Forth Interest Group UK

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Inside front cover
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September
2003

Issue 122

Editorial

As indicated in the last issue, Chris Jakeman is taking a break from editing Forthwrite while he looks for a new job. I'm sure you will all join me in wishing him good luck. In the meantime I will be keeping the editor's seat warm for him as well as looking after the library. Chris is more than editor: he is newshound and chief feature writer - a position I cannot start to emulate, so please send in your contributions.

With this issue we welcome new members Gary Cattley from Essex, Patrick Clayton from West Sussex, Antonio Di Maria from Birmingham, P Honour from Oxfordshire, Alex McDonald from East Lothian and Wolf Wejgaard, author of Holon Forth, from Switzerland.

I apologize for the lateness and thinness of the issue. It has been harder to get to grips with the technical aspects of editing than expected, which has left little time to prepare articles for publication. Let's make up for it in issue 123, so do send in those articles! Post or email them in to the editor by October 31st please.

PS. Don't forget the monthly IRC session. Our next one is Saturday 4th October on the IRC server called "IRCNet", channel #FIGUK from 9:00pm.

Until next time, sally Forth!

Graeme Dunbar

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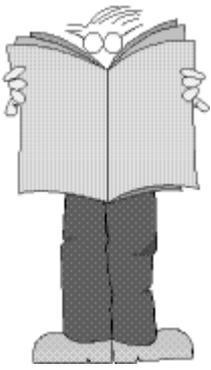
Forth News
Chris Jakeman

Chris Jakeman gives his regular roundup of news and events from around the Forth world.

Forth Events

euroFORTH 2003
euroForth will be held on 17th-19th October, in Ross-on-Wye, England.

FIG UK AGM
The AGM will take place on Saturday 25th October.

See pages 12 and 14 for further details.

C to Forth Project
Stephen Pelc, MD of MPE Ltd, has made source available for download at
http://www.mpeltd.demon.co.uk/arena.htm

"This is a complete C to Forth compiler with sources. It is an MPE research project which we believe will grow better as a Forth community project."

Lint for Forth Project
FLint is a tool to provide type and stack checking to existing code rather as Lint does for C sources.

Stephen Pelc, MD of MPE Ltd, has posted a draft specification at
http://www.mpeltd.demon.co.uk/arena.htm

The aim is to encourage Forthers to contribute to a valuable public domain project.

Non-commercial Systems

Forth for EPOC
In answer to a request on comp.lang.forth, l.schmidt offered a version of Forth for the EPOC, which uses 32 bit math. It is not native code though, but written in OPL32, the interpreter on the Psion 5. PsiForth is available from
http://www.forthfreak.net/misc/interpreters/PsiForth.tgz

Gforth v0.6.2
Anton Ertl reports that version 0.6.2 is now available at
http://www.complang.tuwien.ac.at/forth/gforth/
It includes recent research on using super-instructions for optimisation.

Commercial Systems

VFX v3.5 for Windows

MPE Ltd have released version 3.5 of VFX, which remains the fastest Forth on the planet. Details of the improvements, including more sample code, are at
http://www.mpeltd.demon.co.uk/pfwvfx.htm

An evaluation version of VFX that never times out and involves merely a polite nag screen is available free.

TDS2020F

Triangle Digital Systems have released version 1.11 of Datalogger Wizard for their TDS2020F Forth embedded computer recently. They also supply software enabling customers to send and receive text messages on a TDS2020F using a GSM radio modem. These and other software products are available for free download from their web site http://www.triangledigital.com/front.htm

Forth Resources

eForth
Bill Muench developer of the well-known eForth has re-published the source material at http://www.baymoon.com/~bimu/forth/

#Forth Portal
A new web site has been published at http://forth.bespin.org providing resources and a forum dedicated to Forth.

Win32Forth Bulletin Board
Ron Aaron announced that Win32Forth now has a bulletin board hosted at http://win32forth.serveftp.org/phpBB2

xyplot v1.1.3
Krishna Myneni has released a new version of xyplot for Windows at http://ccreweb.org/software/xyplot/xyplot.html

Version 1.1.3 for Windows now includes kForth (v1.0.14-2) and allows user-written Forth modules to be loaded, just like its Linux version.

Forth modules can be used to write new functions for xyplot and these functions can be added to the xyplot menus. The distribution file contains numerous examples of Forth modules (.4th files) for performing functions such as data smoothing, polynomial fitting, etc. Users can add their own.

F11-UK
F11-UK is a professional quality low cost kit developed by members of FIG UK which contains both hardware and software. It is suitable for both hobby and professional use and, because of its simplicity, is also a great way to learn Forth. For details, see http://www.fig-k.org/f11uk.htm

The first production run of the kit has now sold out and an improved version is being planned.

Leaf Editor
Jeff Massung has published a tool for editing Forth on Windows - see http://www.simforth.com/leaf
Features include:
- Syntax highlighting geared for Forth
- Hover over known words to see their stack notation!
- Link to the Forth compiler of your choice
- Evaluate the current line of code or whatever is highlighted
- Unlimited undo/redo

Jeff is hoping for encouragement to develop this tool further.

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What's All This Compiler Stuff, Anyhow ?[†]

(Or How to Produce Code for the F11-UK Single Board Computer)

Jeremy Fowell

In the first of two articles by Jeremy in this issue, he tackles the problem of developing code in flash memory for embedded systems.

Flash Memory

One question I am asked quite often when replying to emails about the F11-UK kit is: "How do you write Forth definitions while running Forth on the HC11 processor and save them to the on-board FLASH memory ?"

Well the short answer is that you don't, or at least not as far as I am aware. Perhaps it's a good idea to begin with a little history. . .

In those far off days when the IBM PC was but a glint in the eyes of the engineers at Big Blue, Personal Computers came into being. These were but humble systems at first, with perhaps 2 kbytes of RAM and no hard disk storage. However they all had a keyboard and some sort of screen because they obviously had to. These were the days of figForth. If you wrote code for a microprocessor it was most probably the CPU in your system (See Ref.1). Compilers ran on the processors they were compiling code for.

If we now fast forward to the present time it's quite normal to work with a Single Board Computer (SBC) like the F11-UK board connected to a larger machine such as a PC during code development. In those earlier times there was no larger machine to be had and therefore no choice to be made. The process of compiling code is faster and more convenient in the comfortable environment of the modern PC where results can easily be saved to disk and downloaded to the SBC. Our target board now has all non-essential items stripped away from it. After all an industrial motor control, washing machine or reptile environmental control system is probably not going to need a screen. Compilers now run on a PC but produce code for another processor, and are therefore cross-compilers.

[†] **Footnote:**   The title of this article is taken with apologies from the series "Pease Porridge" written by the legendary analog engineer, Bob Pease, who wrote (and probably still does write) for the American magazine "Electronic Design". He always used the title "What's All This xxxx Stuff, Anyhow ?".

Steps

With this background in mind it's perhaps easier to see how to produce code for the F11-UK board using its version of Forth, PygmyHC11. These are the steps to follow using the files supplied as part of the F11-UK kit (see http://www.fig-uk.org):

1. Using a word-processor (one that runs under DOS is probably best to start with), begin by writing one or two small Forth words in PygmyHC11 to run on the HC11. Save these to disk in a file such as `TEST1.4TH.` Place this file in the same directory as the other F11-UK files.

    Make sure this file contains only ASCII text and no print formatting commands for example.

2. It is important to keep the F11-UK distribution files in their own directory, and if you are experimenting with 80x86 Pygmy on your PC keep these files in another directory. (`PYGMY.COM` for use with PygmyHC11 is not the same as the `PYGMY.COM` generated by 80x86 Pygmy).

3. Open the file `11-LOAD.4TH` and replace the line:

    `( INCLUDE MY-PROG.4TH .S CR ( application code )`

    with

    `INCLUDE   TEST1.4TH   .S   CR`

    and save the file to disk.

    Note that the leading bracket has been removed so that the line is not commented out. `.S` (dot-s) displays the stack contents. This should be empty and is used to check for compile errors.

4. Run the correct version of 80x86 Pygmy by typing `P <enter>` which runs `P.BAT`.Type

    `1 LOAD <enter>.`

    This should compile the PygmyHC11 language plus your code into PC memory. The message: "`HC11 target code etc. etc`". should also appear. Check that "`stack empty`" is also displayed.

    On the first occasion leave 80x86 Pygmy by typing `BYE <enter>.` View the

contents of the file **11-WORDS.TXT** which contains a list of all target words that have just been compiled. The word at the highest address should always be **RESET** . The words from your file **TEST1.4TH** should be the next lower. If they do not appear in this file they have not been compiled and we have a problem.

5. If you have reached this point successfully download your code to the F11-UK board by following the instructions in section 10 of the User Guide.

6. Your words should now be part of the PygmyHC11 dictionary and you can execute them by typing their names at the PygmyHC11 prompt.

7. Add some more words to **TEST1.4TH** (and perhaps rename the file to something more meaningful). Test these by running them on the F11-UK board. This file should now grow into your application program.

_____

8. To produce a program that runs automatically when the F11-UK board is powered-up proceed as follows:

Write your code so that executing one top level word will run your whole program. If this word is called **SET-TEMPERATURE** , for example, you should be able to test your whole program by typing **SET-TEMPERATURE <enter>** at the PygmyHC11 prompt.

When you are satisfied that all is OK, open the file **11PYGMY.4TH** and look for the word **(BOOT** near the end of the file. Comment out the 3 lines of messages by placing a leading bracket at the start of these lines. **(BOOT** should now contain the single word **SET-PORTS.** On a new line below this add your top level word **SET-TEMPERATURE.** Save the file back to disk, compile and download to the F11-UK board in the normal way

When you restart the F11-UK board your program should run automatically.

References
Ref.1: "eForth and Zen" by Dr. C. H. Ting, Offete Enterprises Inc. 1993.

This book is among of Ting's best, and among many other things discusses how Forth developed alongside early Personal Computers. It should be in every Forth programmer's personal library.

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Connecting an LCD to the F11-UK Single Board Computer
Jeremy Fowell

In his second article in this issue, Jeremy looks at extending the F11-UK hardware.

Stand-alone System

One of the most useful items to attach to an F11-UK board is a 16 character by two line Liquid Crystal Display. These are quite inexpensive these days and can form an important part of a stand-alone system, where the F11-UK board is no longer connected to a PC once it has been programmed. The diagram opposite shows a simple way of doing this and the F11-UK kit (see http://www.fig-uk.org) contains the necessary Forth code in the file **11PYGEXT.4TH**.
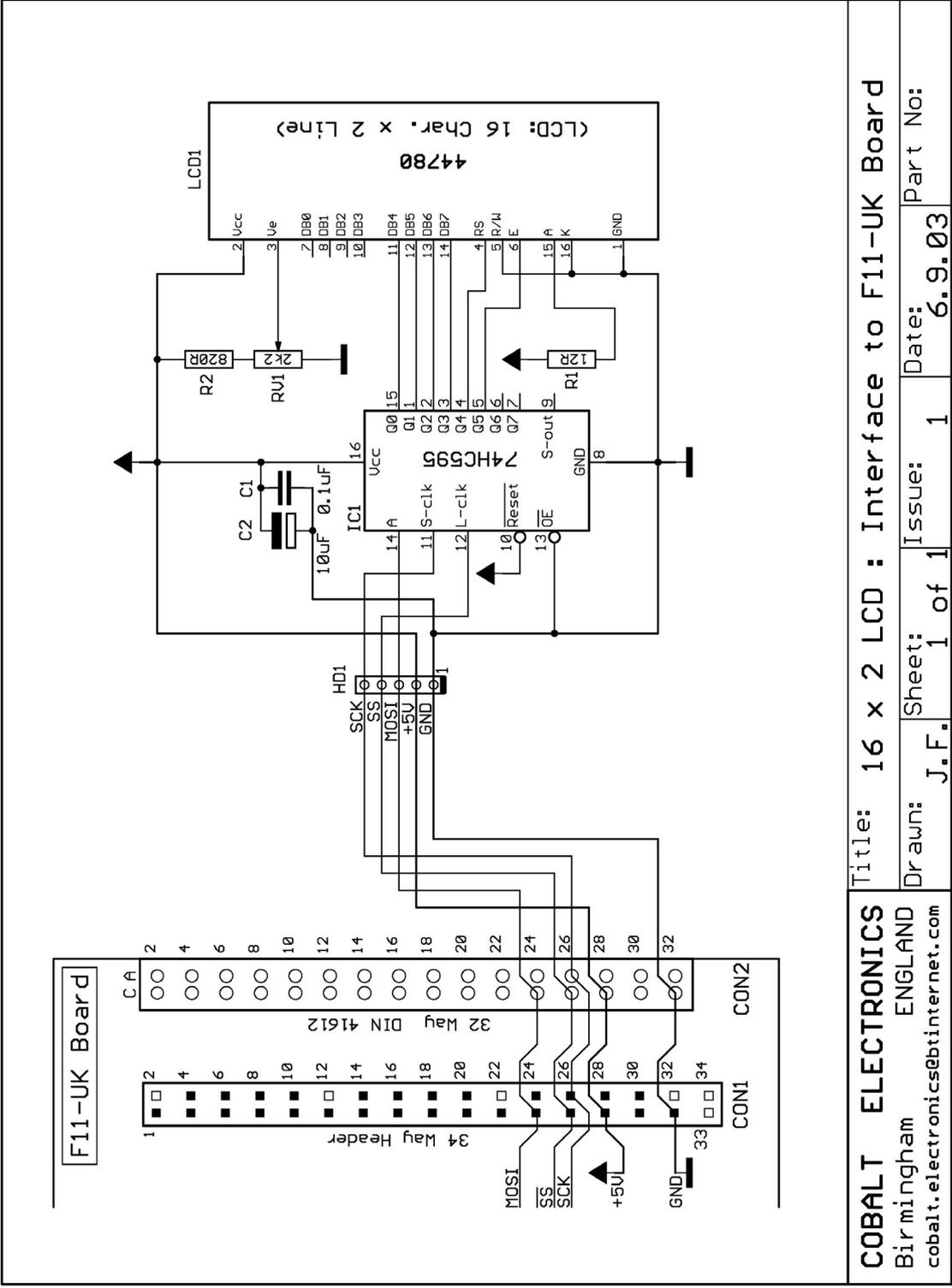
LCD Display

All LCDs of 16 x 2 and similar arrangement are generally supplied as a module containing their own controller chip. As far as I am aware this is always an HD44780U. Although originally produced by Hitachi there are probably many copies, but the important thing is that the hardware and software interface is always the same.

Hardware

The 44780 interface uses seven pins, four of these are used as a 4-bit data bus. The remaining three are control signals. R/W (read/write) is connected to GND to put the chip in write-only mode. RS (register select) chooses between the Instruction Register and Data Register. E (Enable) is used to perform a data write. Thus commands are sent to the device to move the cursor or clear the display for example, followed by the data to be displayed. The IC also has an 8-bit data bus mode but we use 4 bits to enable the interface to be achieved with only one 74HC595.

Software

First of all the display must be initialised by sending various items of configuration data to the 44780. The chip wakes up in 8-bit bus mode although the highest four data lines are not connected, and the first four bytes of data (high nibble set to zero) are sent from a look-up table by the HC11 using the word C!LCD. After this 4-bit mode is used to send the remaining six bytes a nibble at a time with LCD-COM!. The whole process is hidden inside the word LCD-RESET which sets up the display in a simple arrangement without a flashing cursor.

LCD1

44780
(LCD: 16 Char. x 2 Line)

2 Vcc
3 Ve
7 DB0
8 DB1
9 DB2
10 DB3
11 DB4
12 DB5
13 DB6
14 DB7
4 RS
5 R/W
6 E
15 A
16 K
1 GND

R2 820R
RV1 2K2
R1 12R

IC1 74HC595

16 Vcc
15 Q0
1 Q1
2 Q2
3 Q3
4 Q4
5 Q5
6 Q6
7 Q7
9 S-out
8 GND
14 A
11 S-clk
12 L-clk
10 Reset
13 OE

C2 C1
10uF 0.1uF

HD1
SCK
SS
MOSI
+5V
GND
1

F11-UK Board

CA
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
CON2
32 Way DIN 41612

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34
CON1
34 Way Header
1 33

MOSI
SS
SCK
+5V
GND

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Title: 16 x 2 LCD : Interface to F11-UK Board
Drawn: J.F.
Sheet: 1 of 1
Issue: 1
Date: 6.9.03
Part No:

Having got this far it is very easy to define a few simple commands such as:

```
: LCD-CLEAR  (  --  )  1 LCD-COM!  2 MS ;
```

Note the 2 milli-second delay. Like many output devices an LCD is not fast and may well hold up your program. One way of dealing with this is to place output in a buffer and then continue processing other tasks. PygmyHC11's multi-tasker could then be used to collect characters from here and send them to the LCD.

However to display characters we use the vectored word EMIT. In Pygmy Forth EMIT is not executed directly but fetches the address of a word stored in RAM and executes that instead. So by making use of vectored execution we can redirect output either to the serial port (and hence to the PC screen) or to the LCD. The real beauty of this method is that all standard output words such as: .   U.   .R   TYPE$ etc can be used with the LCD without writing special display words. As an example:

```
: LCD-TEST ( -- ). LCD-RESET " Testing F11-UK" >LCD TYPE$ >SER ;
```

The SPI Bus

Data and commands are sent from the HC11 microcontroller to the 44780 LCD controller IC using a serial format devised by Motorola, the SPI bus. This is shown in the diagram. Data is then converted back to parallel form by IC1, a serial-in parallel-out shift register. In its simplest form the serial bus has three signals: MOSI (master out slave in), SCK (clock) and SS (slave select). Data is placed on the MOSI line which is valid when SCK rises from zero to logic one. SS is held low during the entire process and acts as a chip-select for the 74HC595.

A second 74HC595 output device could be connected to the SPI bus by taking its input from the serial output pin of the first 74HC595. In addition to this input devices such as the 74HC165 parallel-in serial-out shift register can be connected to the HC11 using its MISO (master in slave out) pin. One of each type could be used, for example, to connect a sixteen key keypad to the HC11.

On the software side the SPI bus is handled by three words:
SPI-SETUP, **SPI!** and **?SPI**.   These operate in a similar way to serial port words
TX! and **?RX**.

Further Information

A more complete explanation of LCDs can be found in "LCD Module Technical Reference" at: ftp://ftp.ee.ualberta.ca/pub/cookbook/faq/lcd.doc

F11-UK

F11-UK

provides everything needed in a professional-quality low-cost Forth controller board.

Use it in industrial or hobby projects to control a wide range of devices using the well-known multi-tasking Pygmy Forth.

Designed for hosting from a Windows or DOS PC, you can test your application as it runs on the F11-UK board itself. The board was developed by FIG UK members to provide an easy way to explore the world of controlled devices – a niche where Forth excels.

The kit includes both hardware and software and is supported and sold to members at a nominal profit through a private company.

Software
_____

PC-based PygmyHC11 Forth compiler running under DOS produces code for Motorola HC11 micro-controller.

Code is downloaded via standard serial link from the PC to the FLASH memory (or RAM) on the F11-UK single board computer (SBC).

No dongle or programming adaptor of any kind is required.

Forth running on the SBC is interactive which makes debugging and testing much easier.

Multitasking and Assembly included.

The serial link can be disconnected to enable the SBC to function as a stand-alone unit.
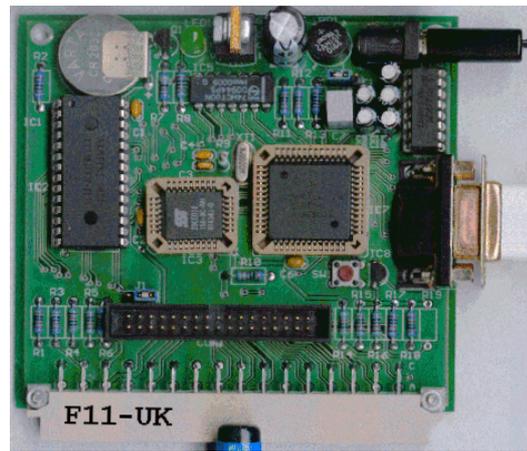
All source code provided - 78 pages or so (unlike many commercial systems).

Around 30 pages of additional documentation is supplied including a full glossary of the 300 or so Forth words in the system.

Email mailing list for discussion and limited support.

Hardware:
_____

Processor:
 Motorola HC11 version E1 - 8 MHz (2 MHz E-Clock).
Memory:
 32k x 8 FLASH
 32k x 8 battery backed SRAM
 512 x 8 EEPROM onboard HC11.
I/O:
 20 lines plus 2 interrupts (IRQ & XIRQ).
Analogue in:
 up to 8 lines using onboard 8-bit A/D.
Serial:
 1. RS232, UART onboard HC11
 2. Motorola SPI bus onboard HC11.
Expansion:
 Via HC11 SPI serial bus using
  2 or more of 20 available lines.
Timer system:
 Inputs: 3 x 16-bit capture channels
 Outputs: 4 x 16-bit compare channels.
PCB size: 103 x 100 mm.

Price to FIG UK members:	£47.00 plus postage and packing (£2 UK, £4 overseas) plus $25.00 (US Dollars) for registration of 80x86 Pygmy Forth with the author Frank Sergeant.
Delivery:	ex-stock.
More information:	jeremy.fowell@btinternet.com and 0121 440 1809

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Membership Matters
Doug Neal & Graeme Dunbar

The Secretary and Editor take a look at recent membership applications and renewals.

As mentioned in the Editorial we welcome six new members. Our members come not only from the UK, but are spread around the globe.

The membership renewal form includes a space for adding further information reflecting member's interests, or suggestions concerning FIG UK and Forthwrite. Thank you for the many complimentary comments we have received! It is fascinating to read about the varied systems and applications our members are working with.

Duncan Louttit, member 670 writes: "I run Swallow Systems, a manufacturer of educational robots. All firmware in the robots is in Forth. I also build MicroMice and run the "Cock Lane Academy", a group of youngsters who build racing robots. Again, all the firmware is in Forth."

Are there any other members working on robot projects? There are a number of members whose businesses are built around Forth. A potted history of the company would make an excellent adjunct to an advert and don't forget to let us know of any items for the Forth News column.

Robin Wilks, member 2048 (a nice round number that!) writes: "I want to use Forth on the StongARM RiscPC (Acorn) computers - also on the new IYONIX (Castle Technology). I can't get WimpForth to work properly - has anyone got a suitable system? If not, I was thinking of writing a suitable Forth system, but I am somewhat hesitant to do this - any volunteers?"

If you can help, then the Editor is happy to pass your details on so you can make contact, and while you are about it, why not write up something about it for Forthwrite?

FIG UK – AGM

The Annual General Meeting will be held on Saturday 25th October at Doug Neale's home, 58 Woodland Way, Morden from 2:00pm.

All members are cordially invited to do attend. If you cannot come, but wish to comment on the way FIG UK is going or the direction you would like it to take, write or e-mail Jeremy or Doug before the meeting.

Anyone who lives in the London area can get to Doug's house easily by Underground as he is just ten minutes walk from the southern terminus of the Northern Line. You can get directions from http://www.multimap.com for his postcode SM4 4DS or just phone him on 020 8542 2747.

Some of the topics likely to be discussed are:

- Finances – see annual accounts published in issue 121
- EuroFORTH 2003
- Web Site
- Mailing list / e-community
- F11-UK: where next?
- Forthwrite
- Promoting Forth and FIG in the UK
- FIG UK 25th Anniversary Reunion (November 2004)

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Library Notes
Graeme Dunbar

News and comment from the FIG UK Librarian

Loans

The FIG (UK) Library (see inside back cover for details) has been receiving a steady stream of requests over the past few months, mostly from newer members. Material is usually loaned for a period of up to three months and to share our resources fairly, up to two items can be borrowed at any one time. To borrow material, we ask only that you enclose unused postage stamps (to the value of the postage on the package when you received it) when you return the item. Given a ready supply of second hand padded envelopes, the loans system is self-sustaining and poses no financial burden on either FIG (UK) or the Robert Gordon University where the library is held. Overseas members should contact the Librarian to arrange postage.

Moving – Again!

The Library is in something of a state of disarray at the moment due to alterations to the building. Unfortunately the hasty packing means a good deal of work is needed to re-shelve it, so there may be delays in fulfilling borrower requests. The good news is that the books can be organized more logically.

Forthwrite Reprints

Occasionally members request information from back issues of Forthwrite. It is more economic and simpler to administrate if photocopies are sent rather than posting and returning the original. To ensure that the system is self sufficient, again please send stamps.

Scans

By way of an experiment, an article was scanned and sent to one overseas member in response to his request. In special circumstances this method may prove useful, but it is time consuming. Getting the right balance of image resolution and file size is tricky and there are other problems associated with old and slightly discoloured copy from pre-laser printer days. Nice though it might be, digitising our Forthwrite heritage would be a job for a full-time archivist!

Donations

I am happy to announce that due to the generosity of Chris Jakeman, Dick Pountain's book "Object Oriented Forth" is again available for borrowing. The original copy went missing some years back and Chris kindly donated his copy when a new one could not be found for sale.

The Library has also been very fortunate to receive a substantial donation of Forth books and Forthwrite magazines from member Charles Fletcher. The books give the Library valuable second copies that will cut down waiting times and the magazines he donated include a long run that was lost from Library archive in a previous move.

Thank you Charles and Chris for your kindness.

euroFORTH 2003

The 18th annual euroFORTH conference is being held on Fri Oct 17th to Sun 19th at the Royal Hotel, Ross-on-Wye, England

The annual conference (held in the UK every third year) returns this year to the UK. For details, see http://www.micross.co.uk/euroforth2003/Call_for_papers.html . (For Bill Stoddart's report on the previous year's conference, see Forthwrite Jan 2003.)

As well as presentation sessions there will be discussion workshops and demonstrations. A limited area of exhibition space can be made available, please contact the Conference organisers for further information.

It is hoped that a visit to an industrial installation controlled by a Micross Electronics systems programmed in Forth can be arranged to take place on the Friday morning before the conference or during the Saturday in place of a workshop session.

The conference hotel is two minutes walk from the town centre and boasts dramatic views across the River Wye.

Ross-on-Wye has been attracting tourists since Victorian times, and a full visitor programme is planned for delegates' guests. Visits to Hereford, with its Cathedral housing the famous 12th century Mappa Mundi, the book town of Hay-on-Wye, and shopping in Cardiff are all possible.

Cost
Including two nights accommodation at the Royal Hotel with full board from 2pm Friday 17th till after traditional English lunch on Sunday 19th - £300.

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Across the Big Teich

Henry Vinerts

This material was prepared for Vierte Dimension by Henry Vinerts, and
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FIG Silicon Valley Chapter Meeting - July 2003

Greetings to everybody!

I would like to let all readers know that as the "oldest Forth novice" I shall no
longer attempt to fumble with technical reports about the proceedings in the
SVFIG meetings. Dave Jaffe (our webmaster) and Kevin Appert (our most
ardent web "surfer", if I may say so) are doing an excellent job with their notes
on the web. For the June 2003 meeting, you can go to http://www.forth.org/svfig/kk/06-
2003.html and also investigate some of the material provided in the numerous links
from that site.

Judging by the encouragement that I have been getting from Dr Behringer,
Friederich, and Chris, it seems that I should continue with some kind of "mini-
reports across the Big Pond", if only to let you know that Forth is the substance
that pulls a number of live people together in one place, once a month in Silicon
Valley, where they can talk about their projects, chat vis-a-vis, crack jokes, and
watch one another grow older (and wiser?). I hope to be able to continue to send
you "SIGNS OF LIVE FORTH" from Silicon Valley, as long as I can witness such
phenomena.

Oh, yes, I counted about 20 live bodies in our June meeting, albeit not all
present or awake at the same time. The reasons for coming to the meetings may
be different for everybody, but as long as Forth is the common denominator and
there is breathing, to me it is a sign of live
Forth.

Paradoxically at first, Dr. Ting started the morning lecture on C, actually C++, he
said, but then he hastened to explain that it was his shorthand C++ for ascorbic
acid (vitamin C), possibly the cure-all for most of human ailments, like the "magic
bullet" or the "chih" that the Chinese have been searching for 5000 years. With
his usual thoroughness and patience he had studied and researched enough

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books and papers, to be able to start his own book "SARS, Cardiovascular Disease, and Vitamin C". No work on Forth for a whole month, because his board and computer were not cooperating. Interesting lecture, from a qualified holder of a doctorate in chemistry. Now, if someone would just hurry up and discover vitamin F!

Al Mitchell came with his "gadgets" – various versions of Cygnal's C8051Fxx single-chip systems – his "Forth stamps", which he is marketing in development kits, usable by the masses similarly to the BASIC stamps. The BASIC is written in Forth, and Al hopes to at least attract some of the curious to Forth, since the source code is open. Al invites ideas for
applications for the systems (visit his website at http://www.amresearch.com).

Al has also compiled an online version of the last Forth Dimensions that did not get published (Vol. XXI, 1,2, in 1999), which is available as fd.zip from his website (or by link from Kevin's notes on the SVFIG website).

You see, my letter gets too long if I only wish to list what is available on the web that may be of interest to the readers of VD and Forthwrite. Would somebody, please, tell me whether my time might be put to better use?

That's it today, folks. Keep breathing and smiling!

Henry

FIG Silicon Valley Chapter Meeting - August 2003

Hello, my friends across the Big Pond!

Despite the hot summer which discourages one from driving around Silicon Valley in a 32-year old Volvo wagon without air-conditioning, I did manage to attend the July and August SVFIG meetings, albeit only a half a day each – the first half – which usually shows a number of late-comers, some perhaps sleep-deprived, having worked on their projects way too long into the night before. Also, more often than not, it is the indefatigable Dr. Ting who fills the first two hours non-stop with lectures that cover a multitude of subjects besides Forth. After the lunch hour, the character of the meetings lately has become less structured, spontaneous presentations perhaps serving as rest breaks in an

atmosphere of group discussions, information exchange, and volleys of witticisms.

In July Ting told us about FML (Forth Mark-up Language?) which has been developed in Taiwan for a Chinese web browser. FML is written in DSForth (from Russia) which interprets Forth words that are placed inside HTML tag brackets. I understand that the system will even go further and interpret colon definitions written in Chinese that are within the brackets.

In August, Ting's lecture dealt with the basics of line-drawing and polygon-filling algorithms (for hardware), at the efficient rate of two cycles per pixel, and even better for horizontal lines only. I learned also that in Chinese characters half of the strokes are horizontal.

The attendance in the morning part of both meetings was smaller than usual - about a dozen live bodies, mostly regulars. But, signs of LIVE FORTH they were. The summer has not withered their spirit.

Until next, stay cool! (I'm sorry, Dr. Beierlein, "cool" has a double meaning in American English.)

Henry

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What Languages Fix

The following observation on programming languages was taken from the web page of Paul Graham, author and designer of the Arc language (http://www.paulgraham.com/fix.html). In this context, what problem does Forth fix (post-fix?) Similarly, what can be said about the evolution of Forth itself: F79, FIG-Forth, F83, ANS Forth?

Kevin Kelleher suggested an interesting way to compare programming languages: to describe each in terms of the problem it fixes. The surprising thing is how many, and how well, languages can be described this way.

Algol: .... Assembly language is too low-level
Pascal: .... Algol doesn't have enough data types.
Modula: .... Pascal is too wimpy for systems programming.
Simula: .... Algol isn't good enough at simulations.
Smalltalk: .... Not everything in Simula is an object.
Fortran: .... Assembly language is too low-level.
Cobol: .... Fortran is scary.
PL/1: .... Fortran doesn't have enough data types.
Ada: .... Every existing language is missing something.
Basic: .... Fortran is scary.
APL: .... Fortran isn't good enough at manipulating arrays.
J: .... APL requires its own character set.
C: .... Assemby language is too low-level.
C++: .... C is too low-level.
Java: .... C++ is a kludge. And Microsoft is going to crush us.
C#: .... Java is controlled by Sun.
Javascript: .... Java is scary.
Lisp: .... Turing Machines are an awkward way to describe computation.
Scheme: .... MacLisp is a kludge.
T: .... Scheme has no libraries.
Common Lisp: ... There are too many dialects of Lisp.
Dylan: .... Scheme has no libraries, and Lisp syntax is scary.
Perl: .... Shell scripts/awk/sed are not enough like programming languages.
Python: .... Perl is a kludge.
Ruby: .... Perl is a kludge, and Lisp syntax is scary.
Prolog: .... Programming is not enough like logic.

There are a lot of languages I haven't been able to figure out how to describe this way. Suggestions would be appreciated about any languages missing from the list.

What I'm looking for is not exactly what motivated the language designer (Smalltalk was originally intended for children) but what niche the language first lodged in. What was the appeal of the language to its first users?

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Vierte Dimension 1/2003
Joe Anderson

Joe provides a look at the latest issue of the German FIG
magazine. To borrow a copy or to arrange for a translation
of an individual article, please call Joe.

Letters

The Magazine Team is always pleased to get feedback and encouragement – and of course articles for publication in Forthwrite. If you have an idea, an interesting application or a query on Forth matters – but you don't think it warrants a full article then why not write a letter?

Perhaps you want to find other members in your area, or maybe you are looking for people who share your interests? Send in your correspondence, care of the editor.

It would be helpful if you could include your full name, membership number and contact details, and indicate whether you agree to your address / telephone number / email address being published.

See your letter here...

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Reading Dutch is easier than you might think. And as Forth is an international language, reading Dutch code is easier still for a Forth enthusiast. Are you interested? Why not subscribe to

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FIG UK Services to Members

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Library   Our library provides a service unmatched by any other FIG chapter. Not only are all the major books available, but also conference proceedings, back-issues of Forthwrite and also of the magazine of International FIG, Forth Dimensions. The price of a loan is simply the cost of postage out and back.

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Beyond the UK FIG UK has links with International FIG, the German Forth-Gesellschaft and the Dutch Forth Users Group. Some of our members have multiple memberships and we report progress and special events. FIG UK has attracted a core of overseas members; please ask if you want an accelerated postal delivery for your Forthwrite.

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