

# of course

VOLUME 4, NUMBER 1

SPRING 2004

Using Wi Fi on the road

**Starter**  
Technology for PHP  
Learning to Program in Perl  
2005

**Main Course**  
PHP Programming  
Perl Programming  
Tel and Expect Basics  
Java Programming for the Web  
Python Programming  
2005

**Side**  
Tcl/Tk and Expectk  
MySQL Relational Database  
Apache Tomcat Deployment  
Regular Expressions  
Using Perl on the Web  
Perl for Larger Projects  
Deploying LAMP  
2005

**Dessert**  
Perl Extra  
PHP Extra  
Java Extra

**Melksham  
Restaurants**

Where to eat  
in the  
evenings

**Who teaches the teachers?  
Where we go to learn it ourselves**

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## PHP: What do the letters stand for?

Originally, PHP was Rasmus Lerdorf's "Personal Home Pages", but as the language grew beyond all recognition, it was felt that a new acronym should be provided. Now, it's \*P\*HP \*H\*ypertext \*P\*rotocol.

## How do I learn Object Oriented design?

Numerous books are available on object orientation; you might like to look at some of these. Have a look also at "UML" – the Unified Modelling Language – which allows teams of IT developers to design a system, or model, through a number of diagrams (views). Although you're unlikely to want the formality of UML, the diagrams are instructive and you can learn a lot by sketching out informal alternatives for your project. To some extent, good training courses introduce OO design. We do on our Python and Java courses as both those languages are OO-based, and on our Perl for Larger Projects course too. But few attend a full programming techniques course as well as a programming language course. In any case, the very best way to learn is to get a basic grounding...and then practise.

Take a look at our feature article on pages 18-20 for tips on how to create quality code, including incorporating object orientation.

## A matter of choosing which OS to use

Would you like to sit at a computer running Windows, or one running Linux, or one running Mac OSX for the practical exercises on your training course with us? Perhaps you might even prefer to bring your

own laptop and use that as well as one of our machines?

We aim to provide all our customers with training to suit their needs. We have trainee workstations available with OSX, Linux and Windows, and we can normally provide you with the operating system of your choice from this list. If you let us know ahead of time, we can actually guarantee that you'll have the OS of choice.

Trainees often bring their own systems, and are welcome to connect in to our training network using either a 10/100/1000 base T cable, or a wireless connection. We'll provide configuration information for you so that you can make full use of our external Internet link from your machine, and so that you can download training examples and data from our course server and even upload to it on our server/programming-based courses.

## What's a polecat?

### Perl One-Liner Eclectic CATalog

An entire Perl program that can be either written in one line, or typed in its entirety at the command line. Often seen in email signatures. Also: One line of Perl code that contains an impressive amount of functionality.

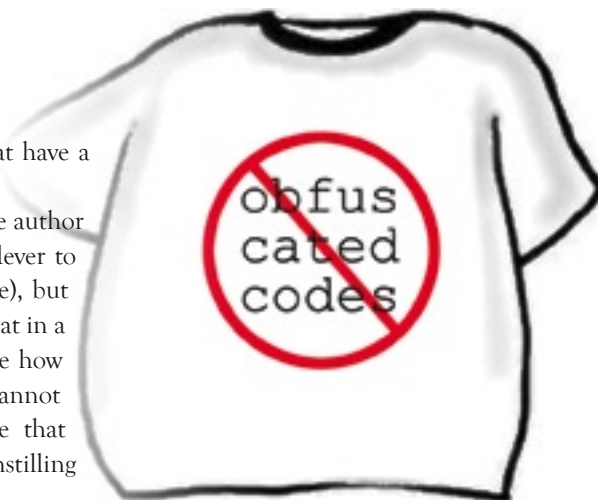
If a one-liner is preceeded with the word 'perl', what you see can be typed at the command line. If not, then you can copy and paste it into your Perl code, or run it at the command line by typing:

```
perl -e `code goes here`
```

## I refuse to wear THOSE shirts!

Have you seen the tee shirts that have a piece of obfuscated Perl on them?

"I refuse to wear those shirts; the author of the code may have been very clever to get the code so short (and obscure), but you should never write code like that in a real live application. I teach people how to write good applications, and I cannot be seen wearing a piece of code that breaks the design rules that I'm instilling in my trainees!" – Graham



## Get the update on where to stay here

We have regularly provided an accommodation list for Melksham in our "Of Course" newsletter so that trainees who are booking onto courses can see the wide variety that's available locally, and can directly contact an establishment that suits their needs.

However, we've noticed this information seems to get out of date very quickly, so we're now maintaining it on our web site in the form of a downloadable .pdf.

We'll still continue to send out an updated, printed copy with each booking confirmation on a public course, along with a map showing how to find our centre.

To download the latest accommodation list, please visit our web site:

<http://www.wellho.net/downloads>



## The hidden costs of developing and/or maintaining software over a lifetime

Do you think that it's costly to develop software? It's certainly much more expensive than buying a piece of standard software (if one is available), but that's not the full story.

Lifetime software maintenance costs are likely to exceed the cost of original development. Did you know that 80 per cent of applications are not maintained throughout their life by the original developer?

And did you know that the investment in the data held within your application, and its maintenance, is likely to exceed the combined software development and maintenance costs?

If you're developing software, it's vital that you use a design which will make for easy maintenance. It's also vital that your design gives full consideration to the user, not merely providing a way of doing everything that's needed, but providing an efficient, reliable way.

A WORD FROM GRAHAM ELLIS

## Quality matters

Welcome to our Spring 2004 issue, bringing you the latest news from Well House Consultants and the Open Source programming languages on which we provide training.

The theme of our eighth newsletter is "Quality" and we have a number of technical articles relating to software quality, ranging from initial design right through to final documentation for a project, with visits to useability and maintainability in between. We also touch on our own business philosophy, which is very much quality oriented.

All the programming languages that we teach are high quality pieces of software. They're reliable, fit for the purposes to which most users apply them, and easy to use. It is true that there are easier things to learn, but that's where our courses can come in.

Speaking of quality, we pride ourselves on providing high quality courses. Because we write our own notes, we're always updating to improve them further and to keep right up with latest releases. We also listen closely to you and treasure your comments.

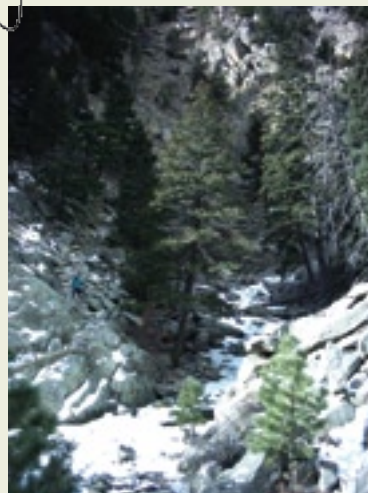
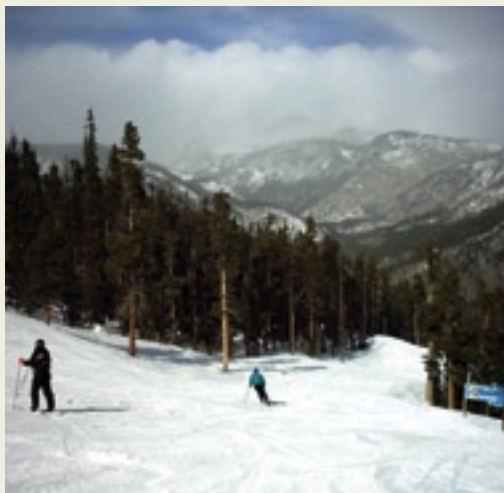
Quality figures into our own training centre, too, with facilities second to none. Because we limit the number of trainees on public courses to seven we can ensure we provide individual attention to each student's needs.

But how can you be sure you're getting quality where it matters most? How does our tutor learn in order to be able to teach you? From books in our vast library. From practical work in the subject he's teaching by consulting for other organisations.



*Graham recently attended a course in Colorado presented by Mark Lutz, author of several Python books.*

From research undertaken to write the notes. And from other authorities on the subject. If there's a niche subject that we're getting involved in, we'll attend the courses ourselves, given by the best authorities on the subject, either by the authors of the language itself, or by authors of definitive guides to the subject. If that includes travelling halfway around the world to attend a class, then so be it. Do read my report on my visit to Colorado to see how Mark Lutz trains on Python.



*One of the perks of attending a course in Colorado is having a free Sunday to explore.*

# Joining tables in MySQL

If you're designing a database, you shouldn't try and place all your data in a single table, otherwise you'll end up with limitations, duplications and a system that's hard to maintain.

Codd's principles of database design set out how to normalise data to avoid limitation and duplication. By using these principles, you'll end up with multiple tables that need to be linked in your enquiry.

**Example of multiple tables**

Shown (right) are two tables of data.

**1. Distance**

The first shows the distance from home to various airports.

**2. History**

And the second gives flight history for the last six months.

**3. Origins and Destinations**

How does SQL give a report showing origins and destinations, and the distance to the airport for each trip?

**4. Eliminate incorrect responses**

a) Select from both tables without giving MySQL any information about how to link ("join") the tables and every possible combination is returned.

b) Specify a where clause to tell MySQL how to join the tables to eliminate the incorrect result rows.

**5. Or use a join**

An alternative (and perhaps better) syntax is to use a join.

**6. A left join**

c) If you want at least one row from one of the incoming tables in the result set, even if it doesn't match any data in the second table, a left join can be used (or, in recent versions of MySQL, a right join).

**7. Find the nulls**

MySQL can also be used to find "Orphan" records in a table. In this example, all airports for which there are no flight records are shown. Simply use a left join and look for null keys in the joined resultset where, in theory, a null can't exist.

*In 1985, Dr. Edgar F. Codd published a paper specifying what a relational database must support in order to be relational. Codd extended the 12 rules to 18 in 1990 to include rules on catalog, data types (domains), authorisation etc.*

1. Distances

```
mysql> select * from airports;
```

name	distance	aid
Bristol	30	1
Heathrow	94	2
Gotwick	116	3

2. History

```
mysql> select * from flights;
```

destination	fidate	flewfrom	fid
Minneapolis	2004-01-24	3	1
Los Angeles	2003-12-21	2	2
Washington DC	2003-10-16	2	3

3. Origins and Destinations

```
mysql> select * from airports, flights;
```

name	distance	aid	destination	fidate	flewfrom	fid
Bristol	30	1	Minneapolis	2004-01-24	3	1
Heathrow	94	2	Minneapolis	2004-01-24	3	1
Gotwick	116	3	Minneapolis	2004-01-24	3	1
Bristol	30	1	Los Angeles	2003-12-21	2	2
Heathrow	94	2	Los Angeles	2003-12-21	2	2
Gotwick	116	3	Los Angeles	2003-12-21	2	2
Bristol	30	1	Washington DC	2003-10-16	2	3
Heathrow	94	2	Washington DC	2003-10-16	2	3
Gotwick	116	3	Washington DC	2003-10-16	2	3

4. Eliminate incorrect responses

```
mysql> select * from airports, flights where airports.aid = flights.flewfrom;
```

name	distance	aid	destination	fidate	flewfrom	fid
Gotwick	116	3	Minneapolis	2004-01-24	3	1
Heathrow	94	2	Los Angeles	2003-12-21	2	2
Heathrow	94	2	Washington DC	2003-10-16	2	3

5. Or use a join

```
mysql> select * from airports join flights on airports.aid = flights.flewfrom;
```

name	distance	aid	destination	fidate	flewfrom	fid
Gotwick	116	3	Minneapolis	2004-01-24	3	1
Heathrow	94	2	Los Angeles	2003-12-21	2	2
Heathrow	94	2	Washington DC	2003-10-16	2	3

6. A left join

```
mysql> select * from airports left join flights on airports.aid = flights.flewfrom;
```

name	distance	aid	destination	fidate	flewfrom	fid
Bristol	30	1	NULL	NULL	NULL	NULL
Heathrow	94	2	Los Angeles	2003-12-21	2	2
Heathrow	94	2	Washington DC	2003-10-16	2	3
Gotwick	116	3	Minneapolis	2004-01-24	3	1

7. Find the nulls

```
mysql> select * from airports left join flights on airports.aid = flights.flewfrom where fid is NULL;
```

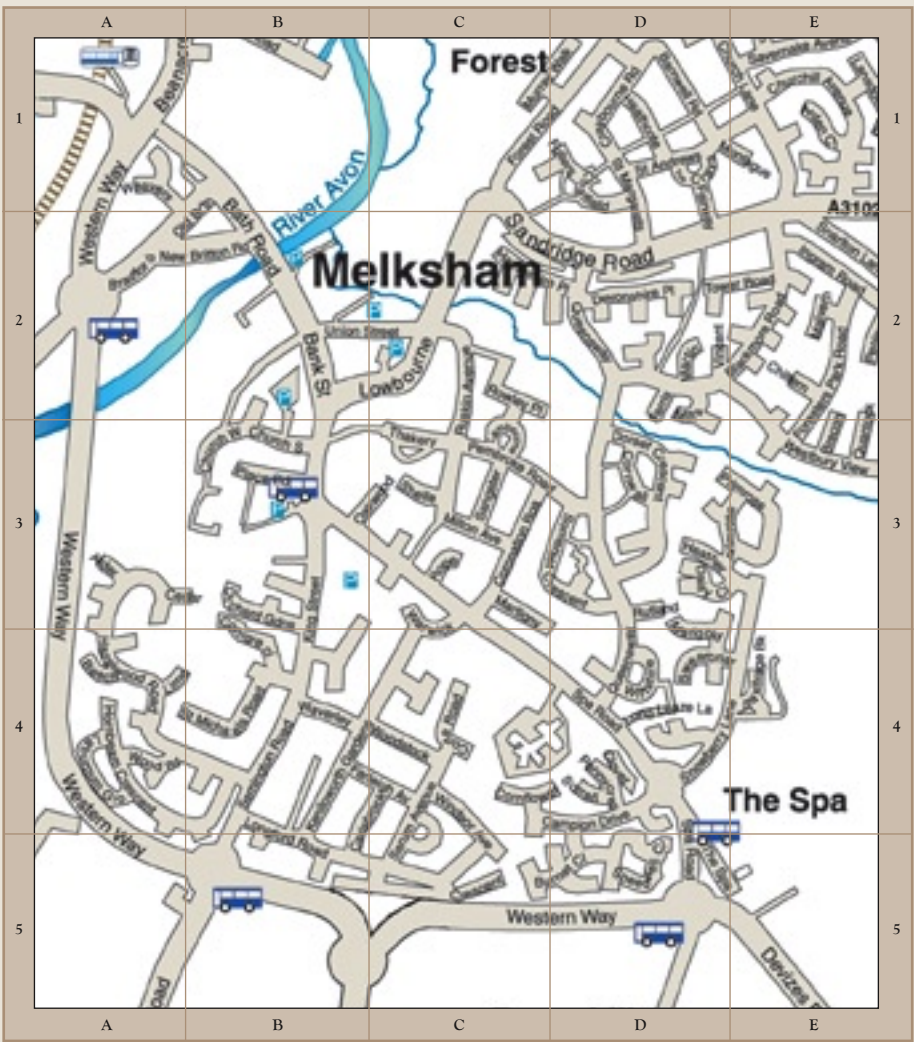
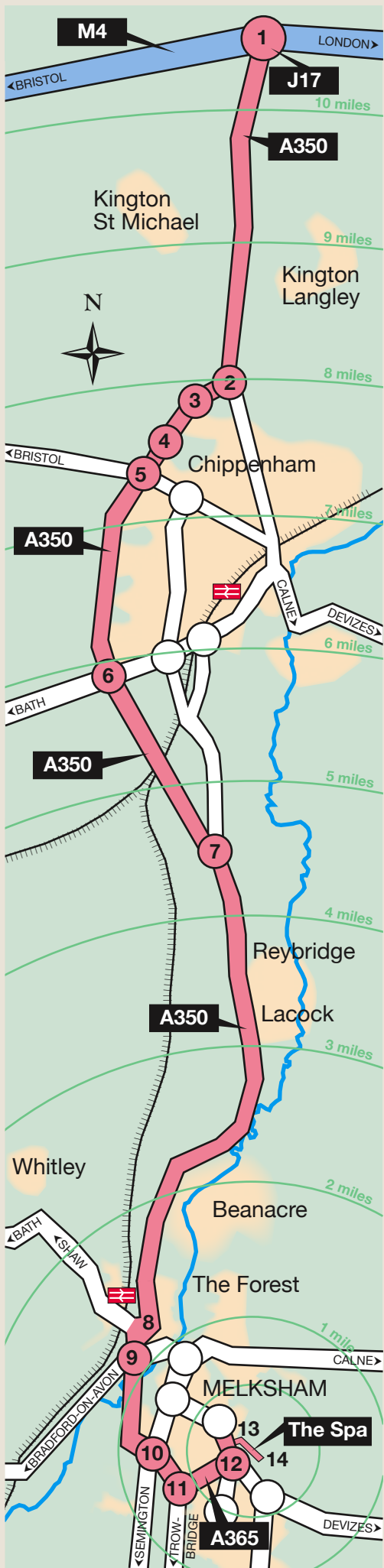
name	distance	aid	destination	fidate	flewfrom	fid
Bristol	30	1	NULL	NULL	NULL	NULL

# Getting to our training centre

## DIRECTIONS FROM THE M4

1. Start out at M4 Jct 17 (A350/A429/B4122), Wilts  
Follow signs for Chippenham on the A350
2. Malmesbury Road Roundabout  
At roundabout take 2nd exit following the A350
3. A350 Badger  
At roundabout continue forward
4. Brook  
At roundabout continue forward
5. Bumpers Farm (Junction with A420)  
At roundabout take 3rd exit
6. Chequers (Junction with A4)  
At roundabout take 3rd exit (signposted Poole, Warminster)
7. A350 Lackham  
At roundabout take 3rd exit
8. A350 Junction with A365  
At traffic signals forward
9. A350 Junction with A3102/B3107  
At roundabout take 2nd exit
10. A350 Junction  
At roundabout take 2nd exit (signposted Devizes)
11. New Semington Bypass  
At roundabout take 1st exit (signposted Devizes)
12. B3112  
At roundabout take the 1st exit onto Spa Road - B3112
13. The Spa  
Turn right into cul-de-sac
14. Well House Consultants Ltd  
Turn left in last gated entry at 404, The Spa, Melksham (4-storey Georgian)

Estimated travel time: 20 minutes in non-adverse conditions



# So, who/what teaches the t

How do we make certain we understand the subjects we teach, not only at a technical level, but also that we have the correct feeling and philosophy for the language? We write code, we write notes, and we attend training ourselves.

## Getting trained from the source

In January, 2004 Python trainer, Graham Ellis, flew to Denver, Colorado to attend the public course on Python given by Mark Lutz. Mark has been deeply involved with the language for more than 10 years, taught many courses, and has written three books on the subject published by O'Reilly.

Upon his return, Graham returned fired with enthusiasm, and looking forward to presenting further courses.

Python use is growing each year. It's an elegant language with a strong feature set that we'll be seeing more of in the future.

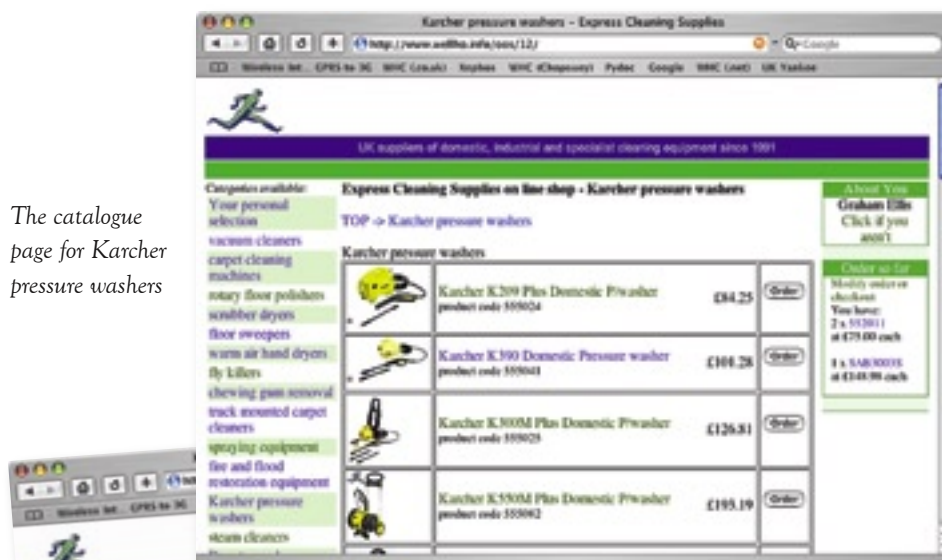
## Using the technology for contract work

One of the ways we keep ourselves up-to-date with the practical application of Open Source is by undertaking a small number of appropriate contracts. For example, we wrote the online ordering system currently used by Express Cleaning Supplies and we're now in the testing stage of the next generation for them.

Key features for the new Express Cleaning Supplies' site include:

- Ability to generate most of the existing online catalogue from a "minicat" system
- A system that is search-engine friendly to optimise rankings
- A clean, consistent system that users find easy to navigate and a pleasure to use
- A minimum of steps from product choice to order completion
- An order history, allowing users to order supplies and spares for their capital equipment at a later date
- Collection of payment information via secure pages
- An easy migration route from the current system allowing users and products to transfer easily
- The ability to automatically pass data from completed orders on to their Sage accounting system
- Day-to-day operation, maintenance and Web site design to be in the hands of

The catalogue page for Karcher pressure washers



An individual product page



My personal catalogue, offering me supplies and spares for my purchases, and the opportunity to place repeat orders easily



These illustrations are screen captures from the testing phase.

Visit <http://www.express-cleaning-supplies.co.uk> to see the live system in action.

Express Cleaning Supplies staff

The solution provided uses PHP to provide the category and product pages, each of which has full navigation, order to-date and user information. The checkout system including the secure server code is in Perl, using code modified from the current system. Product, category, user and order

information is held in six MySQL tables accessible from both the Perl and PHP elements, and the look and feel of each page is maintained in HTML templates that allow site-wide changes at the edit of a single file. The system even checks daily with the European Central Bank so that it can tell users the Euro equivalent of the prices.

# e teacher?

## Python on either side of the pond

Three or four times a year, Well House Consultants offers a public three-day Python course at their training centre in England, taught by Graham Ellis. Mark Lutz, author of “Programming Python” and “Learning Python” offers a three-day public course in Colorado, USA, again three or four times a year.

Although the two courses cover roughly the same topics (the fundamentals of programming in the Python language), Mark’s is best suited to the North American market, and Graham’s to the European market. We’re both quite happy to refer prospective customers back and forth when we get enquiries from across the Atlantic.

Both Mark and Graham also offer private training courses in Python which are run for groups at customer’s offices; such courses are tailored to suit the needs of the trainee group. There’s no minimum number of trainees for a private course, but it’s much more cost-effective for you to take a public course if you’ve only got one or two people to get trained.

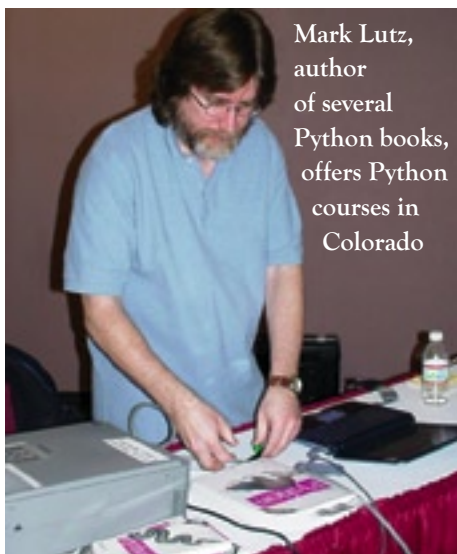
### Further information:

<http://www.wellho.net>

Python courses from Graham Ellis in Europe

<http://www.rmi.net/~lutz>

Python courses from Mark Lutz in North America



Mark Lutz,  
author  
of several  
Python books,  
offers Python  
courses in  
Colorado

## Latest Versions of Open Source Software

as of early March 2004

PHP 5 is in Beta release as this newsletter goes to the printers, and it should have been released as a stable version by the time you’re reading this. We anticipate it will take some time for the new version of PHP to replace the previous one in production use on most web sites - it’s likely to take a while to get into the packaged distributions that many systems administrators use to install new servers, and for servers already running many administrators take the view “if it ain’t bust, don’t fix it”. However, over the next 12 months PHP5 will become a force to be reckoned with.

The largest change in PHP5 is the new object model; a true object model where objects are referenced by handle rather than by value. It’s a major design and efficiency improvement. Private and protected members, abstract classes and methods, interfaces, exception handlers and an autoloader are also added. If you’re familiar with Java, Python or Object Oriented Perl, these will be familiar terms.

Perl	5.8.3 Production  5.9.0 Language Development Release	<a href="http://www.perl.com">www.perl.com</a>
Tcl/Tk	8.4.5	<a href="http://www.tcl.tk">www.tcl.tk</a>
Expect	5.40.0	<a href="http://expect.nist.gov">expect.nist.gov</a>
PHP	4.3.4 Production  4.3.5 Release Candidate 3  5.0 Beta 4	<a href="http://www.php.net">www.php.net</a>
Python	2.3.3	<a href="http://www.python.org">www.python.org</a>
MySQL	4.0.18 Production  4.1.0 Alpha  5.0.0 Alpha	<a href="http://www.mysql.com">www.mysql.com</a>
Java Standard (J2SE)	1.4.2 SDK / Production  1.5.0 Beta 1	<a href="http://java.sun.com">java.sun.com</a>
Java Enterprise (J2EE)	1.4	
Java WSDP	1.3	

# Broadband Access for the

## Making it easier to take the business o

*We sent Graham Ellis on the road, and wherever he went, he tested out the latest in Internet buzzwords: Wi Fi, or Wireless Fidelity.*

### **On the road in the UK**

I'm sitting in a McDonald's restaurant somewhere in Southern England, doing my final research for this article. Just to my left, my half eaten Big Mac and large Coke. In front of me, my laptop computer. No cables - not a single one. And yet I'm online.

I've just downloaded a three Mbyte test file in less than two minutes; much better than the 10 minutes it takes using a conventional modem, but a lot slower than the 15 seconds it takes in our training centre.

# The Traveller on the road

**W**ireless broadband for the traveller is here in the UK, even though coverage is patchy at the moment. There are said to be around 2,200 access points at hotels, motorway service areas, restaurants, pubs and the like, with the majority operated by BT under their Openzone banner. But I've visited some of the places listed and can report a few teething troubles. It should improve, as one of the major motorway service operators writes, "We are about to plan the roll out of [our wireless broadband] service with the intention of having them all done over the next six months". And BT competitor Broadreach plan to have wireless for on-train access as well.

Costs? As a minimum with BT Openzone, you'll pay six pounds for one hour's usage within a 24-hour period. It's £5.50 at Starbucks with T-Mobile, and the Broadreach network (about 100 locations, mostly London and Scotland) is offered at three pounds per hour. Subscriptions of various sorts are also available. Ease of connection? Just start your laptop, ensure it's set for DHCP (and not static IP) and open your browser. We tried the BT service and were diverted to a BT login or registration page. Registration is straightforward enough, but they have a strange security policy. Why insist on a long and complex user name and password (entered in a reassuring password field) when you're going to echo them back in plain text on the next screen? And why not provide a password field for credit card numbers when the typical user will be registering in a public place, with all the locals looking over your shoulder and saying "ooh-err, look what

*continued on next page*

## Logging in to the BT Openzone service

**BT Openzone** | **BT**  
Wireless broadband

**WELCOME!**

create a new account  
access my profile  
I am an Orange user

**Hilton**  
**HotSpot Hotel** Directory Search  
**Bluewater**

**roadchef**  
**Visa**  
**MasterCard**

Login:   
Password:   
Domain:   
Realm: @btopenzone.com  
sign me in

Please log in

**You are in a BT Openzone hotspot**  
If you would like to access BT Openzone and pay by credit/debit card (visa, mastercard, amex, switch) please click "create a new account" to create an account.  
If you need assistance during login please call our helpdesk on 0870 240 5745 (UK) or +44 132 556 0841 (from outside the UK).

**If you want to top up your account, click on "access my profile".**

**On your first use of BT Openzone, click on "create a new account".**

**If you already have time on your profile, you can just sign in.**

**When you start your browser in a hotspot, you will be redirected to a BT Openzone page. You can either create a new account, top it up or log in.**

**BT PLEASE READ THIS**

When you open a BT Openzone account online, you also need to purchase access time

- 1 Login to your profile
- 2 Choose "Top Up My Account"
- 3 Follow the instructions
- 4 Close your profile
- 5 Login at the welcome page

[Click here to continue](#)

**BT Openzone**  
Wireless broadband access

**Having created your account, you're instructed on how to top it up.**

**BT Open My Profile**

Login:   
Password:   
Login

**Need an account?**  
[Click here to sign up](#)

**BT Openzone**  
Wireless broadband access

**Log in to your profile for the next stage of topping up your account.**

**BT My Profile**

Name: Graham Ellis  
Account: 0.0.0.1-13211962  
Status: ACTIVE  
Type: Credit/Debit Card  
Expires: Never

Resource	Balance
Time Remaining	00:00:00

[Change My Password](#)  
[Top Up My Account](#)  
[Change My Details](#)  
[Close My Profile](#)

**BT Openzone**  
Wireless broadband access

**Before I enter my details it displays I have no time on my profile.**

**BT My Profile**

Name: Graham Ellis  
Account: 0.0.0.1-13211962  
Status: ACTIVE  
Type: Credit/Debit Card  
Expires: 2/18/04 4:36 PM

Resource	Balance
Time Remaining	1 : 0 : 0

[Change My Password](#)  
[Top Up My Account](#)  
[Change My Details](#)  
[Close My Profile](#)

**BT Openzone**  
Wireless broadband access

**After it's been topped up, I'm ready for an hour of serious computing.**



## Creative Software Solutions for Product Development and Technical Business Problems

For more than 15 years, MPC Data Limited has been developing high-quality software, providing cost-effective and innovative solutions to our blue-chip client base. We have implemented many solutions based on open source components including Java, PHP, Apache, TCL and Linux.

Our clients include some of the world's largest multi-national organisations as well as some of its smallest specialists. Though our name may not be familiar to you, the chances are you will have heard of many of our clients and you will have encountered systems that we have developed for them.

*To find out how we can help you deliver cost-effective and appropriate solutions to your clients and users, contact our Business Development Director Phil Buckley (pbuckley@mpc-data.co.uk).*

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Fax: +44 1225 868191

[www.mpc-data.co.uk](http://www.mpc-data.co.uk)

**We recommend Well House Consultants to our customers for  
Open Source Training and Consultancy.**

## Online for the Traveller

*continued from previous page*

he's doing ..."?

What have I found to be the biggest problem in using the BT Openzone? Taking care at McDonald's not to be tempted to type with greasy fingers, nor spill coke onto my laptop!

### Interesting aside ...

Exeter in Devon and Bangor in North Wales are said to be the most wireless network-enabled towns in the British Isles, with Bristol being the most wired (or should it be unwired?) major city.

### In Ireland ...

O2 and BT Openzone each operate around 10 hotspots in Dublin, and a smattering elsewhere in places such as Cork and Galway.

### In the USA ...

On recent trips to the USA (DC in October, California in December and Colorado in January), we've noticed a rapid growth in broadband access for the traveller. A year ago, it was a novelty to be able to plug in and pay for broadband access from a hotel room in Los Angeles. On the last three trips, we've been on line from hotels in places as diverse as Bishop (CA) and Longmont (CO) and, rapidly, the service has become a "freebie" as hotels find that they must provide access for their business guests. Sometimes it's wireless, sometimes you'll find an ethernet connector in your room.

Airports (Denver, and Minneapolis/St Paul on the latest trip) have just set up for wireless broadband. Even though you'll find yourself paying for the privilege, it's still less than you would in the UK, perhaps four pounds for 24 hours which, in reality, would be a single visit to the airport.

### Conclusion ...

I'm still carrying my modem cable wherever I travel, but I need it less and less in the USA, and the need is reducing in the UK too. I expect to be connected in broadband on the majority of my USA trips in future, and in the UK in about a year. I look forward to the UK costs dropping to the levels charged in the USA; Broadreach have a target of 4,000 hotspots, and if they reach this level, it'll be very hard for the other operators to maintain the price differential.

With a broadband connection, I can work anywhere - I have a truly mobile office!

## >>bookanengineer.co.uk

Cost effective IT solutions and support for the SMBE.

Bespoke network and connectivity solutions.

Lowcost IT on call for your business.

Free VPN routers.

Free email server monitoring for active customers.

Free security check.

Free no obligation quote.

Free advice.

Supporting customers in Europe and North America.

Demo our online support system today!

Contact us at 01788 567572 or visit  
<http://www.bookanengineer.co.uk> for details.



# Dining out in Melksham

*When you come on a course with Well House Consultants, we provide course lunches as a part of our service, but if you are staying in local accommodation whilst attending a course, where can you eat in the evening? Traditional pub food is available every evening, and we have award-winning French, Indian, Thai and Chinese restaurants as well as fish & chips, kebabs, a Little Chef, McDonalds and more. Bon appetite!*

# Have time and a sense of adventure?

We have a few local favourites to add to the list as well, but these are further out of town. Perfect for when you want to explore the Wiltshire area. All of these are in easy driving distance, and evening buses are available to some (check with us for a timetable). Graham and Lisa both enjoy all of the restaurants featured, but each has special favourites.

**Graham:** *I have chosen five places with an interesting atmosphere where we have always found the food excellent and the environment not too smoky. By the very nature of our part of the country, most of them are pubs.*

**The Barge Inn, Honey Street, Pewsey, Wiltshire SN9 5PS**      01672 851 705  
A remote pub beside the Kennet and Avon canal, and gathering point for the cropicircle-ists. Pub food at reasonable prices.

**At the Sign of the Angel, Church St, Lacock, Wiltshire SN15 2LB**      01249 730 230  
A 15th century hostelry and restaurant set in the National Trust village of Lacock about five miles from our training centre. Not cheap, but an experience to eat here. Book ahead!

**The Northey Arms, Bath Road, Box, Wiltshire SN13 8AE**  
01225 724 333  
The Northey Arms is set beside the A4, the old London to Bristol coaching road, and has probably been there since the days of those coaches. These days, they serve food that's one step better than your typical pub.

**Tino's Italian Restaurant, Long Street, Devizes, Wiltshire SN10 1NJ** 01380 723 834  
Here's a surprise for you – the best pizza and other Italian casual dishes, served in “The Elm Tree” pub. And the prices won't break your budget!

**The Red Lion, High Street, Avebury, Wiltshire SN8 1RF**      01672 539 266  
Set in the middle of Avebury stone circle, where you can walk amongst the stones on the long summer evenings before retiring to the “most haunted pub in Wiltshire”. A little touristy, but what an experience.

**Lisa:** *Although three are associated with pubs, the concentration for all is on exquisite/authentic food in an ambience ranging from modern to celebrating the building's history.*

**The Lamb at Strand, 99 The Strand, on A361, Seend, Wiltshire**      01380 870 263  
It has the combination of an understated country pub that isn't trying too hard, with good quality ales and wines and a range of interesting meals on the menu, the sort of place you could nip into for just a main course and a drink and come out having had an excellent meal for little more than a tenner.

**Las Iguanas, Seven Dials, Sawclose, Bath BA1 1EN**      01225 336 666  
A modern-day Latin America with dishes originating from Mexico, Chile and Brazil, serving favourites such as nachos, burritos and fajitas as well as other specialties. A great place to meet up with friends.

**The George and Dragon, High St, Rowde, Wiltshire SN10 2PN**  
01380 723 053  
Not your typical seafood restaurant, especially in a land-locked county. The finest and freshest, prepared as you'd never expect. Reservations expected, but not always impossible to find a space for you during a weekday. Expect to pay for quality.

**Pear Tree, Top Lane, Whitley, Wiltshire SN12 8QX**      01225 709 131  
Nouveau cuisine, ergo small portions of excellent tastes leave you wanting more. Comes highly recommended by the Good Pub Guide and the AA Pub Guide 2001.

**Thai Barn, 24 Bridge Street, Bradford on Avon BA15 1BY**      01225 866 443  
One of the finest Thai restaurants to be found, The Thai Barn offers all the usual favourites and some original tastes as well. Food has never been more freshly served. Thai beer and fine wines may be enjoyed in a relaxed atmosphere.



## Places to get food in Melksham



CHINESE	
<b>Beijing Express</b> 🍴	7 King Street, Melksham SN12 6HB 01225 899 298
<b>Chop Suey House</b> 🍴	15 Bath Road, Melksham SN12 6LL 01225 704 318
<b>Golden Falls Chinese Take Away</b> 🍴	3 King Street, Melksham SN12 6HB 01225 703 006
<b>Happy Valley Chinese Take-Away</b> 🍴	Unit 1, 48 Blenheim Park Bowerhill, Melksham SN12 6TA 01225 700 049
<b>Lee's Chinese Restaurant</b> 🍴	1 Granville Road, Melksham SN12 8AN 01225 707 288
<b>Lee's Chinese Take Away</b> 🍴	5 Granville Road, Melksham SN12 8AN 01225 706 302
<b>Oriental Aroma</b> 🍴	Lowbourne, Melksham SN12 7DZ 01225 793 388
<b>Ruby Chinese Take Away</b> 🍴	35 Bank Street, Melksham SN12 6LE 01225 899 222
BURGERS/CHICKEN	
<b>Chicken Hut</b> 🍴	Bath Road, Melksham 01225 707 719
<b>McDonald's Restaurants Ltd.</b> 🍴	Beanacre Road, Melksham SN12 8RP 01225 703 702
FINE CUISINE	
<b>At the Sign of the Angel</b> 🍴	Church Street, Lacock SN15 2LB 01249 730 230
<b>The Bay Tree Restaurant</b> 🍴	Beechfield House Hotel & Restaurant Beanacre, Melksham SN12 7PU 01225 703 700
<b>Conigre Farm Hotel &amp; Restaurant</b> 🍴	Semington Road, Melksham SN12 6BZ 01225 702 229
<b>The George Inn</b> 🍴	4 West Street, Lacock SN15 2LH 01249 730 263
<b>The Pear Tree Inn</b> 🍴	Top Lane, Whitley, Melksham SN12 8QT 01225 709 131
<b>Shaw Country Hotel &amp; Restaurant</b> 🍴	Bath Road, Shaw, Melksham SN12 8EF 01225 790 321
FISH & CHIPS	
<b>The Fisheries</b> 🍴	52 Union Street, Melksham SN12 7PR 01225 703 406
<b>Happy Valley Fish &amp; Chips</b> 🍴	Unit 1, 48 Blenheim Park Bowerhill, Melksham SN12 6TA 01225 700 049
<b>Lee's Fish &amp; Chip Shop</b> 🍴	3 Granville Road, Melksham SN12 8AN 01225 709 988
<b>Trisha's Plaice</b> 🍴	27a Church Lane, Melksham SN12 7EE 01225 703 011

Restaurant  
Take Away



## GROCERY STORES/CORNER SHOPS

- Aldi**   
Beanacre Road, Melksham SN12 9RP
- Alldays Stores Ltd.**   
19, Pembroke Road, Melksham SN12 7NB  
01225 702 188
- Co-operative Pioneers**   
2 Blackmore Road, Melksham SN12 7HU  
01225 704 323
- Cooper Foodstores**   
1a Littlebrook, Bath Road, Melksham SN12 6LP  
01225 703 704
- Dillons One-Stop**   
Blenheim Park, Bowerhill, Melksham SN12 6TA  
01225 790 504
- Iceland Foods plc**   
37 High Street, Melksham SN12 6JY  
01225 709 696
- Jones Day & Night**   
104, Forest Road, Melksham SN12 7AE  
01225 702 395
- Kwik Save Stores Ltd.**   
Market Place, Melksham SN12 6EX  
01225 709 327
- Lovejoys Traditional Greengrocers**   
53-5 High Street, Melksham SN12 6JY  
01225 708 838
- Sainsbury's Supermarkets Ltd.**   
24, Bank Street, Melksham SN12 6LL  
01225 791 727
- S. K. Fruits**   
17 High Street, Melksham SN12 6JY  
01225 709 809
- Somerfield Stores plc**   
Bath Road, Melksham SN12 6LP  
01225 707 435

## INDIAN BALTI/TANDOORI

- The Melksham Tandoori**   
26 Church Street, Melksham SN12 6LS  
01225 705 242
- Refa Tandoori Balti House**   
1-3, Market Place, Melksham SN12 6ES  
01225 705 680
- Sultan Indian Cuisine Ltd.**   
5b Bath Road, Melksham SN12 6LL  
01225 709 867

## KEBABS/PIZZA

- Acropolis**   
21 Church Street, Melksham SN12 6LS  
01225 791 338
- The Kebab House**   
4 Bank Street, Melksham SN12 6LG  
01225 708 666

## PUBS WITH RESTAURANTS

- The Barge Inn**   
Seend Cleeve, Seend SN12 6QB  
01380 828 230
- The Bell Inn**   
Bell Hill, Seend SN12 6SA  
01380 828 338
- The Foresters Arms**   
Sandridge Road, Melksham SN12 7BN  
01225 702 824
- Kings Arms Hotel & Restaurant**   
Market Place, Melksham SN12 6EX  
01225 707 272

continued on next page



**利園**  
**LEE'S**  
*Chinese Restaurant*

*Fully Licensed & Air Conditioned*  
*Specialising in Peking and Cantonese Cuisine*

**1 Granville Road, Melksham SN12 8AN**

**01225 707288**

**Our brand of Java\* for a savings of £50**



**\* or any other public course**



**REFA TANDOORI**  
*Indian Take-Away and Balti House*



*Curry and Tandoori dishes prepared in authentic style.*

Our aim is to satisfy you, so that you can tell your friends to pay us a visit.

*Our Balti house is not licensed, but if you wish to supply your own alcoholic drinks you may. No corkage charges.*

**1-3 Market Place  
Melksham, Wiltshire**  
**01225 705680 or 358428**

## 10 % OFF COUPON

# LEE'S

## Chinese Restaurant

Students attending a Well House Consultants' course are invited to dine at Lee's Chinese Restaurant at 10 percent off the price of an evening meal.

Present original coupon when placing order. One coupon per person. May not be used in conjunction with any other offer. To be used only when dining inside restaurant for an evening meal, Sundays through Thursdays.

Coupon expires 30 September, 2004

### EVENING HOURS OF OPERATION

Monday	5.30-11.00pm
Tuesday	5.30-11.00pm
Wednesday	5.30-11.00pm
Thursday	5.30-11.00pm
Friday	5.30-11.30pm
Saturday	5.30-11.30pm
Sunday	5.30-11.00pm

Also open for lunch from 12-2.00 pm  
Monday through Saturday.

## Places to get food in Melksham

continued from previous page

**The Three Magpies**  
Sells Green, Seend, Melksham SN12 6RN  
01380 828 389

**West End Inn (Hungry Horse)**  
Semington Road, Melksham SN12 6DD  
01225 703 057

### PUBS WITH BAR SNACKS

**The Bear**  
3 Bath Road, Melksham SN12 6LL  
01225 702 901

**Bud's King Of Bars**  
1 Lowbourn, Melksham SN12 7DZ  
01225 707 456

**The Grapes (Inn Business)**  
33 Bank Street, Melksham SN12 6LE

**New Inn**  
Semington Road, Melksham SN12 6DT  
01225 703179

**The Parsons Nose**  
30 High Street, Melksham SN12 6LA  
01225 702 947

**The Pig & Whistle**  
Woodrow Hs, Forest Road, Melksham SN12 7AE  
01225 705 118

**The Pilot**  
Blenheim Park, Bowerhill, Melksham SN12 6TA  
01225 790 599

**Red Lion**  
1-6 The City, Melksham SN12 8DA  
01225 702 960

**The Tavern**  
20 Market Place, Melksham SN12 6EX  
01225 709 932

**The Unicorn**  
59 Bath Road, Melksham SN12 8AB  
01225 702 261

### SANDWICHES/COFFEE SHOP/BAKERY

**Baguette Bar**  
16 High Street, Melksham SN12 6JU  
01225 708 008

**The Cornerstone Coffee Shop**  
14a Market Place, Melksham SN12 6EX  
01225 792 000

**Country Cottage Pasties**  
51 High Street, Melksham SN12 6JY

**Gallery Café**  
1st Floor, Leekes Department Store  
Beanacre Park, Melksham SN12 8RR  
01225 557 000

**Hungry Jacks**  
Unit 7 Avonside Enterprise Park  
Melksham SN12 8BS  
01225 709 011

**Little Brook Bakery**  
6 Bath Road, Melksham SN12 6LP

**Three Cooks Bakery/Coffee Shop**  
15 High Street, Melksham SN12 6JY  
01225 702 665

**Waney Edge Cafe**  
Semington Road, Melksham SN12 6DY  
01225 702 038

### TRADITIONAL

**Big J's Café**  
28, High Street, Melksham SN12 6LA  
01225 707 069

**Little Chef**  
Nortree, Beanacre Road, Melksham SN12 8AU  
01225 707 171

## £50 OFF COUPON

# Well House

## consultants LTD

www.wellho.net

Choose from one of the following public courses:

- Learning to Program in Perl
- Perl Programming
- Using Perl on the Web
- Perl for Larger Projects
- Technology for PHP
- PHP Programming
- MySQL Relational Database
- Java Programming for the Web
- Deploying Java Applications on Linux and Unix
- Python Programming
- Tcl Programming
- Tcl - the Tk Toolkit
- Regular Expressions
- Deploying Apache and Tomcat
- Deploying LAMP - Linux, Apache, MySQL, Perl / PHP

Readers of our "Of Course" newsletter are invited to take advantage of a £50 savings off the price of a public course on your next booking.

Present original coupon when placing order. One coupon per person; multiple coupons may not be used with the same order. May not be used in conjunction with any other offer. Course must be confirmed between 1 April and 30 September 2004 regardless of when course is run.

Coupon expires 30 September, 2004

## 10 % OFF COUPON

# REFA

## TANDOORI

### Indian Take-Away and Balti House

Students attending a Well House Consultants' course are invited to dine at Refa Tandoori Indian Take-Away and Balti House at 10 percent off the price of an evening meal.

Present original coupon when placing order. One coupon per person. May not be used in conjunction with any other offer. To be used only when dining inside restaurant for an evening meal, Sundays through Thursdays.

Coupon expires 30 September, 2004

### EVENING HOURS OF OPERATION

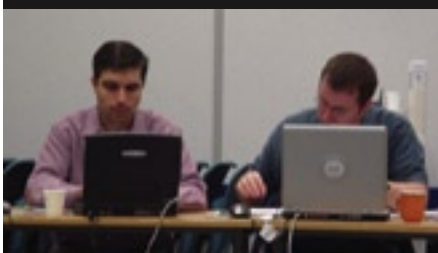
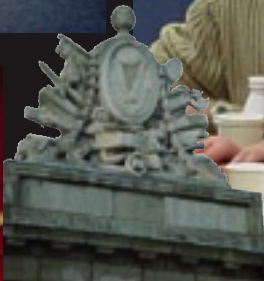
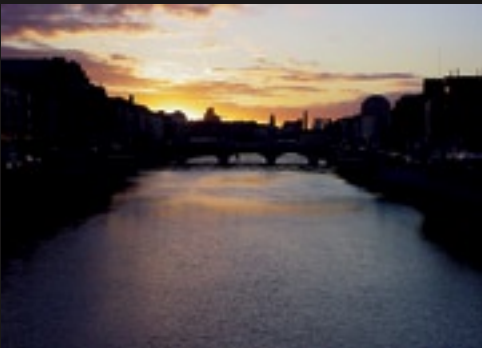
Monday	5.30pm-midnight
Tuesday	5.30pm-midnight
Wednesday	5.30pm-midnight
Thursday	5.30pm-midnight
Friday	5.30pm-midnight
Saturday	5.30pm-midnight
Sunday	5.30pm-midnight

Also open for lunch from 12-2.00 pm  
7 days a week and all Bank Holidays.

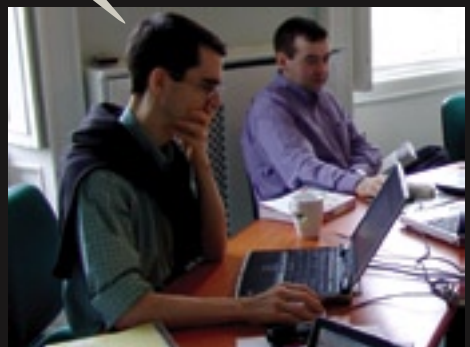
# Brag Page

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

We didn't actually have to go all the way to Colorado for some snow afterall. February ended with a burst of the white stuff that didn't quite rival the skiing conditions we had during the Python course we attended in the US in January, but it still blanketed enough for some beautiful photo opportunities that greeted us after our return from training Perl in Dublin. Charlie, as ever, held the fort for us at the training centre, perched on her favourite viewpoint in the customer lounge. We include these cold reminders in our Spring issue, not to bring back chilly memories, but to look forward to the warm days you're experiencing whilst enjoying with us some of our favourite moments with our students and mentors.



Thanks Graham. I seize this opportunity to tell you how useful the course was. It's going to change our life on a daily basis! – Dominique Lacassagne



# Using Objects in Perl – some practical examples

Object orientation is a way of thinking!

I've just written an application to provide a listing of airline routes from the UK to the USA. What were my considerations?

- My data sources were all web sites, but there were a number of different formats involved.
- I need to be able to produce a number of

different outputs.

- I need to be able to maintain my results, changing my program as the web sites that are my data sources change their formats.
- I don't have a lot of time to do this maintenance.

Not a big project, so should I use a

structured program? No, I chose a simple object model.

The result is utterly flexible. I can generate a new output report by simply rewriting the selection, sorting and printing code irrespective of the various input formats. And I can change and support new input formats as airports update their web site look and feel without affecting my outputs. By dividing the application down in this way, I have two easy maintenance jobs rather than one very tough one.

Was it hard to write the object (class) definition in Perl? I needed to understand what I was doing for sure (Perl is easy to use once you know what you're doing, but not necessarily easy to learn!), but the code turns out to be very short.

- Carp and croak to ensure that errors are reported relating to their line number in the calling code
- strict to ensure that I didn't accidentally use any package or global variables
- new to construct me a new object of class flight
- AUTOLOAD to provide me with all the other methods I need

**I defined a class of flight objects and wrote a method to handle each new type of incoming data, and I pushed all my flight objects onto a list:**

```
push @flights, new flight (to => $info[0],
                           airline => $info[1],
                           terminal => $info[2],
                           aircode => $info[3],
                           phone => $info[4],
                           airport => $airport);
```

**For my report, I loop through all my flights finding those of interest:**

```
foreach $route (@flights) {
    $to = $route -> getto();
    $from = $route -> getairport();
    $airline = $route -> getairline();
    if ($usd{$to}) { # %usd a hash of destinations in the USA
        push @{$routes{$usd{$to}}}, "$from with $airline";
    }
}
```

**And I then sort and print my results:**

```
foreach (sort keys %routes) {
    print "Fly to [b]".$_, "[/b] from ...\\n";
    for $with(@{$routes{$_}}) {
        print "        $with\\n";
    }
}
```

**The object definition code turns out to be very short:**

```
use strict;
use carp;
package flight;

sub new {
    my ($class,%info) = @_;
    bless \%info,$class;
}

sub AUTOLOAD {
    my ($self,$val) = @_;
    my ($dirn,$what) = ($flight::AUTOLOAD =~ /\.?:(...)(.*)/);
    if ($dirn eq "get") {
        return $$self{$what};
    }
    if ($dirn eq "set") {
        return ($$self{$what} = $val);
    }
    return 1 if ($dirn eq "DES") ;
    croak ("Don't understand your call to $flight::AUTOLOAD ");
}

1;
```

## References and variables in Perl

You may find this revision table useful if you've got a complex looking series of `{ }`s, `@s %s` and `$s` in a piece of code you've been given to maintain!

1. Perl variables are dynamically created as your program runs.

**\$abc** a scalar – holds a single number, string or reference

**@abc** a list – holds a collection of scalars indexed by position number

**%abc** a hash – holds a collection of scalars indexed by an scalar key of programmer's choice

**abc** a file handle – used for a set of buffers or interface to file system

*continued on page 18*

Here's some sample (demo) code using most of the things I described in "References and Variables" on page 16.

Can you work them out?

```
$var = "Hello";
$itsat = \$var;                                # reference to a scalar

print $var, "\n";
print $itsat, "\n";
print $$itsat, "\n\n";                        # contents of

@stuff = ("tom", "thingy", "arry");
$itsat = \@stuff;                              # reference to a list

print @stuff, "\n";                           # no separator
print "@stuff\n";                             # space separator
print @stuff+0, "\n\n";                       # scalar content - length of list

print $itsat, "\n";
print @$itsat, "\n";                          # list referenced by scalar
print @{$itsat}, "\n\n";                      # list referenced by scalar
print $$itsat[2], "\n";                       # element of list pointed to by a scalar
print $itsat->[2], "\n";                       # element of list pointed to by a scalar
print $itsat->[-1], "\n\n";                    # element of list pointed to by a scalar

%table = ("Chris", "S&Kpie", "Paul", "Burger");
%table = (Chris => "S&Kpie", Paul => "Burger"); # alternative
$itsat = \%table;

print $itsat, "\n";
print %$itsat, "\n";                          # hash referenced by scalar
print %{ $itsat }, "\n\n";                    # hash referenced by scalar

print $$itsat{"Chris"}, "\n";                 # element of list pointed to by a scalar
print $itsat->{"Chris"}, "\n";                 # element of list pointed to by a scalar
print $itsat->{"Chris"}, "\n\n";               # element of list pointed to by a scalar

$itsat = {"Carine", "Pastie", "Pali", "Haddock"}; # ref to an anonymous hash
print $itsat, "\n";
print %$itsat, "\n";                          # hash referenced by scalar
print %{ $itsat }, "\n\n";                    # hash referenced by scalar

print $itsat->{"Carine"}, "\n";
print $$itsat{"Carine"}, "\n";
print %{ $itsat }{"Carine"}, "\n\n";

$itsat = ["Lancashire", "Yourkshire", "Elsewhere"]; # ref to an anon list
# ( ) would give "3"!

print $itsat, "\n";
print @$itsat, "\n";                          # list referenced by scalar
print @{$itsat}, "\n\n";                      # list referenced by scalar
print $$itsat[2], "\n";                       # element of list pointed to by a scalar
print $itsat->[2], "\n";                       # element of list pointed to by a scalar
print $itsat->[-1], "\n\n";                    # element of list pointed to by a scalar

$yikes = [{"Tom" => "Plumber", "thingy" => "Copper"},
  {Carine => "Programmer", "Paul" => "Programmer"},
  {Pali => "Hard Worker"}];

print "$yikes\n";

foreach $el (@$yikes) {
  print "$el\n";
  foreach $k (keys %$el) {
    print ("$k $el{$k}\n");
  }
}
```

References and more complex data structures, the principles of object orientation, how it's implemented and used in Perl are covered in Well House Consultants' "Perl for Larger Projects". This course requires a prior knowledge of the Perl fundamentals, which you can learn on a course such as Well House Consultants' "Perl Programming".



## 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

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

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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

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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

### Issue 7 - Autumn 2003 - 24 pages

The need for speed  
What happens after Perl 5?  
Broadband update  
Keeping up with the pace of Open Source  
Should you link or copy when you store data?

## Some Perl practical examples

*continued from page 16*

- &abc** code - holds a named block of code - i.e. a sub
  - \*abc** a typeglob - a scalar, a hash, a list, a code and a file handle all of the same name
2. If you're referring to an individual scalar member of a collection, you use the **\$** prefix and you use:
    - square bracket subscript to indicate a member of a list
    - curly brace subscript to indicate a member of a hash
  3. If you precede a variable name, you can reference and dereference. Thus:
    - \** means "a reference to" or "the address of" if you prefer
    - \$** means "contents of" or "refers to"
    - >** an alternative notation for **\$**  
example - **\$\$abc[3]** and **\$abc->[3]** mean the same
  4. You can create anonymous lists and hashes
    - \$abc = {"England", "London", "Wales", "Cardiff"}**  
an anonymous hash with two pairs  
**\$abc = {England => "London", Wales => "Cardiff"}**  
alternative notation  
**\$abc = ["England", "London", "Wales", "Cardiff"]**  
an anonymous list with 4 members  
**\$abc = ("England", "London", "Wales", "Cardiff")**  
probably WRONG - **\$abc** takes the value "4"
  5. If you refer to a list in a scalar context, you'll get the number of elements in the list. If you refer to **\$\$listname**, you'll get the index number of the last element in the list
  6. You can also use **{ }** to delimit a variable name, thus:
    - "\$abkgs"** means a string containing the contents of the variable **\$abkgs**
    - "\${ab}kgs"** is a string containing the contents of the variable **\$ab** followed by "kgs"
  7. You are limited only by your own ingenuity as to how complex a structure you make. Use an Object Oriented design if you're looking at a complex problem. This helps divide the complexity down into a series of different parts and can be developed and tested before you move to the next stage.

# What do you put into a file?

When writing programs or classes in Perl or Python or Java or PHP, you should include:

- a) The source code (executable statements) for the program.
- b) Programmer's comments, describing what the program or class does so that the maintainer will understand it.
- c) Documentation so that the user of your work will know how to use it and who to contact for support.
- d) All three of the above.

The correct answer is "d) all three of the above" except in the most unusual of circumstances.

No one is going to argue that a file in which you are writing a program or class needs to contain the code (source) of that program or class. And most programmers will agree that code should be commented well so that subsequent programmers who take over maintenance can find out what's what as quickly as possible.

So, what's this about user documentation within the source? If you write a program, your users will need to know how to use it. They might prefer the documentation in plain text, or as a .pdf file. Web users might prefer an .html page, and Linux or Unix geeks might want a man page. That's likely to be a lot of work if you have a wide range of users!

Rather than maintain many separate sets of documentation, the modern Open Source languages (and some others) give you the ability to write your user documentation within the source code, then convert it to a format to the user's requirement automatically. It's a huge saving in the time that has to be spent preparing documentation; only one set is needed, after all! It also helps avoid the documentation getting out of step with source code that's otherwise stored elsewhere.

Great idea, great facility, but it's implemented in very different ways in different languages.

## Pod - Perl

The Perl language includes POD - Plain old documentation. A line in the source code starting with an = character indicates the start of a POD block, which is ended by another line starting with an = sign.

The Perl interpreter ignores POD blocks in just the same way that it ignores programmer's comments. Separate programs (such as pod2text and pod2html) are included with the Perl distribution and extract the POD from your Perl and produce output in plain text, in HTML, or in one of a number of other formats.

Perl internal documentation and documentation of CPAN modules is written in POD, and there's even a standard set of section headers suggested to ensure consistency in documentation.

## JavaDocs - Java

Java supports three comment structures - // to end of line, /\* to \*/ and /\*\* to \*/. If you think that the latter is just a special case of /\* to \*/,

*continued on next page*

## What to put in a file

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you're both right and wrong. As far as Java compilers are concerned, you're right. Both `/* to */` and `/** to */` are ignored, but the javadoc program searches out the `/** to */` lines and uses them (and information extracted from the Java source) to produce HTML pages describing the code.

Output from javadoc can be tailored using a doclet. If you want to generate XML, RTF, MIF or another output format, you can write or provide your own doclet. As with everything Java, there are lots of options and possibilities. The man page for Javadoc runs to 115k of plain text (12,000 lines); when you read it you'll get referred on to lots of other documents!

### Docstrings – Python

If you're new to Python, you may be surprised to see some rather curious strings of text at the start of each module, class and def. They're written in Python, but they appear to be orphans that don't get saved into any variables. But appearances can be deceptive. These are docstrings.

In Python, each module, class and def can be provided with a docstring which is accessible from within Python once you have loaded or imported the modules. Docstrings are provided with the majority of standard modules, and provide an important resource for Python programmers. We encourage you to provide similar docstrings in your code. If you're writing objects for other programmers to use, you'll describe the API you're providing. If you're writing an application, you'll provide the user documentation in this way.

A very few lines of Python let you load and examine docstrings, and you can use your Python code to produce any output format you like. Much of this has been done already. Third-party open source code is available for download from the Vaults of Parnassus (<http://www.vex.com/parnassus>) and elsewhere.

### HTML Documentation – PHP

PHP embeds in Web pages (HTML), and supports comment lines, but not a user documentation system. Why not? Because you should simply include the user documentation in the HTML – the Web page. Users calling up your php script are then provided, not only with the necessary form or links, but also with instructions!

## What defines a quality piece of software?

It's a system, application or component doing a good job for its users, that's reliable and easy to maintain and can develop as requirements change. It shouldn't be expensive to develop, and it should also contribute components to other related applications and systems.

If you're a newcomer to providing solutions, you'll need to learn how to analyse the requirement and design a suitable structure, in addition to learning the actual programming language that you've chosen. No small task, and there's no "one size fits all" solution either. Let's look at three alternatives: using a single piece of code; structured programming techniques; and Object Oriented programming.

### Using a single piece of code

It makes sense to start writing your application at the beginning and keep writing until you reach the end. I grant you this is the most obvious way to do it, but you'll end up with hundreds or thousands of lines in one big flow. It'll be very hard to test and maintain as it's an all-or-nothing and you certainly won't be sharing bits of your code with others.

When should you use a single piece of code? When there's a job that was a one-off to do, and you're pretty sure the application will only be used for a short while. For example, here's a complete application in Tcl that reads an NC machine tool tape and alerts the user if it contains non-zero U or V codes. This was a one-off application; an existing library needed to be filtered to find tapes that needed altering.

```
#
# Look for lines on an NC tape that have non-zero U or V codes
#
set fh [open $argv]
set iwant 0
while {[gets $fh line] > 0} {
#
# Lines containing U0 V0 (and some variants) are not noted
#
    if [regexp {U0\. ?V0\.[ A-Z]|$} $line] {
        # puts "$line identified as a header"
    } else {
#
# Look for other U or V lines (with non-zero values)
#
        if [regexp {[UV][-0-9.]+} $line] {
            # puts "$line identified as real U and/or V data"
            set iwant 1
            set sample $line
        }
    }
}
#
# Report back to user whether or not this NC tape needs to be
fixed
#
if {$iwant == 1} {
    puts "I need to fix this because of lines like ..."
    puts $sample
} else {
    puts "This one is AOK"
}
```

### Structured programming techniques

All modern programming languages provide the programmer with the ability to name a block of code. Values, or parameters, are fed into this block of code and a result is returned. The code blocks are known as functions in PHP and

Python, methods in Java, subs or subroutines in Perl, and procs in tcl. The names may be different, but the principle is similar.

In a structured program, you design your application “on the back of a fag packet”. You use just a few boxes to draw a flowchart, which you then translate into code with each flowchart box being a call to a named code block. You then take each of these named blocks of code and design it in the same way, until eventually you get to a block of code for each single subtask. With a structured program, you can test each named block of code using a short test harness. Errors are rapidly focused down to a single piece of code. You can also load named blocks of code from a file or library allowing many programs that require the same functionality to share a single piece of source.

Here’s part of a PHP script we use to regenerate an entire site; it’s a bit long to reproduce in full but you’ll get the idea.

```
<?php include
    ("$_SERVER[DOCUMENT_ROOT]/../oos/stdoos.inc");

// Make site script

/*
1. Connect to MySQL database and read in categories
   table
2. Loop through all products, generating pages in
   the appropriate directories
3. Loop though all categories, generating category
   pages
4. Produce top level index page
*/

// Stage 1
sql_connect() or die
    ("Unable to reach the SQL database");
    # Now in included file
($categ = sql_load_table("categories")) or die
    ("Unable to read product categories");
$boilerplate = grabtemplate("boilerplate");

// Stage 2
$individual = grabtemplate("individual");
$mid_item = grabtemplate("mid_item");
$handle = sql_get_table("products");
while ($params = sql_get_next($handle)) {
    expand_product($params);
}

// etc.
```

#### Guidelines for programmers’s comments:

- A comment block at the top of the file describing content and author, giving support information and version number
- A comment block at the top of every class, method, function, sub or proc describing the operation of that piece of code, including inputs, outputs and exceptions that can be thrown.
- Brief overview before every section of five to 30 lines of code
- Extra comments on lines that might be obscure when you look back at them or are otherwise noteworthy
- These comments should be in addition to user documentation

“sql\_connect”, “sql\_load\_table”, “grabtemplate”, “sql\_get\_table”, “sql\_get\_next” and “expand\_products” are all functions we’ve written and tested elsewhere, and they’re loaded in by the **include** at the top.

There’s something of an overhead if you use structured programming for the simplest applications, but it rapidly becomes the most efficient way to work when you get beyond a certain complexity. But then, structured code too starts to become unmanageable.

Why’s this? Sooner or later you’ll end up with two blocks with the same name, or you’ll end up with an administration nightmare as you attempt to manage all your named blocks in various source files.

#### Object Oriented Programming

You’re still writing named blocks of code in an “OO” program, but it’s a different way of thinking and designing, and most modern languages include extra facilities to help you implement your design and keep the internals at one level hidden from the next level up, a capability known as “encapsulation”.

Using an object oriented system “the data is King”. You define a particular type of data (class of object) and provide a number of blocks of code (methods) that can be run on objects of that type. Since the method is specific to the object type, you’re not going to have the same name conflict problems you had with structured programming.

Extensions allow you to define a new type of object (class) as being like another object but with certain differences. This saves a huge amount of recoding from scratch, but at the expense of considerable extra complication for the smaller application.

Here’s a test harness for a type of object we’ve defined in Perl called “thing”:

```
use thing;

$first = new thing(-colour => "yellow", -size => 26);
$item = new thing(-colour => "red", font => "courier",
    -size => 16);
$item -> set(-weight => "bold", -leading => 10 );
$item -> set("jelly" , "Wobbly");

@props = $item -> getproperties();

print "@props\n";

print ("Colours: $colourlist\n");
```

To use “thing” you should understand the calling sequences and what it does.

The beauty is that you don’t need to know how it does it, and you don’t need to change your calling code if the expert who’s written the “thing” class changes its internals.

# Schedule

## PERL

### Learning to Program in Perl

#### Perl Programming

5 days £1210

Covers the major features of the language and their use for newcomers. This course now runs in conjunction with Learning to Program in Perl.

19-23 April 2004

14-18 June 2004

6-10 September 2004

6-10 December 2004

#### Using Perl on the Web

2 days £550

This advanced course takes the Perl programmer through to making full use of Perl on the Web. CGI, mod-Perl, standards. Sessions, cookies, content management, etc.

26-27 July 2004

29-30 November 2004

#### Perl for Larger Projects

3 days £770

This advanced course takes the Perl programmer through the facilities provided in the language which make it particularly suitable for larger projects. Objects, huge data, SQL databases, XML, efficiency and other topics.

28-30 July 2004

1-3 December 2004

#### Perl Extra

1 day £330

Subjects not covered on regular public courses.

telephone or email for details

## PHP and MySQL

### Technology for PHP

1 day £330

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.

22 March 2004

17 May 2004

19 July 2004

13 September 2004

22 November 2004

### PHP Programming

4 days £990

This course covers the fundamentals of programming in PHP and Web-related issues such as linking a series of forms together into a session, maintaining state if multiple users are on your site at the same time, cookies, security and other matters. We also cover PHP's interfacing to relational databases in some depth, with a particular study of MySQL.

16-19 March 2004

18-21 May 2004

20-23 July 2004

14-17 September 2004

23-26 November 2004

### MySQL Relational Database

2 days £550

Structure, installation, administration, database design and programming through SQL.

22-23 March 2004

24-25 May 2004

20-23 July 2004

2-3 August 2004

20-21 September 2004

1-2 November 2004

## JAVA

### Java Programming for the Web

5 days £1210

An introduction to the Java programming language, and its Internet and intranet use with server- or client-side applications.

7-11 June 2004

11-15 October 2004

### Deploying Java Applications on Linux and Unix

5 days £1210

Learn to install and support applications under Linux/Unix with Apache, Tomcat and MySQL.

telephone or email for details

### Java Extra

1 day £330

Subjects not covered on regular public courses.

telephone or email for details

## OTHER

### Python Programming

3 days £770

The fundamentals in depth, and an introduction to applications such as GUI design and data munging.

26-28 May 2004

22-24 September 2004

### Tcl Programming

3 days £770

Fundamentals of the Tcl programming language including Expect, libraries and regular expressions.

12-14 July 2004

18-20 October 2004

### Tcl - the Tk Toolkit

2 days £550

Covers widgets, geometry managers and event handlers of the Tk GUI so you can write and maintain graphic applications.

15-16 July 2004

21-22 October 2004

## GENERAL

### Regular Expressions

1 day £330

Dedicated to pattern recognition and matching, dependent on recognising sequences of characters.

26 March 2004

6 August 2004

5 November 2004

### Deploying Apache and Tomcat

2 days £550

How to source, install, configure and support Apache and Tomcat for the deployment of Java web applications.

24-25 March 2004

4-5 August 2004

3-4 November 2004

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

4 days £990

Installing and supporting applications under open source technologies.

4-7 May 2004

Prices valid for bookings confirmed by 30 September, 2004. See Web site for US dollar and Euro prices.

# 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 three or more students and would like a course custom-tailored to your needs, please phone us to make sure the dates are still available.

## APRIL 2004

			1	2
5	6	7	8	GOOD FRIDAY 9
EASTER MONDAY 12	13	14	15	16
PERL 19				
26	27	28	29	30

## JULY 2004

			1	2
5	6	7	8	9
TCL 12			TCL 15	
PHP 19	PHP 20			
PERL 26		PERL 28		

## MAY 2004

BANK HOLIDAY 3	LAMP 4			
10	11	12	13	14
PHP 17	PHP 18			
MySQL 24		Python 26		

## AUGUST 2004

MySQL 2		Apache 4		RegEx 6
9	10	11	12	13
16	17	18	19	20
23	24	25	26	27

## JUNE 2004

BANK HOLIDAY 31	1	2	3	4
JAVA 7	8	9	10	11
PERL 14	15	16	17	18
21	22	23	24	25
28	29	30		

## SEPTEMBER 2004

BANK HOLIDAY 30	31	1	2	3
PERL 6	7	8	9	10
PHP 13	PHP 14			
MySQL 20		Python 22		
27	28	29	30	1

## Getting to the core price of Fedora

Fedora Core (or more simply Fedora) is a new operating system based on the Linux Kernel. It's an Open Source project, and as such a free distribution, but it's based on the Red Hat core and sponsored by Red Hat. Because of this, there's strong cross-fertilization from new Red Hat developments into Fedora, and from Fedora back into Red Hat Linux projects.

If you visit <http://fedora.redhat.com> you'll find further details and links to downloads; if you choose to download, you'll find that you will need at least one set of two CD images (1.3 Gbytes) but the three-CD set is recommended.

Alternatively, you can spend £36.50 (\$49.99 USD) on a book such as Sam's "Red Hat Linux and Fedora Unleashed" which includes a DVD with the equivalent of 6 CDs, plus an easy-to-install version on two CDs. You also get 1,000 printed pages of tutorials, examples and descriptive text.

The current Fedora release includes most of the Open Source languages and tools you would wish for, such as Python 2.2.3, PHP 4.3.3, Apache 2.0.47, Perl 5.8.1, and Tcl, Tcl/Tk and Expect. As with any packaged software, you'll notice that the tools will be good recent releases rather than the white-hot latest version, but they will have been checked out within the Fedora core.

Usually, the supplied version will be the best for you to use, but you have the tools available to you to upgrade specific tools if you really must.



*Although Fedora is free, you may find that buying the book will get you more*

### BOOK REVIEW

## HTTP Developer's Handbook is a must if you publish your scripts to the Web

Are you making your application available via browsers? Whether you're using Perl, PHP, Python or Java, you can make a much more effective Web application if you understand and make use of the powers of HTTP (Hypertext Transfer Protocol) too.

The "HTTP Developer's Handbook" by Chris Shiflett starts by overviewing the HTTP protocol, then goes on to explain how it can be used to maximum effect in Web-based applications.

What sets this book apart from others

on the same topics? Among the gems contained in this book, but not covered by most other texts, are details of how to set caching controls and how to send compressed (gzipped) pages if the browser can accept them. You'll learn how to save a downloaded file under a specific name, which is especially important if you consider this last is a notoriously difficult nugget to discover from the reference manuals! Security and authorisation issues, media type control and the tools necessary to be able to maintain state through a session are all covered as well.

If you're at the stage of putting simple programs on the Web, but need to link and secure them, we recommend this book for the background information it provides.

See the Well House Consultants library on line at <http://www.wellho.net/library>.

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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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