**06 – Software Licensing and FOSS**

**Activities**

COMP190 – Tools and Techniques for Software Development

Dickinson College

Fall 2020

Prof. Grant Braught

Top of FormThis week’s class begins a new topic on Free and Open Source Software (FOSS). Undoubtedly you are familiar with proprietary software, in which you purchase a license to use the software but are forbidden from many other uses of it. Earlier in the course we briefly encountered Free Software and its four freedoms. In this set of activities, we’ll take a closer look at the foundations of intellectual property (IP) that underly software licensing. We will differentiate copyright protection from patent protection and come to understand how software licensing, and FOSS licenses in particular, are related to copyright. Finally, you’ll get familiar with a few different types of FOSS license and have the chance to investigate the licensing of some different software products.

**Intellectual Property:**

Watch the video *Bottom of FormIntellectual Property* produced by Durham University in the UK. This introduction covers intellectual property from the UK perspective, but the main concepts are similar to ones that exist in most other countries – though the specific mechanisms sometimes differ (e.g. the UK Design Rights she mentions are protected by Design Patents in the US.)

* <https://www.youtube.com/watch?v=EQsZf2G4Sdc> (5:51)

The following are not required viewing. However, you might find these additional sources from United States Patent and Trademark Office interesting and useful for differentiating the main types of intellectual property:

* Trademark, Patent, or Copyright? A document and embedded video (8:37) that covers the basics of Trademarks, Patents and Copyrights and the differences between them.
  + <https://www.uspto.gov/trademarks-getting-started/trademark-basics/trademark-patent-or-copyright>
* Supervisory Patent Examiner Gwendolyn Blackwell gives a longer and more detailed overview of Patents, Trademarks, and Copyrights: An overview of intellectual property
  + <https://www.youtube.com/watch?v=nXyCyWg6x98> (43:16).

1. The video identifies the four categories of IP protection described below. For each of these four types of IP protection briefly state, in your own words, the purpose of that particular IP protection, the requirements for receiving that protection and give a few examples of things (different from those in the video) that are protected by that IP protection.

a. Trademarks:

i. Purpose

ii. Requirements

iii. Examples

b. Copyright:

i. Purpose

ii. Requirements

iii. Examples

c. Patent:

i. Purpose

ii. Requirements

iii. Examples

d. Design Rights:

i. Purpose

ii. Requirements

iii. Examples

2. For each of the following examples identify the type of IP protection that would most likely apply: patent, trademark, copyright or design right.

|  |  |  |
| --- | --- | --- |
|  | **Example** | **Type of IP Protection** |
| **a** | The company name Tesla Motors |  |
| **b** | The idea for a new machine for extracting energy from food waste. |  |
| **c** | A clever new design for a device that opens food cans. |  |
| **d** | The song The Blues are Alive and Well on Buddy Guy’s latest album. |  |
| **e** | A new process for ordering internet search results. |  |
| **f** | The bash script that you wrote at the end of A04 in this course. |  |
| **g** | The jingle “I’m Lovin’ it” from McDonald’s commercials. |  |
| **h** | The theme song “I’ll Be There for You” from the TV show Friends. |  |

3. Copyright protection plays a particularly important role in software licensing and FOSS. To prepare for that connection, answer each of the following questions with regard to copyright:

a. At what point does copyright apply to a piece of creative work?

b. What must a creator of a work do in order to hold the copyright for their work?

c. How is holding the copyright to a piece of work different than registering the copyright for that work?

d. How long does the copyright last?

e. What must happen in order for others to be allowed to use a piece of copyrighted work? (I.e. To perform the play, show the painting or photograph, publish the book, or use the program statements?)

f. Can the holder of the copyright for a piece of work allow others to use it without charging a fee?

**Software - Copyrights and Patents:**

Software is an interesting case when it comes to copyrights and patents. A program is a fixed tangible expression of a creative work. This makes it similar to other creative works like books, plays, musical scores or performances, etc, that are protected by copyright. However, a program also embodies a process for completing a task, which if new and of commercial value can be protected by a patent.

Watch the video *Protecting Software: Patents vs. Copyrights* from the University of Michigan Engineering channel which discusses the differences between patents and copyright on software:

* <https://www.youtube.com/watch?v=uGzrgMIXLpk> (3:53)

4. Imagine that you write a really innovative piece of software that does something new:

a. When you have completed writing the source code, which type of intellectual property protection automatically applies to your source code?

b. Which type of IP protection prevent others from using your source code in another application without your permission? (Hint: See 3e).

c. Which type of IP protection would you need to obtain in order to prevent someone from independently creating their own software that does the same thing as yours?

5. OpenOffice ([www.openoffice.org](http://www.openoffice.org)) and LibreOffice ([www.libreoffice.org](http://www.libreoffice.org/)) are FOSS projects that essentially duplicate the functionality provided by Microsoft’s Office Suite. Why are they permitted to do this?

**Free and Open Source Software:**

At the end of the first video you watched on intellectual property she asks the question “What would be the point of having a good idea if anyone could take it?” It would seem that if the answer to that was really that there is no point, then FOSS would not exist. But let’s dig a little deeper to understand FOSS and why it’s advocates believe that it is the right way to develop software.

To begin deepening your understanding of open source software read the article *What is Open Source* from Opensource.com.

* <https://opensource.com/resources/what-open-source>

6. Both proprietary and open source software have licenses, but the purpose of the license for these two classes of software is quite different. Respond to the following two prompts with a few sentences of your own words based on the content of the article.

a. Summarize the purpose of the license for proprietary software.

b. Summarize the purpose of the license for open source software.

7. The article discusses five reasons that advocates of open source software prefer it to proprietary software. Pick one of these that appeals to you. Briefly summarize the idea in your own words and describe why you find it appealing.

There are a number of common misunderstandings that people have about FOSS when they first encounter it. To help ensure that you develop an accurate understanding of FOSS and avoid these misunderstandings, read the article *Six misconceptions about open source software* by Dave Kelly and Cody Van De Mark:

* <https://opensource.com/education/12/7/clearing-open-source-misconceptions>

8. One of the misconceptions is that open source is bad for business. Summarize in a few sentences of your own words how a businesses might benefit from using open source software as a part of the products that they create.

9. Because the source code for open source software is required to be available for free (or nearly free) available, it is hard to imagine how one could make money selling open source software. Give at least two ways in which companies have built successful businesses around open source software.

We have been using the term Free and Open Source Software (FOSS) as an umbrella term for both *Free Software* and *Open Source Software*. Free software and open source software are very similar ideas and nearly all free software is open source software and vice versa. However, the philosophies that underly these two types of software are different, and some world argue essential. The following are not required reading but if you are interested will shed some light on the underlying differences:

* *What is Free Software* from the Free Software Foundation (FSF) discusses the four freedoms we learned about earlier in much more detail.
  + <https://www.gnu.org/philosophy/free-sw.en.html>
* *The Open Source Definition* from the Open Source Initiative defines what open source software is and can be compared to the FSF definition of free software.
  + <https://opensource.org/docs/osd>
* The article *Why Open Source misses the point of Free Software* by Richard Stallman discusses the differences in values and philosophical underpinnings between free software and open source software.
  + <https://www.gnu.org/philosophy/open-source-misses-the-point.html>

**Software Licensing:**

The article you read in the previous section (What is Open Source?) claims that open source licensing promotes collaboration and sharing because “its authors make its source code available to others who would like to view that code, copy it, learn from it, alter it, or share it.” Now recall (See 3a and 4a) that an author automatically holds the copyright on any software they produce. Thus, to make it legal for others to copy, alter, share (and more) their software they must explicitly allow it (See 3e and f). The software license and Free and Open Source Software licenses in particular are the mechanism by which the author of a piece of software, the holder of its copyright, can allow others to copy, alter and share it. Without this license, anyone doing so would be infringing on the author’s copyright.

There are lots of different licenses available but they can largely be divided into two groups permissive licenses and copyleft licenses. Read the short article What are Open Source Licenses from the FOSSA blog:

* <https://fossa.com/blog/what-do-open-source-licenses-even-mean/>

10. What are several licenses that fall into each of these categories:

a. Permissive Licenses

b. Copyleft Licenses

11. Copyleft licenses have a “reciprocity obligation.” Using both the general information and the information about the specific copyleft licenses in the above document, describe in your own words what this means.

12. This reciprocity obligation has led some people refer to copyleft licenses “viral licenses.” Former Microsoft CEO Steve Ballmer infamously ranted that Linux, which is under a copyleft license, “is a cancer that attaches itself … to everything it touches." Why might people label copyleft as “viral” or a “cancer”?

13: Others argue that copyleft licenses accelerate innovation and ultimately serves the greater good. Why would people say that?

14. What are your thoughts on the positions expressed in question 12 and 13?

**Licenses in the Real World:**

15. In previous activities we installed a number of different pieces of software onto your LinuxLite distribution. For each of the following give the name of the license that is used and indicate if it is a permissive license, a copyleft license or something else. I found that the Wikipedia pages were a pretty quick and easy way to get an idea about how each was licensed.

a. LinuxLite

b. The Eclipse IDE

c. The Apache Web Server

d. The Open JDK

e. The Chrome Web Browser

**Acknowledgements:**

Some materials, questions and resources have been adapted from activities posted on foss2serve.org.