OPEN SOURCE SOFTWARE AND INTELLECTUAL PROPERTY RIGHTS

(This is the text of the talk delivered by Justice Yatindra Singh at NALSAR Hyderabad on 22.3.2005. The same talk was delivered at NLS, Bangalore and NUJS, Kolkata on 24.3.2005 and 1.8.2005.)

Cyber laws

1. Inventions, discoveries and technologies widen scientific horizons but also pose new challenges for the legal world. Information Technology—brought about by Computers, Internet, and Cyberspace—has also posed new problems in jurisprudence. These problems have arisen in all areas of law. The law (statutory or otherwise) providing answers to these problems or dealing with Information Technology are sometimes loosely referred to as 'Computer Laws' or 'Information Technology Laws' or simply 'Cyber Laws'. Intellectual property rights (IPR) are important aspect of Cyber laws. Today we will discuss one aspect of IPR relating to the Open source software. But first a few words about WTO and IPR.

WORLD TRADE ORGANISATION (WTO)

2. It was around the middle of the last century (1944), when the second World War was coming to an end and Germany was losing, that some economists held a conference in Briton Woods Hampshire, USA to restore economic order. They thought the world would be a better place if there were international bodies,

- To solve monetary/currency problems.
- To reconstruct and develop the nations and
- To harmonise tariff and international trade.

3. The first and the second were established and are loosely known as the International Monetary Fund (IMF) and the World Bank, but the third one, to be known as the International Trade Organisation (ITO) never took off. The US Congress did not approve it and without its support it was not possible to establish it. But all was not lost; representatives of 56 countries again met in Havana (1947) to formulate principles to be followed by nations to improve international trade. This formed the basis for signing up a General Agreement on Tariff and Trade (GATT) in Geneva by the end of the same year. The contracting nations also resolved to form a Board of Trade with a Secretary General to look after its further revision and implementation. Thus ended the first round of GATT. Legally GATT was not a formal organisation, but an agreement entered into by the contracting nations.

4. Broadly GATT dealt with reducing tariffs and improving trade among the nations, though there wasn't any dispute settlement mechanism. Few more rounds were held and it was the 8th round, started in 1986 with a meeting in Uruguay that led to the creation of the World Trade Organisation (WTO). It was in this round that the US sought inclusion of a few more items, amongst others,

- Trade related to Intellectual Property Rights,
- Trade related to Investment Measures,
- Trade related to Services,
- Agricultural subsidy,
- Dispute settlement mechanism.

5. The 8th round continued for seven and half years and it often appeared that an agreement would not be reached. But ultimately a draft was prepared under Secretary-General Arthur Dunkel that came to be known as the Dunkel draft. It was debated and most of it was approved of in December 1993. It was formally signed on April 15, 1994 by 125 countries at a meeting held in Marrakech (Morocco) inter alia, it meant,

- Establishment of the WTO from January 1, 1995, the Trade Policy Review Body, and the Dispute Settlement Body. And
- Accepting the agreements forming the basis for international trade.

6. All the WTO agreements (except for a few plurilateral agreements) apply to all WTO members i.e. a member has to accept all of them; he cannot choose. These agreements provide certain minimum standards to be observed by members and keep trade policies of the members within agreed limits. Among the other agreements is an Agreement on the Trade related aspect of intellectual property rights (TRIPS). This has an impact on the protection of computer software. We being member of the WTO have to abide by the TRIPS.

7. TRIPS talks about the following kinds of Intellectual Property Rights:

I. Copyright and Related Rights
II. Trademarks
III. Geographical Indications
IV. Industrial designs
V. Patents
VI. Layout - designs (Topographies) of Integrated Circuits
VII. Protection of Undisclosed Information (Trade Secret)

8. TRIPS provides a minimum standard to be observed by the members. We have to amend our laws to bring them in conformity with the TRIPS. The time limit to do so is provided in Article 65 Part VI (TRANSITIONAL ARRANGEMENT) of the TRIPS. Under this provision, we had to amend our laws by 31.12.2004.

Intellectual Property Rights (IPR)

9. 'What is worth copying is prima facie worth protecting'[1] is the genesis of intellectual property rights. These rights refer to the property that is a creation of the mind: inventions, literary and artistic works, symbols, names, images, and designs used in commerce. It is broadly divided into two categories:

- Copyright, which includes literary and artistic works such as novels, poems and plays, films, musical works, drawings, paintings, photographs, sculptures, and architectural designs. It lies in description of some.

[1] Paterson J in University of London vs. University of Tutorial Process Ltd. 1916(2) Ch 601.

Industrial property, which includes inventions (patents), trademarks, industrial designs, and geographic indications of source.

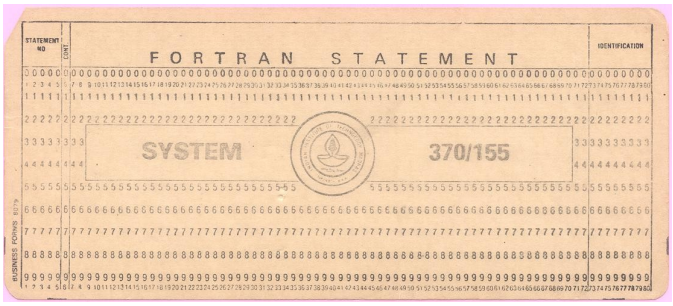
10. In India, IPRs are protected under following Acts.

I. The Biological Diversity Act, 2002
II. The Copyright Act, 1957.
III. The Design Act, 2000.
IV. The Geographical Indications of Goods (Registration and Protection) Act, 1999.
V. The Patents Act, 1970.
VI. The Protection of Plant Varieties and Farmers' Rights Act, 2001.
VII. The semiconductor Integrated circuits Layout design Act, 2000.
VIII. The Trade Marks Act, 1999.

11. IPRs are also dealt under two more areas namely, the trade secret and the Indian Contract Act. Today we will confine ourselves to the Copyright Act as this has bearing on open source software.

Copyright: Source Code and Object Code

12. Computers do not understand our language. They only understand 'machine language' or 'machine code' i.e. instructions which consist of a series of 0s and 1s. In the earlier days a computer program used to be written in machine code or by punching a punchcard. The punched slot or unpunched slot indicated requisite information to the computer. This process was slow and tedious. Such a programme, although intelligible to the computer, was virtually unintelligible to any one except an equally skilled programmer.



(Computer Punch Card)

13. From earlier days, the Computer scientists also devised an alternative language for writing programmes, known as 'assembler language'. These assembler languages had advantages over writing a programme in machine code but they still required many instructions to be written in order to achieve the simplest tasks. A number of high-level languages—such as Basic, Fortran, Cobol, Pascal etc—have been devised in order to simplify the work of a programmer. The use of these high level languages enables a programmer to write a programme in terms that nearly resembles ordinary English unlike those used in the lower level languages. They also permit complex operations for the computer to be directed by a relatively compact command. The programmes as written by a programmer are known as the source code. When an assembler or a compiler converts it into machine code, it is known as the object code. Generally this conversion is one way from source code to the object code. However it is possible to reverse it but de-compilation and disassembly is time consuming and expensive.

14. GAIM is popular proram for that loads different instant messangers (MSN or Yahoo) together.

(Logo of GAIM)

15. Source code of GAIN is open.; it is known to everyone. It is written in C++. A small part is follows.

```
#include "proxy.h"
#include "signals.h"
#include "sslconn.h"
#include "sound.h"

struct GaimCore
        {
        char *ui;


    void *reserved;

        };

static GaimCoreUiOps *_ops  = NULL;
 static GaimCore      *_core = NULL;
```

16. If one reads it one can understand a few words mentioned therein and what it is trying to say. It is kind of description of something and it amounts to literary work within the meaning of the Copright Act and is so protected. A source code of a computer program if it is open is a literary work within the Copyright Act. However often it is not disclosed and kept as trade secret. But is an object code also protected?

17. The Australian High Court in 1986 held that the source code is a literary work and is protected as a copyright. But no such protection was given to the object code. One of the judges in the majority held[2],

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[2] Gibbs J. in Computer Edge Pty Ltd vs. Apple Computer Inc (1986) 161 CLR 171. The text of the judgement is also available at http://www.hcourt.gov.au/

> 'I have not found anything … that has persuaded me that [the object code] a sequence of electrical impulses in a silicon chip not capable itself of communicating anything directly to a human recipient, and designed only to operate a computer, is itself a literary work, or is the translation of a literary work within the Copyright Act.'

18. The aforesaid question didnot arise in India. Earlier the provisions in the Copyright Act in our country were similar; it was possible that courts might have rendered similar judgment.

Amendments in the Copyright Act

19. The Berne convention for protection of literary and artistic works in 1986 provided that computer software (object code and source code) and compilation of data be protected under the Copyright Acts. Agreement on Trade Related Aspect of Intellectual Property Rights (TRIPS) is part of the charter establishing World Trade Organisation (WTO). Every member of the WTO (and our country is a member) has to accept it. It has proceeded from the Berne convention and article 10 of the TRIPS requires members to amend the laws accordingly. Since then, we have amended the Copyright Act by two amending Acts namely Act no. 38 of 1994 and Act no. 49 of 1999. These amending Acts amended section 2(o) of the Copyright Act to change the definition of the word 'literary work'. It now includes computer programme as well as computer database. The result is that not only the computer programmes (subject code as well as object code) but computer database is also protected as a copyright. In India infringement of a copyright is a penal offence and civil remedies (injunction damages etc.) are also available (TRIPS articles 41 to 50, 61). By the two amending Acts consequential amendments were also made in other sections to make enforcement more realistic.

Software Licences, Open Source Software and Copyleft

20. One never purchases software but merely takes a licence to use it. There are different kinds of licenses. Software where the source code is not disclosed and is secret is known as close source software. ‘Proprietary software’, is a close source software, where in general the user has only limited right to use a product, on a specific computer (sometimes with a specific power or processor) sometimes with a limited number of signed or concurrent users. ‘Freeware’ is usually used when a piece of software is given at no cost. Generally the programmes are released only as executables, with their source code not available. For example one can download the Adobe Acrobat Reader as a freeware, but the software is still proprietary and its source code is not available. ‘Shareware’ is usually distributed free of charge for a limited period of time or for a limited use, mainly to give the user the opportunity to test it before buying it: ‘try before you buy’ is their motto. ‘Public domain software’ is software for which copyrights do not exist. Although this notion is invalid in Europe (but can be understood under US law). It is often used for software anyone can use for any purpose, without any restriction. However, the availability of the source code is not guaranteed.

21. Copyrights are used to protect computer software but everyone is not using copyrights to have rights in software. Some are using copyrights so that no one else may have any rights in that software; there is a new word for it: they 'copyleft' it. Before a software may be copylefted, its source code must be disclosed. A disclosed source software can be copylefted or non-copylefted. In order to copyleft a software, the owner first states that it is copyrighted and then adds a condition. This condition gives everyone the right to use, modify, and redistribute the source code and object code in the original or modified form only if the aforesaid condition remains unchanged *i.e*. the source code and object code of the modified version could be further modified and distributed. Thus, there is freedom to modify the software and anyone who redistributes the software, with or without changes, must pass along similar freedom to others. Copylefting guarantees that every user has freedom. I will talk about copylefting in more details under the heading 'Free Source Software, GNU and GPL'. Not all disclosed source software is copylefted: it could be non copylefted. This depends on the terms of the licence of the software. The software where source code is disclosed and is copylefted atleast to some degree is referred to as Open Source Software (OSS)[3]; the license has to qualify some conditions. I will talk about these conditions under the heading 'Open Source Initiative'.

Free Software, GNU and GPL

22. Copylefted software is also known as free software. In fact the term free software was used much before the term open source software was used. It all started in 1984 when Richard Stallman, a researcher at the MIT AI Lab, started the GNU (a recursive acronym for GNU is Not Unix) project under the umbrella organisation of Free Software Foundation (FSF). Stallman argued that only a few people would dominate the software industry unless there was freedom to modify software. The software industry could innovate and continue to grow if the source code could be freely available. This became the philosophy of the FSF and the GNU project. Their philosophy as explained on their website (see below)[4] is as follows:

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[3] An informative study on open source software by Interchange of Data between Administrations (IDA) European Commission, 'Pooling Open Source Software' is available at http://europa.eu.int/ispo/ida

[4] Please see http://www.gnu.org/philosophy/free-sw.html

'Free software' is a matter of liberty, not price. To understand the concept, you should think of 'free' as in 'free speech', not as in 'free beer'.

Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the users of the software:

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor (freedom 2).
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.

23. Richard Stallman, with the help of lawyers, drafted the General public licence (GPL). It contains a condition that copylefts software. Most of the software under the GNU Project are under GPL. Software, under a GPL licence, is also known as GPLed software. GPLed software can be integrated with similar GPLed software but not with any proprietary programmes. However an LGPL (earlier known as Library and now Lesser General Public License) can be integrated with almost any kind of software including proprietary software.

24. The GPL does not require you to release modified version. You are free to make modifications and use them privately, without ever releasing them. This applies to organizations (including companies), too; an organization can make a modified version and use it internally without ever releasing it outside the organization. But if you release the modified version to the public in some way, then the GPL requires you to make the modified source code available to the programme's users. Thus, the GPL gives permission to release the modified programme in certain ways and not in other ways; but the decision, whether to release it or not, is up to you.

Open Source Initiative (OSI)

25. The philosophy of FSF conveyed an anti business message. In the spring of 1997, a group of leaders in the free software community assembled in California. They thought of a new term to describe it: Open Source Software. Open Source Initiative (OSI) was started and a series of guidelines were drafted to describe when software can qualify as an Open Source Software? These criteria[5] are:

(I) **Free Redistribution:** The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

(II) **Source Code:** The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost–preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

(III) **Derived Works:** The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

(IV) **Integrity of The Author's Source Code:** The license may restrict source-code from being distributed in modified form only if the license allows the distribution of 'patch files' with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

(V) **No Discrimination Against Persons or Groups:** The license must not discriminate against any person or group of persons.

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[5] Please visit http://www.opensource.org/docs/definition.php

(VI) **No Discrimination Against Fields of Endeavour:** The license must not restrict anyone from making use of the program in a specific field of endeavour. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

(VII) **Distribution of License:** The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

(VIII) **License Must Not Be Specific to a Product:** The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

(IX) **License Must Not Restrict Other Software:** The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

(X) **License Must Be Technology - Neutral:** No provision of the license may be predicated on any individual technology or style of interface.

26. Software fulfilling the aforesaid criteria are marked OSI Certified. OSI has also created the following graphic certification mark to mark it as an open source software.

(OSI Mark)

27. A software having either of these, means that the software is being distributed under a license that conforms to the Open Source Definition by OSI. The following licenses have been certified by the OSI as open source software (for details of these licenses see the website mentioned below).[6]

(1) Academic Free License
(2) Adaptive Public License
(3) Apache Software License
(4) Apache License, 2.0
(5) Apple Public Source License
(6) Artistic license
(7) Attribution Assurance Licenses
(8) New BSD license
(9) Computer Associates Trusted Open Source License 1.1
(10)Common Development and Distribution License
(11)Common Public License 1.0
(12)CUA Office Public License Version 1.0
(13)EU DataGrid Software License
(14)Eclipse Public License
(15)Educational Community License
(16)Eiffel Forum License
(17)Eiffel Forum License V2.0
(18)Entessa Public License
(19)Fair License
(20)Frameworx License
(21)GNU General Public License (GPL)
(22)GNU Library or "Lesser" General Public License (LGPL)
(23)Historical Permission Notice and Disclaimer
(24)IBM Public License
(25)Intel Open Source License
(26)Jabber Open Source License
(27)Lucent Public License (Plan9)
(28)Lucent Public License Version 1.02
(29)MIT license
(30)MITRE Collaborative Virtual Workspace License (CVW License)
(31)Motosoto License
(32)Mozilla Public License 1.0 (MPL)
(33)Mozilla Public License 1.1 (MPL)
(34)NASA Open Source Agreement 1.3
(35)Naumen Public License
(36)Nethack General Public License
(37)Nokia Open Source License
(38) OCLC Research Public License 2.0
(39)Open Group Test Suite License
(40)Open Software License
(41)PHP License

[6] The details of these licenses are available at http://www.opensource.org/licenses/

(42)Python license (CNRI Python License)
(43)Python Software Foundation License
(44)Qt Public License (QPL)
(45)RealNetworks Public Source License V1.0
(46)Reciprocal Public License
(47)Ricoh Source Code Public License
(48)Sleepycat License
(49)Sun Industry Standards Source License (SISSL)
(50)Sun Public License
(51)Sybase Open Watcom Public License 1.0
(52)University of Illinois/NCSA Open Source License
(53)Vovida Software License v. 1.0
(54)W3C License
(55)wxWindows Library License
(56)X.Net License
(57)Zope Public License
(58)zlib/libpng license

28. People still debate whether open source software should be called free software or not. FSF says there is freedom to modify the software and therefore it should be called free software. However, apart from any other connotation, it causes some confusion as the word ‘free’ has the meaning that ‘it is without any cost’. It could be mistakenly understood for the software that is of no cost or freeware. I have discussed in some details about 'free software' and 'open source software'; there is some difference between the two. However, the basic ideals of both are the same; it would be better if they could sort out this difference. I have used the words ‘open source software’ rather than ‘free software’; just to avoid confusion. This does not diminish the contribution of either of them.

Linux

29. Linux[7] is the most successful and commonly known GPLed software. It is inspired by Unix, another operating system, that was developed at AT&T’s Bell Labs in the late 1960s’. At that time AT&T was a regulated monopoly and it could not sell computers. AT&T made Unix freely available along with source code to the universities and the government so that programmers could tinker with it and improve it. By early 1980s’, Unix became a powerful and popular operating system though there were competing versions of the same.

[7] Please read 'The Joy of Linux: A Gourmet Guide to Open Source' by Michael Hall & Bian Riffitt for more information on Linux and its working.

30. Andy Tanenbaum, a University Professor in Amsterdam, wrote Minix, a Unix clone, as a teaching aid for Unix. Linus Torvalds, a student of the University of Helsinki Finland, in order to overcome the shortcomings of Minix, started writing a programme for a new operating system, which was based on Unix. It was Linus' Unix or simply Linux. In developing it, Linus had relied on a lot of tools that had been distributed freely over the internet—especially the GCC complier distributed by GNU, a GPLed software. Many GPled softwares were also integrated with Linux. It is for this reasons many prefer to call it GNU/Linux. I have used the word Linux as it is shorter of the two and have mentioned the name of Linus Torvalds because he was the originator of the Linux. This should not be understood as undermining the contribution of GNU project or thousands of other programmers who are responsible for the success of Linux.

Linux - Suits

31. However one should know about the suits regarding use of Linux. Their outcome might change the future of Linux.[8]

32. AT&T had given one of the licenses of Unix to the University of California, Berkeley (the University) at the time when AT&T could not do computer business. The University developed and released its own version of Unix, known as the Berkeley Software Distribution (BSD). It became freely available and other companies incorporated it in their own products. In the meantime AT&T broke up in 1984 and was allowed to do computer business. It continued to improve its own Unix and released commercial versions of the same. The BSD version of Unix developed by the University became a contender to the AT&T's version. AT&T sued the University for infringement of its IPR. The defence was that the University had the right to distribute its version of Unix as most of the subsequent work had been done by the University. In 1993 AT&T sold its Unix business to Novell who settled the suit with the University on undisclosed terms.

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[8] The details of these suits may be seen at http://www.sco.com/scoip/

33. It is claimed that in 1995, Novell sold the unit that marketed commercial Unix software to Caldera now owned by Santa Cruz Operation (SCO). The SCO filed a billion dollar suit against IBM in Utah on March 6, 2003, alleging that IBM has

- breached its obligations under UNIX license agreements entered into with AT&T in 1985.
- violated the agreement by removing substantial source code from AIX and Dynix, two UNIX-based products, and dumped that code into Linux.
- infringed SCO's UNIX copyrights by using UNIX System V source code after SCO terminated the IBM license in 2003.
- incurred liability for tortuous interference and unfair competition.

34. IBM has filed a counter claim in the aforesaid suit alleging that

- IBM's Linux activities donot infringe any of SCO's copyrights;
- It has nor breached any agreement with SCO; and
- It is SCO that has breached the agreement.

35. It is not clear as to what was sold by Novell. As according to Novell,

- It simply sold a license to develop and then sub-license its version of Unix to other companies.
- It did not sell any Unix-related intellectual property to SCO.
- Novell and not SCO, owns the Unix copyrights and patents.

36. SCO has filed a suit in Utah against Novell, claiming that Novell is interfering with SCO's business by publicly arguing that Novell, and not SCO, is actually the owner of the intellectual property in UNIX. The suit seeks damages in cash, to be determined in the trial. It also requests injunctions that would require Novell to assign to SCO any wrongfully obtained copyrights.

37. SCO has also sent notices to 1500 corporations to obtain license from it failing which legal proceeding would be taken against them. It has also required the companies to take suitable measures so that its Intellectual property rights in UNIX may not be mixed in open source software. It has filed suits against AutoZone in Nevada on March 3, 2004 alleging that AutoZone violated SCO's UNIX copyrights by running versions of the Linux operating system that contains code, structure, sequence from SCO's proprietary UNIX System V code in violation of SCO's copyrights.

38. SCO also filed a suit against DaimlerChrysler in Michigan on March 4, 2004 for its alleged violations of its UNIX software agreement with SCO, seeking the following reliefs that

- Daimler Chrysler has violated Section 2.05 of the Software Agreement by refusing to provide the certification of compliance with the "provisions" of that Agreement;
- Daimler Chrysler be restrained from further violating the Agreement;
- A mandatory injunction be issued requiring Daimler Chrysler to remedy the effects of its past violations of the Agreement; and
- Award damages in an amount to be determined at trial along with the cost of the suit.

39. In the aforesaid suit DaimlerChrysler applied for summary disposition. It was partly granted 9th of August 20004 granting summary disposition to all claims except for SCO's claim for breach of contract for DaimlerChrysler's alleged failure to respond to the request for certification in a timely manner; thus dismissing most of the claim filed by the SCO. The remaining part of the suit was dismissed on 21st December 2004 without prejudice to bring fresh claim on the condition that in case the SCO refiles its claim for breach of contract for alleged failure to respond to the request for certification in a timely manner, the SCO shall pay DaimlerChrysler costs and reasonable attorneys' fees incurred in the instant action in defending against that claim after the Court's order dated 9th August, 2004 partly granting and partly denying DaimlerChrysler Corporation's Motion for Summary Disposition.[9] SCO has filed an appeal against the orders.

40. Red Hat is a leading company selling its own version of Linux. It has filed a suit in the Delaware court for declaration that it has not infringed SCO's copyrights in its use and distribution of Linux.

41. It is difficult to predict the outcome of these suits. It will depend on the evidence of the case. However, the most important suit is the first suit filed by SCO against IBM; its result may effect the remaining pending suits. Nevertheless, in order to safeguard the interests of purchasers, many vendors (including Red Hat, HP and IBM), are indemnifying the purchasers against claims of third parties (such as SCO) in case their (Red Hat, HP, IBM) open source products infringe any third parties' rights.

Other Successful Open Source Software

42. Some other popular copylefted open source softwares are

I. OpenOffice.org suite (LGPL License): Office suite provides bundle of software that are used in an office. The most popular office suite is Microsoft office suite. OpenOffice.org suite is similar to it.

[9] The copy of this judgement is available at http://scofacts.org/DC-2004-12-21-B.html

II. Mozilla Firefox Mozilla Thunderbird and Mozilla Sunbird (Mozilla Public License): Software which permits one to access Internet is called web browser. There are many such software: Opera, Internet explorer etc. Mozilla Firefox is a web browser. Mozilla Thundrbird is a program for sending and receiving emails. It can perform functions of Outlook express. Mozilla Sunbird is e-manager; it manages one calender. It can work perform functions of Microsoft outlook.

III. Ximian Evolution (GPL License): Microsoft Outlook is an electronic manager. It manages ones email, calender, appointments etc. Ximian Evolution is also an electronic manager. It is similar to Microsoft outlook

IV. GIMP (GPL License): It is GNU Image Manipulation Programme and is suitable for such tasks as photo retouching, image composition and image authoring.

V. Apache (Apache Software License): It is the most popular HTTP (Web) server.[10]

43. OpenOffice.org suite, GIMP, Mozilla Firefox, Mozilla Thundebird and Mozilla Sunbird can operate in Linux as well as in Windows however Ximian Evolution works in Linux only. This article as well as the presentation was made OpenOffice.org suite on a Linux laptop. The ease in writing and makeing the presentation was no less in wrting and making a presentation on window machine with Microsoft Office suite.

Open Courseware

44. Open Source Software concept is spreading in other arenas: higher education and is appropriately called open courseware. Massachusetts Institute of Technology in Cambridge, Mass., has posted course materials for 500 of its classes on the Web by the end of September 2003. It plans to post online material for virtually all its 2,100 formal courses. The material can be used freely by anyone and altered to meet local needs, as long as MIT is credited as the source for the material and no one charges for it. Similar networks have been built around the human genome project and its descendants; the offering by artists of free online music; and a new research-journal project called the Public Library of Science.

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[10] The Netcraft investigated the responses of over 15 million reachable web servers in their May 2000 survey. It showed that more than sixty percent were powered by Apache. See http://www.netcraft.com/survey/

Open Source Software: Future

45. Linus Torvalds (along with David Diamond) has written an autobiographical book 'Just for Fun: the Story of an Accidental Revolutionary'. It is entertaining and offers an insight into how the mind of a creative developer works. The last few chapters of this book including the one on 'Intellectual Property' make interesting reading. He says (on pages 194, 210, and 213),

> 'The GPL and open source model allows for the creation of the best technology. … It also prevents the hoarding of technology and ensures that anyone with interest won't be excluded from its development.
>
> …
>
> So open source would rather use the legal weapon of copyright as an invitation to join in the fun, rather than as a weapon against others. It's still the same old mantra: Make Love, Not War, except on a slightly more abstract level.
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> …
>
> Imagine an intellectual property law that actually took other people's rights into account, too. Imagine IP laws that encouraged openness and sharing. Laws that say sure, you can still have your secrets, whether they be technological or religious, but that doesn't *mandate* legal protection for such secrecy.'

46. Linus Torvald manages and releases Linux kernel. Will he always be there to do so? Who would do it after him? Will there be another Linus? Many also make a point, 'Who can afford to do professional work for nothing.' To them, proprietary software is the only solution. Windows, a proprietary software, is undoubtedly the most popular desktop for personal computers. Bill Gates in his book 'The Road Ahead' says (page 122),

47. 'In addition to free information, there's a lot of free software on the Internet today, some of it quite useful. Sometimes it's commercial software given away as part of a marketing campaign. Other times the software has been written as a graduate student project or at a government-funded lab. But I think consumer desire for quality, support, and comprehensiveness in important software applications means that the demand for commercial software will continue to grow. Already many of the students and faculty members who wrote free software at their universities are busy writing business plans for start-up companies that will provide commercial versions of their software with more features, not to mention customer support and maintenance.'

48. Which way will the software industry go? I am neither an expert in this field nor can I see the crystal ball. There is a suit also. However I shifted to GPLed software few years ago: the reasons were practicable. GPLed software comes without any cost. And it does what I do—word processing, playing music, watching Video, surfing internet, and electronically managing my calendar—as well as any other proprietary software. This paper as well as the presentation was made in OpenOffice.org suite over Linux machine.

CONCLUSION

49. Michael Lewis wrote a book in 1999 entitled 'The new new thing: a Silicon Valley story'. It is success story of the Silicon valley told through the biography of Jim Clarke. The most quoted line from this book is, *'The definitive smell inside a Silicon Valley start-up was of curry.'* In this century, the most important issue will be of intellectual property rights. If we understand it well and harness the powers of open source software then not only inside a Silicon Valley start-up but also the operating system of e-commerce and cyberspace will there be the smell of curry.

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