

of course

VOLUME 3, NUMBER 2

AUTUMN 2003

Open Source moves forward

with major release updates to:

Perl • PHP • MySQL

Deployment ready to grow?

Three newscourses test theory

The need for speed

Catch us if you can!

Broadband Internet connection doubled

In this issue...

Features

Broadband update	8
Course goodies.....	10
Keeping up with open source technology	12

Columns

What's after Perl 5?	4
Library listing online	6
PHP sticky boxes	16
Link or copy data?.....	18
Deployment courses	20

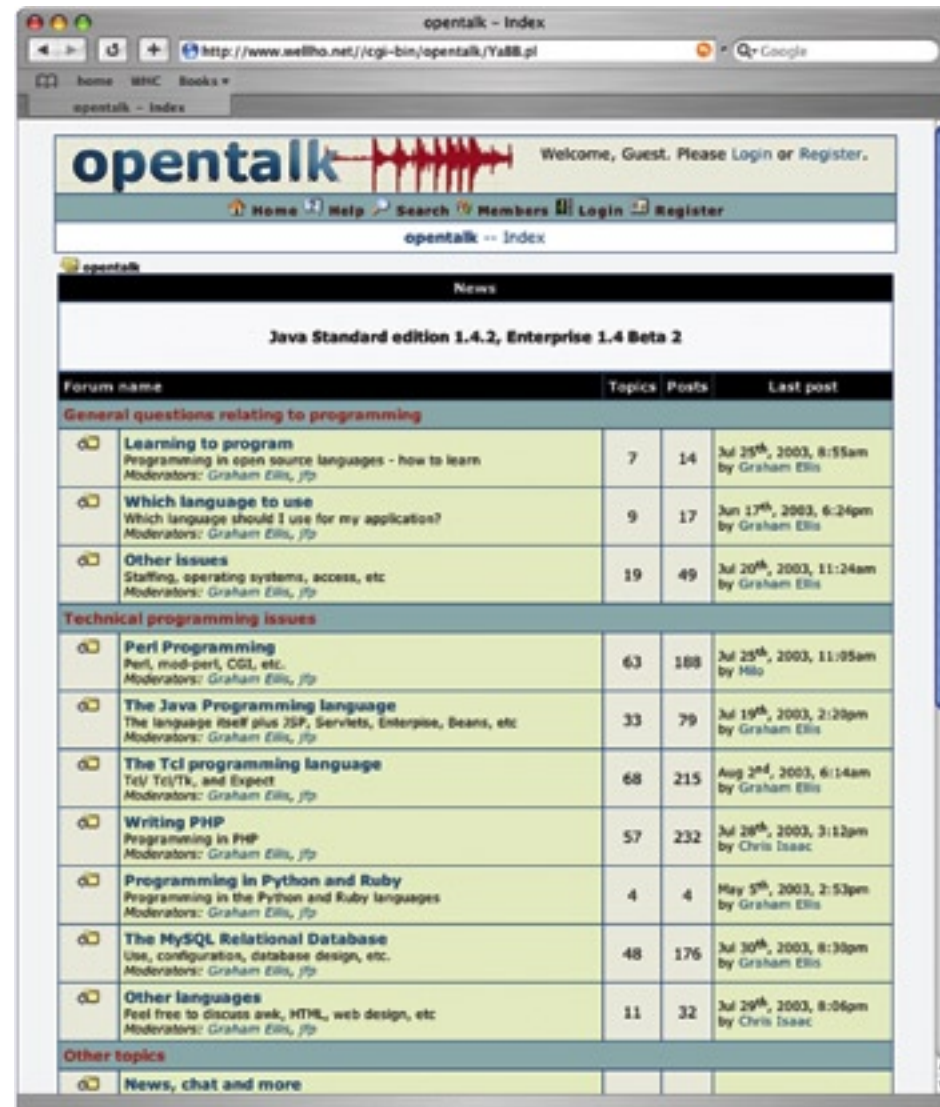
In each issue

Local accommodation	5
Map of Melksham.....	7
Brag page	19
Latest versions.....	21
Course schedule	22
Course calendar.....	23
Contact information.....	24



Can a high speed link be “too fast”?

An internet data transfer is only as fast as the slowest link in the chain, and even if you use the fastest of services you'll often find the service doesn't achieve the full rate. Our own web space provider can feed data to us flat out all the way from California, but as yet this is the exception rather than the rule. Where the high speed link does win hands down is when we have a number of users accessing the Internet at the same time – perhaps looking up PHP manual pages during a course, or checking their email at coffee time.



Opentalk can be found at: <http://www.wellho.net/cgi-bin/opentalk/YaBB.pl>

Got a question on Tcl - or Perl, or Java, or PHP, or MySQL ...? Try it on Opentalk!

Our Opentalk forum is open to all to post their open source questions, and a technician visits the board daily to provide guidance and answers.

Why do we do it? Because it keeps us in touch with our customers. It keeps us in touch with the questions

Embed a database without a daemon

Want a relational database within your application without having to run a separate daemon or service? SQLite may be what you're looking for. It comes with C/C++ and Tcl bindings, and it's going to be built in to PHP from release 5. “SQLite is not a client library used to connect to a big database server. SQLite is the server.” <http://www.hwaci.com/sw/sqlite/>

being asked in the open source world. Because of its popularity, it's building up a valuable archive resource to help us help you even better in the future.

Opentalk is intended to be a friendly site on which newcomers to a subject can post technical questions that they can't resolve with a quick search elsewhere. Opentalk uses YaBB open source software, written in Perl, with extensions also written in Perl by Well House Consultants.

Keep it clean

Web developers - don't forget that although 48% of homes in the UK had internet access by April 2003, only 15% of those were broadband. You need to continue to keep your web sites lean, and your graphic image file size down.

Python ... Jython: Get the full squeeze

Python is a powerful, portable, object-oriented open source programming language for writing stand-alone programs, quick scripts, and prototypes for large applications. There's also an implementation of the language in pure Java known as Jython, which allows the programmer to combine Java's libraries and tools with the power of Python's rapid script development capabilities.

We offer a three-day public Python course, for those with prior programming experience who wish to add Python to their portfolio.

price: £690.00 pounds or €1130 for 3 days

venue: Melksham, Wiltshire, UK (airport collections available)

group size: maximum of 7 trainees per course

start dates: 8th October 2003
21st January 2004

more info: <http://www.wellho.net/course/ypfull.html>



Biting into the Apple more deeply

Apple's OSX operating system continues to impress us. As we update our fleet of training machines, we're adding Macs, as well as running Windows XP and Linux on other laptops. Our tailored Deployment courses (beginning on page 20 of this issue) can already include appropriate coverage of OSX; in other words, we have the knowledge and material. If you have further OSX training requirements, please ask; we might be able to help.

A WORD FROM GRAHAM ELLIS

The need for speed

Welcome to our “fast” issue. The need for speed no longer applies just to transportation; it's been on the Christmas wish list of everyone who's ever played a computer game or browsed the Internet.

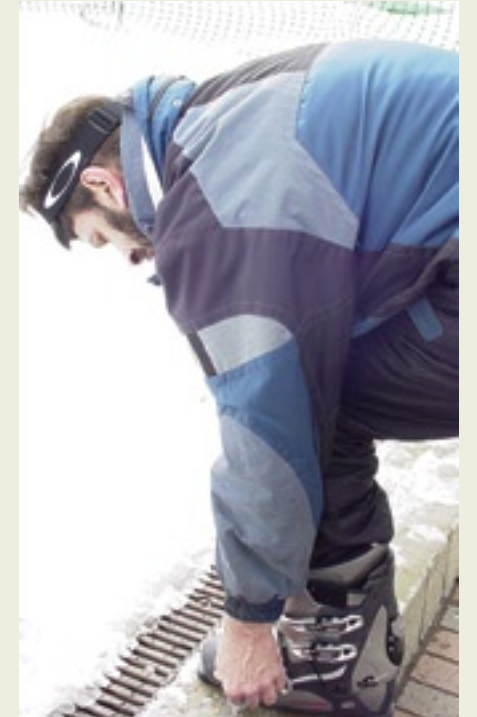
With broadband being the 21st century's must-have, the quest for speed shows no signs of slowing. Just how fast do you want to go?

We were new to broadband last year, approaching it with a trepidation of the initial set-up, rather than jumping ahead and ultimately realising just how much our lives would change as a result. And now that we took that first step, taking the capacity to double was not only a foregone desire, we couldn't get it fast enough...the child waiting for delivery of a brand new puppy.

So who could blame us for wanting to share our enthusiasm with our readers, and focus this issue of “Of Course” on speed and how quickly the next phase of technology is moving?

Featured on pages 8 and 9 is an update of broadband, comparing speeds for different types of access. Our training centre now has a 2 Mbit cable connection, the fastest shown in the table on page 9. We also have twin ISDN lines, an analogue connection, and mobile phone connections available for testing and backup purposes. Our wireless hotspot is available at no extra charge to all trainees while they're here on courses, and the transfer rates achieved will be close to those quoted in the article for the 2 Mbit connection. Our need for speed cannot ignore the fact that others don't have the access rate we do; we, as web designers, need to bear this in mind when we present our own web site. And we, as teachers of the technology, need to show others how to test for different access scenarios.

Besides broadband, what else do you get on our courses? A pictorial on pages 10 and 11 illustrates there's not much you need to bring with you besides yourself, and you go away with a lot more than just a sore head from all that new knowledge. We won't just wave “goodbye” at the door



– support continues even after you leave to put this knowledge to good use by way of our Opentalk forum. It's not only become a good source of information for our readers, but we also learn what's important to you, and that forms much the basis of our editorial ideas.

Open source technology is also taking huge strides following this summer's dash by many developers promising significant upgrades to their next release.

Even with new 4.0.14 just released in July, MySQL is very clearly pushing toward a 5.0 by the end of the year. The release of Python 2.3 has been accelerated since the inclusion of the next version of Mac OS X. Read more about these advances, as well as big steps in Linux, Apache, Perl and others on pages 12 and 13.

As ever, we give you the latest versions on all the open source technologies in our regular column which you can find on page 21 of this issue.

If you're wanting to come on a public course, our schedule and calendar can be found on pages 22 and 23.

After Perl 5, will there finally be a Perl 6?

Not quite. After Perl 5, Ponie, which will be the Perl 5 syntax sitting on top of Parrot – the language-neutral run time environment that’s being developed with 1.5 eyes on Perl 6, and the other 0.5 of an eye looking at PHP – along with Python...and Ruby...and Java...and Basic...and COBOL ...

Perhaps a step back is needed. Perl 5 is an excellent language. According Larry Wall in his 2003 State of the Onion, it’s “doing fine”. But it has a number of kinks and stumbling blocks, and support for long-abandoned features tie it down and render it hard to take forward. That’s not just a Perl problem. Languages can be just like people: a problem in their teens. After all, Perl is 15 years old.

Solution? Not an easy one, for what long-abandoned feature isn’t still used in some vital code that will break when it’s removed? Time for a bold move.

Perl 6 will not be source-code compatible with Perl 5.

It will be built on a foundation that is mutable. In other words, let’s avoid the same problem in another 15 years, and let’s support other grammars (languages) while we’re at it. The foundation is Parrot.

How does one leap from Perl 5 to Perl 6? The current Perl release is 5.8; next will be 5.10. Perl 5 is written in C. 5.10 will be written in C and rewritten in Parrot. That way, code should just go straight over. Of course, you don’t know exactly how something’s going to develop until it’s developed. The parallel 5.10 will be “Ponie”. And the 5.12 release? Slated to be based on Parrot (Ponie) alone, so-called Perl 5.12, and the transform of the innards will have been completed.

Once they have parrot-based Perl 5, application developers can then move across – piecemeal if they want – as quickly or as slowly as it suits, to the Perl 6 language.



What they’re explaining: Ponie defined

“... we need a code name for this thing in the middle. We’ve decided to call it ‘Ponie’.

“We have lots of reasons to call it that. To be sure, none of them are good reasons, but I’m told it will make the London.pm’ers deliriously happy if I say, ‘I want a Ponie’.

And I do want a Ponie. ‘I want the Ponie, I want the whole Ponie. I want it now.’” – Larry Wall

Perl On New Internal Engine.

“Ponie is a version of Perl 5 that will run on Parrot. The guts of Perl 5 will be ripped out and made to work using Parrot PMCs rather than Perl 5 Sv structures, which will mean it will be compatible with Perl 6. Any XS-based code that uses the published Perl 5 API should work fine without any problems. Anything that was marked for deprecation in Perl 5.8.0 will be deprecated in Ponie.

“Although a Perl 5 to Perl 6 translator has been promised, it is unlikely that this translator will operate correctly 100% of the time. Additionally, it won’t account for the thousands of XS glue modules that exist. By building a compatibility layer into Perl 5 it means that your code will run natively on Parrot, alongside any Perl 6 code, as well as any other language that happens to compile on to Parrot.

“The Ponie project means that your Perl 5 source code will be entirely compatible with the Parrot virtual machine, which will also act as the virtual machine for Perl 6. This will provide a clear upgrade path to take your companies code base from Perl 5 to Perl 6, or to keep on using Perl 5 with the modern Parrot engine.” – <http://opensource.fotango.com/>

Local Accommodation

Suggestions on where to stay when attending a training course at our centre in Melksham, Wiltshire

Melksham is in the heart of many tourist attractions, so it is no wonder we have a wide range of accommodation available if you choose to stay locally whilst attending one of our courses.

The information given below is based on single-room occupancy; however, most do offer doubles and

family options as well. Please contact them if you have specific requests.

We provide this list only as a guide for you in making your own arrangements, and we try to be accurate to the best of our knowledge. Please contact the establishments direct for up-to-date information and to book.

				price includes breakfast	breakfast available at extra charge	takes major credit cards	deposit required	number of miles to training centre	miles to Melksham town centre	phone in room	phone is available at reception	fax service available	restaurant on premises	pub/bar on premises	all rooms en suite	en suite rooms available	private facilities near to room
	Springfield B&B 403, The Spa, Melksham Wiltshire SN12 6QL	P: 01225 703694 F: 01225 705820 W: www.visitwiltshire.co.uk/springfield E: janet@joryb862.freemove.co.uk	single £36 weekdays only	•			•	0.0	0.8		•					•	•
				"Home from Home" in Georgian Spa Lodging House. Quiet position. Lovely gardens. Next door to training centre.													
	The Spa B&B 402, The Spa, Melksham Wiltshire SN12 6QL	P: 01225 707984 F: W: www.melksham.org.uk/thespa/ E: thespa@melksham.org.uk	single £20- £25	•				0.1	0.7		•					•	•
				Large, comfortable listed Georgian home. Quiet position with open views. Ample parking. Next door to training centre.													
	The Old Manor B&B 48 Spa Road, Melksham Wiltshire SN12 7NY	P: 01225 793803 F: 01225 793803 W: www.theoldmanor-wiltshire.co.uk/ E: theoldmanor@yahoo.co.uk	single £30- £35	•				0.5	0.3		•					•	•
				Set in 3/4 acre, delightful gardens, large English breakfasts a specialty. Lovely decor.													
	The Townhouse B&B 18 Spa Road, Melksham Wiltshire SN12 7NS	P: 01225 702229 F: W: E:	single £25	•				0.6	0.2		•					•	•
				Listed Georgian townhouse close to town centre.													
	The Kings Arms Hotel 20 Market Place, Melksham Wiltshire SN12 6EX	P: 01225 707272 F: W: E:	single £35		•			0.8	0.0		•	•	•	•			
				Recently completely renovated; located in the heart of town.													
	Conigre Farm Hotel Semington Road, Melksham Wiltshire SN12 6BZ	P: 01225 700125 F: 01225 707392 W: E:	single £43- £52	•	•			0.9	0.1	•		•	•	•			
				Family-run hotel and restaurant offers fine foods, quality accommodation and friendly environment.													
	Longhope Guest House 9 Beanacre Road, Melksham Wiltshire SN12 8AG	P: 01225 706737 F: 01225 706737 W: E: longhope@aol.com	single £28	•				2.0	0.9						•		
				Large Victorian house set in its own grounds; warm and friendly, well decorated.													
photo not available	Bowden View Guest House 27 Beanacre Road, Melksham Wiltshire SN12 8AQ	P: 01225 709443 F: W: E:	Phone for price					2.0	0.9								
				Phone for details													
	Beechfield House Beanacre, Melksham Wiltshire SN12 7PU	P: 01225 703700 F: 01225 790118 W: www.beechfieldhouse.co.uk E: csm@beechfieldhouse.co.uk	single £80- £90	•	•			2.7	1.6	•		•	•	•			
				Comfortable country house, 21 en suite bedrooms, four-poster beds available, heated outdoor swimming pool.													
	The Shaw Country Hotel Bath Road, Shaw, Melksham Wiltshire SN12 8EF	P: 01225 702836 F: 01225 790275 W: www.shawcountryhotel.fsnet.co.uk/ E: rec@shawcountryhotel.fsnet.co.uk	single £46	•	•			2.8	1.7	•		•	•	•			
				A 400-year-old farm house, supremely restored. Mulberry Restaurant has a growing reputation for good food.													
	Newhouse Farm Littleton, Semington, Trowbridge Wiltshire BA14 6LF	P: 01380 870349 F: W: www.visitwiltshire.co.uk/newhouse E: derek.newhousefarm@virgin.net	single £30 £27 p/n 2 or more	•		•		3.5	3.0						•		
				Former Victorian farmhouse, lovely garden setting with rural surroundings. Very warm welcome, spacious, comfortable rooms. Delicious breakfasts.													
	Woolley Grange Hotel Woolley Green, Bradford-on-Avon Wiltshire BA15 1TX	P: 01225 864705 F: 01249 864059 W: www.luxuryfamilyhotels.com/ E: info@woolleygrange.com	single from £90.00	•	•			6.1	5.6	•		•	•	•			
				Jacobean manor house in open countryside with outdoor heated pool, croquet, tennis, badminton. One mile to Bradford-on-Avon.													
	Angel Hotel/Best Western Market Place, Chippenham Wiltshire SN15 3HD	P: 01249 652615 F: 01249 443210 W: www.angelhotelchippenham.co.uk E: reception@angelhotelchippenham.co.uk	single £92.50 weekdays £62.50 w/e	•	•			8.4	7.8	•		•	•	•	•		
				50 bedrooms, an indoor pool, gym, a stylish brasserie and bar with lounges and a courtyard garden. In Chippenham town centre.													
	Travel Inn Cepan Pk (#267) West Chippenham Way (M4, J17) Wiltshire SN14 6UZ	P: 01249 462096 F: 01249 461359 W: www.travelinn.co.uk/ E:	single £44.95	•	•			8.6	8.0		•	•	•	•			
				79 rooms with Brewsters Restaurant and petrol station nearby. One mile to Chippenham town centre.													
	Travelodge (#813) Moto Services, A36/A350 Bypass Warminster BA12 7RU	P: 01985 219539 F: 01985 214380 W: www.travelodge.co.uk/ E:	single £54.95	•	•			12	12		•	•	•	•			
				31 rooms with Burger King, Little Chef and petrol station nearby. One mile to Warminster town centre.													

The WHC library makes good database fodder

Ever wondered which book you should buy when you're learning a new open source technology? Will the book that looks good turn out to be too basic? Should you invest in reference books and do your basic tutorials on line? Is the book that's best for you on the shelf at your local bookstore? Do you want to risk ordering a book "sight unseen" from Amazon?

When you visit our training centre, your questions may be answered by a visit to our library. The Well House Consultants library is available for reference by trainees on courses at our centre. It currently comprises more than 400 titles on the subjects that we teach, plus related topics, and it grows monthly. As well as being kept on our shelves, if we're presenting on an on-site course, we carry the related books with us so that students can read and study during the course. It's often the exposure to these books that gives our students the opportunity to judge for themselves if that book should be purchased and added to their own shelves at work or at home.

All the book titles we own are also stored online in a MySQL database so you can access them through a browser in the privacy of your own computer. This information details the book title, author's name, publisher, ISBN number, published date, which edition, the descriptive marketing text from the rear cover of the book, plus a brief biography of the author. We've also added some further information:

- Whether the book is a descriptive



Our list of library books can be found at: <http://www.wellho.net/library>

- tutorial, quick reference, detailed reference or a book of tips and techniques (cookbook).
- Whether the book is suitable for absolute beginners, a newcomer with some background knowledge, intermediate readers, advanced

- users, or "supergeeks".
- Categories and sub-categories. For instance, the book "Mastering Regular Expressions" by Jeffrey Friedl (2nd Edition) comes up under Perl, PHP and Java.
 - Links to later editions, where necessary modifying the categories. The first edition of the "Mastering Regular Expressions" had much for Tcl coverage, and predated Java.

A small proportion of the books are marked as "Well House Consultants favourites". These are the ones we find ourselves referring to all the time, and which are getting regular plaudits from the students. Very specialist books, excellent though they are in their field, are rarely marked as favourites based on this definition.

Some of the books are commonly available classics such as "Java in a Nutshell", which is Amazon's 1,304th most popular book. And there are other, more specialist books you can browse at our training centre or web site – excellent books, yet some with Amazon rankings of over 150,000.

Quick links in our online library take you to all the books on a chosen subject, and you can then view the full details of individual books or search in more detail (e.g. "I want all Perl books that are suitable for absolute beginners").

We don't sell books. But our library does include links to Amazon (in the UK or USA, depending on the country you're browsing from), and you can order from them online through easy links on our web site.

Would you like to browse our library in real life?

We welcome past trainees and others to our Melksham training centre, but please email us to check that we'll be available and the books won't be out at an on-site course.



Getting to Well House Consultants (and then around Melksham during your stay)

FOOD & DRINK

Groceries

- 44 Aldi
- 61 Co-op
- 18 Iceland
- 49 Made in America
- 37 Sainsbury's
- 38 Somerfield
- Takeaways**
- 19 Acropolis
- 16 Baguette Bar
- 8 Beijing Express
- 36 Chop Suey House
- 11 Cornerstone Coffee Sh
- 28 Cntry Cottage Pasties
- 39 The Fisheries
- 9 Golden Falls Chinese
- 59 Happy Valley F&Ch

- 31 Kebab House
- 43 Lee's Fish and Chips
- 52 Little Brook Bakery
- 30 Ruby Chinese Tkwy
- 60 Sunrise Chinese F&Ch
- 24 Three Cooks Bakery
- 58 Tricia's Plaice
- Restaurants**
- 15 Big J's Farmhouse
- 51 Brewsters
- 46 cafe inside Leeke's
- 43 Lee's Chinese Rest
- 47 Little Chef
- 45 McDonald's
- 23 Melksham Tandoori
- 41 Mulberry Restaurant
- 10 Refa Balti House
- 65 Sultan Indian Rest

- 6 West End Inn
- Sampling of Pubs**
- 35 The Bear
- 32 Bud's
- 53 Foresters Arms
- 29 The Grapes
- 55 The New Inn
- 13 Parson's Nose
- 64 Pig & Whistle
- 62 Red Lion
- 12 The Tavern
- 63 Unicorn

HOTELS / B&Bs

- 56 Angel/Best Western
- 48 Beechfield House
- 67 Bowden House
- 70 Bridge House Farm

- 7 Conigre Farm
- 14 The Kings Arms Hotel
- 40 Longhope Guest Hse
- 68 Newhouse Farm
- 69 Old Manor House
- 5 The Old Manor
- 73 The Pear Tree
- 57 The Regency
- 42 Shaw Country Hotel
- 1 The Spa B&B
- 71 Springfield
- 66 The Town House
- 50 Travel Inn
- 54 Woolley Grange Hotel

LEISURE

- 21 The Blue Pool
- 3 Christie Miller Ctr

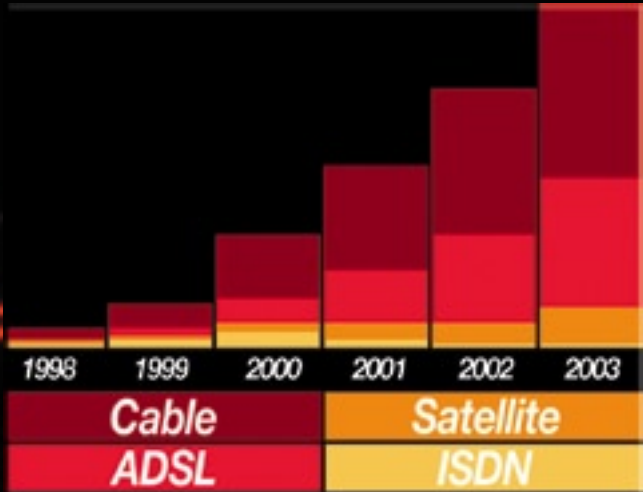
SERVICES

- Banks**
- 34 Barclays
- 26 HSBC
- 17 Lloyds TSB
- 27 NatWest
- Emergency**
- 2 Hospital
- General**
- 25 Boots
- 72 Countrywide
- 46 Leeke's Department St
- 4 Londis/Post Office
- 20 Post Office
- 33 Public Library
- 22 Tourist information



Broadband Update

“Surf up to 10 times faster than a standard internet dial-up connection”



...read the adverts for broadband services. But until recently, both coverage and provider support for local networks was severely limited. What is the current state of play?

Coverage

1. ADSL

You need to be on an enabled telephone exchange (numbers have grown rapidly, and are now in the majority) and within 3.5 km of the exchange.

2. Cable Modem

If you have (or can have) cable TV provided by the two major suppliers – NTL and Telewest – they can supply broadband access too.

3. Satellite

If you're beyond the range of an ADSL-enabled exchange, satellite access may now be a practical option, especially if you have a small business.

4. Wireless Network

A little bit of a different animal. If you're travelling with a laptop, you might like to take advantage of public access points springing up at coffee shops, fast food outlets, hotels and motorway service areas.

Speed

The next thing to consider is speed. If you're new to broadband, anything will seem very fast for the first few days, but you'll start to feel the difference between one product and another. Services all state that their speed is “up to xxxxx”. That's one consideration, but the other consideration is how much that speed will be degraded at times that your supplier's other customers are busy online. And remember that the services are asynchronous. The download speed is the one that's quoted; upload will be half of the download speed at best. ADSL, cable modem and satellite connections all start with a standard quoted rate of 500Kbps. Be careful, that's bits not bytes. ADSL and cable modems can go up to four times that speed – that's 2Mbits per second. Achieved rates can vary; BT quote a typical rate of “200Kbps to 300Kbps” for their satellite service download. At the other extreme we've benchmarked our 2 Mbits cable service really running at that speed.

Upload speeds? Satellite quotes are for a typical speed of between 60 and 70 Kbps per second, ADSL quote 256Kbps whatever the download speed, and cable typically quotes 128Kbps upload for the basic service, 256Kbps for the faster download accounts.

Although your wireless laptop will connect to the local hot spot at 11Mb, the onward route is typically through a standard ADSL link with the standard contention rates (“but we're upgrading all the time”). If the hot-spots take off, I pity other users contending with what I think would become a very busy node.

The table below may help clarify the sort of performance you might get. All times are given in seconds, and are our estimates based on the best data available at the time of writing this article.

Costs

This is an ever-changing arena; the prices we mention give you an idea of what you might expect to pay for unlimited access per month. There are often setup fees involved as well, but at the moment everyone's competing to connect broadband clients and they're often waived or reduced. The exception is the satellite service, where you can expect to spend the best part of £1,000.00 on equipment, and then have to apply for planning permission on top of that.

The future

What does the future hold? None of the major cable companies have been doing well financially, but that doesn't mean that their product is technically poor. Their infrastructure is in place, and they're probably now receiving more broadband income than it's costing them to provide the service. I would expect the service to survive, but I admit that I'm very glad we're in an area where we can get ADSL now. On the mobile phone side, the third generation suppliers are saying that they'll be providing a radically better service than the one listed in the table, but it's still “watch this space” on their web sites as we go to press.

Perfomanced speed (time taken in seconds)	KEY								
	Satellite Broadband	Wireless Hotspot	ADSL standard	Cable modem standard	Cable modem, 2Mb service	Bluetooth with mobile phone	Modem and analogue phone	ISDN line at 64k	ISDN lines tied
30k download <i>e.g. Simple web page</i>	1.5	1.2	0.8	0.6	0.15	15.3	7.3	4.7	2.4
170k download <i>e.g. Complex web page</i>	8.5	6.8	4.5	3.4	0.85	87.7	41.5	26.6	13.3
1.1 Mbyte download <i>e.g. newsletter as a .pdf</i>	55	44	29	22	5.5	561	268	172	86
124 Mbyte download <i>e.g. Our entire web site</i>	6200	4960	3306	2480	620	63265	30243	19375	9687
20k upload <i>e.g. sending an email</i>	3.3	1.56	1.04	1.56	0.78	10.2	4.88	3.2	1.56
1.1 Mbyte upload	183	87	57.3	87	43	561	268	172	86
Price per month	£70	£85 **	£25	£25	£50	*	£15	£20	£20

* Service usually quoted for per minute of connect time

** Wireless Hotspots - much lower cost options available, e.g. £10 for 120 hours / month

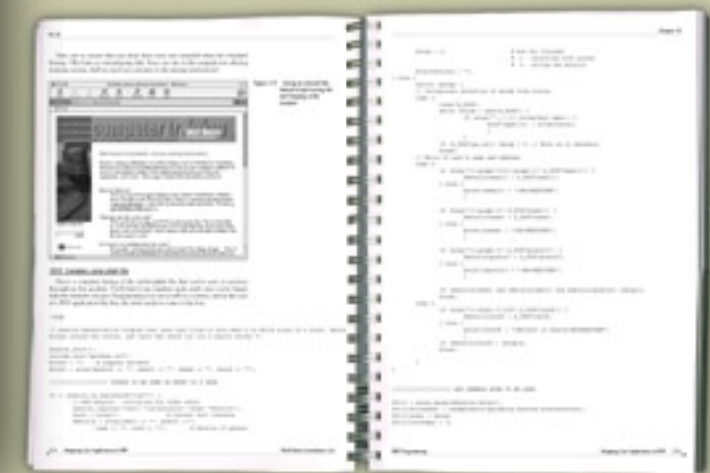
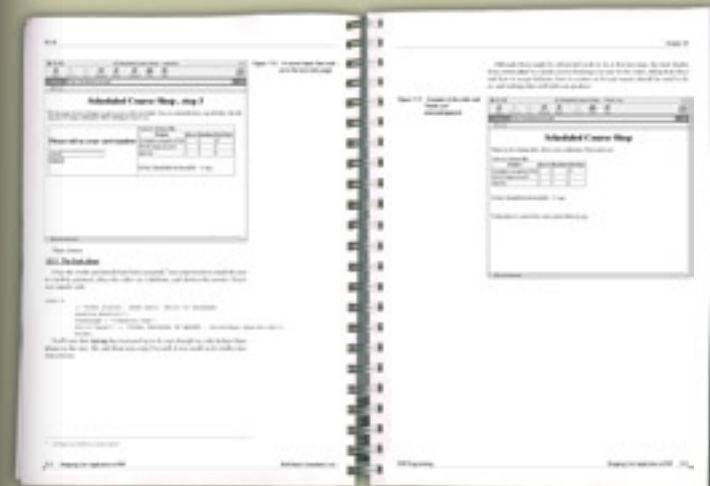
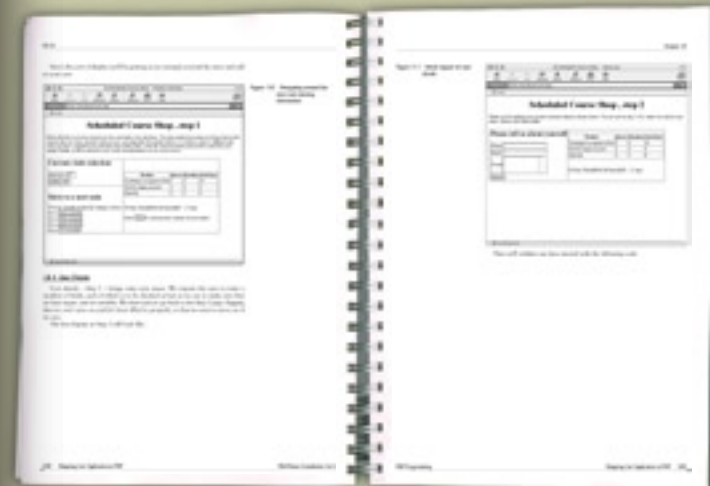


Things to do after the course:

1. Find a good place to hang my course certificate
2. Replace my current mousemat with this new one (really going to be a help while I program!!)
3. Hide the highlighter pen...I don't want someone to nick it!
4. Go over all the notes I made in the manual...pay attention to bits highlighted
5. Ask questions on Open Forum
6. Tell John and Emma about this course...it'll be perfect for them
7. Look out for the next issue of "Of Course"

<http://www.wellho.net/cgi-bin/opentalk/va38.pl>

Well House consultants LTD
www.wellho.net





Open Source Technology: Keeping up with the pace

A friend once said to me, “I don’t know what the language of the future will look like, but it will be called Fortran”. We may chuckle, but my friend was right in one consideration: languages must change to survive, and in this article we look at the major release plans of Perl, PHP and MySQL by looking a little further ahead than we normally do.

Perl

Current release 5.8.0, soon to be 5.8.1

Perl 6 will not be source-code compatible with Perl 5, but its author, Larry Wall, has come up with a brilliant future model for the language which leads to sensible route

forward for legacy code and programmers. (This is further described on page 4 in this issue.)

Perl 6 will sit on top of the Parrot runtime engine. Technically, it will be a “grammar” and other grammars, such as Perl 5, will also be supported. Where to start with describing the syntax that the grammar defines? That’s a hard one. It’s too negative to say “everything that you’ve said ‘wouldn’t it be nice if ...’ to in Perl 5 has been dealt with.” The statement is true, but it goes further.

Key design features:

- Perl will stay true to its original design purpose

- Perl 6 will be familiar to Perl 5 users
- Perl 6 will be mechanically translatable from Perl 5
- Perl 6 will add a number of important features
- Perl 6 is intended to last 20 years or more

Is Perl 6 taking a time? Yes, but a project of this breathtaking magnitude is bound to. One of these days, the doors will open and a shiny new camel will step out into the sunlight. It will support exceptions, delegation, multimethod dispatch, switches, continuations, co-routines and many other features which are very powerful but have been traditionally hard to explain. No doubt we’ll be

providing update seminars and courses.

If you want to read more about the grammar of Perl 6, we have a more technical description in our solution centre at <http://www.wellho.net/solutions/index.html>

PHP

PHP has grown explosively over the past couple of years. It’s a rare beast in that it’s both a language and a web server interface method all rolled into one, and it outshines the separate language plus interface methods that have been kludged together to fill the same role.

continued on next page

Open Source programmers have been busy this past summer with new releases coming thick and fast.

To keep you up to speed, here’s a time line for the coming months:

as of 22 July 2003

MySQL 4.0.14 available

With the second production release of MySQL 4, MySQL 3.23 is rapidly being replaced.

as of 29 July 2003

Python 2.3 (final) released

Python 2.3 will be included in the next version of Mac OSX, code named Panther, which is scheduled to ship by the end of this year.

this Autumn 2003

Linux 2.6 kernel improvements

The 2.6 Kernel will come out in the next couple of months, including support for new architectures and a rewrite of the drivers for block devices.

by the end of 2003

MySQL leaps forward

Development is pushing towards the 5.0 release of MySQL, which is promised by the end of the year, and 5.1 following shortly thereafter.



Back Issues Available

All back issues are available by post to UK addresses at no charge. Please phone or email us for a copy or two. If you don't have a UK address, please let us know your interest in our training, and we'll send you a copy.

Issue 1 - Winter 2000/2001 - 12 pages

Perl Whirl 2000 - An Alaskan Adventure
Wellhokommen, Bien Venue - Open Source training centre.
What is Tcl? - Tcl/Tk and Expect
Handling Huge Data - Sample script to analyse the XML from DMOZ
Book Review - The "New Camel"

Issue 2 - Spring 2001 - 16 pages

Quiz - Checking your knowledge in Perl, Java and Tcl
Using FTP from Perl
In and around Melksham
Blistering Speed right to the laptop
How to decide if Open Source is right for you

Issue 3 - Autumn 2001 - 16 pages

Behind the mechanics of PHP
Java threads for a simple chat room
What is XML?
Relating to MySQL
Wireless networking, the next generation or just more IT Hype?

Issue 4 - Winter/ Spring 2002 - 16 Pages

Keeping data secure as it passes through the Internet
Extracting text from Microsoft Word documents in Perl
Daemons - a story of gods and mortals
Compiled, Interpretive and Virtual machine languages
The Parrot virtual machine

Issue 5 - Autumn 2002 - 16 pages

Regular Expressions - major feature
Bringing Tcl up to date
Learning Perl as a first language - which books will help me?
Tk - How it controls the updates of your screen
Favourite Regular expressions

Issue 6 - Spring 2003 - 16 pages

Letting the cat out of the box
When size matters - text fields in MySQL
Data Mining and Content Management Systems
Setting up online e-commerce; not as daunting as you might think
Introducing our loo

Keeping up with the pace

continued from previous page

But even in its short life, PHP's feature set has developed out of all recognition, and it's very much "PHP Hypertext Preprocessor" rather than Rasmus Lerdorf's "Personal Home Pages" where it started. There were sufficient changes from PHP3 to the current PHP4 to require servers to support both through different file extensions. Even within the PHP4 releases there was a change to variable inputs from form. This was an important change to secure newcomers to the language against a possible hole that sloppy programming could leave. So we see that the PHP team is not frightened to make changes, where necessary, that will affect source.

From its origins as something that can be used to punch through executable content onto a web page, PHP has grown of age into a language well suited for its original purpose and much more. Note the structure of our sample application in this issue on page 17, where PHP is used to generate two completely different result pages from the same script, and all of this (admittedly simple) example is itself on a single page.

What else is needed as a language moves up the (web) application complexity curve? From PHP4, built-in session handling functions provided for easy maintenance of state, and an object model was introduced, which included a good implementation of classes, properties, methods, inheritance and polymorphism.

PHP5 (there's now a beta release out there for testing) uses the new Zend2 engine, and adds further Object Oriented support - the ability to define abstract classes and methods, to declare variables as being private or protected, and to define interfaces. Amongst other features are:

- Exception handling
- an `__autoload` fall back if an undefined function is called

- XML handling updated, and fully based around the libxml2 engine
- a complete database handler in the form of SQLite

MySQL

As a database system grows, database integrity and compatability is vital. Monty Widenius and his team don't have the luxury of being able to change their system over the years in the quite the way that the Perl and PHP people can. Since our last issue, PHP 4 has moved from being a beta release to full production (now 4.0.14), and our MySQL course covers MySQL 4 as its main release. A big announcement? In some ways, yes, but in fact a gentle step forward as far as the user is concerned rather than a leap. Changes include:

- Performance improvements
- The building in of InnoDB tables as standard
- Extra further adherence to standards
- Extra common SQL commands from othe database products supported
- The availability of an embedded library

There's a 4.1.0 Alpha release available that includes extras like subqueries, and a "create table like" construct. For example:

```
SELECT * FROM t1 WHERE
    t1.a=(SELECT t2.b FROM t2)
CREATE TABLE aug03 LIKE
    TABLE monthtemplate
```

There's also a whole new system to support spacial data. For GIS (Geographic Information System) users, this will lead to much easier queries such as, "I want to find the Kentucky Fried Chicken nearest to our Melksham training centre."

Release 5 of MySQL has been talked about, but as yet no download is on the MySQL site.

The big, big news here is stored procedures - watch out for more information in the next edition of this newsletter.



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Setting your own PHP function for sticky boxes

PHP is a modern language because it's not as constrained by distribution size or performance issues as its predecessors. PHP is provided with a far richer feature set than alternative languages, through a plethora of functions.

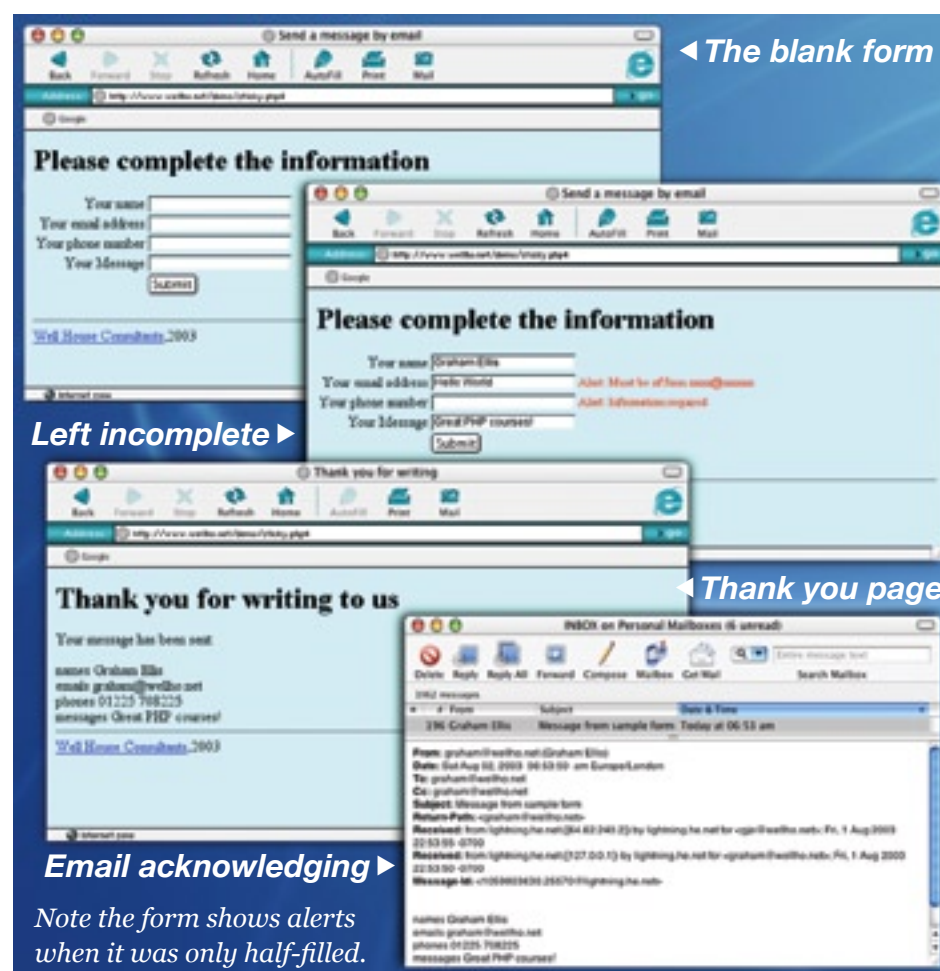
“There's a function to do that.”

Yet one of the most common requirements of all, the ability to provide an input box on a form that retains its content from one page to the next, is not catered for by a single standard function or built-in library.

HTML form elements come in a number of varieties, with a large range of parameters available. Requests to the user will include not only an input element, but also a description of the input required from the user. A third element that's often present is a help facility, either a piece of text describing the type of input, or an assistance button. Finally, the application designer has to decide how the elements are to be laid out. A table would be the most common, but where should the help element go? To the left? To the right? Let's call all these elements together a “User request element”.

If the authors of PHP had tried to provide a set of functions to handle user request elements, the function calls would require long and complex calling structures to take in all the options needed across everyone's application, or they would be limited by arbitrary decisions made about the HTML generated. This is one case where you roll your own functions.

This issue's sample script is a PHP script which uses sticky boxes on a form to ensure that all boxes are completed to specification before the inputs are acted on. The script will send an email, with a copy to the originator. The script uses a number of “best practices” including:



- Code inset to clarify the block structure
- Checking inputs with regular expressions
- Grouping functions under similar names (ure_...)
- Keeping PHP and HTML as separate as possible
- Doing all the data processing before sending the HTML out
- Allowing for special characters such as < and " in user inputs
- Providing an easy route to add or modify the form
- Using the POST method to avoid exposing data in the URL
- Keeping the whole application in under a single URL
- Providing good user feedback on errors made

- Providing user feedback when the task was completed successfully
 - Use of hidden field to maintain state
 - Use of date function to keep page current
 - Standard HTML tags – all lower case, all parameters quoted
- Adding to the script**
- Enhancements or modifications to consider to this script could include:
- Add extra ure_ functions for extra form element types
 - Place the ure_ functions in an include file in a directory not exposed to the web
 - Log uses of the script to a log file
 - Check script uses to ensure it's not being used as a mail relay
 - Loading the HTML from separate files

1. Function ure_input returns a table row including a sticky input box, an alert, and descriptive text for the user

2. We use a hidden field to see if the visitor has just arrived at the script, or has submitted the form for processing

3. Testing to see if each field has have been completed

4. Testing the email address to see if it is correctly formatted

5. Adding a submit button and completing the data entry table

6. Email the recipient, copy the site visitor, if the form was correctly completed

7. The HTML code for the form for the user to complete or correct

8. The HTML to acknowledge that the email has been sent

```
<?php
function ure_input($name,$description,$currentvalue,$alert) {
    if ($alert) { $extra = '<font color=red size=2>Alert: '.
        htmlspecialchars($alert).
        '</font>';
    } else {
        $extra = '&nbsp;'; }
    $description or $description = '&nbsp;';
    $html = '<tr><td align="right">'.
        htmlspecialchars($description).
        '</td><td>'.
        '<input name="'. $name.'" value="'.
        htmlspecialchars(stripslashes($currentvalue)).
        "\"></td><td>$extra</td></tr>";

    return $html; }
////////////////////////////////////
$ask = array(name => "Your name", email => "Your email address",
    phone => "Your phone number", message => "Your Message");
$completed = $_POST[subsequent];

$html = '<input type="hidden" name="subsequent" value="1"><table>';
$msg = '';
foreach (array_keys($ask) as $field) {
    $alert = '';
    if ($_POST[subsequent]) {
        if (!ereg('[:graph:]',$_POST[$field])) {
            $alert = 'Information required';
            $completed = 0; }
        if ($field == "email" && $completed != 0 &&
            !ereg('^[:graph:]+\@[:graph:]+\$',$_POST[$field])) {
            $alert = 'Must be of form xxxxx@xxxxxxx';
            $completed = 0; }
    }
    $html .= ure_input($field,$ask[$field],$_POST[$field],$alert);
    $msg .= $field.'s '.stripslashes($_POST[$field])."\n";
}
$html .= '<tr><td>&nbsp;</td><td><input type="submit"></td></tr></table>';

if ($completed == 1) {
    mail ('graham@wellho.net',
        'Message from sample form',
        $msg,
        "cc: $_POST[email]\n".
        "From: graham@wellho.net (Graham Ellis)\n"); }
$copyright = '<a href="http://www.wellho.net">Well House Consultants</a>,'.
    date("Y") ;
if ($completed == 0) {
    ?>

<html><head><title>Send a message by email</title></head>
<body bgcolor="#ccffff"><h1>Please complete the information</h1>
<form method="POST">
<?php print ($html); ?>
</form><hr>
<?php print ($copyright) ; ?>
</body></html>

<?php } else { ?>

<html><head><title>Thank you for writing</title></head>
<body bgcolor="#ccffff"><h1>Thank you for writing to us</h1>
Your message has been sent:<br><br>
<?php print (nl2br(htmlspecialchars($msg))); ?>
<hr><?php print ($copyright) ; ?>
</body></html>

<?php } ?>
```

This script is available on our web site at <http://www.wellho.net/demo/sticky.php4>

Is link or copy the best way to store your data?

If you have to make a “link or copy” decision, think about the data maintenance and integrity over time, and that should provide a good lead. For a web site, the general rule is “link rather than copy”. Data is maintained by individual authors on individual web sites and, by providing a link from your page, you ensure that you’ll be up-to-date as soon as the original author updates his page. In a database, the general rule is “copy rather than link”. By taking a copy, a single authoritative set of the data is held and its data

For a web site, the general rule is “link rather than copy”

integrity can be maintained. Were links to individual files stored, then those files could be moved, deleted or altered, damaging the overall resource.

Case Study 1

We trained an organisation that provides standards documents on its web site, publicly available to anyone who wishes to consider bidding for contracts. Their web site is the standard reference for this information, and they encourage others to link to their web site, but not to copy the standards. Indeed, they’re so concerned about this that they monitor log files and even analyse individual accesses (via PHP) to look for suspicious footprints. Why the big concern? If a contractor bids on the basis of an outdated standard from a copy site that’s been tightened because of a safety issue, it’s a big problem down the line for everyone.

Case Study 2

A poster to our Opentalk board (www.opentalk.org.uk) has been asked to manage the data from a set of experiments. He comments, “The data is such that I’m having a heck of time formulating tables for this.” He wonders whether to copy into the database, or to link via file names. The decision is to



“I’m designing a web site. Should I link to data that’s available elsewhere on the web, or copy it into my page?”

“I’m storing data in a relational database. Some of it is big blobs of information. Should I copy them into my database, or simply store file names?”

copy the data into tables. The project is an urgent one that has to be written quickly as the data is already building up, so at this stage the table structure

In a database, the general rule is “copy rather than link”

will be very simple with just a few management information columns, and the result sets stored as long text fields or perhaps blobs. The possibility of files being accidentally moved or deleted if only links to files were stored is too fearsome to contemplate, and the presence of the authoritative data at

a single definitive point will avoid all sorts of other data integrity problems.

With one case study coming down strongly in favour of “link” and the other strongly in favour of “copy”, is there some sort of general rule or guide that can be applied? Yes. Design your application so that there’s a single location at which the current, correct, available data is to be held, and provide a stable and robust system to reach that data through appropriate references or look-ups. For web applications, that lookup is likely to be a URL. An SQL table will have a server, database, table and column names, and a unique row key.



Ah, it's a hard life, but someone's got to do it.

People and places from the last six months took on an intercontinental flavour this time. We presented a PHP course for Pepperdine University in Malibu, California in the Spring – beautiful campus, and an opportunity to ski for a day at Big Bear after the course. In August, we visited South Africa for the wedding of former employee Delene Gird, who didn’t actually leave us as she married our son Chris. And thirdly nearby Oxford where we’ve presented a number of courses recently.

Is deployment training a future growth area? We're banking a few courses on it

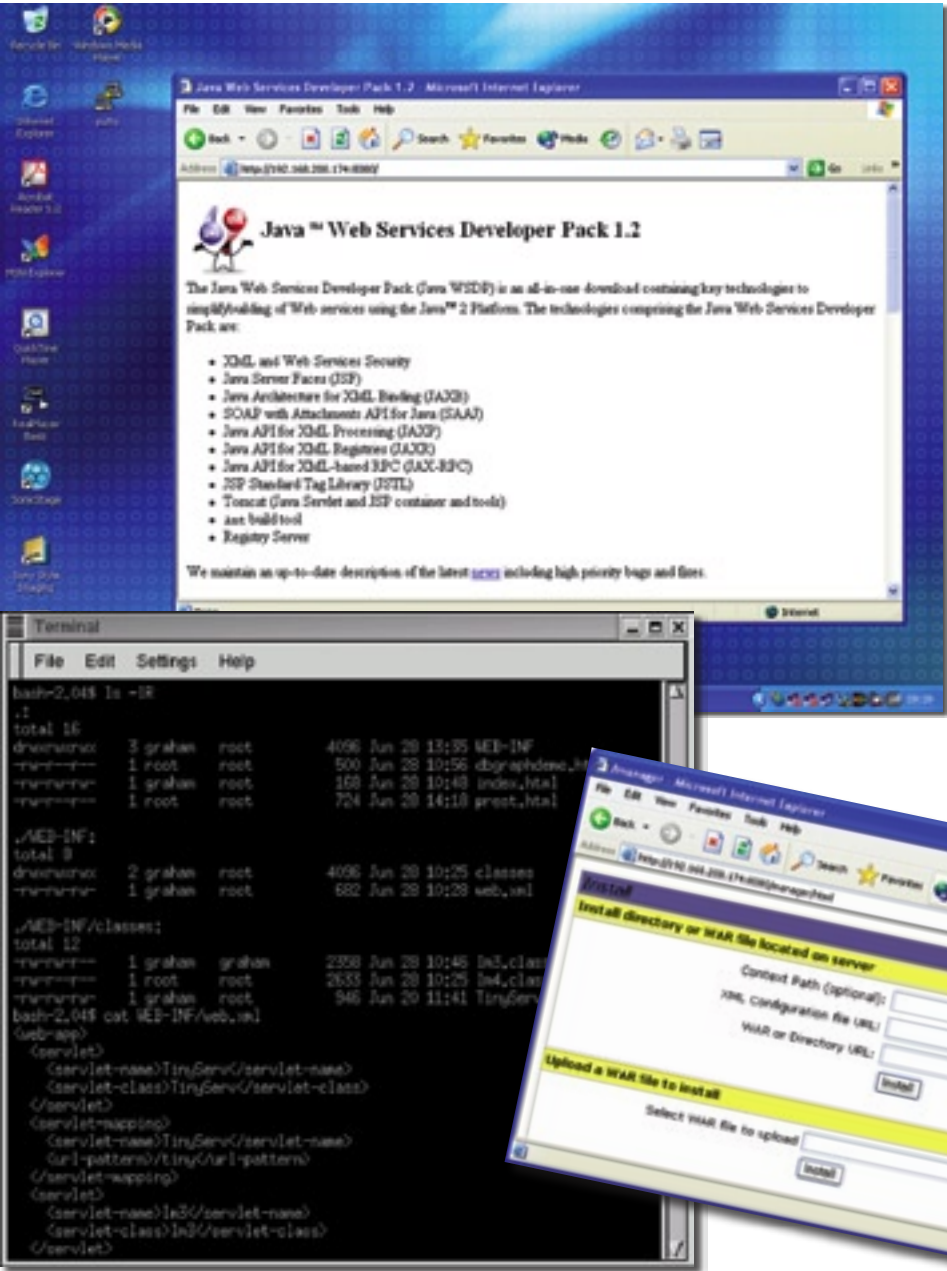
Gone are the days when every computer application was custom coded. These days the world turns on standard or tailored software, with a much smaller proportion of custom code used for highly specialist requirements, or to glue together standard parts into a complete system. Very often, the glue itself is provided by a specialist supplier who writes a little glue code, configures a number of pieces of standard software, and provides a completed system for the end user client.

**New course at WHC:
Deploying Apache, Tomcat**

Does that end user client (or the third party support team) need to know how to program? No, but they do need to know how to configure, back up and trouble shoot, and that includes a need to understand the foundation technologies. If the application being deployed is, say, a company's first web-based Java application, the new technologies involved may include:

- Web application structure and deployment
- HTML, XML and SQL
- Java, Servlets and JSPs
- Web servers such as Apache httpd and Tomcat
- An SQL server such as MySQL
- An operating system such as Linux, Unix or OSX
- Version control software (CVS), build control software (ANT) etc.

We use these technologies, we know them far deeper than most, and we're trainers. A natural extension to our product range are technology deployment courses; first course was in Summer 2003. By the time you receive this newsletter the courses will be well tested and available as private courses at our place or yours, and we'll be running some public courses too.



**New course at WHC:
Deploying Java on Web Apps**

**Deploying Apache and Tomcat
2-Day course (public or private)**

How to source, install, configure, and support Apache httpd and Tomcat as a platform on which to run your Java-based web applications using JSPs or Servlets. The course also covers the structure of Java: compilers, virtual

machines, class files, JARs, WARs, beans, CLASSPATHs, etc. Assumes some prior knowledge of HTML, and your target operating system. See <http://www.wellho.net/course/atfull.html>

Deploying Java, Apache Tomcat and MySQL on Linux, Unix, OSX

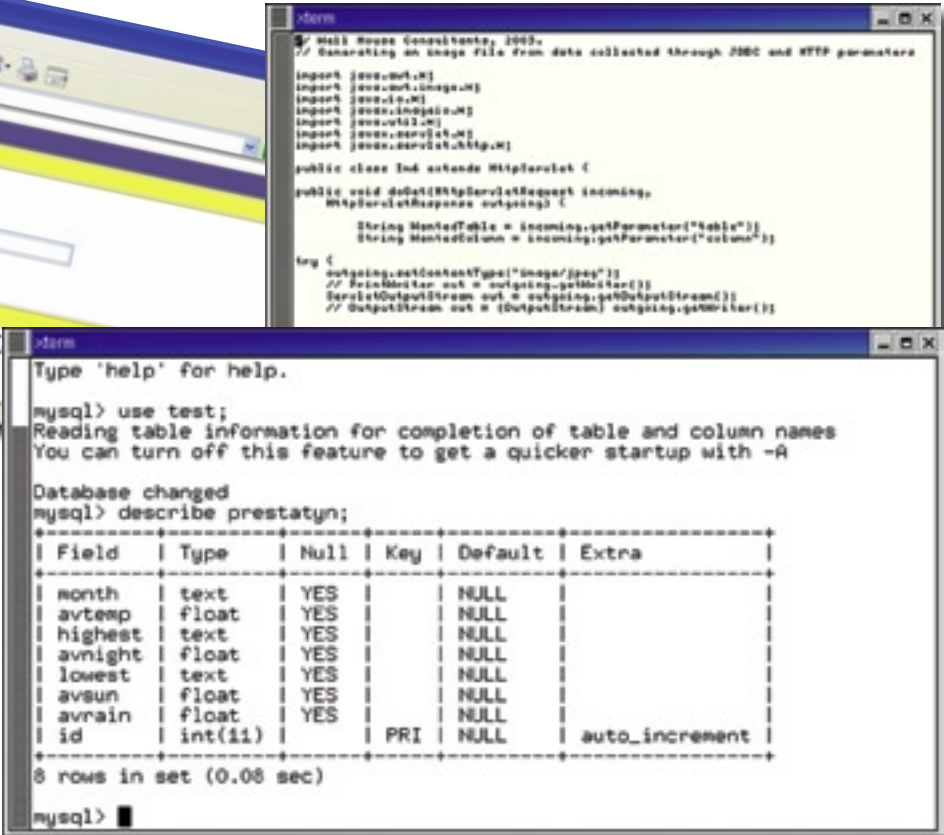
Private course, up to 5 days.

We'll introduce any of the background technology that you will need, from web structure through the "nix" operating systems, HTML,

XML and SQL, concentrating on the aspects that you'll need to know to support your Java application. Then we'll look at Java itself, perhaps a little programming so that you know what to look for if you have to look

**New course at WHC:
Deploying LAMP**

in the source sometimes, but mostly at the structure of compilers, virtual machines, distribution files such as .class .jar and .war, and so forth. Next, we'll look at deploying Tomcat as the container for your application and, if required, we'll look at Apache httpd too, and deal with how the two servers can be connected. Finally, the course can look at sourcing, installing and looking after a MySQL database server and how it serves your Java application. See: <http://www.wellho.net/course/ajfull.html>



Is a private course economically sensible? If you have three or more trainees who need the same course at the same time, yes it is. If you have just one or two staff who need to learn these subjects, do let us know. We can arrange for a one- or two-day introduction to the basic subjects for them, followed by places on our public "Deploying Apache and Tomcat".

Deploying LAMP - Linux, Apache, MySQL, Perl / PHP

The majority of web servers worldwide run the Apache web server, and the most commonly used operating system is Linux, or a variant of Unix. If you require deployment training in any (or all) of these technologies, we can provide up to four days of tailored private training for you. If you need to learn deeper into MySQL, Perl or PHP, we offer regular public courses on each of those subjects. See: <http://www.wellho.net/course/alfull.html>

Latest, Stable Versions
as of mid August 2003

Perl <i>www.perl.com</i>	5.8.0
Tcl/Tk <i>www.tcl.tk</i>	8.4.4.0
Expect <i>expect.nist.gov</i>	5.39.0
PHP other versions: <i>www.php.net</i>	4.3.2 4.3.3 RC3 5.0.0 Beta 1
Ruby <i>www.ruby-lang.org</i>	1.8.0
Python <i>www.python.org</i>	2.3
MySQL other version: <i>www.mysql.com</i>	4.0.14 4.1.0 Alpha
Java Standard <i>java.sun.com</i>	1.4.2
Java Enterprise other version: <i>java.sun.com</i>	1.3.1 1.4 Beta 2
Apache HTTPD <i>httpd.apache.org</i>	2.0.47
C (Gnu) <i>gcc.gnu.org</i>	3.3.1
Tomcat other versions: <i>jakarta.apache.org</i>	4.1.27 5.0.7 Alpha

A very active six months since this table was last updated, reflected in the fact that every line entry except one has changed!

Schedule

PERL

Learning to Program in Perl
5 days £1090
Starting at a gentle pace, it introduces you to some of the principles of programming before going on to cover features of the Perl language.
17 - 21 November 2003
15 - 19 December 2003
2 - 6 February 2004
19 - 23 April 2004

Perl Programming
5 days £1090
Covers the major features of the language and their use for newcomers.
17 - 21 November 2003
15 - 19 December 2003
2 - 6 February 2004
19 - 23 April 2004

Using Perl on the Web
2 days £490
CGI, mod-Perl, standards. Sessions, cookies, content management, etc.
20 - 21 October 2003
9 - 10 February 2004

Perl for Larger Projects
3 days £690
Objects, huge data, SQL databases, XML, efficiency and other topics.
22 - 24 October 2003
11 - 13 February 2004

Perl Extra
1 day £290
Subjects not covered on regular public courses.
telephone for details

PHP and MySQL

Technology for PHP
1 day £290
Overviews the technologies such as the Web, programming and SQL that you'll need to make good use of PHP. A lead-in day for our PHP Programming course.
29 September, 2003
24 November 2003
12 January 2004
15 March 2004

PHP Programming
4 days £890
Learn PHP, and its use as a web-scripting language.
30 September - 3 October 2003
25 - 28 November 2003
13 - 16 January 2004
16 - 19 March 2004

The MySQL Relational Database
2 days £490
Structure, installation, administration, database design and programming through SQL.
6 - 7 October 2003
1 - 2 December 2003
19 - 20 January 2004
22 - 23 March 2004

JAVA

Learning to Program in Java
5 days £1090
Writing Java programs for newcomers to programming.
3 - 7 November 2003
8 - 12 March 2004

Java Programming for the Web
5 days £1090
Learn to write server- or client-side applications in Java.
3 - 7 November 2003
8 - 12 March 2004

Deploying Java Applications on Linux and Unix
5 days £1090
Learn to install and support applications under Linux/Unix with Apache, Tomcat and MySQL.
telephone for details

Java Extra
1 day £290
Subjects not covered on regular public courses.
telephone for details

OTHER

Python Programming
3 days £690
The fundamentals in depth, and an introduction to applications such as

GUI design and data munging.
8 - 10 October 2003
21 - 23 January 2004
Ruby Programming
2 days £490
A modern, object oriented, portable scripting language.
telephone for details

Tcl Programming
3 days £690
Fundamentals of the Tcl programming language including Expect, libraries and regular expressions.
13 - 15 October 2003
23 - 25 February 2004
Tcl - the Tk Toolkit
2 days £490
Covers widgets, geometry managers and event handlers of the TK GUI so that you can write and maintain graphic applications.

16 - 17 October 2003
26 - 27 February 2004

GENERAL

Getting Public Sector Data Online
1 day £290
The technologies that allow web access.
telephone for details

Regular Expressions
1 day £290
Dedicated to pattern recognition and matching, dependant on recognising sequences of characters.
3 December 2003

Deploying Apache and Tomcat
2 days £490
How to source, install, configure and support Apache and Tomcat for the deployment of Java web applications.
4 - 5 December 2003
24 - 25 March 2004

Deploying LAMP - Linux, Apache, MySQL, Perl / PHP
4 days £890
Installing and supporting applications under open source technologies.
telephone for details

Calendar

Public scheduled courses are shown in tan. Open dates indicated as a guide only and are reserved for private on site courses. If you have four or more students and would like a course custom-tailored to your needs, please phone us to make sure the dates are still available.

OCTOBER 2003

PHP	PHP			
29	30	1	2	3
MySQL		Python		
6	7	8	9	10
TCL			TCL	
13	14	15	16	17
PERL		PERL		
20	21	22	23	24
27	28	29	30	31

NOVEMBER 2003

JAVA				
3	4	5	6	7
10	11	12	13	14
PERL				
17	18	19	20	21
PHP	PHP			
24	25	26	27	28

DECEMBER 2003

MySQL		RegEx	Apache	
1	2	3	4	5
8	9	10	11	12
PERL				
15	16	17	18	19
closed				
22	23	24	25	26
closed				
29	30	31	1	2

JANUARY 2004

closed				
29	30	31	1	2
5	6	7	8	9
PHP	PHP			
12	13	14	15	16
MySQL		Python		
19	20	21	22	23
26	27	28	29	30

FEBRUARY 2004

PERL				
2	3	4	5	6
PERL		PERL		
9	10	11	12	13
16	17	18	19	20
TCL			TCL	
23	24	25	26	27

MARCH 2004

29	2	3	4	5
JAVA				
8	9	10	11	12
PHP	PHP			
15	16	17	18	19
MySQL		Apache		
22	23	24	25	26
29	30	31	1	2

New page packed with punch; data mining to meet your profile

Welcome to our new home page – <http://www.wellho.net>. It's no longer a flat page as it automatically reflects the latest news on our site, and it's tailored to reflect the country you're browsing from or any over-riding preference you've given. If you arrive on a link from a well known search engine, our data mining techniques allow us to offer you links suitable for the enquiry you made.

Technical note: Our home page includes code in PHP, which the server runs so that it can send your browser tailored HTML. It uses a database of IP addresses to discover which country you're browsing from

(you can override this, and we'll remember through a cookie), and it uses other resources such as a MySQL database of books and the data files maintained by the Opentalk forum to punch through the latest news from

other parts of our site. You'll learn techniques such as these on our PHP course. (We've also incorporated cascading style sheets and other W3C standards ... and about time too!)

The screenshot shows the homepage of Well House Consultants Ltd. with several annotations highlighting dynamic features:

- All date formats vary depending on visitor's country**: Points to the date "02nd August 2005".
- Illustration changes daily**: Points to a building image on the left.
- Box is pre-selected for visitors from search engines who searched for Perl, Java, PHP, Tcl, MySQL or Python**: Points to the "Select Subject" dropdown menu.
- "Postcode" changes to "Zipcode" for the USA, "County" for Ireland**: Points to the "Search site for" input field.
- Phone number prefixes change to 01144 for visitors from North America and to +44 (0) for other international visitors**: Points to the "Enter your postcode for e-mail" field.
- Box is pre-filled with country name for mainland Europe visitors to the page**: Points to the "Select your country" dropdown menu.
- Link changes to reflect news**: Points to the "What's New?" section.
- News changed regularly via a PHP page**: Points to the "Of Course!" section.
- Dynamic link to latest OpenTalk topics**: Points to the "Opentalk Forum" section.
- Latest forum topic punches through to our home page**: Points to a forum topic link.
- Cover picture automatically changes to reflect the top book title**: Points to the "What's New?" section.
- Books reported are the latest books we've updated on our database**: Points to the "What's New?" section.
- Copyright year changes automatically**: Points to the footer text "Updated 02nd August 2005".

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Our office hours are 08:00 to 18:00 Monday to Friday.

You'll usually reach us at the weekend and in the evenings, too, as we often divert the phone when we're not around. If you email us, we'll receive your email within 24 hours, 365 days a year.

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Not only faster, but bigger, too!

We've spent so much time telling you how fast we've got, we almost forgot to mention how much bigger we are! We kept running out of space for all the things we've been wanting to share with you in each issue, so this copy of "Of Course" has been upped to our new size to accommodate. Our first issue filled 12 pages. And just as our broadband doubled, so has this issue in comparison.

Sadly, we still ran out of space. Just too many exciting things happening with us and with open source technologies as well! Until next issue...