

Free and Open Source Software

Warm Up

- ☐ Is it Free Software?
- ☐ Is it Open Source Software ?
- ☐ Is it both Free and Open Source Software ?

Warm Up

Does Open Source Software mean?

- ☐ Download source code and study the code flow.
- ☐ Modify source code as per your need
- ☐ Create your own proprietary s/w. and sell it

Warm Up

In below, all three organizations are same or different;

- ☐ Free Software Foundation
- ☐ Open Source Initiative
- ☐ Open Source Foundation

A 5x15 grid of 75 various icons, including social media, technology, and nature symbols. The tomato icon in the 4th row, 10th column is highlighted with a blue border.

Free/open source software for all Category

- ☐ Artificial Intelligence
- ☐ CAD
- ☐ Finance
- ☐ Image Editor
- ☐ Mathematics
- ☐ Science
- ☐ Molecular Dynamics
- ☐ Molecular Viewer
- ☐ Nanotechnology
- ☐ Plotting
- ☐ Statistics
- ☐ Speech Recognition

Free/open source software for all Category

- Database
- Data mining
- Enterprise search engine
- File Archivers
- File Systems
- Network and Internet
- Advertising
- Communication Related
- E-Mail
- File Transfer
- Instant Messaging
- IRC Clients



Free/open source software for all Category

- ☐ Middleware
- ☐ Portal Server
- ☐ Remote Access and Management
- ☐ Routing Software
- ☐ Web Browsers
- ☐ Webcam
- ☐ Web related
- ☐ Educational Suites
- ☐ Learning support
- ☐ Language
- ☐ Typing
- ☐ Games

Free/open source software for all Category

- ❑ Application Layer
- ❑ Desktop environments
- ❑ Window managers
- ❑ Content management system
- ❑ Wiki software
- ❑ Healthcare software
- ❑ 2D animation
- ❑ 3D animation
- ❑ Audio editor and management
- ❑ CD-Writing software
- ❑ Flash Animation
- ❑ Graphics



Free/open source software for all Category

- ☐ Image viewer
- ☐ Television
- ☐ Video converters
- ☐ Video editing
- ☐ Video encoders
- ☐ Video players
- ☐ OS
- ☐ Emulation and Virtualization
- ☐ Password management
- ☐ Personal info. managers
- ☐ Bug trackers
- ☐ Personal language support



Free/open source software for all Category

- ☐ Code generators
- ☐ Configuration software
- ☐ Debuggers
- ☐ IDEs
- ☐ Version Control Systems
- ☐ Screen savers
- ☐ Security
- ☐ Anti-Virus
- ☐ Data loss prevention
- ☐ Data recovery
- ☐ Forensics
- ☐ Disk erasing



Free/open source software for all Category

- ❑ Encryption
- ❑ Disk encryption
- ❑ Firewall
- ❑ Network and security monitoring
- ❑ Secure Shell (SSH)
- ❑ Bible study tools
- ❑ General directories



Introduction

□ Free Software Foundation

Freedom to run the software, to study and change the software, and to redistribute copies with or without changes.

□ Open Source Initiative

Freedom to run the software, to study and change the software, and to redistribute copies with or without changes.

Man behind Free Software Foundation

- Free Software by **Mr. Richard Stallman**



Man behind Open Source Initiative

- Open Source Software by Mr. **Bruce Perens** and Mr. **Eric Raymond**



Free Software Foundation(FSF)

- Formation Date : 10-04-1985
- Type : Non Profit Organisation
- President : Richard Stallman
- H.Q : Boston, Massachusetts,
USA
- Motto : Free Software, Free
Society
- Web : www.fsf.org

Free Software Foundation(FSF)

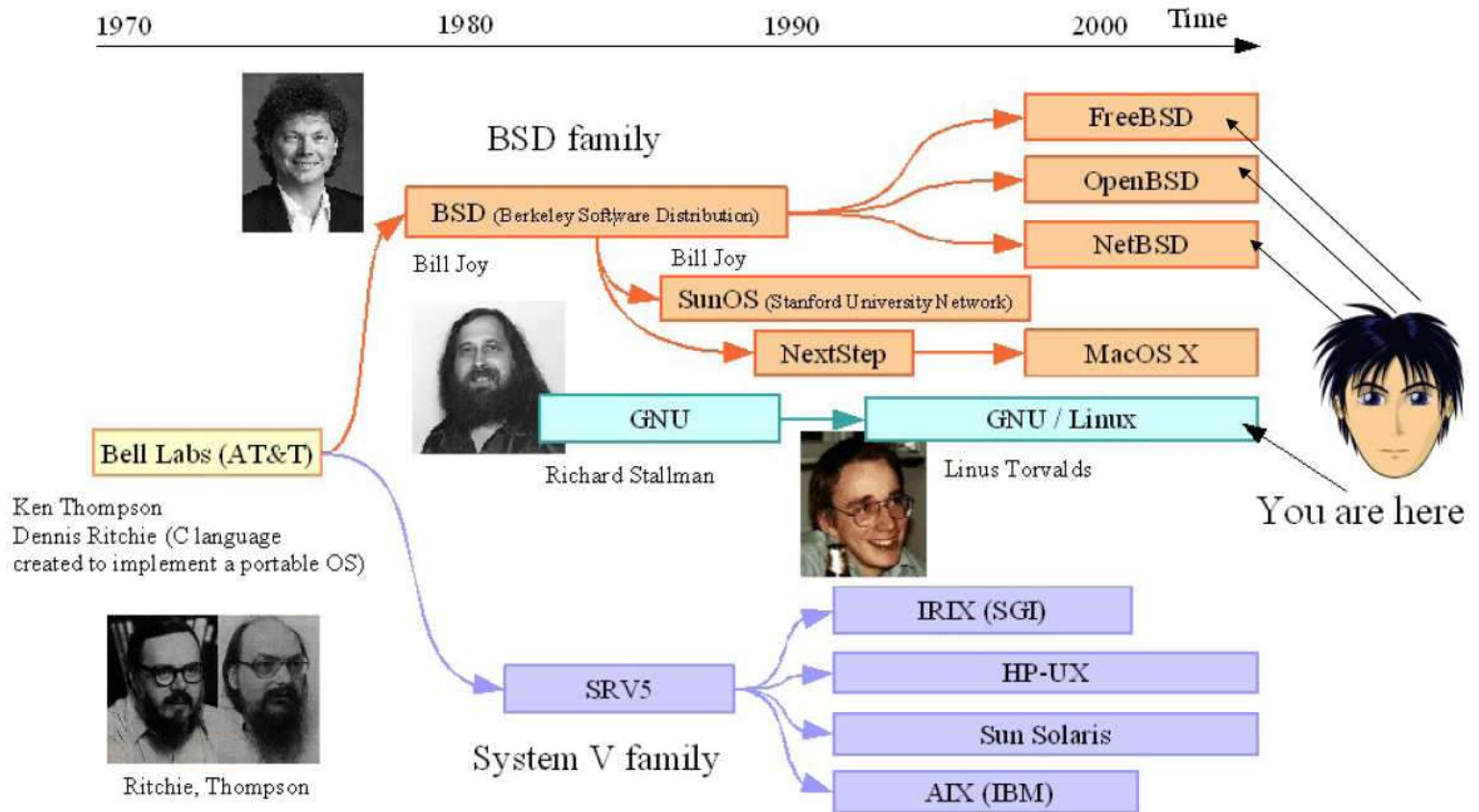
- FSF gives mainly 4 freedom to user
 - Freedom to run
 - Freedom to study and adapt it to one's need
 - Freedom to redistribute copies to help others
 - Freedom to distributing copies of one's modified version.

<http://www.gnu.org/philosophy/free-sw.html>

Open Source Initiative

- Formation Date : Feb, 1998
- Type : Non Profit Organization
- President : Simon Phipps
- H.Q : USA
- Motto : Free Software, Free Society
- Web : www.opensource.org

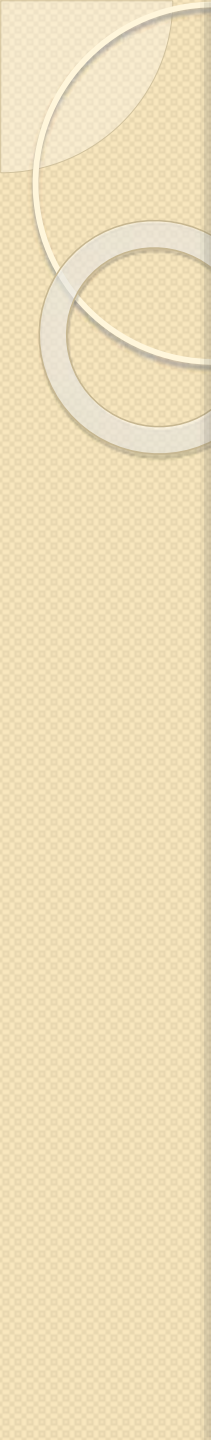
Unix & Linux Family



Open Source Licenses

It makes easy for others to contribute to a project without having to seek special permission. It also protects you as the original creator. It also helps to prevent others from claiming your work as their own.

- **GNU General Public License**
- **BSD License**
- **MIT License**
- **Apache License**



BSD & Apache – free Software Licenses

- Freedom to user
- Allow to make proprietary s/w

GNU – General Public License (GPL) & copy left

- Major contribution from the GNU project
- *Copyleft* license use copyright laws ; Modified versions are free software too.
- <http://www.gnu.org/copyleft/copyleft.html>
- GNU GPL requires that modifications and derived works are GPL too.
 - Only applies to released software
 - Any program using GPL code (either by static or dynamic linking) is considered as an extension of the code.
 - Linux used GPL license
 - GPL FAQ: <http://www.gnu.org/licenses/gpl-faq.html>

How to create proprietary out of Linux open source code

1. Start proprietary s/w from a clean code base
 - Ensure that proprietary code does not build upon any open source code.
 - You remain clear of the “derivative clause” found in the GPL.
 - Derived work must typically be made open source under the same term as the original code.
 - But proprietary code that merely interfaces to open source code is not derivative.

Link to video by Richard Stallman:

http://gplv3.fsf.org/static/release/rms_gplv3_launch_high_quality.ogg

How to create proprietary out of Linux open source code

2. Use only LGPL(Lesser General Public License) Libraries

- Any code that link to a GPL (statically or dynamically) needs to be released under GPL.
- Under LGPL, developer can link to open source code in either way without being bound to release their application's code.
- Key Linux libraries are licensed under LGPL.

How to create proprietary out of Linux open source code

3. Don't modify the interface to the Linux kernel
 - Under GPL, avoid to modify monolithic portion of Linux kernel
 - However, that if your application requires that you make changes to the kernel, only those changes made public.
 - You can still keep your application code proprietary, provided that they simply interface with the kernel via Linux's standard system call.

Open Source Licenses

- From the open source initiatives(OSI)

<http://opensource.org/>

- OSI has its own definition similar to Free Software

<http://opensource.org/docs/definition.php>

- List of licenses approved by the OSI

<http://opensource.org/licenses/>

OF

OPEN SOURCE SOFTWARE LITIGATION

AGAINST	YEAR	LICENSE	About	RULING
Dlink	2001	GPLv2	GPL Binding	Dlink lost
Fortinet UK Ltd	2005	GPLv2	compliance	Fortinet Lost
Gigabyte Technology Co. Ltd, TomTom	2004	GPLv2	compliance	Settled
Sitecom	2004	GPLv2	compliance	Sitecom lost
Skype	2008	GPLv2	Compliance/source code access	Skype Lost
AutoZone, Daimler Chrysler, IBM	2003- 2004	GPLv2	IP infringements Trade secrets contact breach	Settled
Cisco	2008	GPLv2, and LGPL 2	compliance	Settled

License violation

- How short may a copy be to be still considered a violation?
 - 54 LOC (out of 160 KLOC) may be sufficient if they are essential for the operation of a program.
- Binary Analysis Tool (BAT), a system for code clone detection in binaries. Given a binary, such as a firmware image, it attempts to detect cloning of code from repositories of packages in source and binary form

Open Source Project Repository

Name URL

- ❑ SourceForge <http://sourceforge.net/>
- ❑ freshmeat <http://freshmeat.net/>
- ❑ Debian <http://ftp.debian.org/debian/pool/>
- ❑ Apache Software Foundation <http://apache.org/>
- ❑ CPAN <http://cpan.org/>
- ❑ CRAN <http://cran.r-project.org/>
- ❑ BerliOS Developer <http://developer.berlios.de/>
- ❑ Open Source Scripts <http://opensourcecripts.com/>
- ❑ GNU Savannah <http://savannah.gnu.org/>
- ❑ OpenSymphony <http://www.opensymphony.com/>
- ❑ Koders <http://koders.com/>
- ❑ ObjectWeb <http://objectweb.org/>
- ❑ JBoss <http://jboss.com/>
- ❑ PEAR <http://pear.php.net/>
- ❑ JSAN <http://openjsan.org/>
- ❑ CodePlex <http://www.codeplex.com/>
- ❑ Free Software Directory <http://directory.fsf.org/>
- ❑ Ohloh <http://ohloh.net/>
- ❑ TuxFamily <http://project.tuxfamily.org/>
- ❑ OSOR.eu <http://www.OSOR.eu/>
- ❑ Launchpad <http://www.launchpad.net/>
- ❑ RubyForge <http://rubyforge.org/>

Tool to detect license violation

Commercial Tool:

- ❑ BitMatch (S.A.F.E.) <http://www.safe-corp.biz/>
- ❑ Comparison of binary files of contained strings
- ❑ CodeMatch (S.A.F.E.) <http://www.safe-corp.biz/>
- ❑ Correlation of statements, comments and identifiers in files (Zeidman, 2007, 2008)
- ❑ Protex (Black Duck Software),
<http://www.blackducksoftware.com/>
- ❑ File comparison via hashing?
- ❑ Protecode System 4 (Protecode) <http://www.protecode.com/>
- ❑ File comparison (binary + source) via hashing?
- ❑ SIMILE workshop (ESALAB), <http://www.esalab.com/>
- ❑ (Service) Comparison of identifiers, syntax, and semantics (details unknown) in object code

Document for license violation

□ Clone detection

Finding Software License Violations
Through Binary Code Clone Detection
MSR 2011, Waikiki, Hawaii

Armijn Hemel¹ Karl Trygve Kalleberg²
Rob Vermaas³ Eelco Dolstra³

¹The gpl-violations.org Project & Tjaldur Software Governance Solutions

²KolibriFX, Norway

³Delft University of Technology, Department of Software Technology, Netherlands

May 21, 2011



Thanks