

Video Blog: Licensing Software Engineers

August 8, 2007

Michael de Mare
mdemare@cs.stevens.edu

Technoproductions Inc.

Video Blog:Licensing Software Engineers – p.1/4

Defective software

- All Americans have had experiences with defective software.
- Defective software is more than just a nuisance.
- Defective software can jeopardize safety and compromise security.
- Spectacular software failures include the Ariane-5 rocket disaster which was caused by a missing comma
- Defective software can be compromised by viruses, worms and hacker.

Video Blog:Licensing Software Engineers – p.2/4

Security concerns

- Security problems range from annoying viruses and worms to cyberespionage and even cyberterror
- Security problems result from two types of software problems: defective design and defective implementation
- Defective design can be minimized through the use of a formal design process supervised by an experienced engineer
- Defective implementation can be minimized through automated tools and regular code reviews supervised by an experienced engineer.

Video Blog:Licensing Software Engineers – p.3/4

Widespread problems

- Anyone who has had contact with computers in the past ten years has experienced software failures
- Software defects cost the economy many billions of dollars a year
- Software defects can be reduced with properly trained engineers and programmers
- Industry is attempting to address this through a hodgepodge of certifications
- Computer science programs vary too much to be sure of a person's education based on his degree

Video Blog:Licensing Software Engineers – p.4/4

Licensing Engineers

- All engineers other than software engineers must be licensed
- Licensing procedures include rigorous licensing exams
- Software is no less safety critical than any other form of engineering
- Software engineers should be licensed.

Video Blog:Licensing Software Engineers – p.5/4

Implementation

- The Department of Defense could administer a licensing exam for software engineers
- All software used by DoD should be designed and supervised by licensed software engineers
- The DoD should also offer rules for saying that software is made by licensed engineers
- The supervision should include code reviews by licensed software engineers
- The licensing exam should test an understanding expected from a masters degree in computer science

Video Blog:Licensing Software Engineers – p.6/4

The exam

- The exam should test algorithms, programming languages, operating systems, computer architecture, theory of computation, automata and formal languages, and software engineering principles
- No degree should initially be required to take the exam with plans to require a five year degree (BS+MS) for new examinees after five or ten years followed by requirements for ABET accreditation five or ten years after that.
- The exam should also require examinees to show that they are aware of common security related bugs such as buffer overflow errors and array bounds.

Video Blog:Licensing Software Engineers – p.7/4

Conclusion

- People's lives and fortunes depend on software.
- Current software systems are often defective
- Software engineers should be licensed like other engineers
- Unlicensed programmers could still write code under the supervision of an engineer
- Software designed and supervised by licensed engineers will be of higher quality and be more competitive

Video Blog:Licensing Software Engineers – p.8/4