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Computing and Programming Ethics

Most if not all of the people currently on the earth are living lives that are filled with legal jargon that is difficult, and sometimes impossible to understand completely. Even the simplest of things in modern society can have some form of legal jargon related to it, these include but are not limited to installing a computer game, getting a debit card, or even just having a social media account. Even things that people think of as free have some form of agreement that they need to accept the terms of, this is especially so with programming. All the legal jargon that is present in modern society is based around one word, ethics. Ethics is, "The discipline dealing with what is good and bad and with moral duty and obligation," (Ethic). Ethics are involved with programming on the legal side through copyright, license agreements, and the obligations of the programmer when reusing and creating code.

Copyright, when people think of this work the little image of a c inside of a circle, yet most people don't know what it fully entails in regards to programming. Copyright is, "form of protection grounded in the U.S. Constitution and granted by law for original works of authorship fixed in a tangible medium of expression. Copyright covers both published and unpublished works," (copyright.gov). Copyright protects original works of authors against things such as theft, and plagiarism, this even goes towards computer programs. According to Lisa Green, "Congress granted copyright protection to computer programs when it passed the new Copyright Act of 1976. Furthermore, Congress chose to protect computer programs as a type of literary work,"(Green, 89). Computer programs fall under the same protection as things such as plays and books. This is just dealing with the copyright in the united states but what about other countries. In India, copyright is slightly different from the United States when involving computer programs, "For a copyright protection, computer software needs to be original and sufficient effort and skill must be put into impart it originality. But a program which only generates multiplication tables or algorithms may not suffice the degree of effort required for protection,"(Nayak). Within the United States, computer programs are protected as long as they are original, although it might only be parts of the program, while in other countries such as India even if it is original, there needs to be a certain amount of effort put into the program for it to be even seen as original. Copyright is just the start of computer programming ethics, there is also license agreements.

There are many different types of license agreements for computer programs and code, but what is a license agreement. According to Inc.com, "A licensing agreement is a legal contract between two parties, known as the licensor and the licensee," (Inc). A license agreement is pretty much a trade-off or contract where one party uses the other party's property and in return, they

follow some set of rules. The type of license agreements includes public domain, permissive, Lesser General Public License(LGPL), Copyleft, and Proprietary. Each of these licenses has a different situation they are best for. For example, someone makes a set of code that does basic mathematical functions, the most ethical choice would be a Copyleft license. This is because a Copyleft license allows people to modify and redistribute new works based on it, yet they have to have the same license as the original code, this is best because if the code that does basic mathematical functions is at first presented as free to use in the software license any person that modifies or distributes new work based off of it should not be able to use that code to make money, especially if it is a code for basic math functions since the users probably don't have a lot of money if they cannot even do basic math functions. A situation that would require a different license agreement is if someone were to make a video game, this would most likely have a proprietary license, since making a video game requires a lot of time, money and effort and you would not want someone stealing what you worked hard on and making money off of it, taking away from what you should be making. Copyleft licenses are probably the best and most ethical of the license agreements because they allow users to modify the code and distribute new works based on it but they have to have the same license as the original code, this keeps people from stealing the code and being able to make money on it if it was free at first, yet allows them some freedom with the modification and use of the code. Other than the legal work that is involved with the ethics of computer programming, there is also the ethical obligations of programmers when they are reusing or creating code.

All programmers at some point have reused code be it in school, in the workplace, or at home and have created code. There are ethical ways of going about reusing and creating code. Both ACM and IEEE have a code of ethics they are both similar and different from each other in certain ways. The ACM code of ethics has twenty-five items and here are some of them: 1.1 Contribute to society and to human well-being, acknowledging that all people are stakeholders in computing, 1.2 Avoid harm, 1.3 Be honest and trustworthy, 1.4 Be fair and take action not to discriminate, 1.5 Respect the work required to produce new ideas, inventions, creative works, and computing artifacts, 1.6 Respect privacy, 1.7 Honor confidentiality, 2.1 Strive to achieve high quality in both the processes and products of professional work, 2.2 Maintain high standards of professional competence, conduct, and ethical practice, 2.3 Know and respect existing rules pertaining to professional work, 2.4 Accept and provide appropriate professional review, 2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks, 2.6 Perform work only in areas of competence, 2.7 Foster public awareness and understanding of computing, related technologies, and their consequences, 2.8 Access computing and communication resources only when authorized or when compelled by the public good, 2.9 Design and implement systems that are robustly and usably secure, (ACM). The IEEE code of ethics only contains ten items, "1. To hold paramount the safety, health, and welfare of the public, to strive to comply with ethical design and sustainable development practices, and to disclose promptly factors that might endanger the public or the environment; 2.

To avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist; 3. to be honest and realistic in stating claims or estimates based on available data; 4. to reject bribery in all its forms; 5.to improve the understanding by individuals and society of the capabilities and societal implications of conventional and emerging technologies, including intelligent systems; 6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations; 7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others; 8. to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression; 9. to avoid injuring others, their property, reputation, or employment by false or malicious action; 10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics,"(IEEE). While the ACM code of ethics has more items many of them correspond to one of the items in the IEEE code of ethics, one major difference between the two codes of ethics is that the ACM code of ethics in more broad and reaches out to everyone while the IEEE code of ethics is more focused on its employees.

Now to look at some choices that may or may not be ethical involving computer programming. A group of computer scientists is given the task of creating a program that would test the security of a bank website, then some of the group is given the choice of making the program faulty in return for a payment of some kind. This group now has two choices ahead of them, create a program that gives an accurate result and not receive the payment or create a program that is inaccurate with the result and receive payment. The ethical choice is obvious, which is creating the accurate program without receiving the payment because it complies with ACMs code of ethics and IEEE code of ethics, but the other choice is in violation of ACMs code of ethics including the items 1.2 and 1.3, but also IEEE's code of ethics especially items 1, 3, 4, and 9. This is because it is hurting others livelihood if something happens to the bank website and people lose their personal information, it is also the act of accepting a bribe in return for doing something malicious and dishonest. No one should be willing or wanting to do something unethical, such as creating a program that is inaccurate and could lead to harm in return for money.

Ethics is the basis for everything. From basic actions to the copyrights and license agreements. Copyrights protect creators of original works from having them stolen and passed off as someone else's. License agreements involve ethical decisions by the license in following the rules presented to them. Also, the actions involved with the reuse and creation of code should follow some form of code of ethics so that no one is unjustly hurt. Ethics are involved with programming on the legal side through copyright, license agreements, and the obligations of the programmer when reusing and creating code.

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