$u^{^{\scriptscriptstyle b}}$

UNIVERSITÄT

https://docs.google.com/presentation/d/1DIUdyHlaaojn7EO7GTwrGXKEeOfNOVD0fXv3-k2HA_w/edit?usp=sharing

CAS Applied Data Science - Module 4

Workshop on Free and Open Source Software (FOSS)

based on Material from Melanie Graf at MLAW an ccdigitallaw.ch

PD Dr. Sigve Haug, sigve.haug@math.unibe.ch

2021-06-17



Free and Open Source Software (FOSS) and Licensing

MELANIE GRAF, MLAW

17.06.2019, 13:30-17:00 (3H30M): CAS APPLIED DATA SCIENCE MODULE 4

LEARN ALL YOU NEED TO USE AND PUBLISH FREE AND OPEN SOURCE SOFTWARE.





- Please ask questions any time
- No questions are okay too
- Error-friendly



 u^{b}

UNIVERSITÄT

Please fill

https://forms.gle/f8dntN8kNZJve9sq5



Contents

09:00 Introduction

09:15 What is Free and Open Source Software (FOSS)

09:45 Copyrights and -lefts

10:30 Break

11:00 Licenses

12:00 End

☐ PLEASE ASK QUESTIONS ANYTIME 🤝







WHAT IS FREE AND OPEN SOURCE?

EXERCISE

- 1) Discuss what free and open source software means to you?
- 2) Write down keywords the google form



5min



Group



Post-Its

Software published under FOSS^{gitallaw} Licenses





















For Databases: Open Database License (ODbL) v1.0

(☐Better for pictures, video, audio..)



The Free and the Open Source

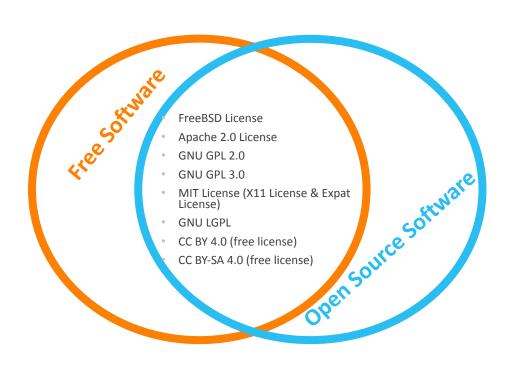
Free Software Foundation

- Freedom 0 the freedom to use the work
- Freedom 1 the freedom to study the work
- Freedom 2 the freedom to copy and share the work with others
- Freedom 3 the freedom to modify the work, and the freedom to distribute modified and therefore derivative works
- List of all approved licenses: https://www.gnu.org/licenses/license-list.html

Open Source Software Foundation

- 10 criteria, including the right of distribution, the right of creating derivate, etc.
- List of all approved licenses: https://opensource.org/licenses/alphabetical

Check out the links (10 min)!



In Summary: Free and Open Source Software

Users are allowed and able to:

- Run the software
- Copy the software
- Modify the software
- Distribute the copy and modification of the software
- ☐ Technical and legal perspective



















Free and Open Source Software (FOSS)

..use, copy, modify, distribute

Technical prerequisite

- Object and Source Code
- Access to source code of the computer program

Legal prerequisites

- Law prohibiting to copy, modify, distribute: Copyright Law and (sometimes) Patent Law
- Right (License) to copy, modify and distribute



Free and Open Source Software (FOSS)

..use, copy, modify, distribute

Forbidden:

- No license fee/royalties (i.e. money in exchange for grant of rights)
- No further restrictions (e.g. DRM)

Allowed:

- Some obligations when FOSS is distributed/published/provided as a service!
 - Copyleft
 - Etc.
- Money in exchange for the physical copy of the code



WHAT OBLIGATIONS DO I HAVE TO MEET, WHEN..?

2

1) you run FOSS on your personal computer?

EXERCISE

- 2) you modify FOSS and run it on your personal computer in your office?
- 3) you redistribute FOSS?

5min



Group



_



UNIVERSITÄT BERN

Objectives and steps

COPYRIGHTS AND -LEFTS



Copyright Protected Work

- Titel 2 Copyright

- Chapter 1 Works
- Art. 2 Definition of works

- ² They include, in particular:
 - literary, scientific and other linguistic works;
 - musical works and other acoustic works;
 - works of art, in particular paintings, sculptures and graphic works;
 - d. works with scientific or technical content such as drawings, plans,

¹ Works are literary and artistic intellectual creations with an individual character, irrespective of their value or purpose.



Computer Programs

Works: «Literary and artistic intellectual creations» with an "individual character" ... "computer programs are also works"

Computer programs

- Source code (if kept secret, protected as know-how)
- Object code
- Documentations

Individuality

- Low threshold: Usually protected
- The more complex the more likely protected



Databases

Works: «Literary and artistic intellectual creations» with an "individual character" ... "collections"

Databases

- Collections of Data
- Everything is Data: Pictures, computer programs, journals (collection of articles), measuring values, scientific databases etc.

Individuality

- Selection and arrangement of data
- Single datum only if individual character

☐ Sui generis right for databases in EU



Copyrights

Exclusive rights to use e.g. the computer program in certain ways:

- Right to copy the code
- Right to distribute the code
- Right to modify the code



≠ Moral rights: personality related, not licenseable

• E.g. right to be named



Copyrights

Exclusive rights to "use" (copy, modify, distribute)

- Only the owner of the copyrights is allowed to "use"
- Everybody else is excluded from the "use"
- Some exceptions
- Only the owner of the copyrights can **allow** others to "use" (licensing)
 - ☐ e.g. publish under a FOSS License
- Only the owner can sell or donate the copyrights (≠ licensing!)



YOU OWN THE COPYRIGHTS OF A COMPUTER PROGRAM...

EXERCISE

- 1) Are you allowed to sell verbatim copies of it online?
- 2) Is your neighbor allowed to copy your code, modify it and sell the modified copies online?
- 3) Is your neighbor allowed to translate your source code into another programming language?



5min



Group



-

DURATION OF COPYRIGHT PROTECTION



Creation

Death of the creator

Lifelong



+ 70/50 years

Public Domain

- Copyrights come to existance with the creation of the work
- ☐ No © necessary

50 years after the death of programmers

70 years after the death of all other creators (e.g. databases)





Ownership of Copyrights

≠ Ownership of the (physical) copy of code!

Ownership of Copyrights of Computer Programs

- In Private: Creator
- At Work:
 - Public law employment contracts (e.g. professor university)
 - Default: Creator
 - Caution! Employment contract and regulations (e.g. University regulations)
 - Private law employment contracts
 - Default: Employer (Art. 17 CopA)
 - Caution! see contracts too! Some companies claim copyrights even to creations in private!



Ownership of Copyrights

≠ Ownership of the (physical) copy of code!

Ownership of Copyrights on Databases

Default: Creator

If relation to contract: see contract.

Service Contracts (e.g. Development of software of databases etc.)

- Usually the customer/client gets all the copyrights they need (Sog. Zweckübertragungstheorie) \square read the contract
- Better explicitly regulate it in the contract!



Multiple Contributors

Separable Contributions

- Every contributor owns the copyrights to their parts
- Each contributor can only dispose of their respective copyrights of their part

Inseparable Contributions

- All contributors own the copyrights to the whole inseparable work together
- All contributors have to agree on how to license or sell the copyrights or their inseparable work

☐ FOSS: Contributor Agreements!

- Contribute code to official release of a project
- Contract to sell/donate or sub-license your copyrights



Infringement of Copyright Law

Infringing behavior

Copy, modify and distribute without a license, exception or ownership

Consequences

Criminal Law: Fines up to Jail

Private Law: Damages



YOU BOUGHT SOME EXECUTABLE CODE...

Am I the owner of the code?

Did I get a license?

EXERCISE

- 3) May I run the code on my laptop?
- 4) May I make copies and sell them online?
- 5) May I reverse engineer?

5min



Group



_

 $u^{^{b}}$

UNIVERSITÄT BERN

SOFTWARE LICENSES



Software Licenses

Contract between two parties

- Owner of the copyrights of a computer program (licensor)
- User of copyrights (licensee)

Content of Licenses

- Grant of copyrights:
 - Right to copy, modify and/or distribute
 - Geographics, duration, non-exclusive licenses vs exclusive licenses, right to license ("sub-licenses") etc.
- Return for the grant of copyrights:
 - License fee (aka "royalties")
 - Obligations/Conditions
- ☐ Unlimited possibilities (except antitrust law, unfair competition law etc.)
- ☐ Can be part of a more comprehensive contract (e.g. selling copy of code, service contract etc.)

EXAMPLE OF A FOSS LICENSE: GNU GPLv2



"1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that..."

"2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of"

Source: https://www.gnu.org/licenses/old-licenses/gpl-2.0.html



FOSS Licenses: Parties

- Everyone owning copyrights of a part of the distributed code (licensors)
 - Many different contributors
 - Contributor Agreements
 - Company, University etc.
- Everyone who is interested to use the distributed code (licensees)
- ☐ Often: Network of contracts between numerous two parties



FOSS Licenses: Grant of Copyrights

- Right to copy, modify and distribute the FOSS Code
- Geographics: Worldwide
- Exclusivity: Non-exclusive (everyone gets a license)
- Durations: as long as the copyright exists
- Sub-licenses: usually none (but MPL)
- Patent license: sometimes explicit (Apache 2.0, GPLv3) often implicit (GPLv2, no legal certainty), sometimes explicitly excluded (MPL)



- 3. License Grant. Subject to the terms and conditions of this License, Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license to exercise the rights in the Work as stated below:
 - a. to reproduce the Work, to incorporate the Work into one or more Collective Works, and to reproduce the Work as incorporated in the Collective Works;
 - to create and reproduce Derivative Works;
 - c. to distribute copies or phonorecords of, display publicly, perform publicly, and perform publicly by means of a digital audio transmission the Work including as incorporated in Collective Works;
 - d. to distribute copies or phonorecords of, display publicly, perform publicly, and perform publicly by means of a digital audio transmission Derivative Works.

Creative Commons Lizenz (CC-BY 2.0)

URL: https://creativecommons.org/licenses/by/2.0/legalcode



FOSS Licenses: Access to Source Code

- Distribution at least of Source Code
- Distribution of Source Code with Object Code
- Offer to access to Source Code with Object Code
- Sometimes limited time to offer access to Source Code

☐ Different for each FOSS License



FOSS Licenses: No further restrictions

No circumvention of the possibility to copy, modify and distribute through other means:

- Licensing fees
- Legal prohibitions through additional contracts
 - NDAs for Source Code,
 - Terms of use e.g. of websites
 - General conditions that prohibit distributions..
- Technical barriers like DRM
- Patents?



FOSS Licenses: Termination

- Termination when no more copyrights
- Premature (automatic!) termination when breach of obligations
 - No right to copy, modify and distribute
 - Copyright infringement!
 - Comply with obligations!
 - Sometimes redemption clause (e.g. GNUv3)



FOSS Licenses: Obligations

Obligations are always tied to (re-)distribution!

Different obligations (overview):

- Grant access to source code
- Attach FOSS License
- Attribution to contributors
- Copyright notices
- Disclaimers and Warranties
- Copyleft: modifications have to be licensed under the same FOSS License
- Permissive: modifications do not have to be licensed under a FOSS License



FOSS License: Obligations

What triggers the obligations?

Find the definition of distribution!

- Aka "publish", "convey", "propagate"
- Publication in online repositories
- Giving a copy to a friend
- Run it on a server as a service
- Company internal use
- Etc.



FOSS Licenses: Obligations

Obligations when distributing verbatim Copies:

- Attribution
- Attach/include license agreement in code
 [this is how you know it is a free and open source software]
- Disclaimers and warranties
- Copyright notices (e.g. ©, copyright by X, etc.)
- Sometimes: Access to source code (E.g. GNU GPL)
- No Copyleft because verbatim copies = no new copyrights
- ☐ Each FOSS License may be different



Example: MIT License (Expat License, X11 License)

The MIT License

SPDX short identifier: MIT

Further resources on the MIT License

Copyright <YEAR X <COPYRIGHT HOLDER>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Source: https://opensource.org/licenses/MIT



FOSS Licenses: Obligations

Obligations when distributing modified copies

Modification = often new copyrights for modifying person/employer

Permissive Licenses

- Same obligations as when distributing verbatim copies
- Modification can be distributed in any way

Copyleft Licenses

- Same obligations as when distributing verbatim copies
- Modification has to be distributed/licensed under the same FOSS License as the original code



Permissive FOSS Licenses

Free in your choice on how to license modified code when distributing

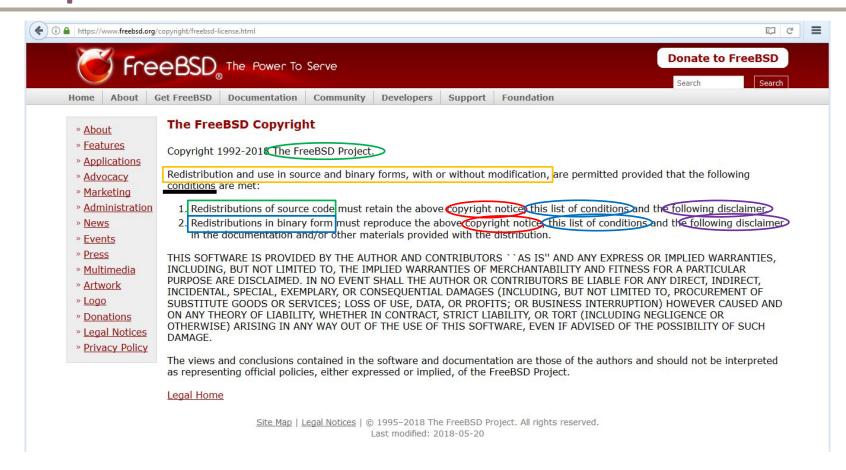
- Integration into proprietary code
- Combination with copyleft code

Examples:

- MIT License
- FreeBSD License
- Apache License

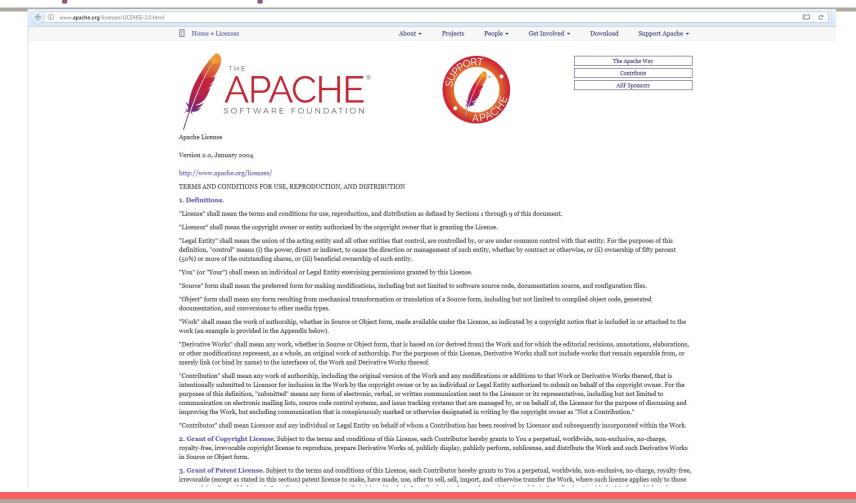


Example 1: FreeBSD License



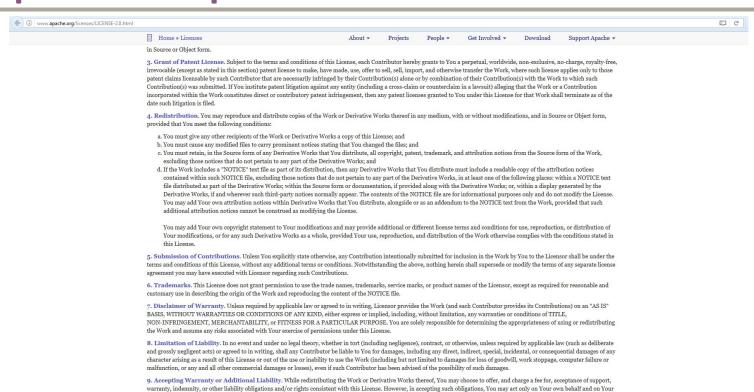


Example 2: Apache 2.0 License





Example 2: Apache 2.0 License



APPENDIX: HOW TO APPLY THE APACHE LICENSE TO

sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims

asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS



FOSS Licenses: Copyleft Obligation

Modified code has to be licensed under the same or a compatible FOSS License

- Source Code of modification has to be made accessible
- Exclusive rights to copy, distribute and modified have to be licensed
- □ Code can (often) not be integrated to "proprietary" software
- Code can only be combined with "less restrictive" FOSS licenses

Different scopes of copyleft

- Weak Copyleft: Lesser GPL (for Libraries), MPL
- Strong Copyleft: GPL (for all code)
- Super strong Copyleft: AGPL (for services not only distribution)





FOSS License: Copyleft Obligation

Copyleft always tied to distribution of modifications (with individual character)!

Find the definition of modification!

- Aka derivative work, work based on the program etc.
- Different degrees of specifications...
- Combination with other separable independant parts: OS and apps, libraries
- Adding new separable but dependent parts: functionalities, libraries
- Adding inseparable an dependent parts: Fixing Bugs

EXAMPLE OF A FOSS LICENSE: GNU GPLv2



"O. [...] and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".)
[...]"

Source: https://www.gnu.org/licenses/old-licenses/gpl-2.0.html



"1.10. "Modifications"

means any of the following:

- a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or
- b. any new file in Source Code Form that contains any Covered Software."

Source: https://www.mozilla.org/en-US/MPL/2.0/



FOSS License: Copyleft Obligation

Copyleft always tied to distribution of modifications!

Find the triggering mode of distribution!

- Distribution as a whole (e.g. compiled)
- Separate distribution (user will have to combine/compile): e.g. upload a bug-fix
- Separate identifiable parts on the same storage memory



FIND THE COPYLEFT CLAUSE IN THE GPLV2

1) https://www.gnu.org/licenses/old-licenses/gpl-2.0.html

EXERCISE



5min



Group



Marker

EXAMPLE OF A FOSS LICENSE: GNU GPLv2



- "2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
- a) [...]
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License. c) [...]

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program. In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License."

Source: https://www.gnu.org/licenses/old-licenses/gpl-2.0.html

20.06.2019 COMPETENCE CENTER IN DIGITAL LAW 50



Copyleft-Clause in GNU GPL v2

Copyleft for:

- New and original parts that are not separable
- Distribution of new and original parts as a whole

No Copyleft for:

- New and original parts are separate and independent, AND
- Separate distribution of new and original parts (not necessarily on a different volume of a storage or distribution medium)







You have written a computer program and distributed it under a copyleft free and open source software license.

Now you want to use parts of that computer program in another computer program, but you want to keep the source code of this program closed.

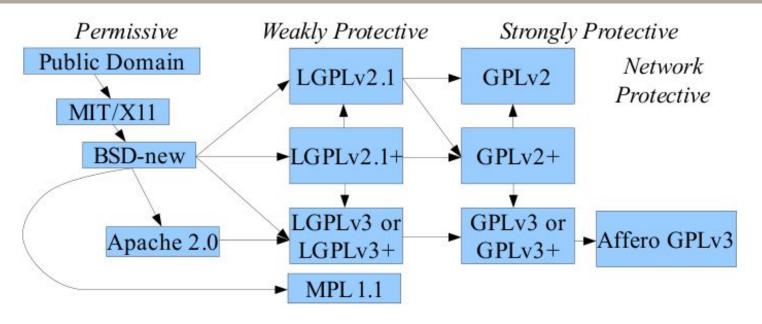


Are you allowed to do that?

- a) Yes, because I am the owner of the copyrights
- b) No, because the copyleft license obliges me to grant access to the source code



Compatibility of FOSS Licenses



Source: https://www.dwheeler.com/essays/floss-license-slide.html

Author: David A. Wheeler, **Date**: 27 September 2007

License: Creative Commons "Attribution-Share Alike 3.0 License"

(https://creativecommons.org/licenses/by-sa/3.0/deed.en); the GNU Free Documentation License; or the GNU

GPL (version 2 or later)



PROS AND CONS...

EXERCISE

- Discuss the pros and cons of permissive FOSS Licenses (permissive and copyleft) and non FOSS
- 2) Write down keywords on post-its



5min



Group



Post-Its



Pros and Cons of Licensing models

What are your goals?

Copyleft

- Community outside of workplace (third parties and research groups)
- No contribution agreements necessary
- Grant back of code/code stays Free and Open Source

Permissive

- Best (legal) compatibility with other software: copyleft and proprietary
- Non-FOSS («Proprietary»)
- Scarcity
- Control



Pros and Cons of Licensing models

What are your goals?

- ☐ Type of computer program: Operating systems, applications, libraries
- ☐ Market situation (e.g. new market, old market, dynamic etc.)
- ☐ Network effects



FOSS License: Obligations

Legal certainty and grey area... How not to infringe

- Read the license
- Read FAQs of the writers of the license
- Read FAQs of the project
- Read forums
- Read books on law
- Ask Owners of the copyrights, especially when Contributor-Agreements
- Ask a lawyer, specialist



Synthesis

- Free and Open Source Software
 - Many different licenses
 - □ Permissive and copyleft licenses
- FOSS ≠ without condition
 - ☐ Comply with the license terms
 - ☐ ALWAYS READ THE LICENSE! (before using the code or licensing your code..)



Any questions?

Feel free to ask 😂



Thank you for listening!



If you have any questions, please write to:

info@ccdigitallaw.ch or melanie.graf@usi.ch



Or visit our online platform:

www.ccdigitallaw.ch