Software Engineering Group Projects – Quality Assurance Plan

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1. INTRODUCTION

1.1. Purpose of this Document

This document is the quality assurance (QA) plan to be used by all Second Year Software Engineering Group Projects in the Department of Computer Science, Aberystwyth. It identifies the operating procedures for all major activities in the Software Engineering Group Project.

Quality must be considered a priority at the outset of a project and must be taken into account at all stages of the lifecycle. It is important to remember that quality cannot be added to a project at the end; the mentality that says "we'll have a quality product because we will test it comprehensively at the end" leads to systems being built that are unlikely to be (a) correct, and (b) reliable. Adherence to QA procedures will help the software developer to produce a system that does what the customer requires, is reliable, and is traceable.

1.2. Scope

This QA Plan aims to formalise accepted good practice for the development of software. Quality assurance consists of those procedures, techniques and tools applied by professionals to ensure that a product meets pre-specified standards during a product's development cycle, and this document summarises these items for the group project.

This document should be read by all members of a project group and by all members of staff supervising a group project. It should be read before any other group project QA documentation.

1.3. Objectives

The objective of this document is to specify working procedures that will lead to the production of a quality software system.

The areas covered by this plan are:
- project management and quality control activities including reviews
- documentation
- meetings, reviews and walkthroughs
- software configuration management
- problem reporting and corrective actions
- tools, techniques and methodologies for building software
- QA manager's responsibilities

Where appropriate, reference is made to other QA documents which will give further details of QA procedures.

2. PROJECT MANAGEMENT

2.1. Organisation of Project

Each project group will have a designated *Project Manager*, who will be a member of staff in the Department of Computer Science at Aberystwyth University. The Project Manager has overall responsibility for the running of the project, and has the power to make executive decisions by which all the project members must abide. The Project Manager will provide high-level managerial input to the project, but little technical input.

All students will be allocated to a group. The students working on a project will be referred to as the 'project group' in this and all other QA documents. Each group will have collective responsibility for the production of a working software system from the same set of requirements.

Each project will appoint a *Project Leader* and a *Deputy Project Leader*. The Project Leader will be one of the project group, and will be selected by the group members, guided by the Project Manager during the project. These roles will be decided a few weeks into the project, once students in a group know each other a little better.

All students in a group wishing to be Project Leader must propose themselves for this role. The group will then discuss the candidates' suitability and agree on the person to be the Project Leader. In the event of the project group being unable to choose a Project Leader, the Project Manager will designate one of the students in the group to be the Project Leader.

The Project Leader will be responsible for the everyday running of the project, and will report to the Project Manager at the weekly tutorials. They will have other duties on the project. The Deputy Project Leader is likely to have other significant duties on the project, and exists to support the Project Leader and to stand-in for them if they are unavoidably absent.

A *Quality Assurance Manager* (QA Manager) will be selected from the Project Group in the same manner as the Project Leader. There will be a Deputy QA Manager, for the same reason as there is a Deputy Project Leader. The QA manager is responsible for ensuring that the documented QA procedures are carried out. Any planned deviation from the procedures must be agreed with the Project Manager and recorded in project minutes.

Various other roles and tasks must be allocated to project members, and these should be recorded in the minutes of the project meeting.. These must be written according to the standards for minutes specified in QA document SE.QA.02, *General Documentation Standards*. It should be noted that no group member should spend more than about 140 hours on the project, and so roles should be allocated to reflect this.

3. DOCUMENTATION

The following documents form part of the quality system, and must be produced during the project:

- **Final Report**. This document should clearly summarise the achievements of the project. Its format is described in QA document SE.QA.10.

- **Design Specification**. This document must describe the way in which the software will be broken into modules for implementation, and must outline the overall functionality of each module. Its format is described in QA document SE.QA.05.

- **Test Specification**. This document will specify each of the tests to be executed according to the test plan. Its format is described in QA document SE.QA.06.

- **Test Report**. This must detail the results of testing, reporting the extent to which the system meets the Requirements Specification. Its format is described in QA document SE.QA.10.

- **User interface specification**. QA document SE.QA.04 describes what needs to be produced to describe the planned user interface.

4. MEETINGS AND REVIEWS

There will be a weekly meeting between the Project Manager and the entire project team to discuss technical issues and progress. These meetings will be minuted according to the standard for minutes specified in QA document SE.QA.02, *General Documentation Standards*. Actions from previous minutes will be reviewed, and further actions identified and minuted. The QA Manager will ensure that actions are dealt with or carried forward, and that a project member is made responsible for each action raised.

Other, informal meetings may take place between the Project Leader and the Project Manager, or between the Project Group without the attendance of the Project Manager. These meetings need not be minuted unless it is thought useful to do so.

At key points during the execution of the project, there will be a formal 'review meeting' to review current progress and to evaluate the quality of the task being reviewed e.g. the Design Specification document. The review meetings which must be held, the personnel who must be present at such reviews, and the procedures to be undertaken in a review are specified in QA document SE.QA.07, *Review Standards*. Major reviews will be held to consider the final versions of the user interface specification, the design specification, and the test specification.

5. SOFTWARE CONFIGURATION MANAGEMENT

All software modules, associated software documentation, internal working documents, and documents ultimately for release to the customer, should be administered under control of a software configuration management system. This will handle version control automatically, and keep a history of the development of each configuration item such that earlier versions can be recovered. It will control versions of all items, such that a released system will consist of identifiable versions of configuration items.

Specific procedures for configuration management are specified in QA document SE.QA.08, *Operating Procedures and Configuration Management Standards*.

6. PROBLEM REPORTING AND CORRECTIVE ACTION

A formal process for problem reporting and change control must be followed. The procedures for this are specified in QA document SE.QA.08, *Operating Procedures and Configuration Management Standards*.

7. TOOLS, TECHNIQUES, AND METHODOLOGIES

All program code must be written in the specified programming language, unless you have written permission from the Client (the group project coordinator).

Systems produced on the project must execute on platforms provided by the Department of Computer Science, AU, unless otherwise specified.

All code to be delivered must adhere to the standards specified in QA document SE.QA.09, *Coding Standards*.

8. SUMMARY OF QA MANAGER'S RESPONSIBILITIES

The QA Manager is responsible for adherence to the QA Plan and to the accompanying QA standards. The QA Manager must, with reference to the relevant QA documents, ensure that:

- the project is conducted in accordance with the QA Plan (this document);

- all documents are produced in accordance with the specification given in QA document SE.QA.02;

- project management is conducted in accordance with the procedures specified in QA document SE.QA.03;

- the design specification is written in accordance with the standards specified in QA document SE.QA.05;

- testing is conducted in accordance with the procedures specified in QA document SE.QA.06;

- formal reviews are conducted at specific points in the project, and those reviews are conducted in accordance with the procedures specified in QA document SE.QA.07;

- all documents, design diagrams, source code and other items as appropriate are kept under the control of a configuration management system in accordance with the procedures specified in QA document SE.QA.08;

- problems are formally reported, changes where appropriate are initiated and carried out, and tests are made to confirm that problems have been corrected, in accordance with the procedures specified in QA document SE.QA.08;

- all source code is written in accordance with the coding standards specified in QA document SE.QA.09 and SE.QA.10;

- the final report is produced in accordance with QA document SE.QA.10.

9. SUMMARY OF QA DOCUMENTS

- **[SE.QA.01] - Quality Assurance Plan**. Covers overall QA activities and procedures, referring to other QA documents for specific details.

- **[SE.QA.02] - General Documentation Standards**. Covers layout and essential information content of minutes, documents, and diagrams, and specifies procedures for production of same.

- **[SE.QA.03] - Project Management Standards**. Covers organisational roles, task categories and naming, milestones, deliverables.

- **[SE.QA.04] - User Interface Specification Standards**. Covers format and contents of the user interface document specification.

- **[SE.QA.05] - Design Specification Standards for Software Engineering projects**. Covers format and contents of the design specification.

- **[SE.QA.06] - Test Procedure Standards**. Covers the format and contents of the test specification, and the procedures for the execution of testing.

- **[SE.QA.07] - Review Standards**. Covers the procedures to be followed in the conduct of formal reviews.

- **[SE.QA.08] - Operating Procedures and Configuration Management Standards**. Covers the procedures, tools and techniques to be used in configuration management, and the procedures for problem reporting and corrective action.

- **[SE.QA.09] - Coding Standards**. Covers the standards to which source code must be produced.

- **[SE.QA.10] - Producing a Final Report**. Covers the standard for the final project hand-in

DOCUMENT HISTORY

Version	CCF No.	Date	Changes made to document	Changed by
1.7	N/A	12/09/08	Changed document template to be Aber Uni	CJP
2.0	N/A	12/05/12	Redid for latest projects	CJP
2.1	N/A	21/12/16	Updated for single semester projects	CJP