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Open-Source Software –Benefits and Drawbacks

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Abstract*: Software that is open-source allows for anybody to examine, edit, and improve its source code. Most computer users never see the "source code" of a piece of software, which is the code that computer programmers can update to alter how a piece of software—a "programme" or "application"—works. A computer programme can be enhanced by adding features or fixing components that don't always function properly by programmers who have access to the source code [2]. It has pros and disadvantages, just like everything else. Introduction to Open Source Software, its guiding principles, and its advantages and disadvantages are all covered in this study paper.*

Keywords: Open Source, Software, Computer Software, License Type

I. INTRODUCTION

Open source software (OSS) is computer software that is available in source code form.

Source code and in certain other forms generally reserved to the copyright holders are provided under a software license that permits users to study, modify, improve, and, in some cases, distribute the software .

To put it another way, open-source software (OSS) is computer software that is distributed under a licence that allows usersto use, study, modify, and distribute the software and its source code to anyone and for any purpose. Open-source software can be developed in a public, collaborative environment. Open-source software is a good example of open collaboration because it allows any capable user to engage in development online, allowing for an infinite number of contributors. The ability to analyze the code make possible public trust in the software.

Development of open-source software might include a range of perspectives that aren't constrained to a particular organisation. According to a Standish Group research from 2008, customers are saving around $60 billion annually as a result of the adoption of open-source software models.

Open source code can be studied, and it allows capable end-users to adapt the software to their personal needs in the same way that user scripts and custom style sheets do for websites, and then publish the modification as a fork for other userswith similar preferences, as well as submit possible improvements as pull requests.

II. EXAMPLES OF OPEN SOURCE SOFTWARE

The most commonly used Open Source Software are Python, PHP, Linux, Eclipse, Mozilla Firefox, and many more.

Eclipse: An integrated development environment (IDE) for computer programming is called Eclipse. It has a typical workspace and a plug-in mechanism for customising the setting. The second-most popular Java programming IDE is Eclipse, which was the most well-known up until 2016. Eclipse is written mostly in Java and it is mostly used for developing Java applications, but it may also be used to develop programs/applications in other programming languages via use of various plug-ins, including Ada, ABAP, C, C++, C#, Clojure, COBOL, D, Erlang, Fortran, Groovy, Haskell,

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JavaScript, Julia,[8] Lasso, Lua, NATURAL, Perl, PHP, Prologue, Python, R, Ruby (including Ruby on Rails framework), Rust, Scala, and Scheme. It can also be used to make Mathematica packages and LaTeX papers (with the aid of a TeXlipse plug-in). A few examples of development environments include Eclipse CDT for C/C++, Eclipse PDT for PHP, and Eclipse Java development tools (JDT) for Java and Scala.[6]

Mozilla Firefox: The Mozilla Foundation and its subsidiary, the Mozilla Corporation, created the free and open-source web browser known as Mozilla Firefox, or just Firefox. It displays online pages using the Gecko rendering engine, which is current and compliant with upcoming web standards. Firefox is compatible with Linux, macOS, Windows 7 and any newer versions. Mozilla users that preferred a standalone browser over the Mozilla Application Suite bundle created Firefox in 2002 under the code name "Phoenix." When compared to Microsoft's then-dominant Internet Explorer 6, beta testers were impressed with its speed, security, and add-ons. After its introduction on November 9, 2004, it had 60 million downloads in just nine months, making Internet Explorer's hegemony vulnerable. It is the spirtual successor of Netscape Navigator because Netscape founded the Mozilla community in 1998 before being acquired by AOL [6].

III. OPEN SOURCE SOFTWARE PRINCIPLE [2]

Transparency: We all have access to the knowledge and resources required to perform at the highest level, whether we are creating software or resolving a business issue. When these materials are available, we can build on each other's innovations and discoveries. We'll be in a better position to make decisions and understand how those decisions affect us.

Collaboration: We can unexpectedly improve each other's work when we are allowed to engage freely. When we can alter the information that others have contributed, we create new opportunities. When these materials are available, we can build on each other's innovations and discoveries. We'll be in a better position to make decisions and understand how those decisions affect us.

Release early and often: Rapid prototypes can lead to rapid discoveries. Iterative development provides better results faster. When you have the freedom to do new things, you can approach challenges in new ways and explore for answers in new locations.

Inclusive meritocracy: Anywhere can produce good ideas, and the finest ones ought to prevail. Decision-makers are always looking for other perspectives because that is the only way we can be sure we've come up with the best ideas.

Community: Communities are created when various people come together for a similar cause. Individual goals and ambitions are put on hold in favour of community objectives, which are driven by common principles.

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IV. BENEFITS OF OPEN SOURCE SOFTWARE [4]

Cost-Effective:

Generally, open-source software is free to use. It is not necessary for users to pay to use the service. It can be implemented for free and with no upfront costs. Nevertheless, the quality is not compromised. Especially for businesses with a tight budget, using open-source software can lead to a significant amount of cost savings

Reliability:

High reliability can be ensured when using open-source software. Expert developers design the open-source software, which is then led by them. As a result, there's a slim probability that software defects will be discovered. In addition to that, the software is monitored by a set of experts who can fix faults in lesser time duration.

Flexibility:

Unlike proprietary software, users in open source software do not experience vendor lock-ins. Even if there are features thatare unnecessary, consumers can easily eliminate them. This is due to the fact that the source code might be changed at any time. The user is not obligated to follow the provider's instructions.

Scalability:

Similar to a Linux operating system, open-source software can also be scaled easily. According to the needs, open-source software can be scaled up and down so that businesses could achieve their desired results.

Licensing:

Open-source software offers convenient license schemes. As a result, users do not have to be concerned about surveillance and tracking. And regardless of the location, open-source software could also be used. Furthermore, there are no limitationson the number of times it can be installed.

Error Free:

The number of people involved in maintaining an open-source software is more in hundreds and thousands. Usually, they are present as a community. These individuals ensure that the software is bug-free.

When a user discovers a bug, they can report it to the community so that it can be fixed as quickly as possible. Releasing apatch will not take a long time since the source code is available to everyone.

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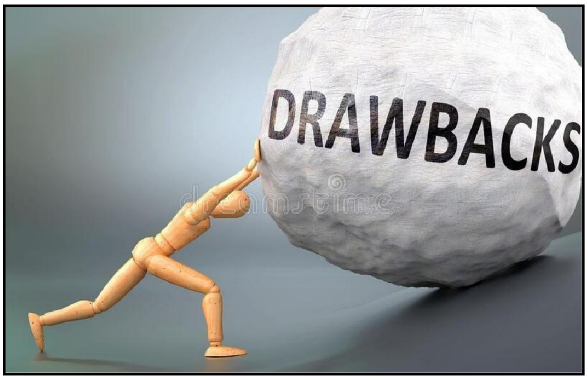

V. DRAWBACKS OF OPEN SOURCE SOFTWARE [4]

Less User Friendly :

Not all open-source applications are easy to use. The Graphical User Interface may be difficult for users to comprehend. Only technical people will be able to understand this interface.

Employees must be trained to use it if it is used in an organization.. For this, the companies need to hire trainers which can cause additional expenses.

Security Issue:

As previously stated, open-source software's source code is freely editable. The problem comes when someone misuses the code for their benefit. While many of them use it to improve the software, others may expose themselves to risks like identity theft and harmful transfers.

Compatibility Issue:

Some apps are unable to run both open source and proprietary software at the same time. Third-party drivers are required torun proprietary hardware on an open-source machine. This does not, however, guarantee that the hardware will function onthe host PC. Therefore, before purchasing hardware it is recommended to check it is supported by the open-source application.

Maintenance Issue:

Even though open-source software has no upfront expenses, it does have certain hidden charges. Especially with maintenance. If you run into any issues during the installation process, you may need third-party assistance, which may come at an additional cost. This is a problem for companies who aren't aware of the hidden costs.

Installation Issue:

Finding essential drivers for hardware components is difficult since the driver must support the operating system you are currently using. Hence, a new hardware component that is installed could fail to provide its functionalities.[1]

Less Support:

It's usual to run into technical difficulties when utilising open-source software. Open-source software, unlike commercial software, does not come with significant support. People turn to the internet for help in resolving this issue. People turn to the internet for help in resolving this issue.

Because open source software is developed by a large number of people, no single person is responsible for any errors.Contacting the supplier or relying on third-party support services are the only options available.

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VI. SUMMARIZED

Like any other thing, Open Source Software are also having some advantages and disadvantages. It depends on the user'srequirements whether they want to use them or not.

According to the survey done by Black Duck Software and North Bridge 78 % of companies use Open Source Softwarewhereas less than 3 % of companies don'tuse any Open Source Software. [5]

VII. CONCLUSION

Open source and free software have been around since the creation of the software. Open source software has revolutionised, however the concept has evolved through time. Firefox, Linux, OpenOffice.org, and Android, the most widely used operating system for portable devices, are just a few examples of the popular software available today that is open source (Blackadder, 2009; Markoff, 2007). Free and open source software differs from other types of software in that users have access to the source code, which allows them to use, learn from, share, and occasionally monetize the software. Open source software isn't necessarily inferior to proprietary, fee-based software, and in certain cases, it's even superior in terms of community support and security. Although open source software is free and offers users a number of advantages, it actually costs the software business more money. The software industry no longer makes money thanks to open source software. Open source software frequently depends on user donations and the community's support, both of which aren't always trustworthy. In addition, not all open source software is unsupported or unmaintained. Users of the software may be duped into using software that actually contains viruses, spyware, and other privacy and security risks because the software distributor has the ability to modify the code.

While the development community is a treasure of resources and open source software provides a free supply of computer software, it does have the potential to hurt the software business. Open source software has benefits and drawbacks, but benefits outweigh drawbacks by a wide margin. Open source software is actually today's revolution by ignoring the negative effects. The next generation of programmers and IT professionals should endeavour to give back to the open source community by making donations and getting involved in the creation of open source software

VIII. ACKNOWLEDGMENT

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