M002_EngineeringEthics.SP19.v1

Wednesday, December 13, 2023 10:41 AM

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Points awarded: _____

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Module 002: Engineering Ethics

Notes:

Question 1: Provide your own example of a popular company that has been publicly revealed to have broken ethical guidelines. Give a brief overview of their violations and note which of the IEEE ethical points were they directly violated.

Volkswagen. They admitted to have manipulated emissions test for its diesel vehicles, violating environmental regulations and was deceiving customers. They disobey the Avoiding harm to others and honesty and integrity principles.

Question 2: The Therac-25 device was a 2-in-1 machine, designed to administer two types of radiation treatments, with the control system managed almost entirely by software on an integrated computer. Why would this be a desirable design choice? Why would it be economical? What other benefits could it offer?

1. Because of its accuracy, precision, flexibility, adoptability and automation.
2. Cost reduction efficient resource utilization
3. It could also offer enhanced safety features, data collections and analysis and real time monitoring.

Question 3: What problems (stated in the reports or otherwise) could arise as a result of this design choice? How might they be corrected?

1.There might be a potentially lethal overdoses of radiation to patients caused by the inability of the software in handling race conditions.
2.We should include thorough unit testing ,integration testing and system testing to validate processes for the software.

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Question 4: The Therac-25 inherited much of its code from past models, the Therac-6 and Therac-20, both successfully deployed machines that used integrated hardware to enact safety measures. The Therac-6 code was developed by one company, and integrated into the Therac-20 and then the Therac-25 by another company. In terms of software development, what sort care must be taken in such a situation? What practices or resources can help reduce development errors?

We must include thorough review and testing of the code. Collaboration and communication with those who are experts, developing a quality assuring process can all help reducing development errors.

Question 5: Seen largely as a software integration problem, the Therac-25 software was managed by a single programmer. What business/ethical concerns arise when determining the number of engineers assigned to a

Question 5: Seen largely as a software integration problem, the Therac-25 software was managed by a single programmer. What business/ethical concerns arise when determining the number of engineers assigned to a task?

The quality of the software might be of concern if the single programmer is incompetent.
The efficiency of the program might also be of concern since there is only one programmer.
The single programmer's political and philosophical view might be included into the program, so that this might violate some ethical principles.

Question 6: In such a scenario, whose responsibility is it to address this potential shortcoming?

The development team, the project manager, the software constructor, the regulation bodies are all to be addressed in being responsible for these potential shortcomings.