

CSC444F Software Engineering I

Tutorial Assignment 3

This assignment is handed out via the web on Monday of week 6 (Week of 8/10/2001)

This assignment is due at **the start of your week 8 tutorial. (i.e. on 22/10/2001)**

To avoid late penalties, submit it to your TA within the first half hour of the tutorial.

Penalties

Reports submitted up to 48 hours late: -50%.

Reports submitted more than 48 hours late will not be graded.

Grading Scheme

This assignment constitutes 10% of your grade for the course.

This report is a team assignment. Each team should submit a single report, and all members of the team will receive the same grade. *See the course orientation handout for details on team grading.* You should include a short statement about which team members wrote which parts of this assignment. If some parts were joint efforts, make this clear.

Content

The assignment is to conduct an inspection of part of your phase 1 module (use Fagan's guidelines to determine a suitable sized unit to inspect). You will conduct the inspection during your week 7 tutorial. Prior to that tutorial you should prepare for the inspection, by selecting a suitable section of your program to inspect. Choose a coherent section of your program, using Fagan's length guidelines. Each member of the team should familiarize themselves with the code and fill out a typo log *prior to* the tutorial. You should also choose inspection roles before the tutorial.

Note: If, after the inspection in the tutorial, you are unhappy with how this inspection went, you may choose to conduct a second inspection in your own time, and report on that).

You should submit the following:

- 1) A description of the code you chose to inspect, with some rationale for why you selected it. Include details of any testing already performed on this code, and your assessment of its quality *before* the inspection.
- 2) A description of the inspection process you used. What roles did your inspectors take on? How did you structure the inspection meeting?
- 3) The results of the inspection. Use the forms on the course website to document your inspection results: you should end up with the following:
 - One inspection Typo log for each inspector
 - One inspection Issue log
 - One inspection Summary Report formUse continuation sheets if you cannot fit everything on a form.
- 4) A discussion of the lessons learnt from your inspection meeting. Use the "Inspection Lessons Learnt Questionnaire" as a guide to help you think about what you learnt.

You should also hand in a listing of the program code that you inspected, in exactly the form you used for the inspection meeting.

Background Information

Informal reviews happen all the time in software engineering, e.g. any time when two or more people chat about or comment on various aspect of the software. A formal inspection is a scheduled meeting, with an agenda, and a written output. Furthermore, it is 'technical' in the sense that it concentrated on the technical aspects of a product, rather than scheduling, budgeting, or other management concerns of the development process. There are a variety of inspection types described in the literature, with different names: Formal technical reviews, Fagan inspections, etc. Many of the principles are the same, no matter which variety of inspection you use.

Objectives of a formal inspection process:

- to uncover errors in function, logic or implementation
- to verify that requirements are met
- to ensure that standards are complied with
- to achieve uniformity (of style, quality, etc.) across a project
- to collect data on error profiles so that these errors can be avoided on future projects
- to train junior software engineers (by allowing them to review other's work)
- to promote continuity across teams

Formal inspection has been shown to be more effective than testing in ensuring that programs are error-free. Furthermore, it can be used on products which cannot be tested, such as specifications, designs, documentation, manuals, test plans, etc.

Formal inspections generally have two main parts: a scheduled review meeting, and individual inspection by each member of the team *prior to* the scheduled meeting. An inspection team should consist of between 3 and 7 people, depending on how experienced the review leader is, and how well the necessary types of expertise can be covered. The review meeting should last for no more than 2 hours. It should focus on a small manageable portion of a product, not on the whole thing. It should be held only after the author of that product has finished it, but in plenty of time to take action on the results of the review. All reviewers should agree on the outcome, which may be to accept or reject the product, or to recommend specific modifications.

The following roles (at least) will be needed during the review meeting:

- leader - chairs the review, ensuring it remains focused, and that everyone contributes
- reader – (possibly the author) steps through the product inviting comments from the review team.
- recorder - keeps a public record of issues raised, preferably visible to the reviewers (e.g. on a whiteboard)

The material to be inspected should be circulated to all reviewers in plenty of time for them to prepare for the review. Each reviewer should spend around two hours preparing, by familiarizing themselves with the product, and noting any issues they wish to raise in the review meeting. Unprepared reviewers are not much use.

Choose the reviewers carefully, from amongst the development team, from other teams, from review specialists, from interested parties, from visiting experts, etc.

Exclude anyone who creates a conflict of interest, e.g. the author's line manager.

Don't proceed with the inspection if some of the reviewers are not present, or have not prepared properly.

Review the product, not the person

Stick to the agenda

Limit debate and rebuttal – defer contentious issues to be discussed after the meeting.

Identify problems but don't try to solve them

Use checklists where appropriate

Schedule inspections into the project plan

Train all reviewers

Review the inspection process itself occasionally.

Types of Inspection:

- 1) Checklist - use a checklist of questions or issues appropriate to the type of product being reviewed. The meeting is structured around the checklist – consider each item on the list in turn during the meeting.
- 2) Walkthrough - One person presents the product step by step, with reviewers raising issues when necessary. The structure of the meeting reflects the structure of the product.
- 3) Round Robin - Each reviewer in turn gets to raise an issue. The structure of the meeting reflects the composition of the review team.
- 4) Speed Review - Each reviewer gets a short time (e.g. 3 minutes) to review a small chunk of the product, before passing it on to the next person. This combines a walkthrough with a round robin, and is good for assessing comprehensibility, as the reviewers only get a limited time to understand each chunk.