SE-4831: Software Quality Assurance
Lab 4: Preparing for your Fagan Inspection
Due: Multiple dates (see deliverable)

This lab session represents the first portion of a two week lab sequence. Over the next two weeks, you will be taking one artifact from your senior design project and performing a formal Fagan inspection upon it with two independent inspection teams. Using the results from those inspections, you then will analyze the data from the inspections to determine their effectiveness.

1. Key Lab Activities

- Determine which senior design project artifact is to be inspected and what instructions should be given to the inspectors.
- "Hire" a moderator for your inspection
- "Hire" inspectors for your inspections.
- Using a baseline artifact, inject faults into the material that is to be distributed for inspection.
- Distribute the artifact to be inspected to the associated inspectors in electronic form (preferably pdf).
- After lab and prior to next week, inspectors perform their own independent inspections on the material.

2. Introduction

Formal inspections represent one of the most effective ways of assuring software quality for delivered products. Depending upon the training of the inspectors and other factors, inspections have been shown to be extremely effective at identifying defects within software artifacts.

For this week's lab, as well as next week's lab, you will be conducting a formal Fagan inspection for an artifact of your senior design project. The exact artifact(s) to be reviewed are up to you, but, as the Grail Knight says, "choose wisely". A wisely chosen artifact will benefit you both in this exercise as well as on your senior design project.

Between this lab and next lab, those who have been tasked as inspectors will be responsible for performing their own independent preparation for the inspection meeting. Depending on the artifact, each person will be tasked with going over the artifact independently and recording their discovered issues on a defect form.

During next week's lab, all inspectors will meet for inspection meetings to discuss findings. Each of your artifacts will be inspected twice by two independent teams, once during the "first" segment of lab and once during the "second" segment of lab.

3. Prelab (Individual)

Prior to lab, each student shall prepare a brief, ¼ to ½ page resume. This resume shall provide information about your relevant experience and skills. This resume is purely in order that your classmates are able to ascertain your skills and capabilities as pertinent to their project. FOR PRIVACY PURPOSES, ALL PERSONAL INFORMATION (GPA, GRADUATION YEARS, ADDRESS, ETC. SHALL NOT BE PRINTED ON THIS RESUME. Rather, this resume merely shall focus on skills and job experience.

Your resume shall be brought in hard copy form to lab.

4. Detailed steps

4.1. Choosing your artifact

Given what we have discussed thus far in class and your experience, you should select an artifact from your senior design project which is both substantially complete and significantly important.

It may not be possible to review an entire artifact in the time period. This is perfectly acceptable provided you clearly delineate the portion of an artifact that will be reviewed. Remember, by "management decree" the inspection meeting is limited to 50 minutes, so the amount that can be covered must be sized accordingly.

4.2. Determining who will be the Scribe

Each team will be responsible for choosing a scribe. The scribe will be responsible for recording the defects found during the inspection meeting on the inspection form. The scribe should be familiar with the artifact being inspected as well as capable of properly recording the defects found during the inspection. Once the scribe is determined, they should enter their role into the Inspection matrix document online at https://docs.google.com/spreadsheet/ccc?key=0AkUVXVIKnUtkdDZJekJUS1Y1MWFCV3RVUzR2eWJFeGc&usp=sharing.

4.3. Hiring a Moderator

Each senior design team is tasked with hiring a moderator. The moderator will be responsible for coordinating two inspections of the document, (aka review A and review B). Given the number of students who either are not in senior design or are the only project member in the class, the moderator should be drawn from students meeting this definition. Once the moderator has been hired, they should be denoted on the master list of students as a moderator and thus unable to act in the capacity of a reviewer.

The moderator is responsible for distributing a copy of the artifact which is to be inspected to each inspector. All inspectors are to receive identical copies of the artifact as well as a set of instructions on how to perform the inspection.

During next week's inspection meetings session, the moderator is responsible for going to the two inspection meetings. The moderator will be responsible for both leading the inspection as well as ensuring the discipline of the inspection session.

All team members who are not moderators or scribes will, by default, be "inspectors for hire". Anyone who is not a team leader will be expected to be "hired" as an inspector for two artifacts from other senior design teams.

4.4. Hiring the inspectors

Each senior design team is responsible for "hiring" inspectors for their artifact. After selecting an artifact, as a senior design team, analyze the skills and backgrounds which would be most beneficial to have in inspectors for the selected artifact. While contemplating these skills, also think of classmates and their skill sets. With this in mind, "hire" the appropriate inspectors. The team shall decide upon the requisite skills, and the moderator will facilitate hiring the given inspectors. Overall, 2 inspectors should be "hired" per inspection session.

On the master list of students, as one is "hired", inspectors will be checked off as being "employed" to the appropriate inspection by the moderator of the "hiring" team. All non-moderators / scribes must participate in two inspections. When an inspector is "hired", they should be added to the matrix at https://docs.google.com/spreadsheet/ccc?key=0AkUVXVIKnUtkdDZJekJUS1Y1MWFCV3RVUzR2eWJFeGc&usp=sharing.

Between this week and next week, inspectors will be responsible for inspecting the artifact using whatever criteria is requested by the senior design team and documented in the instructions from the moderator. This may include checklists or other documents depending on the artifact that you are tasked with inspecting.

In no case may a single inspector participate in more than one inspection of the same artifact. Doing so would create problems with the metrics that will be calculated for the effectiveness of the review.

While it is the principle responsibility of the moderator to "hire" inspectors, adjustments may be made by "the boss" (aka course instructor) in order to accommodate schedules, assignments, etc.

4.5. Injecting faults

Since it is the assumption that the artifact you are inspecting has already been somewhat reviewed by your senior design team, we desire to use a technique called fault injection to provide us with a quality measure of the effectiveness of this review. With fault injection, you specifically inject mistakes into the artifact that you are inspecting. By doing this, you ensure that there are things which should be caught by the inspectors. These may be faults that your team previously found in the artifact during review that you re-inject into the artifact, or these may be made up faults similar to those that have routinely occurred. The exact detail and scope

is up to you as a team. It is advisable that the faults be of varying difficulty to detect as well as spread throughout the artifact to be reviewed.

In specific for this lab, depending on your configuration management processes / plan, it is recommended that your branch the artifact that is to have faults injected from the trunk. This way, the version with faults injected is both isolated from future usage as well as still under configuration management. This branch will end up orphaned in that it will never be merged back onto the development trunk.

As you inject faults, carefully log their location and description. You also will log these onto the defect log available through the class web site.

4.6. Distributing the artifact to be inspected

Between now and next week, the moderator will be responsible for distributing the artifact to the inspectors in electronic form. The artifact must be distributed with ample time so that the inspectors can complete their inspection prior to lab next week. Unless extenuating circumstances exist, distribution should be via electronic means (i.e. e-mail). However, the version distributed must be under configuration management (as it is being "released" outside of the control of you as the senior design team).

4.7. Overview meeting

If the moderator or team deems it necessary, the moderator may request that inspectors and the scribe attend a brief overview meeting, in which the scope of the artifact and the scope of the inspection are to be discussed. However, this is not required of teams.

4.8. Individual Review and Inspection

Prior to next week's lab, all inspectors are responsible for inspecting their material and recording the location of any defects which they have discovered. When inspecting, try to be un-interrupted for the inspection period, and carefully record the amount of time spent inspection.

5. Lab Deliverables for this week

5.1. Review Artifacts and Instructions (Due by 12/20/2013 at 23:59) (Moderator)

The moderator is responsible for distributing artifacts to all inspectors. This includes the materials that are to be inspected as well as the instructions for the inspection. This should be sent out electronically to all inspectors by the team leader, and the instructor should also be copied on the distribution list.

5.2. Review Log Form (Due by 12/20/2013 at 23:59) (Scribe)

Prior to lab next week, upload using the web script the first draft of your inspection log form showing the injected defects and the inspectors. Note that this is an Excel document. Note that

the artifact may be uploaded into Google Docs provided there is a mechanism to extract the appropriate Excel file for future processing.

5.3. Individual Inspection Defect Logs (Due for all inspectors by 1/7/2013 at 23:59)

All inspectors should submit an electronic copy of their found defects through the web submission system. The Word form that is to be used is available on the course website.