

Gerald's Column *by Gerald Fitton*

This month I am in an introspective mood; I shall consider something from the present, more from the past and only a little peek into the future.

Fireworkz and DataPower

Over the last month or so I have received about a dozen letters from registered users of Fireworkz advising me that they have received a circular from Iota, the authors of DataPower. Because I received my copy of Fireworkz from Colton Software without it being registered I have not received a copy of that letter. The letter is addressed personally and offers a 25% discount on the the DataPower 1 database system with a free upgrade to DataPower 2 when it is ready. In other words, those who are registered users of Fireworkz can get DataPower 2 at a 25% discount on the price of DataPower 1. The question asked by Roger Morris amongst others is is “Would Colton like to see (Fireworkz users) migrate to DataPower?”

The first technical point you should be made aware of is that when Mark Colton decided to add a database, Recordz, to the Wordz and Resultz suite he decided to take a short cut and licence the use the DataPower 1 ‘engine’ to drive it. In my view, and that of many of my correspondents, this was a serious mistake. The database section of Fireworkz Pro has caused more heartache and expenditure than it has been worth. It has always appeared to be ‘bolted on’ rather than integrated with the rest of the suite and has been bug ridden from the start. Stuart Swales of Colton Software tells me that Iota acquired the list of registered uses of Fireworkz more than a year ago – it would seem that they did nothing with it at the time deciding to wait for the release of DataPower 2 so, if you didn’t receive your letter, it might be that you wern’t registered at the time Iota acquired the list.

This brings me to my second technical point. The one mitigating feature of Recordz is that you can import and export database data to and from DataPower 1. Over the last few years, since the launch of Recordz, I have received letters which indicate that there are many people who have both Fireworkz Pro (which contains Recordz) and DataPower 1. These people port data to and from Fireworkz’ spreadsheet format from and to DataPower’s database package and they use DataPower 1 rather than Recordz for their database work. In general they recommend strongly this combination as a way of overcoming the deficiencies of Recordz. I have taken them at their word and passed on their recommendation to those of my correspondents who have come to grief with the database part of Fireworkz Pro. The only thing which can be said against buying both Fireworkz Pro and DataPower 1 is that the purchase of DataPower 1 was an expense which, to put it mildly, most purchasers of Fireworkz Pro did not foresee.

Now to my third technical point, indeed, for many it may be a knock out blow. Fireworkz Pro uses the DataPower 1 engine. Stuart Swales has told me that Recordz will not be developed to accommodate the DataPower 2 engine. This means that, although you will still be able to export from Fireworkz Pro to DataPower 2, you will not be able to import back into Fireworkz Pro those database files from DataPower 2 which use DataPower 2 features.

Roger, I know I haven’t answered your question; that’s because I don’t know the answer. I

suspect that those in charge of the future of Colton Software don't have an answer either! Using an ancient ploy originally attributed to an ancient Greek but now considered to be an interesting Jewish tactic, let me answer Roger's question with a question. Does what Colton Software would "like to see" really matter to users? I suggest that Roger and others who have asked this question have asked the wrong question. A better question might be "What future support will Colton Software give to users of its products?" I don't know the answer to that one either!

Computer Concepts

I know many people who read the body text of an article but never read the headings of each section. Sometimes they miss a subtle nuance by that omission. Let me test you. Without asking for it, I have received an upgrade to version 2.45 of Ovation Pro.

I believe that Ovation will continue to be supported by Beebug for a long time to come. Furthermore, if you want to discuss the software and receive the advice and support of other users on the internet you can do so by sending an email to maillist@risc.demon.co.uk with the subject line SIGNON OVATIONP-L.

You can also access <http://www.beebug.com> for free applets and resources.

Colton Software have a web site; try <http://www.prot.demon.co.uk/coltsoft>.

The End or a New Beginning

By the time you read this I shall be a lecturer at Swindon College no longer. My future is uncertain and hence it could be quite exciting – or traumatic. After next week I shall never be responsible for the education and welfare of students again; it is this fact which is leading me to introspection.

It is an understatement to say that my feelings are mixed. Leaving aside a few temporary jobs such as Static Guard (night watchman) with Securicor which I have taken during periods of my life which actors would describe as 'resting', I have worked for three employers since leaving university. It was always my wish to do 'great things'. For me employment has been a way of having access to and control over massive resources far beyond those which my own finances would have allowed. I have used and sometimes abused things, money and people in the pursuit of my own ideas and ideals.

Computers were one of those resources; please allow me to reminisce.

The Square Root of Two

It was in October 1951 that I was first introduced to a programmable computer. In the late forties and early fifties Lyle Street, near Leicester Square, was famous for two reasons. One was what I shall euphemistically call 'Ladies of the Night' (who also 'worked' during the day), the other was that it contained a cluster of War Surplus shops specialising in electronic equipment. The Professor in charge of Numerical Methods at Imperial College took his grant along to Lyle Street and, in the eyes of some of his colleagues, somewhat

frivolously spent it on a couple of tons of post office relays. With these relays he and his research students built an electro mechanical computer. The computer was designed to use a four bit word, each word represented either a binary coded decimal digit or one of about sixteen simple instructions.

During my studies in Numerical Methods my first project was to design and run a programme which would calculate the square root of two to as many decimal places as the memory of the computer would allow; I think it was about nineteen places. At school I was taught how to extract square roots using integer arithmetic (see earlier Gerald's Column articles for an explanation of integer arithmetic) with the aid of the identity shown below: (Note to Paul: In the identity below the equals sign has been replaced by one consisting of three, instead of two, horizontal lines I have selected it from the MathsGreek font – identities use this identity symbol rather than the equals symbol)

$$(x + y) ^ 2 \equiv x^2 + 2*x*y + y^2$$

Your mission, should you choose to accept it, is to port the algorithm which I used so that it runs on a spreadsheet or in BASIC. Let me make clear that this integer arithmetic method is not one of continuously improved 'try it and see' approximations. In the identity above, x represents the solution so far and y the next significant decimal digit. The traditional layout looks a little like a long division sum but the divisor continuously changes as digits are added to the answer. The divisor is double the answer as far as you've got. By this I mean that the divisor is $2x$ and the answer so far is x . You place your best guess at the next digit, y , in the next significant position in the answer, square it (to get y^2), add to it $y * 2x$ (calculated as you might when doing long division) and subtract this from the remainder left over from the previous calculation. For those of you who want to attempt this task I must add that instead of bringing down one digit from the numerator you bring down two digits at a time. I had thought of including a drawfile showing a part calculation but when I considered who might be taking up this challenge of converting the algorithm to a spreadsheet or BASIC I decided that you should investigate possible layouts for yourselves.

This algorithm uses integer arithmetic so the answer is exact as far as it goes. My first programme had to be written in pure machine code in a language which had less than sixteen instructions. Each new digit of the answer appeared in binary coded decimal as a block of four indicator lights on the computer display panel. As each digit lit up in sequence (not LEDs but torch bulbs) the Professor and I had ample time to confirm that it was correct before the next one appeared!

Football Pools

About a year later my next major project on the college computer was to attempt to forecast the results of football matches. We rejected the treble chance in favour of forecasting three draws. A little known bookmaker called William Hill was offering odds of 50 – 1 on the selection of three draws; the minimum stake on each line was a shilling (5p). I decided that the distribution of goals scored by home and away teams was one described by a bi-variate Poisson distribution with the two means being the average number of goals scored per match by the home and away teams.

I had calculated that at odds greater than 45 – 1 we could make a slight profit by selecting

those matches with the greatest probability of a draw. We had a small syndicate which included the Professor and many of the students from my year. It made a small profit over the 1952 – 3 season. The profit to me personally for the season was equal to a month of my student grant.

You may like to have a look at the bi-variate Poisson distribution and see how such a problem might be programmed using a more modern package such as a spreadsheet with custom functions. Last year, with my statistics students and using Excel, I have been able to show that the distribution of home wins, draws, no score draws and away wins accurately mirrors the frequencies which you would get using a bi-variate Poisson. A Chi-squared test shows above 99% level of significance for a season's matches.

Horse Racing

Sadly, William Hill changed the odds for the 1953 – 4 season to 40 – 1 so we abandoned the project and looked at horse racing. I will mention the conclusion of my horse racing analysis using the college computer only briefly. In those days it was a good bet to bet that the second favourite (the horse with the second shortest odds) would be placed in the first three. We refined the analysis and discovered that a place bet on the second favourite was a good one only if there were less than eight horses in the race. In other words bet for a place only on the second favourite in an eight or less horse race. I notice that the rules about place bets now are different so that this system will no longer work.

Incidentally, I have still had no explanation from anyone as to why I have no wish to support the National Lottery and its Charities whilst not feeling the same way about Premium Bonds. However I have had many letters expressing most interesting views about the morality of Gambling, the dubious nature of the 'Good Causes' of the National Lottery and the Statistics of many and various gambling systems.

Gerald's Rules of Gambling

I've been asked to repeat the first two which have been mentioned previously in Archive.

The first is "Never bet on certainties". I have mentioned conditional probabilities before and I will deal further with this subject in the future. At that time I shall introduce you to matrix multiplication on a spreadsheet sometime. For now let me remind you that the probability of any future event having a particular outcome depends on how much you know already. Different people have different amounts of knowledge – a police helicopter has much more knowledge about the probability of a car accident on a particular blind bend in the road than any driver approaching the corner. There is no such thing as an absolute value for the probability of any particular outcome for a future event. Beware of those who are violently agnostic or fanatically religious.

The second is "Never bet what you can't afford to lose". This leads to the spreadsheet analysis of expected values by matrix arithmetic. For now let me point out to you that if you do not insure your favourite camera against accidental damage you are betting the cost of the repair that you won't have an accident. In gambling parlance the chances of you not having such an accident are very short, indeed it is odds on that you won't have an accident. But what if you do? Can you afford to pay up your gambling debt and get the

camera repaired. If you can you afford the premium for good insurance but not the cost of repair then pay the premium even if it is a rip off! Can you afford the risk of eternal damnation when the premium is something which you can afford?

At Vickers

After leaving University I made things such as aeroplanes – which worked. When the prototype of the first aeroplane which I had helped to design flew on its maiden flight the 5000 men and women who worked there were encouraged, nay, instructed, to go outside to see it. I felt enormous pride in the achievement of my design team when the whole works cheered the prototype's fly past.

As I have said before, in the early days calculations were executed by girls called computers, one of which became my wife, Jill. Then in the early 1960s we did our sums on a new fangled thing called a computer. The computer was full of thermionic valves and was located in London near the Post Office (now British Telecom) tower. It was connected to many terminals for many different customers; it employed Time Sharing protocols. The terminal I used was at Vickers' South Marston Works (near Swindon) about 85 miles from London.

The terminal looked rather like a teleprinter. The language used by the computer was Fortran. The programme was written off line using a teleprinter and stored on paper tape punched with rows of eight holes. This programme and data was sent down a telephone line via a modem; the answers were printed out at the teleprinter terminal.

Solitaire

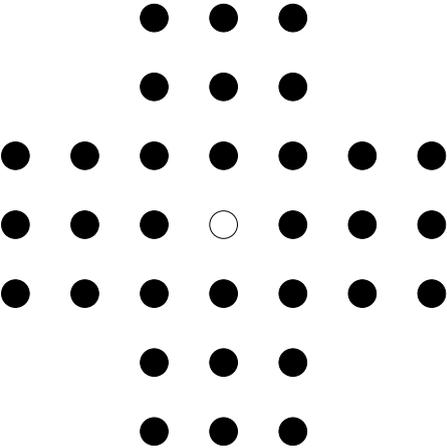
There were many customs and practices in those days which may seem strange now that companies are run by accountants rather than engineers. It was accepted by companies' managements that each design team should have its recreational project. At Vickers these were called 'rabbits' and generally they were feats of engineering which would command respect alongside those of the former TV Show, The Great Egg Race, hosted by Professor Heinz Woolfe. With hindsight I can see that these rabbits developed what nouveau managers and educationalists now call Problem Solving Skills and Team Development Skills and that the company's management exhibited great wisdom in turning a blind eye to this 'waste' of company resources.

Generally the cost of a rabbit was only a small fraction of the cost of running a design team; nevertheless my younger readers may be surprised to learn that when commandeering resources from another manager, a rabbit always had the highest of priorities even over and above the most irate customer's needs.

Rather than something traditional which involved engineering hardware I decided that my team's rabbit for the year would be to find all the solutions to the popular Solitaire puzzle using the remote time share computer. For those of you who think that Solitaire is a game of cards for one person I reproduce below a drawfile showing the starting position of a Solitaire game. The black dots represent pegs in a peg board and you start with one hole without a peg in the middle of the board. The rules of the game are rather like draughts (or the American checkers). Every move must be one in which you jump over a peg with

another peg and then remove the jumped over peg from the board. The objective is to remove all but one peg from the board and that the remaining peg must finish in the centre of the board. A reasonably clever person can find a repeatable solution in a few hours.

My team never found the definitive answer to the puzzle but we did find a few near solutions with about four pegs left. Your mission, should you wish to accept it, is to solve the Solitaire Puzzle using a more modern package.



For Later

If I receive enough encouragement then I shall continue with this introspective view of my use and misuse of computers and other company resources during my lifetime of work another day. I have other topics I wish to deal with this month.

Truth, Justice and What?

In one of my Archive articles I mentioned that in my early life I searched after Truth. I always saw the colour of Truth as cornflower blue. Later I replaced that ideal with Justice in the pursuit of which I have perjured myself when I have felt it necessary. Justice is coloured gold but sometimes it is tinged with cornflower blue or royal purple. I also said that I now pursue an ideal which I rank higher than Truth and Justice but didn't say what it was. In many letters I have been asked what that is but I have avoided answering the question. Let me do so now. Its colour changes in subtle ways from pastel to fluorescent but always grows stronger with time. When at its strongest it shines so brightly that all sense of shade is lost.

Words which are in current English usage do not adequately describe this ideal so I will use a word to describe it from the King James version of the Bible with the meaning that it had at that time. The word is Charity. In current use the word Charity has been devalued so that it implies giving goods, money or time, in what is, perhaps, a patronising way. In more modern versions of the Bible a word which has been devalued even more is used instead of Charity – so I won't use it. Perhaps the nearest expression in current English to the ideal which I try to pursue is to be kind of heart and, when set backs arise, to be long suffering and not give up those Charitable objectives too easily.

For those of you who wish to explore the meaning of this concept further I would recommend to you firstly the words of Saint Paul's letter, 1 Corinthians chapter 13, which gives a detailed definition of the Charitableness which I try to practice; it includes "Charity suffereth long and is kind" and, contrary to the current usage of the word Charity, it specifically excludes bestowing "all my goods to feed the poor".

Secondly a book first serialised in The Cornhill Magazine in 1862 written by George Eliot (1819–80). She wrote of her book "There is no book of mine about which I more thoroughly feel that I could swear by every sentence as having been written with my best blood." The book is called Romola; Romola is the heroine. If you wish to explore what George Eliot and I mean by being kind of heart, long suffering and what it is to experience the joy, rather than happiness, which it brings, then I recommend it to you as did my father to me when I asked him a question about the nature of happiness fifty years ago.

E-mail

Thanks for all the email I've received. My thanks to Paul again for the retirement present which has made this possible and to all of you who have written to welcome me to this new means of communication.

I am available as gerald@abacusline.demon.co.uk. Receiving mail is going well but I am having a few teething problems with sending mail. I think I've got over them now.

<http://www.abacusline.demon.co.uk>

As I write I have not uploaded anything to this web site but I have received many suggestions and helpful instructions. I would like particularly to mention Jack Laverack in this regard. Let me repeat, if you have any ideas how we can use this 5 Mb to our mutual advantage then I shall be most pleased to hear from you.

In the meantime: (a) Please send a disc, self addressed label and return postage if you want a problem solved—don't try to append a file to an e-mail without full instructions (my thanks to Roger King for his excellent instructions) because otherwise I think I won't be able to unravel it; (b) My snail mail and e-mail address is that of Abacus Training (see back inside cover); (c) Many thanks for all your letters.