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BSCS

CS 3205 - SOFTWARE ENGINEERING
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Chapter 1: Exercises

1.1. Explain why professional software that is developed for a customer is not simply the programs that have been developed and delivered.

Custom software for a customer includes planning, documentation, and ongoing support, not just the delivered programs.

1.2. What is the most important difference between generic software product development and custom software development? What might this mean in practice for users of generic software products?

Custom software is tailored for specific needs, while generic software is for broader use. This means custom software can precisely meet user requirements.

1.3. Briefly discuss why it is usually cheaper in the long run to use software engineering methods and techniques for software systems.

Software engineering methods save money in the long run by reducing errors, enhancing maintainability, and improving reliability.

1.4. Software engineering is not only concerned with issues like system heterogeneity, business and social change, trust, and security, but also with ethical issues affecting the domain. Give some examples of ethical issues that have an impact on the software engineering domain.

Ethical issues in software engineering include privacy breaches, biased algorithms, and responsible AI development.

1.5. Based on your own knowledge of some of the application types discussed in Section 1.1.2, explain, with examples, why different application types require specialized software engineering techniques to support their design and development.

Different application types need specialized techniques; e.g., real-time systems require precise timing control, while web applications need security against cyber threats.

1.6. Explain why the fundamental software engineering principles of process, dependability, requirements management, and reuse are relevant to all types of software system.

Principles like process, dependability, requirements management, and reuse are relevant to all software types for efficient development and reliability.

1.7. Explain how electronic connectivity between various development teams can support software engineering activities.

Electronic connectivity among teams facilitates collaboration, version control, and efficient communication in software engineering.

1.8. Noncertified individuals are still allowed to practice software engineering. Discuss some of the possible drawbacks of this.

Noncertified individuals in software engineering may lack expertise, leading to errors, security risks, and quality problems.

1.9. For each of the clauses in the ACM/IEEE Code of Ethics shown in Figure 1.4, propose an appropriate example that illustrates that clause.

Example for ACM/IEEE Code of Ethics: Clause - "Avoid harm" - Not releasing software with known security vulnerabilities to prevent data breaches.

1.10. The “Drone Revolution” is currently being debated and discussed all over the world. Drones are unmanned flying machines that are built and equipped with various kinds of software systems that allow them to see, hear, and act. Discuss some of the societal challenges of building such kinds of systems.

Societal challenges of drone systems include privacy concerns, airspace regulation, safety, and potential misuse for surveillance or attacks.