HOW "OPEN" IS OPEN SOURCE SOFTWARE: THE DO'S AND DON'T OF USING OPEN SOURCE SOFTWARE

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INTRODUCTION

We cannot deny that the internet is one of the most innovative inventions of our time. We use the internet for something as simple as looking for the recipe to make an apple pie, or just to distract ourselves in a social media. However, in the academic and professional field, the internet also plays an important role in our society. Not only it helps us to obtain and collect general information, but also to search and use free digital components. One of these components is what we called *Open Source Software, OSS.*

In this module, firstly we will learn what open sources software are, and how the idea of sharing open source content originated. Then we will examine and identify the practice and use of open source software. After it, we are going to present the professional and academic ethics that the public has to take into account when using open source software. Finally, we will present the ethical problems in the practice of open source software linked to human values and economic and technical options that these same materials offer.

A BRIEF LOOK TO OPEN SOURCE SOFTWARE, OSS

Before we start exploring the con's and pro's about using OSS, let's review how the movement of sharing free software emerged. From there we can say that most software development arises in the fields of research at a university. Researching for a new or improved technologies is also an essential part of university education, as well as sharing ideas or research results with colleagues, other universities, or industry. Consequently, we can see that many technology companies offer funds to universities' research projects. We can find in history of open software projects developed between industry and academia, and one of those projects is the development and distribution of Linux as an open source operating system.

Linux is a freely distributable version of Unix, originally developed by Linus Torvalds, who began work on Linux in 1991 as a student at the University of Helsinki in Finland. Linus now works for Transmeta Corporation, a start-up in Santa Clara, California, and continues to maintain the Linux KERNEL, that is, the lowest-level core component of the operating system.
Linus released the initial version of Linux for free on the Internet, inadvertently spawning one of the largest software-development phenomena of all time. Today, Linux is authored and maintained by a group of several thousand (if not more) developers loosely collaborating across the Internet.
(A brief history of Linux, 2020)

Not only Linux was a great success history of the OSS community, but the idea of sharing open sources has grown over time and also with technological and telecommunication advances and social demands. One of those social demands is the use of smartphones. Just as the demand for better smartphones grows, so too does the growth of developing software to create smartphone apps. The open source project Android Studio was created as a free alternative for the public to create Android apps. Android Studio is the official IDE, Integrated Development Environment**,** for Android app development, based on IntelliJ IDEA. Android Studio is part of the Android Open Source Project and accepts contributions. You can find those contributions at Android.com.

Android is an open source operating system for mobile devices and a corresponding open source project led by Google. On the Android Studio and Android Open Source Project repository offers source code information necessary to create different applications for Android platform. As an open source project, Android's goal is to avoid any central point of failure in which one industry player can restrict or control the innovations of any other player. To that end, Android is a full, production-quality operating system for consumer products, complete with customizable source code that can be ported to nearly any device and public documentation that is available to everyone *(Android Source, 2020)*

Another important open source project, which is the popular open source programming language, Python. Python is developed under an OSI-approved open source license, making it freely usable and distributable, even for commercial use. Python's license is administered by the Python Software Foundation.*(Python.org, 2020)*

Python was created in 1991 by Dutch programmer Guido Van Rossum. It is an interpreted language. This means that it has an interpreter to execute the programmer directly, as opposed to depending more complicated machine languages. He has also made the language open source, which means that anyone can contribute to it, and he hopes that it will become as powerful as competing languages.

Python became popular for the simplicity of its syntax and how fast its compiling process is. It offers concise and readable code by humans, which makes it easier to build models for machine learning. Not surprisingly, given its accessible and versatile nature, Python is among the top five most popular languages in the world.

Python is used by Wikipedia, Google (where Van Rossum used to work), Yahoo!, CERN and NASA, among many other organizations. It is often used as a “scripting language” for web applications. This means that it can automate specific series of tasks, making it more efficient. Consequently, Python (and languages like it) is often used in software applications, pages within a web browser, the shells of operating systems and some games. Like other coding languages, Python is one of the unseen elements that we benefit from without knowing it.

YouTube, Instagram and Quora are among the countless sites that use Python. Much of Dropbox's code is Python (where Van Rossum works now), Python has been used extensively by digital special effects house ILM (whose work spans across all of the Star Wars and Marvel films) and it's a favorite of electronics titan Philips. *(Code Institute, 2020)*

A GOOD REASON TO USE OSS

The great advantage of using OSS is that they are free and also of a good quality. Many people think that open source materials are not very reliable because the programmers that work or contribute to the development of open source projects do not receive monetary rewards, therefore, they will not put the necessary effort to create or maintain good quality codes. But throughout the history of the open source community, this assumption is not entirely true. When you have a community that is freely linked by the internet, you are practicing sharing codes globally. This means that developers from all over the world are contributing their ideas and techniques to create a piece of code that can become a complete program.

In the OSS community, each developers are the author of their codes, and if they wish it, the codes can then be shared in the open source community. Although the developer is the author of the code, once the code is shared freely, members of the open source community can help to improve or implement the code. Basically you are receiving mutual help between colleagues. Certainly, we cannot forget that developers contribute their ideas for several reasons, one of those reasons is that developers are motivated to do quality work because not only are they developing software for their own use, but their reputations among their peers also are at stake *(Ethical Issues in Open Source Software, 2003).* It is a personal pride to be an outstanding developer and earn a reputation that can benefit or build his/her professional career.

WHAT THE PUBLIC SHOULD KNOW BEFORE USING OSS

One of the things you have to take into account when using OSS is the software compatibility with its new version. The OSS community does not contact users of their software when an updated version of the software is released. Normally, the information of the update is published on the website of the OSS organization. So, if you are using some of the OSS, you have to be aware of the news that they publish on their website to be informed about the OSS that you are using. Moreover, when there is an OSS update, always read carefully which part of the OSS was updated. Some OSS update the entire code library or tools and if you don't have much experience in software update, suddenly you have to read and research more to understand how to update the new version of the software.

Another drawback of OSS is that some codes are not compatible from one version to another. That sometimes happens when the OSS algorithm and build-in libraries are mostly restructured from their previous version. From there, you have to find an alternative to manipulate or adjust the previous code to make it compatible with the current version. This does not a lot of work if you have few codes written in the previous version, but if you have a large project, then it would take a longer time to update the complete code of a project.

Also keep in mind that the OSS does not have a group of online customer services to help you with any questions or problems you have about the OSS. Most of the OSS has help by email but mainly through the open source community. In other words, if you plan to speak to a representative to ask a question about a part of the OSS that doesn't work in your code or computer, chances are you will find help through the OSS community's email, chat, or forum.

PUBLIC ETHICS WHEN USING OSS

When developers freely share their codes, they hope that their codes are for a good use. But developers are also aware that in an open community, there may be unethical developers who may misuse their codes. Therefore, every time we share our codes freely, we have to take into account what part of the code can and cannot be freely shared. It is also important to study the open source community before being part of that community. For example, we can read the terms of use of the community and understand how free and safe is to share the code through that community.

Moreover, using OSS for personal or professional purposes, we have to take into account:

- Where its use is deployed
- Time it takes to complete its implementation for optimal use
- Who is in charge of maintaining the code and how often it must be maintained
- the security of the OSS with respect to the flow of information
- The cost of installation, implementation, and training of the staff who will use it.

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