

Ryan Phillips

Professor Shrestha

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Ethical Concerns in Programming:

Programming is not merely about writing code; it's about creating solutions that positively impact societies and individuals on a global scale. Given this significant influence, the importance of ethics in programming is indescribable. Ethical practices within programming ensure the development of technologies that are not only innovative but also equitable, secure, and respectful of individual rights and moral guidelines. Guidelines such as the ACM's Code of Ethics and Professional Conduct, the Software Engineering Code of Ethics and Professional Practice, and the Ten Commandments of Computer Ethics by the Computer Ethics Institute serve as crucial ethical guides. These guidelines help us discern the right course of action in complex situations, ensuring our work contributes positively to society and adheres to the highest standards of integrity and professionalism.

Two ethical dilemmas I've chosen to focus on for this essay are Data Privacy, and Software Reliability. Data privacy is an important topic in today's world, where every software you run, and website you visit runs some sort of background process to harvest data and use for analytics. Companies like Amazon (AWS) have turned data into a billion-dollar industry, while customers remain unaware of just how much information is being collected about them. The other dilemma I chose to focus on is Software Reliability. This dilemma is actually very important for my career, where I work as an engineer for a military contracting company. Our

software is used by SOF (Special Operations Forces) and conventional operators from the US around the world. This means that our users expect that their software will work the first time, every time. Delivering anything else fails to meet our standards.

The ACM's Code of Ethics, specifically the principles regarding respect for privacy (1.7) and avoiding harm (1.2), highlights the gravity of ethical decision-making in programming (ACM Code of Ethics, 2018). The potential for harm through data breaches or misuse not only threatens individual privacy but also destroys public trust in technology. These ethical guidelines advocate for stringent data protection measures, transparency with users about data use/collection, and ensuring that technology serves the public good without infringing on privacy. Data is a very powerful tool in today's society, how we take care to protect it can be the difference between having a successful career in programming or facing international sanctions for privacy invasion. As more and more countries begin to adopt stringent data privacy laws like the EU's GDPR (General Data Protection Regulation), we must ensure that our software is in compliance with the strictest of standards.

Software reliability can be one of the most challenging ethical dilemmas to overcome. Bugs and errors can generate at any point in time during the development process and may not necessarily be the fault of any one person. Ensuring that we are in compliance with ethical guidelines means that at any time that we are programming or coding, that we are continually checking for these bugs and errors and ensuring that our programs work as they should, every time. At times, this can mean that our programs are put through strenuous software testing, that may not necessarily reflect how the average user would employ our software. Nevertheless, it is our duty to ensure that this testing is done, and that if our software fails, we take the time to go back and fix whatever we can so that our programs will pass the next time through.

The importance of ethics in programming cannot be understated. It is our responsibility to build the future that we would want our children to grow up in. As programmers, this means that our programs may be critical or vital infrastructure in the future, which means that every time we are coding, we are following every ethical guideline that we have learned from this module. By using tools such as the ACM Code of Ethics, we can have a place to look to test ourselves and our workmanship versus the strictest of scrutiny. If my or my colleagues' work does not meet the standards set forth in these ethical guidelines. It is the responsibility of myself and others to correct this action and do better in the future. Without adhering to these guidelines, we open the world up to untold consequences as we see in certain technology companies' portfolios today. Coding first and asking questions later has already created real world consequences in today's society and companies have paid billions of dollars in fines to various human rights/governmental agencies for violating the ethical guidelines we've learned in this module.

Sources:

ACM Committee on Professional Ethics. (2018). *ACM's Code of Ethics*. Code of Ethics.
<https://www.acm.org/code-of-ethics>