

Software Testing and Certifications: A Biblical and Ethical Look

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Software development is a long and time-consuming process that takes up money and resources. Naturally, businesses want to release their products as soon as possible to begin recouping their losses. However, one of the most major and costly setbacks is testing the software. In some cases, such as the Therac-25 incidents, where a software bug caused some patients to be overdosed with radiation (Leveson & Turner, 1993), testing can require not only the software, but also the hardware. When these situations arise, testing becomes harder to coordinate and much of that experimental period was used on the hardware rather than the software. Determining the proper amount of testing can be done by determining the estimated impact that a program can have on a person or group of people. If that program has either the capability to kill someone or severely damage them, the application needs to be tested to what can be beyond a reasonable doubt that there would be no errors in common use and accidental misuse.

The developers on these high-impact and risk applications should focus on ACM's Code of Ethics section 1.2 in "Avoid[ing] Harm". The Therac-25 had the chance to impact the patient in a negative way and could cause extensive radiation damage with side effects. Even though the harm was unintentional, "those responsible are obliged to undo or mitigate the harm as much as possible" (ACM Code Taskforce). The phrase "to mitigate the harm" is crucial and the main method of doing so is extensive testing. While it would be unnecessary and impossible to test every possible combination of inputs, the testers and developers should test every way that it would normally be used and possibly misused.

However, the issue of applications and programs being developed and utilized in high-risk areas such as health care, infrastructure, and banking, brings into question the skill of the software developers. The great thing about coding is that anyone can be a programmer in a

relatively short period of time. However, this also raises the concern of developers not having a baseline. In many other fields such as engineering, have a bachelor's degree is a minimum in those fields. Yet, for software developers, they can take a few online courses and start working as an intern or in entry level positions and working on projects with the chance of having a major impact on our society. I believe that there should be certifications that are in place for many high-level and high-impact software. However, as 1 Corinthians 8:9 states "But take care that this right of yours does not somehow become a stumbling block to the weak" these certifications should not hinder those interested in learning to program. Instead, they should be there for software developers to help developers and businesses come to an agreement on what they believe makes a software developer certifiable.

If these certifications do come to light, the major tech companies will likely hire exclusively those that have passed the certifications. But the main reason for these certifications would be to make sure that those developers know that what they are creating will impact thousands or millions of people in many different ethnicities and backgrounds and that they need to be cognizant of their work. Thus, they should include ethical decisions and questions rather than just programming scenarios. Many developers will go about creating wonderful programs and applications who will not be certified. And no one should be gated from entering the software development field. However, the outstanding pay is also a driving factor for many. While monetary value is fine, creating something that you are not passionate for can cause developers to accept bribes or take part in unethical practices for selfish gain. Society is in a transitional period where technology is growing at a rapid rate too fast for many regulations to be put in place (Majumder, 2019). Thus, it has come to the private sector and businesses to determine what is morally ethical and important rather than the law or the developers themselves.

References

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