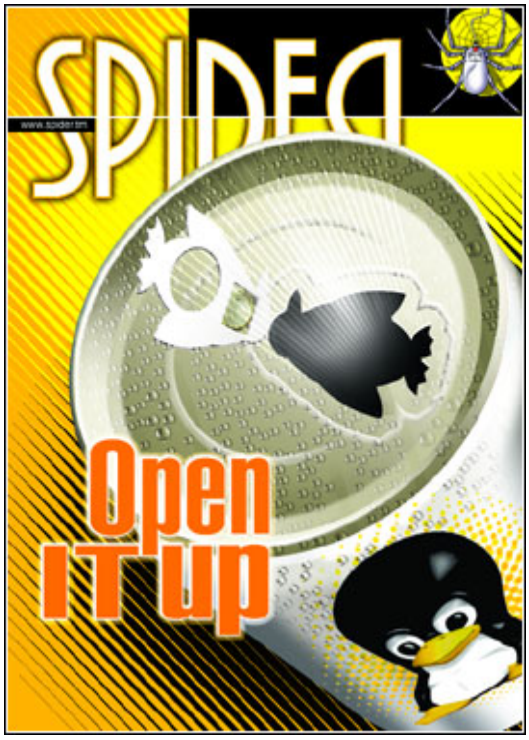
SPIDER September 2006



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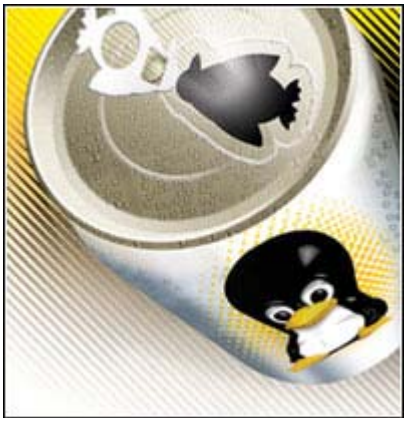
Cover Story

Tune your brains

Open source software has gradually made its way across the shores to Pakistan. It is not only major organisations but also interested individuals that can benefit massively from its arrival.

By Fouad Riaz Bajwa

In a world dominated by proprietary software and closed-source software giants like Microsoft and Oracle, another software technology ecosystem has emerged disrupting traditional proprietary software development engineering. Its marketing practices have evolved a global demand and supply ecosystem of its own dominating the world through enabling Information and Communication Technologies and is known today as Free and Open Source Software (FOSS). A community-based software development engineering model, FOSS is the usage of open standards and open software engineering principles that are not restricted by proprietary licenses that have enforced per user or per machine agreements and charges in the past.



The word “free” in “free software” stands for freedom of use and not free-of-cost as the source code is available either free or at no more than the cost of the compiled version of the software. The FOSS model today is widely recognised by the United Nations, academia, civil society, governments and businesses worldwide. FOSS has been fueled in the last three decades by a community formed by hackers, professionals, and founders of the internet and the web inclusive of open innovative software engineering principles encouraging knowledge sharing for everyone who contribute or want to benefit from it. Silicon Valley today hosts hundreds of startup companies basing their products and service delivery on the FOSS model. FOSS has also facilitated breaking the monopolies of proprietary software companies and their patent attacks that have been known to close down the publicly available code on the internet chaining it down with per user or per machine licenses and patenting software code as trade secrets.

The history of FOSS dates back to the efforts of Richard M. Stallman, a Massachusetts Institute of Technology (MIT) graduate and scientist working at the MIT Labs in the 1970s. Stallman made the philosophical and technological foundation for FOSS. In 1984, Stallman founded the GNU Project with the goal of developing an operating system comprising entirely of free software similar to the environment by Unix but without the unsocial and proprietary restrictions on the use of software that were imposed by Bell Labs on Unix. Stallman founded the Free Software Foundation (FSF) in 1995 to back the GNU project. During early 1990s, Stallman and the FSF volunteers developed the required editors, compilers, libraries and the operating system shell to host the kernel but were unable to put that kernel together in order to operate the system. Meanwhile, a student of the University of Helsinki, Linus Torvalds, used a simplified Unix-like system called Minix on his own computer. Minix, however, did not allow extentions to its code thus motivating Torvalds to create a replacement for Minix from scratch so that a free operating system could exist without carrying such restrictions. This, in effect, gave birth to the most popular open source operating system called Linux.

Linux has made way to supporting 32 and 64-bit computing environments, enabling the fastest ever super computing systems, grids, clusters, and network farms. Linux leads on the internet and intranet telecommunications front while continuously making way into rich clients such as PDAs, embedded devices and television set-top boxes. Linux has challenged the proprietary Symbian operating system found in cellphones as well as the Windows CE and standard Palm operating systems.

Since the free software could not carry proprietary source code or could not be made part of proprietary initiatives, only free software initiatives licensed through the FSF GNU-GPL could benefit from free software. Thus another group from the free software community comprising of Eric Raymond, Larry M. Augustin and Bruce Perens in 1997 was formed in an effort to market the free software concept to people who wore ties initiated the Open Source Initiative (OSI). Facilitating this concept was Eric Raymond’s seminal research paper titled “The Cathedral and the Bazaar” that clearly differentiated between closed source and open source software development and the threats associated with proprietary software development models.

This group removed some of the political language of Stallman’s license hoping to make OSI more pragmatic and persuade the business community to release their source code under OSS licensing. This addition to the concept of community sharing extended to business users and created the base for open standard telecommunication companies as well as formation of Red Hat that based its primary profit model on distribution of Linux. The OSS model proved to be quite a catch-on for business and industry and both ideologies of FSF and OSI combined to form the basis for FOSS.

Companies in Pakistan that have shifted over to FOSS completely or certain portions of their IT infrastructures
1 **Kohinoor Maple Leaf Group**
2 **Crescent Group of Industries (Crescent Bahuman)**
3 **Dollar Industries**
4 **Bank Islami Pakistan**
5 **Askari Commercial Bank**
6 **Dancom Online Services Islamabad**
7 **Inbox Computers**
8 **Siemens Fugitsu**
9 **Ideal Distribution**
10 **Sui Northern Gas Pipelines**
11 **Pakistan Software Export Board**
12 **Open Source Resource Center**
13 **Ministry of IT and Telecommunication**
14 **Ministry of Defence**

The FOSS philosophy ensures the distribution of the software with its source code and under free and open licenses. Therefore, FOSS refers to computer programs that transfer the freedom to other parties to openly review source, comment upon, refine, and perform additions to it and release it while recognising the original contributors. Anyone can take the programs, understand how they work and use them without asking for any additional permission. This approach is a good model for producing resilient software. The “open” concept allows further customisation of the software to the user’s needs. This allows a major reduction in costs incurred by the user while depending less and less on imported technology and customizing software according to local languages and needs.

Looking at the opportunities that FOSS brings to Pakistan, it is a highly useful and fruitful alternative to pirated proprietary software. It also brings the opportunity for the country to benefit from ground-up or bootstrap innovation, research and business opportunities that are cross platform and multidisciplinary in nature. Its success can be attributed to various FOSS communities including the largest and oldest, Linux Pakistan User Group, boasting over 3,500 professional as well as amateur Linux users. The second largest community group is Free and Open Source Software Foundation of Pakistan (FOSSFP) and is dedicated to promoting the overall adoption, development and usage of FOSS throughout the region as well as globally. FOSSFP promotes ICT software freedom for everyone and has over 850 Ubuntu Linux user group members and over 4,900 registered certified users.

Large businesses, industrial groups and banks have benefited from FOSS and have reduced their costs by eliminating licensing offered by proprietary software giants. The Pakistan Software Export Board and Ministry of IT&T established the Open Source Resource Center (OSRC) to encourage an open source demand and supply ecosystem within the region. The OSRC is working towards promoting FOSS throughout the various public and corporate sectors through

capacity development and provision of open-source based enterprise resource planning systems to various industrial associations.

There are companies based in Lahore, Karachi, Peshawar, Multan and Islamabad that are providing various solutions throughout the desktop, server and middleware stacks including extensive enterprise level technical support related to RAC and Cluster computing. Hardware and various operating system desktop, server and enterprise solutions are available through multinational organisations like IBM Pakistan, Hewitt Packard distributors, Red Hat Channel Partners, Novell Distributors and Ubuntu Commercial Support by Canonical. This creates a healthy ecosystem for the corporate enterprise sector to benefit from total solutions.

BytesForAll FLOSS Localisation Consortium

A list of useful online resources for choosing from over two million FOSS projects

1 **Savannah.gnu.org by the founders of FSF**
2 **Sourceforge.net and Freshmeat.org by the founders of OSI**
3 **Launchpad.net by the founders of Ubuntu-Linux**
4 **Gforge.org**
5 **Apache.org**
6 **Mozilla.org**
7 **Drupal.org**
8 **Joomla.org**

Anticipating the benefits and cost-cuts, a lot of local businesses have embraced FOSS completely or certain portions of their IT infrastructures. This creates tremendous amount of human resource demand and supply opportunities and it is prime time to acquire the necessary skills required by all these local projects and businesses that are adopting FOSS as their business support systems. The best combination of skills includes Linux OS installation and administration as well as LAMP (Linux-Apache-MySQL / POSTGreSQL-Php / Python / Perl) software development skills.

As well as learning all the essentials online, users in Pakistan can benefit from various educational institutions offering courses to cater for such requirements. A number of universities and corporate training centres including Peshawar University, SZABIST, MAJU, NUCS-FAST, OpenTech, Oracle University, and APTECH are providing intensive professional technical and managerial trainings. On the integrated multidisciplinary higher educational sectors within the fields of Engineering and GIS, institutions like GIK, NED, UET, NUST-NIIT have intensively incorporated FOSS into their curriculum thus providing opportunities for FOSS research.

After acquiring the FOSS development or administration skills, it is prudent that one chooses to join or initiate FOSS projects on the internet. There are many websites that host FOSS development or catalogue FOSS programs.

The wide variety of FOSS information available on the websites may become really cumbersome for an average user choosing to adopt FOSS. However, to make life easier, the Ohloh service is a one-stop resource to learn about prominent FOSS projects.

An immediate way to engage in FOSS development is to create volunteer Linux or FOSS user groups within universities, colleges, schools, and companies to share personal experiences by contributing information and case studies regarding the use of FOSS and list them as FOSSFP chapters. Secondly, since Ubuntu-Linux is freely available, everyone irrespective of their location can order CDs and share them with their family members, friends and colleagues.

Apart from operating systems and general business applications, FOSS has contributed to human and social development through applications that empower individuals, promote economic growth, reduce inequality, support human rights, gender empowerment, microfinance development, employment creation, news sharing, information and knowledge dissemination. Apart from its low-cost and free-of-cost models, its greatest benefit particularly for Pakistan is that FOSS can be localised into the 70 regional languages spoken in Pakistan. This will provide versions of FOSS that use Urdu, Punjabi, Sindhi, Balochi, Pushto, Sariki, Himalaya as an alternative to the widely available software interfaces in English. Similarly, the availability of localised graphical user interfaces or visual display can be further worked upon to develop localised computing, and programming in Urdu as well as typing in domain names in Urdu into your browsers to access localised web resources over the internet.

Pakistanis are carrying out Urdu localisation efforts around the globe. The most widely accessible and usable tool to localise Ubuntu distribution is called Rosetta. This is an opportunity for Pakistanis to volunteer by donating their time and effort to share the translation activity covering over 1,100 translation tasks. To support localisation, the regional BytesForAll FLOSS Localization Consortium gathers FOSS resources for carrying out localisation efforts for various regional languages spoken in South Asian countries.

It is prime time for our academia, researchers, civil society and business and industry to adopt FOSS development and technologies for ICT-based production. The strategy is to embrace the innovation opportunities that FOSS extends. With the source code for every FOSS program in one's hand, Pakistan can develop extensive and highly marketable products at virtually no cost for global markets. Similar business opportunities are available for extending the software freely without any licensing costs while charging for supplementary services built around the product including hardware, networking, consultancy, training, trouble-shooting, debugging, maintenance and upgrades through patches. The IT Business and Industry can be revived through adopting FOSS, developing commercial grade products for foreign markets, disseminating world class FOSS education and research positioning ourselves as one of the best FOSS knowledge workers and product developers worldwide as well as recreate the interest in IT that once was heard in all corners of the nation.

The Site

OSI **www.opensource.org**

Linux Pakistan User Group **www.linuxpakistan.net**

Free and Open Source Software Foundation of Pakistan **www.fossfp.org**

Ohloh service **www.ohloh.net**

FOSSFP chapters www.fossfp.org/chapters

Ubuntu-Linux shipit.ubuntu.com

Rosetta
launchpad.net/distros/ubuntu/dapper/+lang/ur

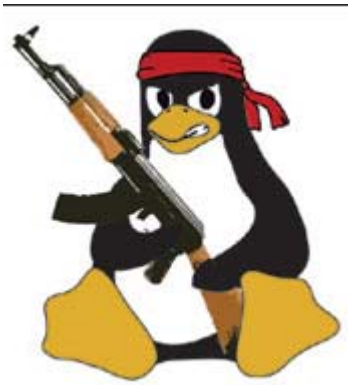
BytesForAll FLOSS Localisation Consortium
groups.yahoo.com/group/bytesforall_floss

Cover Story

The open and closed case

A study of open and closed source software reveals why more corporate and home users are making the shift towards open source

By Nizar Diamond Ali



Once upon a time, propriety software was the only viable option available to home users, professionals and educational institutes. However free open-source applications such as operating systems to development platforms, databases, office suites, browsers and instant messengers are now easily available. This has shifted the focus from availability of alternative software programs with adequate documentation and support to security considerations. Which one is more secure — the closed source or the open source software, and why? The question has intrigued the average end user, security professionals, Chief Technology Officers and governments alike.

To discuss the issue it is important to know the driving factor behind both these philosophies of how the two genres of software are distributed. The closed source group or propriety software code is regarded as a trade secret by business oriented companies such as Microsoft. Whereas the Open Source Software (OSS) movement is built upon the notions of community based development, peer review, constant enhancements and making it possible for people of all backgrounds and financial strengths to enjoy high quality software free of cost. Notable names in this industry are Linux and its various flavours, Mozilla, OpenOffice and some commercial offerings such as Red Hat, IBM and Novell solutions.

OSS advocates argue that since their products are globally available to professionals with vast experience of software development and a broad range of expertise, they are better equipped to improve the code and report any potential problems.

From a security standpoint, the basic advantage of OSS is that since the code is available to hackers and security auditors to explore and experiment with, this basically translates as a boon for the development team as they stand a chance to get to know the vulnerabilities well in advance and fix them before an exploit code is written. On the contrary, in the case of closed source code, an exploit has to be often demonstrated through execution of the original code (such as buffer overflows in several Microsoft products) because the code itself is not known, preventing pre-emptive measures to check the existence of problems. Moreover, OSS advocates argue that since their products are globally available to professionals with vast experience of software development and a broad range of expertise, they are better equipped to improve the code and report any potential problems. This has led to reduced time to fix a certain vulnerability once it is discovered open as compared to publicised delays by propriety software companies like Microsoft in releasing security patches. There are even reports of propriety software introducing new bugs or failing to resolve an existing one. Plus, in case of OSS there are no marketing tactics to be followed unlike closed source companies who may not reveal (or may not even know) the exact number of security flaws in their products.

OSS also claims that the incentive for its development team is to have a better product for the community. On the other hand closed source proponents often dismiss the notion that since their employees are motivated by salaries, their products are less secure. Instead, they say that closely guarded source code maintained by a team of smart developers is a guarantee that individuals with a malicious intent are kept at an arm's length. Otherwise they would devise new ways to break into the applications. This seems to have backfired by and large. There's a whole bunch of highly talented software developers who are sworn propriety-software antagonists.This is cited as one of the major reasons why so many script kiddies, worm and virus writers continuously and relentlessly target Microsoft products. Internet Explorer has now become a notorious example of how vulnerable propriety products can be. Closed source group argues that it is in fact the widespread use that has led to frequent exploitation. But again, the Apache Web server for Linux has a market share more than its closed source competitor, IIS by Microsoft. This alone is an example of OSS that is widely used and more secure both at the same time.

But that doesn't mean OSS is all flaw free — there have been security problems with databases such as MySQL, PostgreSQL, various open source implementations of SSL, SSH and other server software like mail, web, FTP servers, and PHP. SANS, a network security institute writes about Firefox "Many of the flaws discovered are critical in nature and allow a malicious webpage to completely compromise a client system. Exploit code for leveraging these vulnerabilities is publicly available as well."

Security Concerns of Governments

Germany — "When the German Federal Ministry of the Interior in Berlin last week announced a government deal with IBM to purchase hardware and software products that support Linux, the official who signed the deal said that the switch to open source would avoid a "mono" IT environment, which is more susceptible to attack" — www.infoworld.com

India — "We were discussing the future challenges in information technology, including the issues related to software security. I made a point that we look for open source codes so that we can easily introduce the users built security algorithms"— Indian President A.P.J. Abdul Kalam recounting a conversation earlier with Microsoft Chairman Bill Gates —CNet News.com.

"In another public-sector boost to open-source software, Indian President A.P.J. Abdul Kalam called for his country's military to use such nonproprietary technology to ward off cybersecurity threats"
— CNet News.com

There have been several studies that actually conclude OSS to be less secure as compared to Windows OS. But a major problem with these studies is that all the exploits in all the OSS are counted in same category. For instance, if there are problems in PHP, it doesn't mean that Linux is responsible for it but since both are OSS, they are placed under a single heading, OSS. So, on the other side of the equation in such reports it should be closed source comprising the entire collection of commercial application vendors instead of just Windows OS. Secondly, OSS argues that while counting the number of vulnerabilities, several distributions having same core are double counted, thus increasing the total number of security holes.

With all these factors assumed to be accounted for in both OSS and closed source, there is still one factor that gives an unbeatable edge to the OSS — the question of backdoors. Professionals working in defence industries and others sensitive areas throughout the world have apprehensions about the vulnerability of closed source applications to allow hackers to spy upon

their activities and siphon off the confidential data. OSS on the other hand claim that security by obscurity doesn't work, just like the encryption algorithms widely used today are the ones that have stood the test of time and have proven their strength against rigorous analysis by cryptanalysts and mathematicians world over. Microsoft seems to have learned these security priorities of consumer by launching its own Shared Source Initiative which is geared towards academia and governments, allowing them access to the source code for review.

The present and the future of OSS seems quite bright. It has already left behind the nags of installation and usability, and is now sure to impress an even wider audience as awareness and need of secure system gathers pace.

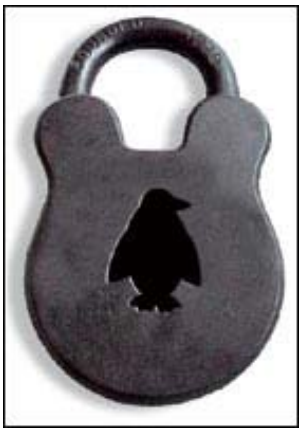
The Site
SANS www.sans.org

Cover Story

My Ubuntu experience

A computer user explains his reasons for switching from the near-ubiquitous Windows operating system to a user-friendly version of Linux called Ubuntu

By Noumaan Yaqoob



Call me crazy, but I am a person who cannot live with feelings of guilt and indignity. When I purchased my beloved computer, it came equipped with a pirated copy of Microsoft's Windows XP. As is the case with many other Pakistanis, I am unable to buy a legal copy of the Windows operating system. It is expensive and unreliable considering the support options and security issues. I kept using pirated Windows XP, which often displayed an icon in the task bar informing me of my computer's security condition. Most Windows XP users would be familiar with this feature. It strongly recommends that you install an anti-virus utility on your computer and enable automatic updates. A legal copy of any popular anti-virus utility is another expensive software. Therefore, instead of using a pirated version of Norton Anti-virus, I left my computer unprotected.

Everyone knows that Windows is quite vulnerable to bugs, viruses, trojans and spyware. There seems to be an attack on Microsoft products on a daily basis and in order to combat these vulnerabilities you need to get patches from the Windows Update website. My cable internet connection did not allow me to download updates using the automatic update utility and Microsoft's Windows Update website didn't allow me to download updates because I was using an illegal copy of Windows XP. I don't know about other people but I felt ashamed whenever I saw a notice telling me that I needed a genuine Windows license in order to take advantage of security updates. I felt ashamed when they indirectly told me, "We know you are a thief and we let you get away because we know you are poor and needy."

I am neither poor nor needy. Companies such as Microsoft think that the citizens of Third-world countries need pirated software for their computing needs and just like any power hungry corporation, they pretend to be kind and gracious by not persuading our governments to aggressively wipe out illegal software. I wanted to tell them, "No sir, I can't take something in such a shameful way. No matter how pretty and valuable it is." This was the reason I went looking for other options and found the wonderful world of Ubuntu.

I knew about Linux and free operating systems such as Red Hat, Mandrake, Debian and others of their ilk. I decided to give one of them a try and bought a set of Red Hat Linux installation CDs. The installation itself went smoothly enough but after booting, my internet didn't work. My modem was not supported and my cable service provider was using an ISA server with some strange settings. During my first attempt to install Linux, I had accidentally deleted Windows and now had no choice but to reinstall it. My initial attempt to migrate failed miserably but I did not give up. I kept looking around for a simple easy open-source solution. Meanwhile, I started using open source programs such as OpenOffice, Gimp, Firefox and Thunderbird on my PC.

Ubuntu is free software. It is free in the sense that it offers the freedom to redistribute, modify and use. There is no enterprise edition, no license fees and you are free to use it for both commercial as well as personal purposes.

One day I came across Ubuntu Linux. I immediately ordered their CDs after learning that Ubuntu is not only free but they also ship free CDs globally. I received my package in three weeks. Unlike many other Linux distributions, Ubuntu comes with only one install CD containing almost everything one could ask for. In light of my previous attempts to install some Linux distributions, this time I didn't make the mistake of deleting my Windows partition from my hard disk. I installed Ubuntu and as with my previous experience, it installed smoothly. However, my internet connection still didn't work. This time, I decided to struggle a little and configure my system. Ubuntu has great community support options and I successfully configured my internet with the help of the Ubuntu Wiki, Ubuntu Forums and IRC chat rooms. It was remarkably simple considering all I had to do was discuss my problem with other community members. I even found a driver for my HCF Conexant modem. Now I can browse the web, create documents, chat with friends without using any pirated software.

Ubuntu is a complete operating system based on GNU/Linux and the of software freedom. Ubuntu is an ancient African word that means "humanity towards others". Ubuntu markets itself as Linux for Human Beings. It has almost everything that a Windows user might want and then some. It has OpenOffice to create documents, spreadsheets and presentations, GIMP to create and manipulate images and Gaim to chat with friends on Yahoo, MSN, ICQ, Google Talk and IRC. By default it comes preloaded with the Firefox web browser and Evolution, a mail suite. It has audio and video players and you can download codecs for almost every media file available. You can plug in your mobile phone, digital camera, iPod or whatever digital accessory you use and Ubuntu automatically detects it.

There are more than 15,000 packages available for one to download and install. If you don't like Firefox then you can always use Konqueror, Epiphany, Galeon, Opera or Mozilla. You don't like Gaim? No problem. Try xchat, aMSN, Gajim, licq. I have completely migrated to Ubuntu and am using it for my personal computing needs. I don't remember a single moment when I regretted my decision to use Ubuntu. I have solid reasons to prove that I am doing the right thing.

Ubuntu is free software. It is free in the sense that it offers the freedom to redistribute, modify and use. There is no enterprise edition, no license fees and you are free to use it for both commercial as well as personal purposes. You are free to modify your operating system completely and redistribute it. You are free to submit patches for bugs or localise the system to your language.

Ubuntu means humanity towards others. By using Ubuntu you become part of a worldwide community struggling for software freedom. You can help others by answering questions in support forums or help the community maintain Wiki-based documentation. You can translate Ubuntu or any of its components in your local language, chat with other Ubuntu users and make friends from all over the world. Free software brings people closer and allows them to solve each other's problems. People out there are contributing their precious time, knowledge and money to help each other. Who wouldn't like to be part of such a great community?

In light of this, legal aspects now seem the least important reasons to love Ubuntu. But you cannot ignore them. I used Windows but it was not my Windows. Using Ubuntu I can say it is my Ubuntu because not only am I legally entitled to use it, I am also allowed to redistribute, modify and contribute to it. It empowers me to work for the community and tell other people to join. I am legally allowed to enjoy the freedom of making lives easier for other human beings. There is no excuse for using illegal software anymore. Today, I wonder why people even try to find lame excuses to use illegal software when there is such an abundance of better, legal and free

software. I am thankful to free and open source software not because it is legal but because I no longer fear the indignity and shame that I faced while using pirated software.

The Site

Ubuntu **www.ubuntu.com**
GNU **www.gnu.org**
Philosophy of the GNU Project
www.gnu.org/philosophy/
Free Software Foundation
www.fsf.org
WhatWindowsUsersWant
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2nd, Floor Haroon House, Dr. Ziauddin Ahmed Road, Karachi - 74200. PAKISTAN
Ph: 111-444-777 Ext. 3377

editor@spider.tm advt@spider.tm