

CS614B – Advanced Topics in Software Quality
Assignment 2 – Individual Project - Winter 2006
Due February 23rd

This project requires a paper submission and a class presentation on February 23rd or March 9th.

Your paper submission should be **five pages (not including references)**, Times fonts (11 or 12 point) and one inch margins, single-spaced, single column, and printed both sides. Include your name, university and ID number at the top of the first page. Choose one of the following projects.

Project 1

You are the sole personnel in the software test department for a small application service provider (ASP), whose application is structurally complex, and used by many users in varying computing environments. You are asked to develop test cases that will exercise the software with a usage-based testing technique and a structural code based testing technique. You have not had experience with either of these approaches, since your expertise has always been “Ad-hoc” testing. To provide yourself with background, review at least three papers on each type of testing and answer the following questions.

- a. In general, that is, not for a specific kind of testing, what is the cost of testing?
- b. What are the core methods involved in each approach?
- c. What are the benefits to the organization of implementing these approaches?
- d. What benefits have other organizations experienced from implementing these approaches?
- e. Make three recommendations to your management that sum up the knowledge you have gained from this research. State any assumptions that you make about your organization.

Project 2

XYZ Bank is interviewing you for their position of Software Quality Management Leader. The Manager of Information Systems explains to you, that in their organization, each department monitors and implements their departmental quality assurance methods. It is not always clear if there is redundancy between departments, or if any of the departments’ approaches are repeatable or even successful. The manager knows that XYZ needs an overall role to evaluate what exists, and create consistency across departments. This is intended to decrease overall internal and external product defects, and reduce time to release of each of the products. You are asked as a first step of evaluation, to create a report to answer some necessary questions.

- a. What is the return on investment of software quality assurance, that is, the savings versus investments, which are observed in two specific industries (not necessarily including banking)?
- b. What are the measures that one of the two industries use to evaluate their return on investment?
 - i. Give situations where these measures are used.
- c. Review at least six papers on Software Quality Management and discuss approaches that have worked for other organizations and may be applicable to this situation. You are not

required to have knowledge of the bank's products, but rather to describe approaches that have had success, and make recommendations solely based on those successes.

- d. Make three recommendations to the Information Systems Manager that sum up the knowledge you have gained from this research. State any assumptions that you make about the bank's needs.

Do not make more than five quotations from your papers. Properly cite all references (given in your own terms) in ACM conference format and include, on a sixth page, a list of references at the end of your paper. A sample of this format is given below.

REFERENCES

- [1] Bowman, B., Debray, S. K., and Peterson, L. L. Reasoning about naming systems. *ACM Trans. Program. Lang. Syst.*, 15, 5 (Nov. 1993), 795-825.
- [2] Ding, W., and Marchionini, G. *A Study on Video Browsing Strategies*. Technical Report UMIACS-TR-97-40, University of Maryland, College Park, MD, 1997.
- [3] Fröhlich, B. and Plate, J. The cubic mouse: a new device for three-dimensional input. In *Proceedings of the SIGCHI conference on Human factors in computing systems (CHI '00)* (The Hague, The Netherlands, April 1-6, 2000). ACM Press, New York, NY, 2000, 526-531.
- [4] Lamport, L. *LaTeX User's Guide and Document Reference Manual*. Addison-Wesley, Reading, MA, 1986.
- [5] Sannella, M. J. *Constraint Satisfaction and Debugging for Interactive User Interfaces*. Ph.D. Thesis, University of Washington, Seattle, WA, 1994.

Marking Scheme

The paper: 60%

- 85% Content
 - Abstract – 5%
 - Introduction – 5%
 - Discussion (your exploration and presentation of the answers to the questions) – 75%
 - Conclusions – 5%
 - Recommendations – 10%
- 15% Format
 - Grammar, spelling, typing, overall layout of the paper – 5%
 - Extra effort (additional research, graphics, etc. if appropriate) - 5%
 - Appropriate number of pages (and pages numbered!) – 5%

The presentation: 40%

You are also required to give a 30-minute presentation about the material presented in the paper.

1. Clarity – 10%
2. Quality of Presentation Materials – 10%
3. Professionalism, Communication and Interaction – 10%
4. Questions – 10%


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