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Ethics of Software Development

In the past fifty years, computer software has become immensely integrated into every conceivable aspect of life. Most, if not all, modern Americans cannot go a single day without interacting with and being reliant on some sort of software. Due to modern dependence on software, it can be incredibly annoying, damaging, or sometimes deadly if said software fails. A large majority of the time, when a particular software fails, it is only an inconvenience. But, when it comes to software that a bank, a hospital machine, or a plane uses, it can be detrimental to one's life. This dilemma raises the question of how software developers determine the testing necessary for a product before use.

One of the earliest and most impactful deadly software failures was Therac-25. It was “a computer-controlled radiation therapy machine produced by Atomic Energy of Canada Limited (AECL) in 1982” (“Therac-25”). While this machine medically helped thousands, it also brutally killed six people due to software malfunctions. This tragedy could have been avoided with extra testing and development. People might say that the amount of testing was justifiable because it helped thousands more than it killed, but this is faulty reasoning. Deuteronomy states: “When you build a new house, you shall make a parapet for your roof, that you may not bring the guilt of blood upon your house, if anyone should fall from it” (Deu. 22:8). So, when one builds a house, or in this case, a medical machine, ensure that there is proper structure as not to hurt or kill others. Therefore, temporarily keeping potential life-threatening products off the market to provide extensive and comprehensive testing is the right and necessary thing to do. Personally, if I were a patient in need of this machine’s treatment, I would wait until the company tested the

machine comprehensively. Furthermore, the ACM Code of Ethics states that “Avoiding harm begins with careful consideration of potential impacts on all those affected by decisions” (ACM). As programmers and Christians, we are morally obligated to make decisions that can prevent harm. The extra time and resources we use for comprehensive testing is the bare minimum for keeping our neighbors and loved ones safe.

Now, moving away from the ethics of how much software testing is required, let's talk about how software developers can improve their testing methods. One potential way to ensure critical software reliability is by giving software engineers the same treatment as regular engineers. This would be through a government certification process varying from state to state. This would entail a system where specific software development disciplines become regulated activities that need a licensed software developer's stamp of approval. This designated software engineer would take legal responsibility for a product. When it comes to products that are concerned with public safety and welfare, they are “trusted by the government and the public to perform the task in a competent manner” ("Regulation and Licensure in Engineering"). It is also important to note that this idea only applies to specific development disciplines. So, this would not require a game developer or some basic application developer to get a government license. Because of this, I would support implementing the general idea across the United States. However, I am somewhat hesitant and conflicted because I no longer trust the U.S. government in the modern age. But then, as a Christian, I am to listen to scripture, “Let everyone be subject to the governing authorities, for there is no authority except that which God has established. The authorities that exist have been established by God” (Rom. 13:1). So, whether or not government restrictions like this are implemented, I will choose to trust God and his providence.

Works Cited

An Investigation of the Therac-25 Accidents | IEEE Journals & Magazine | IEEE Xplore, ieeexplore.ieee.org/document/274940. Accessed 19 Sept. 2024.

“Code of Ethics - ACM Ethics.” *ACM Ethics - The Official Site of the Association for Computing Machinery’s Committee on Professional Ethics*, 23 Sept. 2019, ethics.acm.org/code-of-ethics/.

"Therac-25." *Wikipedia*, Wikimedia Foundation, 18 Sept. 2024, en.wikipedia.org/wiki/Therac-25. Accessed 19 Sept. 2024.

"Regulation and Licensure in Engineering." *Wikipedia*, Wikimedia Foundation, 16 Sept. 2024, en.wikipedia.org/wiki/Regulation_and_licensure_in_engineering. Accessed 19 Sept. 2024.