Tutorial LO 2

Summary and preparatory activities

What we assume you have (or will make soon)

- The work relating to LO 1 will (or will in the future) have generated a reasonably concise document (your **requirements document)** providing:
  - A reasonably diverse list of requirements (functional, measurable, … and at different levels: unit, integration, system, operation, …). This need not be exhaustive because you do not have enough time to do a complete job (unless you need it for something other than this course). But, try to have a variety in the requirements you work on.
  - For each of the requirements you intend to work with, you should also have some ideas about how you will analyse and test for them and have some idea of the potential weaknesses of those ideas.
- The requirements document is the evidence to support your portfolio section for LO 1.
- This is a living document since the requirements may change as you work through the development and/or testing of the code.

Preparing for LO2

- Revisit Chapter 4 of Y&P (or at least look at the slides) – this gives you a good idea of how Analysis and Testing activities fit into software processes.
- Read Y&P Chapter 17 section on Scaffolding - this discusses the use of instrumentation code and scaffolding so the requirements you are interested in are more easily testable.
- Read Y&P Chapter 20 (or look at the slides).
- The Y&P Chapter 20 material on planning and process is often motivated by some of the considerations in Y&P Chapters 2-4 so you should keep these in mind.

LO 2

- LO 2 is: "*Design and implement comprehensive test plans with instrumented code*"
  - To support your portfolio section on LO2 you should construct a **test planning document**. This provides the evidence you need to refer to in the LO 2 section.
  - This is the most challenging LO to assess fully because a fully complete answer could demand an account of the process you intend to use.
  - To make this manageable, the test planning document should outline the factors constraining when and how a small number of your requirements are to be analysed and tested. AND
    - Should choose one of the lifecycle approaches outlined on the Y&P Chapter 20 slides and discuss where in the lifecycle those requirements could be tested.
    - Should consider any risks arising in your chosen mapping of a requirement to the process

LO2 Tutorial preparation (week 4)

- This is described as an individual process but your usual tutorial rooms are booked in bot odd week (when there will be a tutor present) and even weeks (when no tutor will be present).
- The ides of this activity is to stimulate ideas you can bring to the tutorial in week 5
- Do the three activities described on the following slides. Try to take brief notes on what occurred to you as you worked on the activities.

Activity 1: Prioritising and pre-requisites

- In analysis and testing you will always have **limited resource** so you will need to prioritize some requirements and the level of quality you require for those requirements.
- Do the following:
  - Select a requirement you want to work on that you think is important.
  - What level of quality do you think is appropriate for the software (recall **limited resource**).
  - Work out why you think it is important, e.g. there is a regulatory requirement (safety, security, privacy, …), it is important for the viability of the software, other reasons, …
  - Work out **how** it could be tested and **what** the testing needs, consider multiple analysis and test techniques for the requirement. **When** is the testing you envisage possible (e.g. during coding, once it is integrated into other code, only once operational, …)

Activity 2: Instrumenting and Scaffolding

- After activity 1 you will have a requirement and a small number of proposed analysis and test techniques (maybe one, two or three).
- What do you need to include in the code so it is easily testable for the requirement you have chosen. This could be extra data collection, extra interfaces. This is a process of “instrumentation” where you are aiming to make important information visible to the tester
- Also consider what scaffolding code is needed. Scaffolding code lets you test components in isolation from other components and makes use of the instrumentation code to access information that might otherwise be difficult to access. Consider everything that is needed to be able to test effectively.

Activity 3: Process and Risk

- From activities 1 and 2 you should have a fairly good idea of what your proposed analysis and test approaches need for your chosen requirement. This should help you know what is needed for all the requirements you are interested in for the test planning document.
- Now consider how the analysis and test approach you have considered can be fitted into one of the lifecycle approaches considered in the slides for Chapter 20.
- Once you have done this, you can consider whether there are risks associated with your proposed approach to the analysis and test of your chosen requirement.
- Once you have done this you have the basic understanding of how to plan the testing for your requirements.

Summary

- Your test planning document needs to indicate you have the skills to construct a test plan for a project. So it will consist of three sections:
  - A section discussing the priority you put on the requirements and what they need in order to be adequately tested.
  - A section describing the scaffolding and instrumentation that is necessary in order to analyse and test adequately.
  - A section demonstrating you can work out where to put a testing activity into a lifecycle so you have the capacity to develop a comprehensive test plan.