OPEN SOURCE PHILOSOPHY

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DEFINE :F/OSS

- Software comes in the form of compiled code (binaries), and the human-readable source code from which these binaries are compiled. Open-source software is software whereby the software is distributed in the form of binaries as well as source code.

- The distributor cannot restrict any party from redistributing the software, nor can any party be restricted from making modifications or making derivative works based on the source code.

OPEN SOURCE

- Why is it called Open Source Software?
- **Open**: collaboration is open to all
- **Source**: source code is freely shared

Ideals of Open Source

- Share the goal: a broad group of contributors recognize the same need and agree on how to meet.
- Share the work: projects are broken into smaller tasks,and a review process screens the best contributions.
- Share the result: code should be available to all and improvements should be shared to all.

Free vs Open Source

- **Free Software Foundation** (FSF) – non-profit organization, founder: Richard M. Stallman, founded in 1985

  - principal organizational sponsor of the GNU Project

  - www.fsf.org

- **Open Software Initiative** (OSI) – non-profit corporation, founders: Todd Anderson, Chris Peterson, John "maddog" Hall, Larry Augustin, Sam Ockman, and Eric Raymond. Conceived in 1998. Not a membership organization. Currently 5 board members, with Raymond as President.

  - one-sentence sound bite: “Open source promotes software reliability and quality by supporting independent peer review and rapid evolution of source code.”

  - www.opensource.org

Free Software – according to FSF

- 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:

1. The freedom to run the program, for any purpose (freedom 0).
2. 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.
3. The freedom to redistribute copies so you can help your neighbor (freedom 2).
4. 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.

Free Software – according to FSF

- You should be free to redistribute copies, either with or without modifications, either free of charge or charging a fee for distribution, to anyone anywhere. Being free to do these things means (among other things) that you do not have to ask or pay for permission.

- You should also have the freedom to make modifications and use them privately in your own work or play, without even mentioning that they exist. If you do publish your changes, you should not be required to notify anyone in particular, or in any particular way.

Free Software – according to FSF

- Regardless of how you got your copies, you always have the freedom to copy and change the software, even to sell copies.
- ``Free software'' does not mean ``non-commercial''.

OSD

- Open source doesn't just mean access to the source code. The distribution terms of open-source software must comply with the following criteria

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Open Source Definition (OSD)

1. Free Redistribution
2. Source Code
3. Derived Works
4. Integrity of The Author's Source Code
5. No Discrimination Against Persons or Groups
6. No Discrimination Against Fields of Endeavor
7. Distribution of License
8. License Must Not Be Specific to a Product
9. The License Must Not Restrict Other Software
10. The License must be technology-neutral

1. 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.

2. 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. Intermediate forms such as the output of a preprocessor or translator are not allowed.

3. 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.

4. 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

- 5. No Discrimination Against Persons or Groups

  The license must not discriminate against any person or group of persons.
- 6. No Discrimination Against Fields of Endeavor.
- The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

- 7. 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.

8.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

- 9. 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.
- 10. License Must Be Technology-Neutral

  No provision of the license may be predicated on any individual technology or style of interface.

Free vs Open Source

FSF: “The fundamental difference between the two movements is in their values, their ways of looking at the world. For the Open Source movement, the issue of whether software should be open source is a practical question, not an ethical one. As one person put it, ``Open source is a development methodology; free software is a social movement." For the Open Source movement, non-free software is a suboptimal solution. For the Free Software movement, non-free software is a social problem and free software is the solution. ”

Free vs Open Source

FSF: The Free Software movement and the Open Source movement are like two political camps within the free software community. We disagree on the basic principles, but agree more or less on the practical recommendations.

Free vs Open Source

OSI: “They are trying to pitch their concept to the corporate world now.. The term "free software" has been misunderstood by business persons, who mistake the desire to share with anti-commercialism, or worse, theft. Mainstream corporate CEOs and CTOs will never buy "free software." But if we take the very same tradition, the same people, and the same free-software licenses and change the label to "open source" – *that*, they'll buy.”

OSI: “The **basic idea behind open source** is very simple: When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing. We in the open source community have learned that this rapid evolutionary process produces better software than the traditional closed model, in which only a very few programmers can see the source and everybody else must blindly use an obscure block of bits. Open Source Initiative exists to make this case to the commercial world.”

Free vs Open Source

FSF: “"Free software" and "open source" describe the same category of software, more or less …” “The term ``open source'' software is used by some people to mean more or less the same thing as free software. However, their criteria are somewhat less strict; they have accepted some kinds of license restrictions that we have rejected as unacceptable.”

Free Software

GNU Projects www.gnu.org

The GNU Project was launched in 1984 to develop a complete Unix-like operating system which is free software: the GNU system.

Open Source Software

Open Source software development websites

SourceForge.net

(95000 collaborative software projects

1000000 registered users!)

freshmeat.net

OSDir.com

berliOS.com

Open source license

- An **open source license** is a copyright license for computer software that makes the source code available for everyone to use .
- And allows end users to review and modify the source code for their own customization and/or troubleshooting needs.
- Some open source licenses only permit modification of the source code for personal use or only permit non-commercial redistribution

- **Copyright:** The exclusive right to produce or reproduce (copy), to perform in public or to publish an original literary or artistic work. Many countries have expanded the definition of a "literary work" to include computer programs or other electronically stored information.
- **License:** A special permission to do something on, or with, somebody else's property
- Free, Open Source and Copyleft are NOT legally defined

Copyright

- Software copyright is commonly used by proprietary software companies to prevent the unauthorized copying of their software.
- Copyleft gives the legal right to everyone to use, edit, and redistribute programs or program's code
- Copyleft is a general method for making a free software and requiring all modified and extended versions of the program to be a free software

- The concept of copyleft licensing has been around for a long time. Some of the most popular open source development projects employ copyleft licenses:
- The Linux kernel (GPL)
- Mozilla Firefox (MPL, GPL and LGPL)
- OpenSolaris (CDDL)

- Copyright is the most usual method of protection for software products. In fact, open source use, copyright law. copyright law, by default, do not allow for redistribution of software. The only way that redistribution can be done is by granting specific permission in a licence. And that licence can force the redistributor to fulfill certain conditions. This is how open source licences work.

- The two most common types of OSS licensing are:

BSD Style: this category of license allows one to take an open-source software and redistribute it with or without modifications as proprietary software. (e.g. Apache, BIND)

GNU GPL General Public License : It is a license that requires that the product derived from the original open-source software must also be distributed under the same licensing regime as the original. Thus it cannot be turned into a closed-source product. (e.g. Linux)

http://www.opensource.org for more details

Free/Open Source Software Licenses

FSF – defines “non-free software license”:

1. (Original) Artistic License
2. Apple Public Source License
3. Sun Community Source License
4. Aladdin Free Public License
5. Microsoft's Shared Source License

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Free/Open Source Software Licenses

FSF – “compatible with GNU GPL” means you can combine a module which was released under that license with a GPL-covered module to make one larger program (but the larger program will be licensed under GPL)

The OSI has certified over 40 different open source licensing agreements.

- The **GPL** is the most widely-used open source software license and is considered the most “purest” by requiring that all software code is free and available and that changes must be shared with the community.
- Linux is available under the GPL license.

Free/Open Source Software Licenses

OSI-approved:

- Academic Free License
- Apache Software License
- Apple Public Source License
- Artistic license
- BSD license
- GNU GPL
- GNU LGPL
- IBM Public License
- Intel Open Source License
- MIT license
- Sun Public License

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Free/Open Source Software Licenses

If you distribute your software under one of these licenses, you are permitted to say that your software is "OSI Certified Open Source Software."

If you see either of an **OSI Certified** certification mark on a piece of software, the software is being distributed under a license that conforms to the Open Source Definition.

GNU licenses

- For software

1. GNU GPL
2. GNU LGPL

- For documentation

  GNU Free Documentation License (FDL) - intended for use on a manual, textbook or other document to assure everyone the effective freedom to copy and redistribute it, with or without modifications, either commercially or noncommercially.

GNU GPL

- The GNU GPL (General Public License) says that every copy of a program governed by the GPL license, even if modified, must be subject to the GPL again. It has a “viral” effect!
- In the 90s, GPL+Internet, many new Open Source projects started

- The GPL guarantees four basic freedoms for the user:
- You have the freedom to run the program, **for any purpose**.
- You have the freedom to study how the program works and **modify** it to suit your needs.
- To make this freedom effective in practice, you must have access to the source code.

- You have the freedom to **redistribute copies**,either gratis or for a fee.
- You have the freedom to distribute **modified versions** of the program, so that the community can benefit from your improvements.

Taxonomy of Software by FSF

1. **Proprietary**: the use, redistribution or modification of the software is prohibited, or requires you to ask for permission, or is restricted so much that you effectively can't do it freely.
2. **Semi-free**: not free, but comes with permission for individuals to use, copy, distribute, and modify (including distribution of modified versions) for non-profit purposes.

3. **Free** (Free Software ≠ Freeware)

   Copylefted ≠ not copyrighted

   Actually to copyleft a program, we first state that it is copyrighted

Copyleft – as explained by FSF

- *Copyleft* is a general method for making a program free software and requiring all modified and extended versions of the program to be free software as well.
- To copyleft a program, we first state that it is copyrighted; then we add distribution terms, which are a legal instrument that gives everyone the rights to use, modify, and redistribute the program's code *or any program derived from it* but only if the distribution terms are unchanged. Thus, the code and the freedoms become legally inseparable.

Benefits of Copyleft – according to FSF

The simplest way to make a program free is to put it in the public domain, uncopyrighted. This allows people to share the program and their improvements, if they are so minded. But it also allows uncooperative people to convert the program into proprietary software. They can make changes, many or few, and distribute the result as a proprietary product. People who receive the program in that modified form do not have the freedom that the original author gave them; the middleman has stripped it away.

Copyright + distribution terms → copylefted

The distribution terms would ensure the software satisfies the FSF's definition of "free", and more

Copyright + permissions → copyrighted but not copylefted

The permission still satisfies the FSF's definition of "free"

Free vs Copylefted

Copyleft takes away the freedom to turn the software into a proprietary (i.e. non-free) software.

GNU GPL requires the user pass on his/her rights (to copy the software, change it, and/or access the source code), unimpaired, to other users.

Critics of the GPL and FSF

- GNU GPL places considerable restriction on the distribution and modification of software
- It also places the same restriction on any software that is derived in any way from a GPL'ed program, thereby infecting the derived work with the GPL
- BSD license places no such restriction
- GPL forces us to accept the extreme Communistic political philosophy of Richard Stallman and others at FSF
- GPL attacks the very concept of Capitalism and individualism

BSD license

- No restriction on derivative work
- Allows binary-only distribution

Aladdin Free Public license

GPL + restrictions:

- Can’t accept money for the program except for cost of disks and copying
- Can’t put it on a disk with any paid-for software

Mozilla Public License

- Divides software into:

1. Open Source part
2. Anything added by user

- Things added by user can be proprietary, if he does not modify the Open Source part.
- Everything is Open Source if he modifies the Open Source part

Apache license

BSD + condition:

- OK to distribute code if under the Apache name, but not for resale

OPEN Vs CLOSED

CSS	OSS
Developed by Companies and developers work for economic purposes.	Developed By Volunteers work for peer recognition. People know that recognition as a good developer have great advantage
Centralized, single site development	Decentralized, distributed, multi-site development
Users may suggest requirements but they may or may not be implemented	User suggests additional features that often get implemented.
Release is not too often. There may be only yearly releases.	Software is released on a daily or weekly basis

CSS	OSS
Market believes commercial CSS is highly secure because it is developed by a group of professionals confined to one geographical area under a strict time schedule. But quite often this is not the case, hiding information does not make it secure, it only hides its weaknesses	OSSD is not market driven; it is quality driven. Community reaction to bug reports is much faster compared to CSSD which makes it easier to fix bugs and make the component highly secure
Security cannot be enhanced by modifying the source code	The ability to modify the source code could be a great advantage if you want to deploy a highly secure system

OPEN SOURCE SOFTWARE

- **Linux**, 18 million users
- Google uses Linux (1000 queries per second!)
- **Apache**, OS webserver
- Used in 69% of webservers, 15 million servers!
- **Open Office**, a complete office suite of programs,compatible with Microsoft's Office, available in 21 different languages
- http://www.openoffice.org

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