect to be releasing a ROM version at a later date. Requires 128K RAM.

Picture Disks 1&2 - 100s of clip-art graphics..£12.50^{ea}

Disc-Base fast, automatic disc-file organiser...£12.50

KwikFile.....£12.50 Random Access Filer.....£14.95

GraphMaster.....£14.95 Picasso Art and Design....£14.95

Home Accounts..£14.95 BooTracker music maker.£14.95

General Ledger 6128 - business book-keeping... £29.95

Stock/Invoicing £39.95 * 3½" Disc Drives from £79.95

Add £1 post/packing or send an SAE for our CPC catalogue. 10% discount on software!

peacemaker before World War 3 erupts in the kitchen. Hope it isn't too long before we are in touch again. Yours,

Andy Frame
Barrow in Furness

<<Hi Andy, I agree, Haydock Park was a good show, and I know that I enjoyed going (so did Alan Tilling - I know 'cos I asked him.)

If members want to call in and bring something to sell on the stand - great - we are a club, so it'll fit into the image. If it's more than the odd small item, then please ring on 0602 725108 and I'll sort something out.

Great front cover, no it's not that libellous, and again, it suits our/the WACCI image. Our thanks and the best of luck, and whilst I think about it, we cannot sell unwanted wives or other family members TTFN. -Clive.>>

A SAD FAREWELL

Dear Uncle Clive, I have bad news. I must to sell my dear faithful Arnold for personal reasons. WACCI has been great fun and I shall still read it.

Could you please include this advert in your next issue, I think it's a very good deal. Thanks a lot,

John Legge
Buckie, Banffshire

<<No problem, we're always happy to help out club members. I'm sure it'll go to a good home. TTFN. -Clive.>>

FOR SALE - FOR SALE - FOR SALE

AMSTRAD CPC 6128
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HERE'S STAMPER

Dear Clive and all, once again I must apologise for keeping you all waiting for the review of ROMDOS XL. I received the third ROM from SIREN Software and at one time I thought that all the 'bugs' had been removed.

However your worthy Book Librarian Steve Lee rang me up to say he had one and was having problems. I carried out to the letter his instructions and lo and behold, the ROM that I had was acting up in the same way as his.

The trouble was in the formatting of discs. When asked "Do you wish to format another disc? and on pressing the required key it appeared as though the disc was being formatted, but it was not. Poor old Steve did not find this out until he had completed the formatting of his 40th disc. I could imagine his top being blown at this waste of time. <<Er, so can I. -Ed.>>

The next snag was in transferring files from one drive to another. 2k files from drive A began to appear as 66K files on drive B. A 48K file on drive B was transferred as a 2K file on A. Still no joy.

The upshot of it all is that at this moment in time I cannot in all honesty recommend it's purchase to any of you. When ALL, and I mean *all* snags are cured then I will complete my review. If there is anyone out there who has a perfect ROM perhaps they would kindly give me a ring. Thanks.

<<Stamper has tried using the Rom without any other Roms in the rombox, just in case two of the Roms clashed. However, even with only one Rom in the box the problems persisted. -Ed.>>

At the moment I am endeavouring to print out *all* the .DR files on the PD discs for MicroDesign. It's a slow job but I'll get there --- eventually.

Meanwhile be on the look out for more discounts next month. cheers.

Stamper Metcalfe
Chapletown, Sheffield

<<Hi there Stamper, as is usual with this sort of program, many of the bugs do not appear until the program is fully tested by the public. I remember one program I wrote many years ago, which worked happily until a friend used it, then it crashed.

All because I had always pressed either Return or Space at a 'press any key prompt' and he used the Copy key,

and that was it, it crashed such is life. I'll sit here in the hope and expectation of receiving the long promised review, some time in the near future (and preferably before WACCI 71 goes to the printers. -Clive.>>

WAVING GOODBYE TO WAVE?

Dear Clive, I have now received WACCI magazines numbers 59 and 60 (in the same post). Many thanks for processing this. It would appear that I won Competition No. 6 in WACCI 57, just shows what warped little minds we share! Anyway, if nobody is going to write and ask (?) may I please have as my first prize, Public Domain discs numbers 42, 47 and 55.

A note for Mike Lyons, I see from "Fair Comment" that a few doubts have been voiced over WAVE of Barrow in Furness. I had cause to return some stuff to them and was unable to get a refund or any answers to my letters, not even one addressed to their MD. Not a lot of cash was involved but my joystick today may be someone's discs, computer or printer tomorrow - so, be *Warned dear friends!*

Taking note of Mike's winge in WACCI 60 - and why not? I am enclosing a 1st Class stamped label for return of my disc. Sincerely,

Ken Stone
Canford Magna, Dorset

<<Hi Ken. Ta for the low down on WAVE, I hope they are just suffering from a "I'm going to get it all wrong 'cos I want to....." bout. Andy Frame lives near WAVE - so perhaps he knows what's going on? Come on Andy, do you? What's more, do WAVE?

Sorry that Issues 59 and 60 arrived at the same time, did we miss you out or has the Super Snail struck again?

The stamp question is one of those: it's your money what do you want us to do with it problems. We can use your subscription money to pay for stamps (in which case your subscription will eventually go up) or you can buy your own stamps. Either way the choice is - do you want to spend your money on stamps or do you want us to spend your money on stamps for you?

I'll arrange for the discs to be sent to you - in fact you should have them by the time you read this... best wishes and Merry Christmas. -Clive.>>

SEASONAL FELICITATIONS

Dear Mike, May I be the first to wish everyone a Merry Clivemass?

Andy Frame

<<Hi, Andy. Nice to meet you at the Haydock show. I'm always amazed at how different people look than their letters might indicate. Until the 14th. of October I had Stamper pegged as a spotty teenager!

Not only may you be the first you are the first. May your holly never lose it's berries, may your pies never lose their mince and may your parson never lose his nose. -Mike.>>

ARE YOURS WORKING?

Dear Mike, Many thanks for the loan of MMC instructions. My ROMs do not respond to !MMC, I have to use either !COMPOZER or !DIGITIZER.

I had a quick try at digitising this evening but all I could play back was a high-pitched whistle. Like I said, the ROMs may be corrupt.

I wonder if I could impose upon you further? <<Go ahead>> The instructions refer to a help file and demo files on a disc. I haven't got this, I'm afraid. <<AW, Steve, don't be afraid Unca Mikie's here>> would you be able to loan me yours?

If you would rather not, then fair enough, <<I'm a fairy... Oh No. Not that again. Ed.>>, I'd understand. However, I thought it would help me check whether mine are working okay, if I could try the demos etc.

Anyway, thanks again for the instructions. I think I'll go and have another play now. Cheers.

Steve Lee
Ramsey

<<Hi Steve. I'm sorry it's taken so long to get a reply to you, although by the time everyone is reading this you should have my disc. I've sent you the original so as not to breach copyright. I hope it's helpful. I had to search the house thoroughly before I remembered where it was. You know what it's like when you move house. I searched every room thoroughly before I discovered it peeping at me through the spokes of my bicycle in my work/living room.

The instructions are a bit vague, really, but the demos don't help a lot

either. I *did* manage to digitise some sounds using a tape recorder but the overall effect was rather 'hissy'. You don't use !MMC to get started with the ROMs - just type !DIGITIZER, (I *loathe* the American spelling!), or !COMPOZER, (cringe.) The demo is quite nice, but rather twee. I don't know how they digitised the sounds for the number key demo, but I was never able to get that clarity in my attempts.

After using AMS I found these ROMs to be a bit clumsy to use. Good Luck. I think you might need it. -Mike.>>

CHRISTMAS SHOPPING LIST

Dear Mike, Having just received my fourth issue of WACCI, I thought it about time to write and congratulate, (and thank), everyone who keeps WACCI running. I find that the tone of the magazine is just to my liking, (and I don't get too upset by grammatical and spelling mistakes.)

I'm especially pleased to have been in on Steve Hammond's series of hardware add-ons; I like to dabble in electronics but don't yet have enough confidence to attach my monstrosities on to my valuable 6128. Like Patrick Boyle, (WACCI 59), I have a wish list of hardware projects:

- 1) RS232 interface, (I've got loads of MC1488 and MC1489's waiting and am willing to supply them to other members gratis.) <<How kind.>>
- 2) 8-bit printer port, (to make graphics dump programs easier.)
- 3) 8 bit A/D converter, (I've a yen to make my 6128 into a low resolution, (256 step), oscilloscope.)
- 4) Digital speech system and eeprom blower, (so much nicer than the usual allophone-generated sounds.)

I realise that I'm being somewhat ambitious but you have to aim high, don't you? The RS232 interface is at the top because I managed to pick up a new modem from Greenweld very cheaply in their sale and am itching to get into this comms business.

I, too, would welcome the chance to acquire some of Rob Baxter's music files for TMS or AMS. I've dabbled but never produced anything professional.

The generally-taught <<and very old>> method for calculating square roots, (as well as cube- and higher roots, analogously), does have inside it a bit of a loop - you have to find the largest number that when squared and added to etc - which really does put it into the same sort of ball-park as the Newton iterative method described by Ron Hobday, (although, of course, it's guaranteed to terminate after a finite number of steps, whereas the iterative method just gets closer and closer.)

One thing I do find about the magazine contents - they make me feel an inadequate wretch: I use Brunword, rather than the heavily-recommended Protext. I don't have a ROMBOX. I hadn't even heard of MicroDesign plus until I read about it in WACCI, and, since I'm an appalling artist, I would like to take advantage of clip art. (I'll have to ask Santa about that one), and of course Comms is still a dream. Never mind, better late than never. Yours expecting a heavy edit.

Dave Teague
Cheltenham, Gloucestershire

<<Hi Dave. Very little editing from me here. We're always pleased to receive members' letters and to be helpful if we can manage it.

Brunword is a very good WP and if you can produce the results you want from it without too much effort then that's all that matters. We all use Protext because we have it, (that's the royal "We"), and because it suits us. We are not word processorist.

Steve Hammonds articles are very interesting. I don't understand them very well, (I used to think a soldering iron was for putting the creases into army trousers), but I do my best to follow what's going on.

Quite a few people have shown an interest in an 8-bit port project - How far down the line are we on that one St. Clive, your reverence?

By the by, I'm a very naught person, 'cos I eavesdrop and look at other people's mail. I have had a good play with your program and it's deeply fascinating. I think you should put a health warning on it - *DANGER. This program could seriously damage your interest in anything else!*

As a bye-line, Dave has been more than generous and sent me 90p in

stamps to cover his postage, (and also covered forwarding his disc to Sir.) Not that I'm being naughty - you know I wouldn't be like that, don't you?

There's nothing wrong with ambitions and dreams, Dave. You never know, perhaps Santa Clive can make your wishes come true, but then again... perhaps not. -Mike.>>

LETTER v DISC? THE DEBATE CONTINUES!

Dear Mike, I write to disagree with the principles you suggest in WACCI 60 for letters on disc. This letter will cost me around 22p to send to you including paper and printing. If I were to send it on disc, it would cost me 32p for the jiffy bag and 18p for the stamp.

The only reason for sending it to you on disc is to save *you* time, not me. Therefore, I think it is courteous of you to return the disc to me. As I always use a fresh jiffy bag, people usually put a sticker across the address and return it in the same bag.

This letter is so short, you will save very little time if I send it on disc. But, if I had forked out an extra 28p to make life easier for you with a longer letter, I don't see why I should pay another 18p for my disc to be returned. Yours sincerely,

John R. Hudson
Huddersfield

<<Dear John, Your letter throws a very interesting new perspective on this perplexing issue. <<Ok Clive, you've used your quota of long (boring) words for this issue. -Mike.>> Let me start by outlining my view of the situation:

1. WACCI the club has no money of its own. It does however holds a lot club members money.

2. No one who is connected with WACCI is paid (or receives expences.)

(Don't tell my wife, but my phone bill averages £250. I pay it, the club doesn't... Why? That's easy, editing WACCI is my hobby.)

3. Those who do work on behalf of the club (like yourself with the dBASE series), do so for a variety of reasons, but mainly because they want to help other members.

4. Odd as it may seem, even I (the editor) has to fl8 subscription.
5. We rely on you telling us what to do with your money.
6. If the members want us to spend their money on stamps, great, provided that they realise, that what they are doing is pushing up the price of WACCI. WACCI has no money of its own

Nothing like going round in circles to confuse friend and foe alike. If you (the members) want us the club, to use your money to pay the postage - let us know and we'll do it..

An apology to Mike Lyons. Sorry Mike I read your reply and changed it - I never realised that doing Fair Comment was costing you (not the club) some £50 per year in postage. Not even after I'd read your comments about stamps in WACCI 60. My apologies.

I sit here waiting for your views, wondering if those in favour will send a disc and a stamp, and if those against will send a letter.... cheers, have a very merry Christmas -Clive.>>

CLIVE'S HINTS ON LETTERS

1. Use a lightweight Jiffy bag and an uncased disc, and it'll only need an 18p second class stamp.
2. Place the Jiffy bag in an envelope, address the envelope, the Jiffy bag is then re-usable.
You can now claim to be a Green person (and politically correct.) Many members recycle old envelopes, especially those that come with circulars.)
3. Don't include a hard copy of letter, this pushes the weight over the 60gm (18p) limit.
4. Don't use the Fibre type jiffy bags, these are heavier. The saving in price is outweighed by the additional postage.
5. I'm claiming a world record for my three year old jiffy bag, it's made 50+ return journeys.

A VERY NICE MAN

Dear Mike, In the November issue of WACCI, you published a letter from Alan Haire which, I'm sorry to say, contained some misleading information about my company, SD Microsystems.

Alan is a valued, (and satisfied), customer of ours and I know it was not his intention to give false facts but I really must correct his comments.

He wrote in with regard to DISCBASE, our fast-file organiser, to suggest that we change the code to cope with large numbers of files on 3.5" discs. That is 'fair comment' but he then referred to a 'phone, conversation he had with me during which he *claims* I told him that "we didn't plan to do any more CPC work as our CPC had been stolen and we were not replacing it."

This is utter nonsense. What I *actually* said was that the *programmer* of DISCBASE had had *his* only CPC stolen and would not therefore be doing any further work on the program.

If Alan had thought a bit more deeply I think he would have realised what a ridiculous remark he had made. How could we possibly duplicate and sell our range of serious software without a CPC? In fact we have several including a new Plus.

We are also continuing to develop new product such as the FRONT-RUNNER WIMP DeskTop, which handles 3.5" drives and most 800K software, and the BIG-BASE Random Access Filer, which can hold over 1000 records in a single file. We also sell a wide range of other software and consumables, all of which offer a 10% discount to your readers, (advert over!)

Perhaps I can end by saying that I remain a staunch CPC user and that my company will support the CPC for as long as possible. Yours,

Steve Denson
SD Microsystems
PO Box 24, Holbeach, Lincs. PE12 7JF

<<Hello Steve, nice to hear from such a nice man. What a relief to learn that SD Microsystems isn't going under thanks to the nefarious deeds of some felon. I'm even more relieved that you are still supporting our favourite home computer. I don't really mind giving you the free plug 'cos you're such a nice person to deal with. I am enthralled at the prospect of a WIMP front end. I have used David Wild's

DESK software but it didn't cope well with ROMDOS so I've stopped using it. If you would like a review, (nudge, nudge, wink, wink), please put me at the top of your list. Thanks for your support. -Mike.>>

<<Oh well it just goes to show what happens: if you want someone to know something - then there's not much point in telling them. This explains a lot about governments. -Clive.>>

GOING, GOING - GET IT NOW

Dear Clive, would you kindly place the enclosed 'For Sale' advert in the next issue of 'The Magazine'. If I can donate one of the listed books to the WACCI library, please select one and delete it from the sales list, thanks.

Bob Greenhalgh
Braithwaite, Cumbria

<<Hi there Bob, Uncle C here, thanks for very kind offer, I hope all the others are snapped up quickly. Best wishes, have a good day. -Clive.>>

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ACQUISITIVE AUSTRALASIAN

Dear Clive, I have now received the July and August copies of WACCI and for your reference, it costs 8.00 Australian dollars to send a bank cheque in English pounds.

I was about to send for the 20 disc package when another question came to mind: I assume that any of your PD or Homegrown programs will print out on a 9-pin printer, especially the screen pictures and clip art programs, <<?>>, as some will only print on a 9-pin and others on a 24-pin.

I have an Epson LX800 9-pin printer. <<A very good printer. I've just sold mine. -Clive.>> Do the clip art and screen pictures print out via that disc or do you require a special disc such as AMX PAGEMAKER which is the only one I have. Will I have to buy Microdesign or Microdesign Plus as on page 4 of WACCI August?

No-one in Australia is interested in the Amstrad 6128 or in helping to solve problems and there is absolutely nothing available for Amstrad users here. I know you must be very busy but your club almost needs a position created for overseas enquiries.

Another problem. Does anyone know of programs which will do the following:

- 1) Design model railway layouts.
- 2) Draw house plans or project plans.
- 3) Landscaping programs.
- 4) Animation or animal programs, (like the Commodore Amiga.)
- 5) A program to put titles on videos.
- 6) A program to capture TV or video screens.

There was a product made by Rombo, the ROMBO VIDI 6128 VIDEO DIGITISER. These were readily available in Australia at one time and from what I am told they worked very well.

Another program which your club may have is CPM 2.2 "HIND.BAD". This program allows you to repair faulty tracks on a disc and is, from what I could find out about it, very good

What is the difference between a 6128 and a 6128 plus?

Does WACCI sell any of the following commercial programs: Pagemaker Plus, Bonzo Flash Pack, (WACCI Flash Basic), OCP Art Studio, Microdesign, Protext, Promerge, Prospell. Thanks.

Darryl Partridge
Port Pirie, South Australia

<<Well Darryl, what a lot of queries. Let's start at the very beginning, (in the words of the song.)

Any program which produces printed output should work happily with both 9-pin and 24-pin printers, providing that certain 'standards' are obeyed. As you have an Epson Printer, any program which uses the Epson codes should handle your printer with the greatest of ease.

<<The best picture printing program in the library, in my opinion, is SDUMP4 on Homegrown Disc 7. -Clive.>>

The Clip art consists of small(ish) pictures, usually in a format for a particular art or page design package, which need that package to print them out, (or otherwise manipulate them.)

Many WACCI clip art discs are for Microdesign, these are the discs that have 'another disc full of MicroDesign pictures and clipart' as part of the disc description.

Screen pictures easily and quickly unsqueeze into the standard 17k screen format and they can be loaded into almost all art programs - most art program accept a standard 17k screen. You don't have to buy Microdesign - but it is a very good program.

There are a number of animation programs available, Parrotty Plus being probably one of the best. (The complete Parrotty Plus demo program is available on Public Domain disc 54 - Club members are entitled to a £6+ discount.) The Advanced OCP Art Studio will cope with very simple palette-switching animations. Any art package which will work in mode 2 is capable of producing graphic designs for plans and technical drawing. The ROMBO Vidi Digitiser is still around and it still works very well.

It is capable of capturing video or TV signals. Campursoft, (the people who saved Microdesign), are producing a video title program and there are also a number of others on the market. <<Michael Beckett has written a good PD Video Titling program - it's on PD Disc 55. -Clive.>>

I've never heard of the CP/M program "HIND.BAD", anyone out there any the wiser? <<I use BD04, it's on PD disc 2, this marks Bad Disc sectors so faulty discs can be used. -Clive.>>

At WACCI we don't sell commercial programs, we do, however, negotiate discounts for club members, thus the

member benefits from the lower price. However the addresses for Arnor, (who produce Protext, Promerge & Prospell) and Campursoft (Microdesign) can be found with in these very pages. As far as I am aware OCP Art Studio is no longer produced, (Telecomsoft are long-since dead.)

Finally, Darryl, a 6128 Plus is Amstrad's latest, (and probably last), attempt to corner part of then games console market. It's a (very) slightly (dis)improved 6128 which has special hardware to produce quality graphics for cartridge-based games only.

The cheap edge connectors back have been replaced with proper PC-type, D-connectors (to comply with the new EEC rules) and there is a whole world full of incompatibility, especially with ROM software, including, Promerge, Prospell, Romdos and others. Please don't give up if solutions are not immediately forthcoming. Australia is a long, long way away. -Mike.>>

GO FORTRAN AND MULTIPLY

Dear Sir, I enclose £6.00 for the next four issues of your magazine and a further £4.00 for the loan of PD discs 12, 24, 25 and 27.

I read in last month's AA that there is now PD version of Fortran available for the CPC. Is this true? As I use Fortran for engineering problems this program would be a great help. I am willing to pay for an original if one is available. Can you put me in touch with a supplier? Thanks, in advance.

Andrew Steel
Kilmarnock

<<Hello Andrew. It's nice of you to write. By the time you read this, the great Saint, (Clivius Maximus), will have, (I hope), contacted you about the availability, or not, of a Public Domain version of Fortran.

Your discs were posted on the 4th. November so you should have them by now. Good luck with Fortran. -Mike.>>

<<Err, you're not quite right Mike, although to contact Andrew I would like, he has no phone you see, so I've had to send a letter, which of course, is not better! I cannot track down the Public Domain Fortran compiler - So perhaps Andrew can let me know where he read about Fortran, and I'll go and get a copy. -Clive.>>

THE LATE 'L' PLATE

Dear Mike, Owing to the expiry of my subscription my issue 59 came rather late. However all is now well and I can get on with my reading.

I always peruse "THANX n STUFF" from the editor's pen. I note the remarks about the recurring pages such as the libraries. It's good to read that the space taken by these pages could be used for other things and that our editor had something else to put in their place. I whole-heartedly agree with the idea of putting the library lists on separate sheets, avoiding the need to reprint them with every single issue but I do think that it may be better to print "Who's Who" in each issue for the benefit of new readers.

In my recent letters, I said that I would purchase the Firmware Guide and Micro-Design Plus. These have now found their way into my collection and I am impressed with both. I must say that the small print out that I did with Micro-Design gave a better output than any ART package or DTP that I have so far encountered. Three cheers for CampurSoft. It will take me a while to become proficient in the use of these acquisitions but I think that it will be well worth the effort.

Steve Hammond's Expansion Slot is becoming quite interesting. DIY kits will be a pleasant change for the soldering brigade, of which I am a lazy member. I trust that directions for assembling the kits will be available for those of us who are a (little) bit thick.

Like reader Patrick Boyle, I would welcome an 8-bit Printer Port kit, which might allow me to send special symbols to my printer. I have found it difficult without one. I understand that many printer fonts are available to those who have an 8-bit port. I have a program from AA that allows me to use the high-bit but a port would be much better.

That's all for now, God Bless
AL "The L Plate" Cooper
Lisburn, Co. Antrim

<<Hello Al. I've sent your disc on to St. Clive and I'm sure he appreciates your efforts. Steve Hammond is working his inevitable way through various add-on bits for our beloved CPC's, but I don't know how likely he is to produce the 8-bit port which the world

and his wife seem to want. Nearly every letter that I've had this month mentions one. Steve Hammond, come on down. The time is right! If assembly instructions are produced then they will have to be in one-syllable words for me. I'm as thick as a brick on practical matters. K.I.S.S.

Our beloved editor, the venerable Clive, doesn't have a pen, Al. He prefers to use a charcoal stick and vellum. He always thought it was a bad idea to leave the caves. -Mike.>>

THE GOOD, THE BAD AND THE UGLY

Dear Mike, Just a quick note, (on disc again), to say a couple of thank you's and a few apologies.

First the nice bits: Thanks to Clive for being such a pleasant chap when I met him for the first time at the Novotel All Formats Fair on the 14th. You are the first WACCI-ite I have actually met, despite having close links with both Peter Campbell and Jess Harper. I do wish I had got there earlier though so that I could have met a few more people. Never mind.

Thank you also to George Ho-Yow for being so kind as to wish me luck in my A Levels in his letter in issue 60. It is nice when someone has the time to show a little interest in his fellow WACCI-ites. In return, I would like to congratulate George on his series of articles which is both useful and very interesting - something I think all articles should be.

Now onto the apologies. I suppose you all saw my article(s) in issue 60. You probably also saw the bit about my writing of "The Disc Surgeon." Well, I'm afraid to say that it has not come about. This is mainly for two reasons: One, the program was too big to tackle in one go and two, I have recently been extraordinarily busy, programming a new release for Campursoft.

The other small embarrassment to do with the articles was my copyright message at the bottom of each article. It's embarrassing because they were not intended to be printed. Clive, in his respect for copyright, printed them anyway. It makes it look as if I was worried that the text would be pinched or that I was trying to get my name into print. You can see why I'm a little embarrassed. In spite of these small problems, (and it was my first

article), I shall be writing another one soon, connected with the project I have been working on with Campursoft. That's all for the moment Mike, Yours,
Graham Denyer
Ascot

<<Hello, Graham. How are the studies going? I don't know how you find the time with all the other things you are doing - Articles, programming....

You must not be embarrassed about anything. Let's face it, we like to see our names in print and to feel the glow of satisfaction at having created something, whether it's an article, a cake, a chocolate digestive or even a program. There's nowt wrong with that.

As for your problems in completing "The Disc-Surgeon", that's just one of the delays that life throws at us. I'm sure it will get done eventually. I await your next offering with a degree of unbearable anticipation.

I'm pleased your first meeting with a WACCIite hasn't put you off the rest of us. The prospect of the great white Clive looming towards you has been known to make men tremble. -Mike.>>

ONE FOR THE HARDWARE BODS

Dear Mike, I would be very interested to hear Steve Hammond's opinion on my intended mod to my 6128, in light of the "Expansion Slot" article.

My need for the 8-bit port is that I have just bought a 6128 with a DMP 2000 for myself, which I need to be mobile. I have set up, in my son's room, two 464's with DDI-1, FD-1 and LC10 II with KDS printer port. This lot is stationary and not available to myself after 9.00pm, (bed time.)

If the mod in AA 28, involving the addition of one wire, eliminates the need for the KDS port and saves £25, then this would be preferable. Yours,

Mark Flower
Bristol

<<Hi Mark. Sorry I've taken so long to deal with this, I got very confused, lost your letter twice in one week and generally went ga-ga, (a touch of Cliveitis.) I've passed your query on to Steve who, faster than a sleeping pullet, will do something about it - I hope. How about it Steve? Can you make an 8-bit port a priority? -Mike.>>

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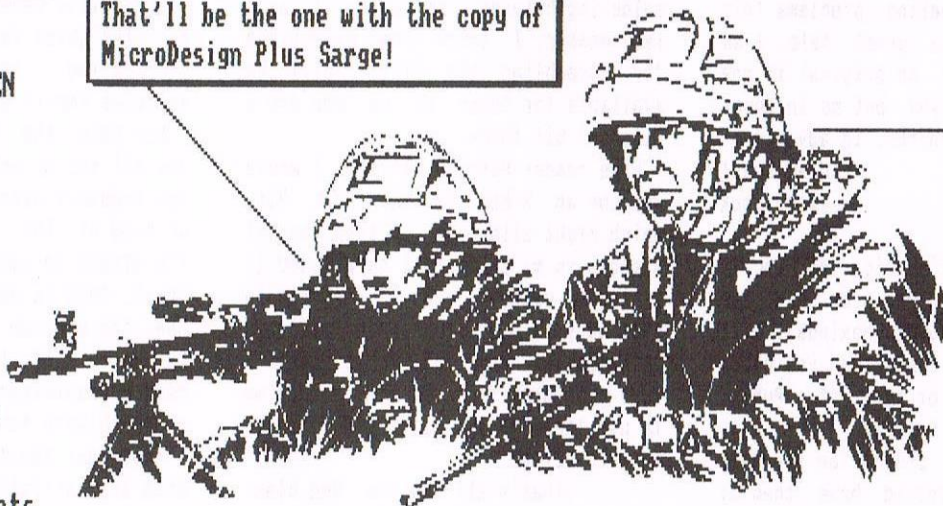
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Inspiration

George Ho-Yow eats three machine code routines for breakfast.....

Welcome to Inspiration once again fellow CPC enthusiasts. I've been writing about tactics for machine code programming over the past months and I now have Strategy firmly in sight. It's funny how the word strategy seems to be bandied about in the news at present. MPs clamour for the Prime Minister to state his strategy on Economics. So how can you expect a lesser mortal (like me) to state his strategy on designing programs in machine mode? Well I'll try.

IT'S A BIRD? A PLANE? A STRATEGY?

To start with (and first of all) I would define strategy as:

"to formulate a plan on the way(s) to achieve some objective(s) given certain resources."

Now to leave you with such a generalised definition is asking for trouble. So let me explain what I mean in more detail. Okay, to write a program requires a knowledge of the programming language obviously, then tactics on how to link the commands or instructions so that they co-operate into forming meaningful statements, decision branches and loops. Next set out your plans on how you're going to tackle the program, ie. the strategy.

It's like solving a maze. We start at the input and try different routes until we reach the exit. Oh dear! Is this the way you design programs? Not a very good way. Another strategic approach is the so-called WIBNI method (the patent will not be applied for.)

WIBNI means Wouldn't It Be Nice If.... This is probably your favourite strategy and mine. Start with an idea and let it grow and grow, using WIBNI ideas as they spring to mind.

NO! IT'S AN EXPERIENCE

At this point I've a feeling that you're not buying the fact that strategy is good for you. There must be something missing from my sales pitch. The missing factor is (wait for

it) experience. Unless we have trodden similar paths, seen an elephant fly, sang "Land of hope and glory," we wouldn't be on the same wavelength.

Experience is the glue that binds tactics and strategy together. (You are the sum of all your experiences to date by someone famous.) Without experience, you are forced into programming by trial and error. So how does one get experience?

Many ways, but one of the easiest is to look at other programs that are already extant and really analyse the coding to understand the principle behind what the code is all about. You can then incorporate the idea in your program. Please don't copy the program code letter for letter, that may infringe copyright.

PROTECTED EXPERIENCES?

Some programmers go to great lengths to hide their code for this very reason, because they don't want to share their ideas with others, they forget that at some point in their career as programmers they too had to copy ideas from others.

I suppose there's a limit to how much of your program you want to reveal, when commercial competition is at stake. It's inevitable though, that programs which are written to achieve the same objectives are going to be similar in some places. After all our programs are written for the CPC and consequently there is not an infinite number of variations possible.

Another way to gain experience in programming, skills, is to practise programming exercises that bring out certain techniques.

Like musicians do when practising their scales, so I've been told. When all's said and done this is the best way to gain experience, write as many programs as you can. You lose what you don't use, no pain no gain. Do I hear complaints about too many cliches?

<<Yep, how's about: too many cliches spoil the article and look before you cliché. -Clive. Hmmm! -George.>>

POSITIVE THINKING WINS AGAIN

Let's think positively now. To write good programs, you need good design strategy. What can we do to assist us in program design. Well if you take a look at the essay I wrote in WACCI Issue 56, called Program Design, you will see that I suggested that you write down specifications for your program. I didn't say anything about an Overall Specification at the time. My apologies for this oversight.

This should be your first step. What is an Overall Specification for a program? It's a brief description of your program, giving some detail of the features and functionality. Don't forget that you're going to follow this with detailed specifications for the Input, Output and Functional Specifications. So don't go overboard with the Overall Spec. <<and don't go overboard with the cliches either!>>

WIBNI WINS THROUGH

You may wish to apply a bit of WIBNI during this phase, it's much easier to do so now, to trim back on superfluous requirements when you find the program is going to be more complex than you had planned it to be. But don't waste

too much time on WIBNI though, there's real work to be done. As mentioned previously, after your Overall Spec, write down your Input, Output and Functional Specifications.

You must set down the Specifications precisely to build a firm foundation for the program. Remember, if you make changes to your input spec to have a close look at the other specs to see if there is any impact on them.

ONWARDS AND UPWARDS

Onto the next stage of your program design, producing algorithms for your program. This is where you do your thing, like writing an essay on the same subject, no two programmers will write the same algorithm or program, instruction for instruction exactly.

I get hold of lots of scrap paper, as I expect to be changing my ideas as I go along. I look at the Inputs and Outputs and think, "How do I arrange to process the inputs to give me the outputs?" As a reminder, the algorithm isn't meant to be too detailed.

Think of planning your route to a distant place, as an analogy. For example, you might think of getting on to the Motorway (M49) via the A309, then you'll leave the M49 at exit 9 and so on and so on.

The details of the journey itself, will be coped with as you do it. You are an experienced driver and know all about driving and traffic rules (the tactics.) You also have a local map of your destination, making it easy for you to home in on your friend's home (equivalent to a sub-routine.)

HERE'S THE MAIN POINTS AGAIN

So just write down the main points to cover your overall specification. You can always write a more detailed algorithm for a specific area of your specification (at a later date) if necessary. This brings to mind another general technique known as the salami technique. Chop your complex task into smaller manageable ones. It's often daunting when you view a major task in all its glory, but break it down into slices; work away at each slice, couple them together and before you know it the entire program is completed. Then stand back in pride as you gaze in admiration at your program knowing that you completed that what you thought was an impossible task.

THERE ARE OTHER WAYS!

You may not need to write algorithms. If a program is small and straightforward, you can even skip this stage and go straight on to flow charts.

Again I use lots of scrap paper for drawing flow-charts. By the way, I still haven't got round to using my word processor instead of using scrap paper. Well on to flow charts. You remember our old friends statements, branches and loops? Flowchart boxes are classified in similar fashion.

FLO JO WINS AGAIN!

A flow chart is an intermediate stage between your algorithm and writing code for your program. If your flow chart is drawn up correctly, you could give it to someone else to write the code from it. It is like a blue-print showing what a box does and its role in the overall plan.

A flow chart pictorially represents the way your program passes control from statement to statement (boxes) via branches or through loops. Our minds work much better with pictorial representation than with textual machine code instructions.

FLO JO CHANGES DIRECTION

I will deviate from the standard flow-charting methods of fitting text into piddling little diamond-shaped and rectangular boxes. It used to annoy me no end having to write pidgin English to fit text in a diamond-shaped box. With the text starting off as a word then a few more on the next line and so on increasing in size towards the middle and then reducing to fit the lower half of the diamond. What I propose is this:

A statement will be surrounded by square brackets, EG. [1. Initialise]
A decision branch will be surrounded by angle brackets, EG. < 2. Is the char input a letter "Z"? > with yes/no branches attached.

Actually there isn't a special box for loops (statements and decision boxes are used to create loops.)

Terminators and connectors can be represented by the round brackets.

Slashes can be used for input/output transfers. Vertical bars are used for sub-routines. Rather than drawing boxes, I use lines of text surrounded by the relevant framing character to identify the type of "box".

Each box should be numbered to provide easy identification. Where flow charts spread over several pages, connectors can have both a page number plus box number. A connector is a link between one box of a flow chart to another connector or box so far away that it is impractical to draw a connecting line between them. Small circles are used in standard flow-charting.

WANTED - MORE SPACE

Oh dear, I am running out of space rather quickly, so let me wrap up my article into a neat bundle for you. I've indicated that strategy, as applied to machine code design for small programs, is a blueprint to formulate ideas on how to achieve some objective(s) given certain input(s).

The suck-it-and-see method is to be avoided. Apply constructive steps (the strategy) as follows:

- 1) Write down your specifications, remember that changing your Input spec could impact on your Output and Functional Specs or vice versa.
- 2) Devise the algorithm.
- 3) Draw flowchart(s) to pictorially represent the manner in which you intend to meet the specifications. This is not as easy as it may appear at first sight.

WRITE THAT PROGRAM

From the flow chart you should be able to write your program. Providing you have composed your flowchart well, you shouldn't have any problems writing your program and getting it to work. Finally you just need to think of tests to prove that your program meets the spec and that's it, another job very well done.

OUTRO

Next month I will be applying these steps to a sort program. In the meanwhile perhaps you can have a go at applying these ideas yourself. The program is required to sort a list of numbers in descending order. Use the selection-sort method, pick the larger of two numbers (at a time) and swap them over. Bye for now everyone, have a very happy Christmas and all the very best wishes for 1993.

George Ho-Yaw

VERY BASIC BASIC

Written by
Alan Tilling

Letters to -
Very Basic Basic
65 Lawrence Road
Altringham
Cheshire
WA14 4EL



ALAN CONVERTS THE INNOCENT, BBC BASIC PROGRAMS AND MORE!

HELLO EVERYONE, 'TIS I.

A friend of mine asked me to convert a program from BBC Basic into CPC Basic. If in the future any one tells me Basic is a universal language, I'll scream. That sound statement is a pig, especially if you don't know the syntax of the original dialect. Another keyword I thought I was OK with was RND (RanDom Number.)

RTFM (READ THE FLIPPING MANUAL)

A quick look at the computer handbook and it is all summed up in a few words - or is it? Take a look at figure 1 which is a thinly disguised version of the RND explanation in the handbook.

If you enter the program as it is written in the handbook (page 3/69 in mine) you will get a column of three blocks of numbers. Go on have a go now so you will be able to see what I am regurgitating about.

When I tried it, the results shot by me so fast that it was difficult to comprehend what was happening so I thought I would make it easier to see what was going on. Unfortunately the listing, like Topsy, grewed.

SEEDS

No this isn't gardener's corner, it is just that no computer can give a truly random number. (Come to think of it can a human be truly random. It can be argued that we humans know all the numbers from minus infinity to plus infinity therefore any number is possible but you must be restricted to the numbers in the language you speak.

Come on you filloff err... philosif err clever sods, there must be the bones of a treatise there.) Where was I... computers do a lot of maths and then come up with a number and we assume it is random. It aint! Think about it. If you have a formula, no

matter how long or how complicated, if you always start with the same number you will always get the same answer. This formula takes the answer to the last calculation as its seed for the present calculation. This means that the resultant numbers always follow in the same sequence. The way to change this is to keep changing the 'seed'.

TARGET PRACTICE

My aim was to lay the blocks out in two columns. Then I realised that if a second go was laid out at the side the results could then be compared. This resulted in the program figure 1.

LIST (TO STARBOARD)

The screen colours are set up in line 10. If you don't like these colours, mess around for a bit and choose your own. You'll find out more messing about for a few minutes than in hours of reading. We need a lot of numbers on the screen and so line 20's MODE 2 is mandatory. Let's skip down to 100.

MESSY SEED?

Randomize is the word which allows us to mess up this "seed". 110 is the start of a loop. In fact it is the start of a "nested" loop. It is called that because there is a loop within a loop. The command variable x is going to be reduced by -1 each pass until its value is -1. This means that the

loop will be executed once when x's value is 2, 1, 0 and -1. During each pass the loop comprising of lines 170, 180 and 190 will be made. Ignoring some lines we get to:

```
PRINT "rnd parameter=";x
```

(Ignore, for the moment the #w.) This causes rnd parameter=2 to be displayed first time round. The "n" loop now makes the CPC use the formula, and print out the result, six times. First time using the "x" value then the

```
10 INK 0,14:INK 1,0:BORDER 14
20 MODE 2
30 flag=0
40 w=1
50 WINDOW#0,1,80,20,25
60 WINDOW#1,1,18,1,19
70 WINDOW#2,19,37,1,19
80 WINDOW#3,38,56,1,19
90 WINDOW#4,57,75,1,19
100 RANDOMIZE
110 FOR x=2 TO -1 STEP -1
120 IF flag=0 THEN w=1
130 IF x<1 AND flag=0 THEN w=2
140 IF flag=1 THEN w=3
150 IF x<1 AND flag=1 THEN w=4
160 PRINT#w, "rnd parameter=";x
170 FOR n=1 TO 6
180 PRINT#w, RND(x)
190 NEXT n
200 NEXT x
210 CALL &BB18
220 IF flag=1 THEN 20
230 flag=1
240 GOTO 100
```

fig 1

answer to its sum for each of the next passes. 200 sends Basic back to 110 to decrement x and to start again. That's about all there is to it really. All the parts that have been skipped are to do with getting a clean display.

WINDOW BOXES

We've had the seeds, now this is where are we going to grow them. Well, not really. When Basic needs to communicate with us, it always uses window #0. When you run fig 1 Basic will ask you for a seed - in window number 0, so to stop it messing the main display up line 50 forces all communications from the computer to be restricted to the whole width of the screen from column 1 to column 80 but only in lines 20 to 25.

The actual output that we require will lie in blocks 18 columns wide and 19 lines long so windows 1, 2, 3 and 4 run from 1 to 18, 18 to 37 etc columns wide and all 1 to 19 lines long. Hence lines 60 to 90 set up the windows.

It's not always easy to appreciate the layout of the windows so in line 10 change the term BORDER 14 to BORDER 0 and add 75 PAPER #2,1:CLS #2 and 95 PAPER #4,1:CLS #4. This changes the border and the paper in windows 2 and 4 to black. When you've had a look, go back to the original lines.

WAVE THAT FLAG

In line 30 a variable called flag is set to zero but in 230 it is changed to one. In other words, at the start of the program flag is 0 but after the first run through it is changed to 1.

This makes it easy to know if we are on the first or second iteration. Now in 40 the variable 'w' (for window) is

set to 1. Lines 120 and 160 say, in effect, IF we are on the first run through THEN PRINT in window 1 (#1) rnd parameter=(the value of)x. Let's have a look at the next few lines. 130 IF x<less than 1. Well it isn't.

FLAGGING?

Similarly flag, in 140, isn't 1 and 150 is like 130. What that lot means is that for the value of x of 2 the six RaNDom values of 'n' are printed. The NEXT x at 200 sends Basic back to 110 and x is reduced to 1 and the process repeats with the second set of values underneath the first set.

The next time around, x is less than 1 and so 130 changes the value of x to 2 and so the results are printed in window 2 however, now that x =(-1), 210 causes the program to pause until a key, any key, is pressed.

Flag is still zero and so the test at 220 fails and then flag is raised to 1. (This is after the test so it doesn't matter - yet.) The following command send control back to the randomize statement and the program starts again but this time line 140 and 150 control which window is operative. Eventually the test at 220 sends Basic back to line 20 to clear the screen and start completely again.

RANDOM NUMBERS

Wow, it's taken a long time to get around to the point of the program. When I run the program I get, with a seed value of 1 and a rnd parameter of 2, 0.27194658 and all the rest (in this block) are different.

With a RND parameter value of 1 the numbers in the next block are different but look at the zero block

- they are all repeats of the last one in the "1" block. Now look at the -1 block they are all repeats of the starting figure. This means that positive seeds give differing numbers, zero values repeat the previous ones and negative seeds always give the start value.

Mess around giving different values but you will find that the most useful seeds are positive decimal values.

THE LAZY WAY

It's annoying always having to give the seed value isn't it? Let's delete line 100 and get rid of randomize. Type 100[RTN] to rerun the program.

When you hit the [RTN] key you will get a set of numbers printed out.

Unfortunately they will always be the same so that idea is not much good. Some way of forcing the different numbers is needed.

THE SEEDS OF TIME

There is a way of making the computer give its own seed and always of a different value. Interested?

The command is RANDOMIZE TIME. This automatically presents the value of the internal clock to randomize. It's still not true random numbers but time is at least always changing and so is the seed and so therefore, is the "random" number. Change line 100 to RANDOMIZE TIME, sit back and watch, then you'll see the difference.

WORKERS PLAYTIME

Play about with the program and you'll have some fun but remember, zero will repeat and negative values will give the start value. So until next month; Byeeeeeee for nowwwwwww. Alan.

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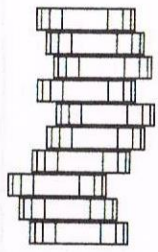
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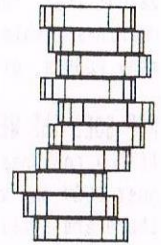
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THE STACK



COLIN TAYLOR DISCUSSES STACKING IN ASSEMBLY LANGUAGE

PART TWO - CONTINUING THE LONG VOYAGE INTO THE "STACK"

After the introduction to the stack in part 1, we're now going where Captain Pugwash - has never before, been

Hello, Good evening and welcome back to the second part in our look at stacks on the Amstrad CPC range of computers - last month I had stacks and stacks of mail, unfortunately it was all from double glazing companies and the like

RETURN THAT CALL!

Both the CALL and RET instructions use the stack. The CALL command PUSHes the address from where the command is in memory. While the RET command does the opposite by POPing the top value off the stack and then RETURNing to it. So the following will RETURN you back to &1000 the original stack address:

```
LD HL,&1000
PUSH HL      ;Store ultimate RETURN address on stack.
CALL pardon  ;Store current value of PC on the stack.
RET          ;Never used....
```

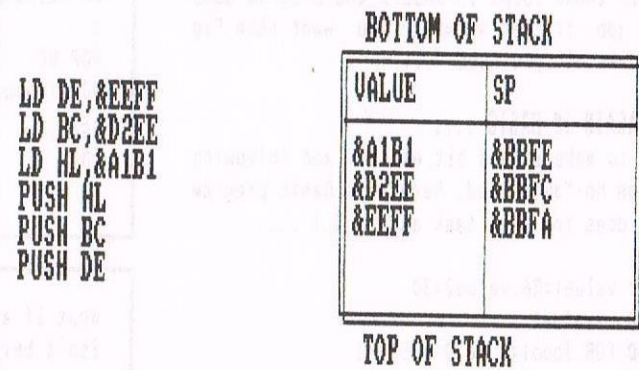
```
.pardon
POP BC       ;Take original CALL value off the stack,
RET         ;and RETURN to &1000!
END
```

It's not possible to leave values PUSHed in a routine that was once CALLED. As the address to RETURN back would be in a lower position on the stack than the other PUSHes. Use a RETURN routine instead, as below.

If you're using the stack within a loop, be careful! It's incredibly easy to get into a muddle causing jam to squirt all over the place. The following tips may help you to avoid these sticky problems:

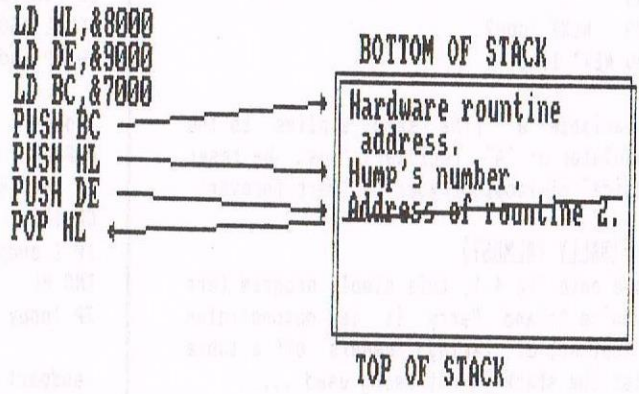
1. If you've ended a loop and still have values on the stack then don't just use the RET instruction to end a loop; as this will cause the computer to RETURN back to the top most value on the stack. Instead use a "return" routine (see page 18.)
2. PUSH the values which hold the current "counter" for that loop as early as possible so to free the register pair. While POPing them off in the last few instructions will help in the same way.

DIAGRAM 1.1



```
LD DE,&EEFF
LD BC,&D2EE
LD HL,&A1B1
PUSH HL
PUSH BC
PUSH DE
```

DIAGRAM 2.1



At this point in the program the stack is in the position on the right.

3. If you have a bug in your program and suspect the stack, then try the following. Print out a listing of the suspect routine, then follow through the program noting down the values stored on the stack (as well as what they are, ie position on screen etc.). It helps if you draw a chart and then use arrows pointing from the appropriate instruction to the value on the chart, as in diagram 2.1.

CHART TOPPERS?

Values that remain on the chart once the routines completed, indicate that there's too many PUSHes, or not enough POPs!

POP GOES THE WEASEL

If the routines POPing too many values then just PUSH the value more than once. Yet if there are still values on the stack when you RETURN then add a "return" routine. Where instead of RETURNing directly you use a JUMP instruction to pass control. Then just restore the stack to it's original position, and once finished, RETURN.

MORE EXAMPLES

As an example, say you want to store the contents of A and B, each of which is being used as a "counter" within it's own loop. These values must be stored and retrieved within those loops to ensure the program does it's job. if that's what you want then Fig 3.1 does all you need

AND AGAIN IN BASIC

Just to make life a bit easier (and following George Ho-Yow's lead, here's a Basic program that does the same task as Fig 3.1

```
10 value1=26:value2=30
20 b=value1
30 FOR loop1=b to 0 STEP -1
40 a=value2
50   FOR loop2=a to 0 STEP -1
55   '
60   'Body of program.
65   '
70   NEXT loop2
80 NEXT loop1
```

The variable "a" (the same applies to the accumulator or "A" register) must be reset "outside" of loop2 or your be there forever!

AND FINALLY (ALMOST)

We are onto Fig 4.1, this simple program (err if you're Roland Perry it is) demonstrates the lost art of taking numbers off a table whilst the stack is not being used

AND FINALLY (DEFINITE)

Well that's about all for this month, I hope that all this has been of use to you, I know that I've enjoyed doing it, in fact I've had stacks and stacks of fun

OUTRO

Talking of people who can't spell you should meet my friend, Fred. Then again looking at him - perhaps you shouldn't

Colin Taylor - September 1992

```
.value1 equ 26
.value2 equ 30
```

```
ORG &4000
LD B,value1
```

```
.loop1
PUSH BC           ;Store value1 on the stack.
LD A,value2
```

```
.loop2
PUSH AF           ;Store value2 on the stack.
```

```
:
:                 ;Body of program, ie display alphabet
:                 ;move sprite, shoot football etc.
```

```
:
POP AF            ;Get value2 of the stack,
CP 0              ; is it zero?
JP nz,loop2      ;No, go back to loop2.
:                ;Yes, continue with rest of program.
```

```
POP BC
DJNZ loop1       ;Disc Jockey Not Zet (German).
```

```
RET
```

```
END
```

Fig 3.1

What if a list of numbers must be taken off a table, while the stack isn't being used? Ponder over this one:

```
ORG &4000
```

```
DI                ;Zap interrupts (They use the stack).
LD (tempstore),SP ;Store current stack value.
LD HL,&5000        ;Place to put data.
LD SP,endofdata   ;The stack goes backwards...
```

```
.loopy
POP AF            ;Get value of data list,
LD (HL),A        ; and put it into the address of HL.
CP &FF           ;End of data list?
JP Z,endpart     ;Yes, then go to endpart.
INC HL           ;No then increase pointer,
JP loopy         ; and go back.
```

```
.endpart
LD HL,(tempstore) ;Put the stack
EX HL,SP         ;pointer back to it's original position.
EI              ;Enable interrupts.
RET             ;Go home.
```

```
.startdata       ;List of data.
dw &FFAA,&EEAA,&DDAA,&CCAA,&BBAA,&FFFF
```

```
.endofdata       ;The end of everything as we know it...
END
```

Fig 4.1

dBASE II dBASE II dBASE II

DBASE II - GOOD, BAD OR UGLY? - JOHN HUDSON SPILLS THE BEANS

dBASE II stores most data in relational tables with the extension .DBF. Like a spreadsheet, a relational table consists of rows and columns. Each row is a record in the database and each column a field. You only ever see this structure in dBASE if you use 'BROWSE'; the direct commands 'DISPLAY', 'EDIT' and 'LIST' allow you to see the information in various other formats while the programming language allows you to create all manner of screens within which to view, amend or print the contents of a file.

PLAYING FIELDS

Unlike a spreadsheet in which a row is limited by the maximum number of columns allowed, a row, or record, in dBASE II is limited to 1000 characters in up to 32 columns (or fields).

A field can be from 1 to 254 characters wide. The theoretical maximum number of rows in dBASE II is 65,535 giving a theoretical maximum file size of 65Mb.

Since CP/M Plus can only handle 8Mb file size (maximum), the number of fields presents the main limitation in dBASE II. I have rarely come near the 32 field limit and it can be worked round by creating two .DBF files and operating them together as if you had 63 fields (one field should be identical for indexing purposes.)

WHAT NO *.BAK FILES

Unlike a spreadsheet and most other programs which 'save' data by deleting any .BAK file, renaming the existing file the .BAK file and then creating a new file containing the latest version, dBASE writes data directly to disc, overwriting the existing data when you make changes.

This means a 178K disc can hold a 178K file and a 720K disc a 720K file. However, unless you have a silicon disc or a hard disc, around 300K is the practical maximum with a 3.5" drive to allow space for sorting.

As this represents 50-70 pages of information in which you can find any record in a matter of seconds, this is still pretty good! However, as this may be your only copy of the data, dBASE always reminds you to make separate back up files of your data

every time you exit the program. (You should always have an 'up to date' backup copy of every important program and of all important data the you use. Then if the worst comes to the worst you'll be able to recreate any lost data easily and efficiently. -Ed.)

FOLLOW THE LEADER?

Just as dBASE was the first program with a page description language, so it was the first to make extensive use of the cacheing techniques now so widespread on PCs.

If you ask to see a record in a file, it loads a few records around the one you are working on into the TPA so that you can move forwards and backwards quickly. Any changes are held at first in the TPA and only written to disc as you move further away from that part of the file when dBASE is loading in new records or when you close the file.

You must never reset the computer or switch off without closing all files so making sure that changes still held in the TPA are written to disc.

CREATING A SIMPLE DATABASE

dBASE II allows three field types, C(haracter) or alphanumeric, L(ogical) and N(umerical). I'll illustrate their use by creating a very small database. Enter at the dot prompt:

```
.create members
```

dBASE bursts into life (very slowly at first it may seem) and helpfully responds with: Enter record structure as follows: Field Name, Type, Width, Decimal places Followed by

the mysterious 001 prompt, which at first (or even first) leaves you more than somewhat baffled.....

Let me briefly explain what is going on, dBASE is prompting you to enter a data field using the format of: the field name, quickly followed by the field type, which in turn is followed by the field size and finally where (and if) applicable the number of decimal places in the field.

And before you ask, the 001 is the prompt that's asking for, yes, you guessed it, field number, 001.

CREATE THOSE FIELDS

If you then enter the following, pressing <RETURN> at the end of each line, dBASE will count the fields for you as you go.

```
MMRSMISS,C,4
INITIALS,C,9
LASTNAME,C,20
DEAR,C,20
ADDRESS1,C,30
ADDRESS2,C,30
ADDRESS3,C,20
POSTTOWN,C,20
POSTCODE,C,8
TELEPHONE,C,13
JUNIOR,L,1
DATEBIRTH,C,8
MEMBERFEE,N,5,2
FEEDUEON,C,8
```

When 015 appears, press <RETURN> and dBASE will respond:

Input data now?

If you reply N, dBASE will close the file; if you reply Y, dBASE will take you to the APPEND screen in which all the fields are listed down the left of the screen for you to input data. When you have completed one screen, dBASE offers you another. When you have finished adding data, you have to press <RETURN> at the start of a new screen - there is no other way of

getting out of append mode. (Well you could use the three finger reset, but, you'll remember from earlier on, you should always exit the program correctly otherwise any changes made and any data entered will be lost.)

MORE ABOUT THE FIELDS

dBASE allows upto 10 characters for a fieldname but recommends, for reasons that will become clear later, that you use only 9 when you are creating a relational table.

In this example, though it is possible to program dBASE to extract initials, I have put 'Mr', 'Mrs', etc., the initials and the person's lastname in separate fields and added a further field 'DEAR' in case you are likely to use the person's first name in letters, notices, etc.

You can have a single address field or have a sequence ADDRESS1, ADDRESS2, etc. I have found a separate field for post town (and county or region in Scotland) is useful anyway whether or not you keep the rest of the address in a single field or a sequence.

I've assumed the club has 'Full' and 'Junior' members and used a logical field to identify the juniors. Logical fields can only hold the values T(rue), F(alse), Y(es) or N(o).

DATEBIRTH and FEEDUEON are character fields which will hold dates. dBASE II does not have separate date fields but as it displays its date as an 8

character string in DD/MM/YY (or MM/DD/YY) format, a character field 8 long is used for all date functions.

HOW OLD?

DATEBIRTH will hold a Junior Member's date of birth; since dBASE can work out age in seconds using date of birth and today's date, there is no point in storing ages as the Government recommends the NHS does! No wonder IT in the NHS costs so much if they are having to pay people to amend all our ages on their computers every year.

I mention this because dBASE comes with a series of facilities to calculate changing data from fixed data; so .DBF files should only have relatively fixed data in them like people's names, addresses dates of birth and fees paid. There is no need for 'Age' or 'Total received' fields since these can be calculated automatically in seconds from the data in the relational tables.

WHAT'S THE POINT OF IT ALL

You will realise if you have used this example, that I ignored the 'Decimal places' in all but the numeric field 'MEMBERFEE'. If I had ignored it in MEMBERFEE, dBASE would have treated it as an integer field with a maximum value of 99,999. The 2 indicates 2 decimal places and because one space is now used by dbase for the decimal point, the maximum value this field

can hold is 99.99. For those of you who are interested in its mathematical capabilities (and for those of you who are not) dBASE offers precision to 10 significant places, use of values from 10 to the minus 63 to 10 to the power of 63 and five operators, addition, subtraction, multiplication, division and brackets to indicate precedence. However, all these operations are usually performed in the memory variables cache, complex arithmetic can be done in seconds.

A FINAL HINT OR TWO

If you entered 'N' at the: 'Input data now?' prompt, you'll need to enter:

```
.use members  
.append
```

to add records. To close a file, enter:

```
.use
```

or, to close all files, enter:

```
.clear
```

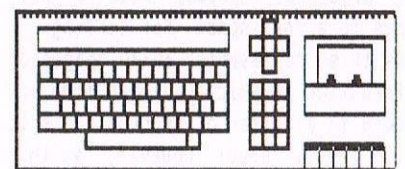
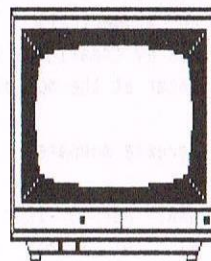
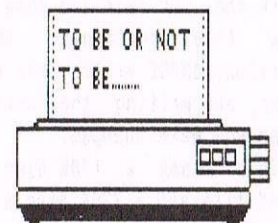
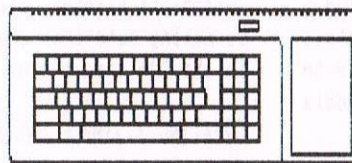
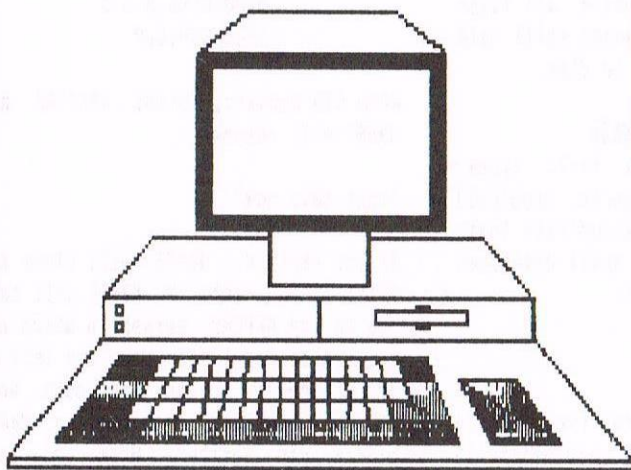
To exit (also closing all files), use

```
.quit
```

Remember to press Return after you've entered the command. Next time I will look at getting data out of a file.

Until then, Merry Christmas. John H

A SELECTION OF MICRODESIGN CLIPART FROM WACCI PD DISC 29



SCREEN PICTURES & 'CLIPART' - ONLY £3.00 PER DISC

HIGHLIGHTS

BY RON IZETT

HIGHLIGHTING FOR QUESTIONS AND DATABASES

INTRO

Not a very awe-inspiring title I must admit but one that points to an area of program writing that has, amongst a whole lot of other things, remained somewhat of a mystery to me and something that is seldom mentioned except in passing in most of the books on Locomotive Basic that have been written. Well, most of the definitive proggies and treatises on and about Basic have been and gone, and our elders (steady on Grandad) and betters have moved on to other things.

So, just for the hell of it, here are a couple of routines that do what I wanted, and if you wanted it too, well aren't you just the lucky one.

PROGRAM ONE

This is just a simple questionnaire type of proggy, such as you would write into a children's program etc. and consists of a series of six questions simply lined down the left-hand side of the screen, with the first question highlighted. Type in the answer and <ENTER> and the highlight moves to the next question and so on. At the end an option to edit appears which allows any question to be corrected by entering "N" until satisfied after which press "Y" to end the program.



Well, it worked for me! As noted, if you expand the number of questions don't forget to set up an array for an\$ AND ed\$ and of course increase the loops accordingly, and the an\$ array can be saved to disc if required.

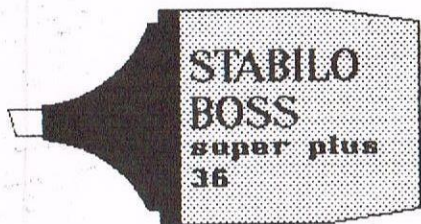
PROGRAM ONE

```
10 MODE 2:INK 0,0:INK 1,20:ln=1:RESTORE 500
15 CALL &887E:REM Turn off the cursor
20 FOR n=1 TO 6:REM Print the Questions
30 READ a$:LOCATE 2,ln:PRINT a$
40 ln=ln+2
50 NEXT
60 ln=1:d=1:RESTORE 500:REM Reprint and highlight the questions in sequence
70 FOR n=1 TO 6
80 READ a$
85 LOCATE 2,ln
90 PRINT CHR$(24);a$;CHR$(24)::INPUT an$(d):REM Load answers(an$1-6)
                                     into array an$(6)
95 REM Remember if the array an$ is greater than 10 DIMension it at the
   start of the program. You will also need to DIM ed$
100 LOCATE 2,ln
110 PRINT a$:REM Overprint the question again to cancel highlight
120 ln=ln+2:d=d+1:REM Set step to next question
130 NEXT
140 LOCATE 2,14:PRINT"CORRECT Y/N?":v$="YN":GOSUB 600:REM Keypress
150 IF kp=1 THEN END:                                     REM Selector
160 IF kp=2 THEN LOCATE 2,14:PRINT SPC(15):GOTO 300: REM Sequence
170 :
180 REM ---- EDITING ROUTINE ----
190 :
300 ln=1:d=1:RESTORE 500
310 FOR n=1 TO 6
320 READ a$
330 LOCATE 2,ln
335 REM Temporary answer store Press <ENTER> if no change is required
340 PRINT CHR$(24);a$;CHR$(24)::INPUT ed$(d)
345 IF ed$(d)="" THEN 350 ELSE an$(d)=ed$(d):REM Load correction to to the
                                     an$ array
350 LOCATE 2,ln
360 PRINT a$:REM Overprint with correct answer:Erase odd chars with spaces
370 ln=ln+2:d=d+1:REM Set step
380 NEXT
390 GOTO 140
400 :
500 DATA Question(1),Question(2),Question(3),Question(4),Question(5),
   Question(6)
550 :REM ----- SINGLE KEYPRESS SELECTOR -----
600 kp=0
610 WHILE kp=0
620 in$=UPPER$(INKEY$)
630 IF in$="" THEN 620
640 kp=INSTR(v$,in$)
650 WEND:RETURN
```


PROGRAM TWO

This one is a little more complicated on account of the variable nature of the display. I haven't included an editing routine on account of not wanting to hog too much space (optimist), but I think the idea in Prog 1 would work.

This produces a facsimile (whew) of the sort of form you fill in on numerous occasions, or for fancy database presentations et al and could be surrounded by a border or whatever takes yer fancy.



THE DETAILS

This produces a series of highlighted boxes into which the relevant information is typed direct, and which limits each entry to the size of the current box. Because the input is dealt with in single characters it unfortunately gives rise to the rather ugly looking concatenation (cor!) in lines 300 thru 340 to produce useable strings to save as data if so required. I couldn't find a better way of doing it but I bet somebody out there knows a man who can. You simply go round and round the loop printing each character in turn, and press <ENTER> when finished. If there are too many for the box you get a "beep" from the computer and are returned to the start of the same box. If you make a mistake, carry on with spaces till it "beeps" then start again.

Line 440 scrubs out the an\$ array and leaves it nice and clean for the next series of inputs.

OUTRO

And that's about it really. I suppose it's all about using the CPC's capacity for picking up data statements from where it left off. This makes using multiple location statements very easy and saves a horrendous amount of, I'll say it again, a horrendous amount of duplication. So, if this was something that was bugging you as it was me, fret no more, Ronnie has got it taped (or should I say disced.) Ron Izett.

PROGRAM TWO

```
10-70 REM Odd lines removed. Part of personal editing routines
80 MODE 2:INK 0,0:INK 1,20
90 DIM an$(22),L$(13),D$(13):REM an$ array set to max box size
100 GOSUB 400:REM Read the labels
110 FOR k=1 TO 12:FOR n=1 TO 3
120 READ a(n):NEXT:REM Read the locating co-ords
130 :
140 LOCATE a(1),a(2):REM Set out labels and highlighted boxes
150 PRINT L$(k); " ";CHR$(24);SPC(a(3));CHR$(24);:NEXT
160 CALL &B87E:q=1:FOR k=1 TO 12:REM Turn off the cursor
170 FOR n=1 TO 3
180 READ a(n):NEXT:REM Read the input co-ords
190 PRINT CHR$(24);
200 LOCATE a(1)-1,a(2)
210 PRINT CHR$(243);:REM Print arrow in current box
215 GOSUB 440:REM Check array an$ is empty
220 p=1
225 WHILE p<>a(3):REM Print characters in sequence in current box
230 an$(p)=INKEY$
240 IF an$(p)=""THEN 230
250 IF p<a(3) AND INKEY(18)=0 THEN 300 ELSE 260:REM Bash ENTER for next box
260 LOCATE a(1)+p,a(2)
270 PRINT an$(p);
280 p=p+1
285 WEND:PRINT CHR$(7);:REM If too many characters return to start of
      current box
290 p=0:GOTO 215
300 A$=an$(1)+an$(2)+an$(3)+an$(4)+an$(5)+an$(6):REM Assemble the answers
310 B$=an$(7)+an$(8)+an$(9)+an$(10)+an$(11)+an$(12):REM and load to
320 C$=an$(13)+an$(14)+an$(15)+an$(16)+an$(17)+an$(18):REM E$ array
330 D$=an$(19)+an$(20)+an$(21)+an$(22)
340 E$(q)=A$+B$+C$+D$:q=q+1
345 GOSUB 440
350 PRINT CHR$(24);
360 LOCATE a(1)-1,a(2):PRINT CHR$(143);:REM Erase arrow in last box
370 p=0
375 NEXT
380 GOTO 380:REM Suppresses Ready message
390 :
400 FOR r=1 TO 12:REM Read the labels
410 READ L$(r)
420 NEXT
430 RETURN
440 FOR n=1 TO 22:an$(n)="" :NEXT:REM Clear out odd characters
450 REM Labels
460 DATA SURNAME,INITIAL(S),AGE,SEX,PHONE,HOUSENAME/NUMBER,STREET/ROAD
470 DATA DISTRICT/PARISH,TOWN/CITY,COUNTY,COUNTRY,POSTCODE
480 REM Layout co-ords
490 DATA 3,3,16,29,3,8,50,3,6,62,3,10,50,5,16
500 DATA 3,7,16,7,9,22,3,11,22,9,13,22,12,15,22
510 DATA 11,17,22,50,17,14
520 REM Input co-ords
530 DATA 12,3,14,41,3,6,55,
534 DATA 3,4,67,3,8,57,5,14,22
535 DATA 7,14,20,9,20,20,11,20,20,13,20
540 DATA 20,15,20,20,17,20,60,17,12
```


HARD COPY

PRINTERS : MIKE LYONS TELLS YOU ALL YOU EVER NEEDED TO KNOW

Wilkommen to what is probably going to be the last waffle on printers, (general), unless anyone out there wants more. <<We do, please, we do, otherwise there will be a couple of blank pages in WACCI -Clive.>> If you want help then please don't he-he-he-hesitate to 'phone at any time of the evening.

TAKE ME TO YOUR READER

As I have said, I use a blank printer driver to clear as much space as possible for any codes I might want to use. I find that a number of the Protext pre-sets are either wasteful or of no use at all. For instance to set NLQ mode PROTEXT has the following long code built in

```
q 27 40 27 120 1
```

My printer can automatically start up in NLQ mode so I don't need this and it just wastes valuable space.

To create a blank printer driver use SetPrint, set up your basic page length, margins etc in the Print Options menu then cancel everything except Sub/Superscript, Bold, Reset, Condensed, Italics and Underline in the control codes section.

Get rid of either the pound sign, (£), or the hash (#) in the Redefined Characters menu - most modern printers can obtain both by a language code, (usually <ESC> "R" n), and save the result off as "BLANK" or some such. This should leave enough room for quite a few codes of your own without risking "Out of Memory" messages.

If, like me, you use both sets of line graphics, (single and double), providing you don't need both in the same line, you can replace old definitions with new ones anywhere in your document, 'on-the-fly', and still use the same symbols on the screen.

FOREIGN CHARACTERS

If you use foreign characters a lot it is probably better to use >oc 27,82,n before your foreign text than [CTRL]f and [CTRL]g, unless you need different language characters in the same line.

I'VE FORGOTTEN MY LINES

To draw 'line graphics' you'll need to include something like the following at the start of a document in Protext.

REDEFINING CHARACTERS

>rc"}" 180	or	>rc"}" 185
>rc"}" 179		>rc"}" 186
>rc"}" 191		>rc"}" 187
>rc"}" 217		>rc"}" 188
>rc"}" 192		>rc"}" 200
>rc"}" 218		>rc"}" 201
>rc"}" 193		>rc"}" 202
>rc"}" 194		>rc"}" 203
>rc"}" 195		>rc"}" 204
>rc"}" 196		>rc"}" 205
>rc"}" 197		>rc"}" 206

Those on the left are for single line graphics, those on the right are for double. There is a further set which is a mix of single and double lines but I never use these.

EVENING STANDARD

You'll be wondering why you need to redefine the characters. After all, they are standardised, aren't they? Oddly enough, no there are not.

We are caught between two standards, take a quick look in both your Amstrad CPC Manual and your own printer Manual at Ascii Code 192 decimal (&CO HEX).

The printer manual will show it as either an italic ampersand 'e' or as the bottom left hand corner of a square, like so \textasciitilde . Whilst the Amstrad CPC manual shows it as a sort of very short diagonal line, which of course, my (and probably your) printer cannot print. Standards, no problem, we have

as many as you need..... Your printer manual will (it should if it's good) have full details of all of its character codes. It is important to remember that any occurrence of these lines needs to be preceded by the code to allow use of the IBM graphics characters if your printer supports them. On my Star the codes are:

27,116,1,27,54 for on

and

27,116,0 for off

The 27,54 switches to the second character set rather than italics. I usually set up a control code to handle these as I use them rather often and to keep using ">oc" is a bit of a nuisance.

ANY PORT IN A TEACUP

If you have either a CPC 464, 664 or a 6128 and you're at all serious about printing out your efforts, an 8-bit printer port is an absolute *must*. You can send high order characters but it's a real pain in the proverbials to keep ferreting about with [ESC] ">" and [ESC] "=", simply from the point of view of all the maths you'll have to do. £30 may seem an awful lot of money, but believe me it's worth it. (If you're the plus owner wipe that greasy smug smirk off your face.)

Not only that, but printing out graphics, except on an Amstrad printer is a real pain too, (but this time we'll have it in the gluteals.) <<I wish I knew what they are, is or were as well. -Clive.>>

Apart from anything (and everything) else it's totally slow. If you are in the habit of writing graphic dumps you have to remember that you can't send codes higher than 127, so you will have to instruct the printer to print each screen line in sections and 24-bit graphics are totally out of the window. <<Screen or house window?>>

AMBIDEXTROUS? NO IT'S A SINGLE MANUAL

One of your most important friends (or is that most impotent fiends?) is the manual which comes with your printer.

If it's a well written-one, (pigs will fly and Peter Ceresole will never believe you), all the information you need about control codes and character numbers can be found easily and quickly and all the instructions will be clear, concise and accurate.

If you find a manual like that throw the printer away and try to get the film rights. Most printer manuals, even today, are poorly translated, grammatically unacceptable, often inaccurate and incomplete tripe.

Epson manuals go miles out of their way to be incomprehensible, as do IBM manuals. IBM also excel at inaccuracy. Canon, it seems, also suffer from inaccurate or incomplete information and poor writing. One very well known companies specialises in a manual that looks good, is accurate but fall apart as soon as you use it.

Star manuals are good. The two Star manuals I have, (User Manuals, not technical manuals), are very readable, quite accurate and concise. They are also, as far as I can tell, written in English. This would be unusual. Most manuals seem to be translated from Swahili via Japanese and Plat Deutsch, (Slang German.) Needless to say, comprehension suffers.

DIPPING ABOUT IN THE DARK

DIP switches frighten a lot of people. They just refuse to go near them. Admittedly, few people will probably need to adjust the factory settings these days as many of their functions are now included either amongst the control codes or from the front panel. However, some functions are *only* available via DIP switches.

DIP switches are those very small inaccessible switches deep inside the bowels of your printer which you have to use a sharp object to manipulate. They can be either ON or OFF. You usually find that it says, (if you can see them), ON at the bottom of the package and this generally means the OFF position. Your manual may tell you about dip switches but, then again, it may not. If it does mention them be *very*, nay *extremely*, careful about the ones which it says to leave alone. Leave them severely alone.

Most DIP switches can only be altered whilst the printer is switched off. In fact it's a very good idea to ensure that the printer is off before you go poking around inside it, especially if you're using a sharp metal object and you're not heavily insured.

If your printer has electronic DIP switches these have to be changed when the printer is switched on, but they are much more useful and available. (No sharp objects to disappear into the printer and produce nasty sparks.) Sorry to keep boasting, but I can set about 20 different options, all from the front panel. It's wonderful. Many common functions which can be set by DIP switches include:

COMMON DIP SWITCH FUNCTIONS

Emulation	Epson/IBM chars
Line Feeds ...	With/without a <CR>
Paper Out	Detector ON/OFF
Font	Default font when first switched on
Char Set	IBM graphics, IBM Code page, italics
Page Length ..	66, 70 or 72 lines

My present printer also supports an Auto Sheet Feeder, Multi-part forms, two different printing areas, four automatically selectable page lengths a choice of eight start up languages, eight IBM code pages and any of 16 fonts and four character pitches. <<A choice of tea or coffee, with or without either milk or sugar and two choice of daily paper.>>

CATS AND PRINTERS

Printers get warm if you leave them on, cats like the warmth, Clive's cat will sleep on top of the printer if given half a chance always check for cats before you start printing.

WHAT TO TALK ABOUT NOW?

Take a look back at last month's (well the month before last month) article. Specifically at the place where I included a printout of the complete

character set. Got it? Great, magic, smashin', champion. However, I must now own up, I cheated outrageously. <<Shock, Horror, Probe. Questions in the House! - Where's the coffee mum?>>

The last box, with the IBM second character set in it was not printed using defined characters. If you think about it, it makes sense. To redefine all 127 of those characters would have used up a hell of a lot of memory and time. How did I do it? I used ">oc" from Protex. Apart from the top and bottom lines, every other character in that box, plus spaces was entered using ">oc". Why? Because it was the *easiest and simplest* thing to do. What better reason is there?

A MATTER OF PERSONAL TASTE

It makes sense to get the best printer available in your price range. But, having got the printer it's never a good idea to use everything all at once. It's a common complaint about certain magazines that they dazzle the eye with too many fonts, pitch sizes and type styles. If you've got colour as well then this makes it even easier to make your audience throw up.

It is nice to have many options available, but a little common sense should always be applied (not to mention finesse.) Too many fonts etc. means an amateurish look to everything you print. Your *nice* bank manager will not be impressed when you ask for a loan and present him with a begging letter which is a riot of conflicting typestyles and colours. Unless he's one of the 'new-wave' sort, he'll probably throw you out on your ear.

Stick to one basic typeface for each letter, book or whatever it is. Use alternative typefaces for emphasis, or headers, where appropriate. The block graphic characters can be useful for tarding up tables and highlighting headers, (that's a beautiful bit of alliteration there don't you think?), but avoid excess.

If you're ever stuck on how to do something use the manual, (a technique which is otherwise known as RTFM.) If that won't work try one of the help-liners. Above all, *be patient*. If that won't work try again, or try me!

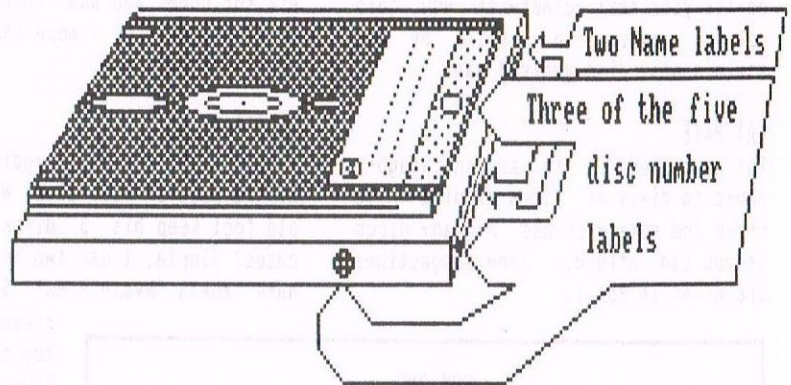
Whatever happens, if things look really bad, just wave your bits at the world and you'll feel quite an idiot. I'm Mike. If you've a problem, fly me.

DIS[C]ORGANISED

BOB MOFFATT PUTS THE WHIRLED TO WRIGHTS

Would you organise your 3.5" discs using the advice of a man who can't stack two Lego bricks neatly? No? Neither would I. Move to the next article please.

Lots of CPC users are exploring the benefits of the large format 3.5" discs and the associated disc operating systems such as RAMDOS or ROMDOS. WACCI has featured articles on both the hardware and the software, but so far we don't seem to have looked at simple advice on how best to organise a collection of discs and what utilities to use. I intend to outline some hints to help keep your disc collection organised. We'll start with 3" discs and a single disc drive and work up from there.



WAR STORIES

When I first moved from a ZX 81 to a CPC 664 I was amazed at the size of storage available on disc and the speed with which it could be accessed. I was also horrified by the cost of 3" discs and, having bought one, reserved one side for my own use and donated the other side to my four children.

Each child had his own User area. In those days the CPC was used on a shift basis with children having computer time in the wee small hours. It took two days for a riotous assembly to be formed. I dashed out for another (very expensive) pack of five discs.

LESSON ONE

With 3" discs the User facility is of limited use. A 3" disc can hold a maximum of 64 directory entries, after that you'll see a 'Directory Full' message. It doesn't matter how many User areas you spread the 64 files across, you'll still get the 'Full' message when you try to save file number 65. In mode 2 you can see the 64 entries without the screen scrolling, so why use the User areas? I will try to remember to answer that a little later on.

CHILD ABUSE

In the wee small hours of the morning I was woken by an anguished child. His disc was full and he had a long program needed to save. "The new discs are in the bureau." I grunted, rolling over. Minutes later I was woken again with a further tale of woe.

LESSON TWO

Unformatted discs rank alongside magnesium fireguards as one of life's most useless and dangerous artifacts. As soon as you get your new discs home format them and, if you are really brave, number them.

FAMOUS FIVE

Five discs don't take a lot of organising so you might as well number them from 1 to 5 and use them in numerical order. *Wrong.* The sooner you lay down a plan for numbering, naming and using your discs in a logical fashion the better.

Your disc collection will grow and one day you will find that only a major act of bravery will rescue your system from total collapse. Your plan should be simple and neat and where possible it should (or must) prevent

the possibility of two discs ending up with the same (or similar) numbers or names. Everyone uses his computer for different purposes so I cannot dictate how to categorise your discs.

LESSON THREE

The number of categories should be small and they should be easily remembered. I use those three, Games, Word Processing and Other.

This was a lucky number as we'll see. Dash out and buy five packs of Blick self-adhesive labels from your local photography shop. You want the small, coloured, circular ones with numbers on them.

Each pack contains the numbers 1 to 160 in each of three colours, red, blue and green. I assigned Green to (G)ames, Red to wo(R)d p(R)rocessing and blue to Other.

Why five packs of labels? You'll want two on the disc (one for each side) and three for the case (On the top and two side edges.) The stickers should be placed at the very bottom of the disc label so that the number can be read when the disc is ejected from the drive without fully removing it.

PROSE AND CONNS

What are the real advantages of this numbering scheme? Well, each side of each disc is now uniquely identified, eg Red 21a, Red 21b.

You cannot duplicate the numbering because you are controlled by the numbers remaining in your pack of sticky labels. You can easily find any disc and its case, even when scattered across the work surface.

Your discs are always scattered across your desk otherwise you would not be reading an article by the world's most disorganised man.

CAT PATE

The next step is to assign category names to discs or sides of discs. Be brave and spread across as many discs as you can afford. Some suggestions are given in Box 1.

BOX ONE

Blue 1a - Utilities - Amsdos	Green 1a - Roland
Blue 1b - Utilities - CPM	Green 1b - Unassigned
Blue 2a - Masterfile - Serious	Red 1a - Protext Boots
Blue 2b - Masterfile - Leisure	Red 1b - Dictionary
Blue 3a - Scratch Pad	Red 2a - Home, Services
Blue 3b - Buffer	Red 2b - Home, Money

Some suggestions for disc names and categories

A BLUE JOKE

I like to have a disc (I've called it Blue 3) which I keep empty (ha, ha!). I use this disc to store files which haven't got a home yet. This buffer or temporary disc is used for grouping files together before opening a new disc, not much use with one disc drive but it becomes essential when we move on to a 3" + 3.5" disc set-up.

CATS & SQUIRRELS

"Hold on!", I hear you cry, "three categories are not enough for my wide range of interests." All is not lost.

The most ardent data squirrel is unlikely to amass ninety nine 3" word processing discs before expanding to 3.5" discs (think of the massive cost for a start). Labels with three digit numbers (100 - 160) can be assigned to another category. For example I use Blue 100 onwards for DTP and Red 100 etc for Comms and BBs. There's a total of six categories - more than that and you're on your own.

HORSES AS WELL

I know there's been a nagging question at the back of your mind. Why does the old fool keep his 3" discs in plastic cases? Simple, I use two self-adhesive name labels (Ryman's Ref 535 White at

present) on the top of the case (one label per side.) Discs are to slim too use a self-adhesive label on the bottom edge.

Because they pull off as you remove the disc from the drive and you can't really write on

the edge of the permanent disc label because apart from being too shiny it soon becomes greasy and worn.

WHERE'S YOU BIN?

In addition some years ago I was lucky enough to find some coloured plastic 'spare parts bins' - the things you see in workshops filled with nuts and bolts. You don't have to believe they

were coloured red, blue and green and were 88mm wide but they were. Twelve cased discs fit perfectly in each bin.

LASHINGS OF THYME

By now I suppose you will have worked out that I don't believe in either printing lists of disc contents or creating a data base of them. I have tried both systems but it requires far more discipline and time than I have. The contents of my discs change too rapidly, because of additions, to make it a practical proposition.

SOLE MATES

What are the best disc organising utilities for the single (or married even) 3" disc drive user?

I honestly don't know. I have not tried many utilities because I'm not a professional reviewer. If you buy your own software you tend to like the cheapest program you have found which nearly meets all your needs.

What do I mean by disc organising utilities? That depends on the way you have organised your discs in the first place. As far as I'm concerned a good disc organising utility allows you to:

- Format a disc.
- See what is on a disc.
- Delete files.
- Copy files.
- Rename files.
- Group files for mass operations.
- Verify copies.

OUTRO

I'm sorry to have to say that I've run out of room (for this month.) Don't panic, there'll be a lot more on this gripping subject next month. Goodbye and please, "Have a good Christmas and a very merry New Year". Bob Moffatt.

FOR SALE - NEW COLOUR AND GREEN SCREEN MONITORS - FOR SALE

Oasis Computer Systems have a in stock a complete range of 464, 664 and 6128 colour and green screen monitors.

For many years we've been told that we could not buy a monitor, unless we purchased a complete computer system.

This is no longer the case, Oasis Computer systems have purchased a bulk lot of new monitors from Amstrad and

are ready and willing to supply them to club members, at reasonable prices.

If you don't want to pay the post and packing charge, give R Chillard at Oasis a ring, he attends most of the All Formats Fairs and he will bring a monitor along to a local fair, ready for you to collect in person. Oasis attend many of the Computer Fairs so

the best time to ring is the middle of the week, during the early evening.

Colour Monitors £69 + £8 p&p.
Green Monitors £12 + £6 p&p.

Oasis Computer Systems
6 Bridgewater Road, Sully, South Glam.
Tel 0222 5312710 Fax 0222 531270

WACCI

JANUARY 1988

REVISITED

THE TEN BASIC COMMANDMENTS OF ALASTAIR SCOTT

Five score and ten years ago, well five anyway, Alastair Scott produced his definitive list of Basic speed ups. Alastair felt that, despite what machine code buffs say, it is possible to write Basic arcade games of a decent standard. All you need is speed. Take it away Alastair....

INTRO

The following small program is a test routine which repeats an operation (placed between lines 30 and 40) one thousand times and tells you how long it took. I am going to insert various program lines inside the FOR-NEXT loop to show you how you can cut seconds off program execution times.

TEST PROGRAM

```
10 DEFINT a-s,u-z
20 ti=TIME
30 FOR a=1 TO 1000
40 NEXT
50 PRINT ROUND(TIME-ti/300,2);"SECS"
```

1. AVOID STRINGS

Strings are messy things. Unlike numbers, they do not have a fixed length and are slower to deal with.

```
31 IF INKEY(69) THEN c=1
32 IF INKEY(54) THEN c=2 3.46 SECS
```

```
31 b$=INKEY$
32 IF b$="A" THEN c=1
33 IF b$="B" THEN c=2 4.38 SECS
```

2. UNNECESSARY GARBAGE COLLECTION

The 664 and 6128 had improvements made to the Basic Rom so that there was no chance of suddenly running out of memory if you were using strings. Delete all FRE("") references if you have Basic 1.1.

```
35 a$="**" 1.33 SECS
```

```
35 a$="**":z=FRE("") 4.78 SECS
```

3. AVOID ARRAYS

If your program contains tiny arrays with only 2 or 3 elements, it's much faster to use separate variables.

```
35 z=a1+a2 2.63 SECS
```

```
35 z=a(1)+a(2) 3.24 SECS
```

4. USE DEGREES INSTEAD OF RADIANS

Arnold is the only home computer who allows you to use degrees and radians for angular measurement equally easily but degrees are quicker.

```
15 DEG
35 t=COS(45) 9.37 SECS
```

```
15 RAD
35 t=COS(45) 11.83 SECS
```

5. AVOID MATHS FUNCTIONS (SIN ETC.)

Repeated calculations of this sort take ages. If you know about Taylor or Maclaurin series, use them instead, even two or three terms can give excellent results. Also avoid the power ("^") operator; use repeated multiplication.

```
35 t=0.5 1.11 SECS
```

```
35 t=COS(PI/6) 17.85 SECS
```

6. USE INTEGERS

As an integer takes up only two bytes of memory, against five bytes for a real number, so it takes less time to knock fewer bytes into shape.

```
10 DEFINT a-s,u-z 0.47 SECS
```

```
10 DEFREAL a-z 1.11 SECS
```

7. AVOID EXCESS BRACKETS

A common error (you see it in almost every program) is to use far too many pairs of brackets. They waste time. Remember the order of preference and save time: () * / + -

```
35 z=3*2*5*7 2.80 SECS
```

```
35 z=(3*2)*(5*7) 3.29 SECS
```

8. USE LOTS OF CONSTANTS

Calculate as little as possible inside loops. Use plenty of constants instead. Integers are the best.

```
15 t=SQR(2)
35 z=t*a 3.75 SECS
```

```
35 z=SQR(2)*a 16.99 SECS
```

9. FOR-NEXT INSTEAD OF WHILE-WEND

Apologies to structured programming fanatics but FOR-NEXT loops are much faster, although they don't look as pretty.

```
30 FOR a=1 TO 1000
40 NEXT 0.47 SECS
```

```
30 WHILE a<1000
35 a=a+1
40 WEND 2.43 SECS
```

10. BE LOGICAL

Get rid of multiple statements by using logic instead. Say goodbye to IF-THEN-ELSE.

```
35 z=1-(RND>.5) 3.96 SECS
```

```
35 z=1:IF RND>.5 THEN z=2 4.16 SECS
```

11. ERMmmm...THERE IS NO ELEVEN

Finally, remove all excess spaces and REM statements, and compress variable names. A toute vitesse!

Alastair (PK4) Scott.

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13 London Sandown Park, Esher, Surrey J9/10 M25
14 West Midlands National Motorcycle Museum J6 M42
20 North West Haydock Park Racecourse J23 M6
21 Scotland City Hall, Candleriggs, Glasgow
27 Hemel H/stead Dacorum Pavilion, The Marlowes
28 West Brunel Centre, Templemeads, Bristol
- March 6 Leicester De Montfort Hall, Granville Road
7 North Univ. Sports Centre, Calverley St., Leeds
20 London Sandown Park, Esher, Surrey J9/10 M25
21 West Midlands National Motorcycle Museum J6 M42
27 North West Haydock Park Racecourse J23 M6
- April 3 Edinburgh Appleton Tower, George Square
4 Scotland City Hall, Candleriggs, Glasgow
17 Nottingham Jesse Boot Centre, University
18 West Midlands National Motorcycle Museum J6 M42
24 London Sandown Park, Esher, Surrey J9/10 M25
25 West Brunel Centre, Templemeads, Bristol
- May 1 North East Northumbria Centre, Washington, Dist. 12
22 London Sandown Park, Esher, Surrey J9/10 M25
29 Leicester De Montfort Hall, Granville Road

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All Fairs 10 a.m. - 4 p.m. unless stated above