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<div align="center">Copyright and Licenses</div>

The last three decades have bore-witness to rise of the digital age and some of the greatest technological advances in history. One of the greatest advancements of our society is the simple access to the entire breadth of knowledge of humankind. The majority of this information is available for free in the public domain and the internet has become a place for the exchange of ideas and works. However, while individuals are happy to contribute and offer up their own works in the open-source domain and further progress in the world, many authors and most users are blissfully ignorant to the legal implications regarding the use of open-source items. Source code for computer programs, in particular, presents an interesting problem set as the vast majority of individuals are completely uneducated in the proper use and attribution of code that they come across. A concrete understanding of copyrights, the implications of copyright law and program licensing would promote a healthier collaborative culture where users give proper attribution and credit to authors and where more individuals and organizations are open to sharing or being involved with what they feel needs to be protected.

Copyright as defined by the United States Copyright Office, "is a type of intellectual property that protects original works of authorship as soon as an author fixes the work in a tangible form of expression" ("What Is Copyright?"). Perhaps, there is an ignorance of copyright law that is driven by misconceptions of how it is commonly portrayed and utilized in the

business world, but by this definition, we are all owners of some copyright, even if it was some finger painting in kindergarten or a simple college paper. Considered to be a literary work by the United States Copyright Office, computer programs or source code, as defined by chapter 700, section 721, of the Compendium of U.S. Copyright Office Practices, is "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result" ("Compendium Chapter 700"). These works may be registered with the United States Copyright Office if the source code "contains sufficient amount of original authorship," however this does not mean that all copyrights are registered and not every portion of the source code is subject to copyright protection ("Compendium Chapter 700"). As defined in section 102 of "Copyright Law of the United States and Related Laws Contained in Title 17 of the United States Code," protection does not extend to "any idea, procedure, process, system, method of operation, concept,

principle, or discovery, regardless of the form in which it is described" ("Copyright Law"). As applied to source code, this would mean that protection does not extend to the concept of utilizing a function or following a well prescribed and named means of sorting. No individual owns the copyright to the use of a variable, the copyright instead is of the work of another to include their non-executable code comments. In order implement the copyright source code of another individual, both author and the user need to enter into an agreement through the use of a license.

Under copyright law, when a work is created it is considered to be exclusive copyright, unless otherwise defined or licensed, meaning that it may not be modified, copied, or distributed. What this means for open-source code sharing platforms such as GitHub or other code sources from the internet is that users can legally do nothing with the code, even if that was the authors

original intent. A number of types of free and open-source licenses exist to facilitate a proper collaboration environment where authors can control the current and future of their programs and include public domain, permissive and copyleft type licenses with a much larger number of specific licenses falling under each type. Deciding on a specific license is highly dependent on the circumstances that the author finds themselves in and could be decided for them if working under certain work constraints. As an author, I would personally choose to use a GNU GPLv3 license as it allows the user to utilize the source code in almost any manner that they wish and but has the condition that all changes to the licensed material must be documented. Having code that is open to everyone's benefit and usage is also in line with scripture whereby "no one should seek their own good, but the good of others" (1 Cor. 10:24 New International Version). A multi-licensed program could offer additional benefits to myself as an author in the future, but I do not presently find myself writing code for collaboration purposes so an open copyleft license is sufficient for now. An understanding of licensing from the author perspective supports the proper usage of source code and obligations from the user perspective. As a user, the license itself defines specifically what you can and cannot do with the source code and may stipulate certain conditions that must be met in order to use it. This simplifies the obligations of the user and leaves little guess work for its normal usage. The usage in a particular setting such as classwork, a work environment or utilizing it for profit does however bring a number of ethical concerns to light. In a workplace environment, there may be guidelines in place to utilizing open-source code and where or not it is permissible and what steps may need to be taken legally in its usage. When looking at a classroom setting or attempting to profit off the work of another, passing someone else's code off as your own without crediting them directly flies in the face of the commandments as they were reiterated in the book Leviticus, whereby the people were

commanded to not steal, lie, or deceive one another and goes against the Institute of Electrical and Electronics Engineers code of ethics in that professions need to credit properly the contributions of others ("IEEE Code of Ethics" , Lev 19:11).

While the Internet has provided a means for collaborative exchange and access to more information than ever before in history, this seemingly free exchange of ideas and works has led to rampant misuse of copyright material and lack of attribution to authorship. Education on and implementation of copyright and license usage is required for both authors and users of works. By utilizing licenses in source code, both the author and users protect themselves and define the current and future usage of code, allowing for a freer and more productive collaborative process and exchange.

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