LEVEL 5

COMPUTING PROJECT

Student Guide

Modification History

Version	Revision Description
V1.0	For issue

Published by: NCC Education Limited, The Towers, Towers Business Park, Wilmslow Road, Didsbury, Manchester M20 2EZ, UK

Tel: +44 (0) 161 438 6200 Fax: +44 (0) 161 438 6240 Email: info@nccedu.com
http://www.nccedu.com

CONTENTS

1. Module Overview and Objectives

The aim of the unit is to provide a student with the opportunity to employ the skills necessary to develop a computing artefact in the context of a loosely specified problem, which involves research, analysis, design, coding, testing and project management knowledge and skills.

Through the combination of project sessions, private study and tutorial supervision on this module, students will produce for assessment a proposal, report, demonstration and presentation of their project.

2. Learning Outcomes and Assessment Criteria

Learning Outcomes; The Learner will:	**Assessment Criteria;** The Learner can:
1. Identify a suitable computing artefact and development method	1.1 Select and justify an appropriate computing artefact to develop
2. Project manage the analysis, design, development and deployment of a computing artefact	2.1 Select and justify the use of an appropriate development method 2.2 Produce a viable project plan 2.3 Check progress against a project plan 2.4 Evaluate his/her performance against a project plan 2.5 Select and justify the use of an appropriate risk management approach 2.6 Select and justify the use of an appropriate configuration management approach
3. Carry out the analysis for a computing artefact	3.1 Elicit requirements 3.2 Prioritise requirements 3.3 Produce a requirements specification 3.4 Produce an analysis specification
4. Design a computing artefact	4.1 Enhance requirements 4.2 Produce a design specification
5. Develop a computing artefact	5.1 Select and justify the use of an appropriate development environment 5.2 Write the code for a computing artefact
6. Test a computing artefact	6.1 Develop appropriate test scripts 6.2 Test that a computing artefact meets its requirements by using test scripts

3. Syllabus

Syllabus			
Topic No	Title	Proportion	Content
1	Introduction	1/12 2 hour project session 2 hours of tutorials	• Appropriate Artefacts • Planning your Project • Appropriate Development Methods • Appropriate Risk Management • Appropriate Configuration Management ***Learning Outcome: 2***
2	Analysis Specifications	1/12 2 hour project session 2 hours of tutorials	• Structure of an Analysis Specification • Content of an Analysis Specification ***Learning Outcome: 3***
3	Design Specifications	1/12 2 hour project session 2 hours of tutorials	• Structure of a Design Specification • Content of a Design Specification ***Learning Outcomes: 4 & 5***
4	Test Scripts	1/12 2 hour project session 2 hours of tutorials	• Types of Testing (Reminder) • Choosing Appropriate Tests • Applying Tests • Documenting Tests ***Learning Outcome: 6***
5	Planning the final report	1/12 2 hour project session 2 hours of tutorials	• Structure of Final Report • Content of Final Report • Citations and Referencing (Reminder) • Appropriate Appendices ***Learning Outcomes: 1, 2 & 3***

6 -12	Project and Report Completion	1/2 71 hours private study 4 hours (minimum) meetings with tutor	• Private study time should include weekly meetings with your tutor to discuss your progress. • Project production ***Learning Outcomes: 1 - 6***

4. Related National Occupational Standards

The UK National Occupational Standards describe the skills that professionals are expected to demonstrate in their jobs in order to carry them out effectively. They are developed by employers and this information can be helpful in explaining the practical skills that students have covered in this module.

Related National Occupational Standards (NOS)
Sector Subject Area: 6.1 ICT Professionals **Related NOS:** 4.1.P.3 – Manage the outcomes from the data analysis assignment; 4.2.S.1 – Prepare for data analysis activities; 4.2.S.2 – Manage effective data analysis activities; 4.2.S.3 – Maintain effective data analysis deliverables; 4.3.P.1 – Manage, under supervision, information to direct human needs analysis assignments; 4.3.P.2 – Produce, implement and maintain, quality human needs analysis activities; 4.3.P.3 – Provide human needs analysis findings to others; 4.4.P.1 – Prepare, under supervision, for a systems analysis assignment; 4.4.P.2 – Carry out, as required, systems analysis activities; 4.4.P.3 – Monitor the effectiveness of systems analysis activities and their deliverables; 4.4.S.1 – Design, implement and maintain systems analysis activities; 4.4.S.2 – Manage the systems analysis assignment activities; 4.4.S.3 – Liaise with others on matters relating to systems analysis activities; 4.4.S.4 – Review and sign off systems analysis outcomes; 4.5.P.1 – Assist with the development for data design activities; 4.5.P.2 – Manage, under supervision, the maintenance of data design assignments; 4.5.P.1 – Provide others, when requested, with specified information relating to data design activities; 4.5.S.1 – Select and implement appropriate data design processes; 4.6.P.1 – Prepare for human interaction and interface (HCI) design activities; 4.6.P.2 – Implement, under supervision, human interaction and interface (HCI) design activities; 4.6.P.3 – Manage the needs of different users of HCI design activities; 4.7.P.1 – Prepare, under supervision, for system/solution/service design activities;

4.7.P.2 – Assist with the design of system/solution/service design;
4.7.P.3 – Monitor the progress of system/solution/service design activities;
5.1.P.1 - Perform systems development activities;
5.1.P.2 - Contribute to the management of systems development;
5.3.S.3 - Manage systems development activities;
5.1.L.2 - Control systems development activities;
5.2.P.1 - Plan software development activities;
5.2.P.2 - Perform software development activities;
5.2.P.3 - Control software development activities;
5.2.P.4 - Contribute to the management of software development;
5.3.A.1 - Carry out IT/Technology solution testing activities under direction;
5.3.P.1 - Carry out IT/Technology solution testing;
5.3.P.2 - Contribute to the communication of the results of IT/Technology solution testing;
5.4.P.2 - Perform systems integration activities;
5.5.P.1 - Perform systems installation, implementation and handover activities;
5.5.P.2 - Document and present systems installation, implementation and handover activities

5. Teaching and Learning

Suggested Learning Hours					
Lecture:	Tutorial:	Seminar:	Tutor Supervision:	Private Study:	Total:
5	10	5	4	130	150

The teacher-led time for this module is comprised of lectures and seminars ('project sessions'), with private study and tutorial supervision allowing students to complete their projects as required.

5.1 Project Sessions

Project sessions are a mixture of lectures and seminars. There are five project sessions, each of two hours in duration. These occur during the first five topics for the module and you will be encouraged to be active during this time and to practise the concepts covered.

Every project session will contain a lecture coupled with either a seminar-based discussion or an exercise. The PowerPoint slides are presented for use during this time. A key point to note is that the lectures are not designed to present new content beyond the structure and content of the project report, and an overview of the required depth of the project content. All other content is covered in the other modules on the Level 5 Diploma in Computing programme and is included here to highlight its relevance to the completion of a computing project.

5.2 Supervision

You should have access to personal tutorial supervision every week for the full duration of the project (i.e. both during and beyond the taught element of the module). During this time you will meet with your supervisor to discuss your projects and seek support and guidance. You should

meet with your tutor individually for a **minimum** of 4 hours over the course of the project, though you may require more time than this.

The role of the project supervisor is to:

- Advise you about the scope and viability of the work outlined in your project proposal;
- Direct you to relevant books, papers and other sources of information that will support you in the development of your project;
- Advise you on the Harvard style of referencing and the penalties associated with plagiarism;
- Maintain regular supervisory contact with you throughout the whole duration of the computing project;
- Assist you in managing the timetable of the project;
- Assist you in identifying when problems are liable to be encountered and how they might be tackled;
- Ensure that you are made aware of inadequate progress or standards of work below the expected level;
- Read and comment on draft sections of the project report, where this is requested by you, and return such work with constructive criticism and in reasonable time.

5.3 Private Study

This Student Guide also contains details of the private study exercises. You are expected to complete these exercises to improve your understanding. Your tutor will set deadlines for the completion of this work and go over the suggested answers with you. The deadlines will usually be before the scheduled tutorials for that topic. Some of the private study tasks may require you to work in a small group so you will need to plan your time carefully and ensure that you can meet with your group members to complete the work required before the deadline.

You should also use this time to revise the content of lectures to ensure understanding and conduct extra reading (using the supplementary textbooks or other materials available in the library or online). You should bring any questions to the tutorial for additional guidance and support.

6. Assessment

This module will be assessed by means of a project based assignment worth 100% of the total mark. The assessment will cover the learning outcomes and assessment criteria given above. For a complete assessment breakdown, see *Appendix 2*.

7. Further Reading List

There is no essential textbook for this module. The module material is intended to be sufficiently expansive to meet the learning outcomes. However, a selection of sources of further reading around the content of this module must be available in your Accredited Partner Centre's library. The following list provides suggestions of some suitable sources:

Dawson, C. (2009). *Projects in Computing and Information Systems: A Student's Guide*. Pearson Addison Wesley.
ISBN-10: 0273721313
ISBN-13: 978-0273721314

Weaver, P. (2003). *Success in Your Project: A Guide to Student System Development Projects*. Pearson Education.
ISBN-10: 0273678094
ISBN-13: 978-0273678090

Topic 1: Introduction

1.1 Learning Objectives

On completion of this topic, you will be able to:

- Project manage the analysis, design, development and deployment of a computing aretfact

1.2 Timings

Project Session:	2 hours
Tutorial:	2 hours
Private Study:	8.5 hours

1.3 Seminar Exercises

Read the scenario below and then use the content to produce a template for a configuration management approach that could be modified to work with your project. When producing the template you should also include:

- A justification for the configuration management approach
- An overview of what is considered as a configuration management item
- A directory structure to support the configuration management approach
- Details of the platform (hardware and software) that will be used to store the configuration management items

Work on this exercise individually but be prepared to discuss this later with the rest of your class.

Scenario

As DSDM (Dynamic Systems Development Method) is all about enabling change, the one area where more effort is required during the development of the project is configuration management. During the Functional Model Iteration phase and the Design and Build Iteration phase, new versions of software will be developed. It is entirely possible that the latest iteration is for some reason inferior to the previous version or that the development has taken a direction that the users of the system had not intended. For this reason it must be possible to revert back to a previous, acceptable state. This does not only include the prototype software but also any supporting documentation, test plans, test results, prototype feed back documents, and in fact anything that supports the project at a particular point in time.

The most convenient time to baseline the project in this way is at the end of the Feasibility and Business Study phases and after each of the iterations of the Functional Model Iteration phase and the Design and Build Iteration phase. This provides a stable base from which to develop the system further in the knowledge that it is always possible to return to that state.

This project uses a variety of tools to develop the report and the system to go with it:

- The documents, tables diagrams etc. are prepared using Microsoft Office and Visio
- The UML diagrams are prepared using Rational Rose
- Microsoft Project is the Project Management tool
- Borland Delphi is the development tool

These clearly do not represent an integrated software tool for agile systems development. For this reason and because DSDM does not recommend the implementation of new tools during a project, my company uses a simple manual configuration management method which fulfils all of the above requirements. This method uses unique folders for each of the five phases of the project. It is a technique that has been in use within my company for some time and as such it is both proven and familiar to most development personal.

Everything is developed on a Dell Dimension 2400 PC running Windows XP so the folder structure will store all the products of the various phases of the project. The project itself has a folder called, in this case, PROJECT. Below this, there are a number of other folders which contain the various elements of the project. At the lowest level, there are individual folders for each of the four categories of software described above.

This simple structure has a number of features:

- The whole project may be backed up or restored via a single folder
- Each phase can be backed up or restored via a single folder
- All the various files created by some of the packages (notably Delphi, Microsoft Project and Rational Rose) are grouped into a single folder making it easy to track what has been done within the package
- The system is not efficient in terms of disk space since there can be a high degree of duplication. However the essence of DSDM is time and this system is simple to learn and operate. In the context of a modern PC which has perhaps 80 Gigabytes of disk space, duplication of a few documents is of little consequence.

Each of the five phases of the project has a folder. The folder for the Functional Model Iteration phase will contain three further folders, one for each of the iterations. In order to be able to backtrack to any stage in the prototype development cycle, the prototype iterations are baselined. This means having up to three more folders underneath each of the three partitioned Functional Prototype folders.

A partial folder structure is shown below.

C:\PROJECT **(MAIN PROJECT FOLDER)**

PHASE1 **(Feasibility Phase)**

PROJECT (Microsoft Project files)

RATIONAL-ROSE (Rational Rose Case Tool files)

OFFICE (Microsoft Office files)

DELPHI (Delphi Development files)

PHASE2 **(Business Study Phase)**

PHASE3 **(Functional Model Iteration Phase)**

PHASE3_1 (Functional Prototype 1)

PTYPE1 (1st version of Functional Prototype 1)

PTYPE2 (2nd version of Functional Prototype 1)

PTYPE3 (3rd version of Functional Prototype 1)

PHASE3_2 (Functional Prototype 2)

PHASE3_3 (Functional Prototype 3)

PHASE4 (Design & Build Iteration Phase)

PHASE5 (Implementation Phase)

All files for the Feasibility Study are stored in their appropriate folders within the phase 1 folder. Any of the files that are used in the Business Study phase are first copied to the appropriate folder under the phase 2 folder before changes are made. In this way, all files within the phase 1 folder remain unchanged after the Business Study starts.

Good Configuration management software goes further than allowing developers to restore previous versions of software. It can provide security by allowing only one person to 'check out' a program to be changed. Access can also be controlled by project status thereby enforcing a degree of project control. Items such as source code, test scripts and general support documentation can individually be put under version control and these can be linked to create a complete release of the system. Changes can be tracked, in some cases from the initial change request through to the implemented system, and this can also be used for reporting purposes to identify why changes were made to individual programs and to monitor the overall progress of the change request or project.

1.4 Private Study Exercises

You should spend approximately 8.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Task 1

Refer to your project guidelines. You should use this private study time to think about the project you are going to develop and to write a project proposal, using a template or format that is acceptable to your tutor.

Be prepared to discuss your project ideas with your tutor and to show your work in progress. Your tutor will guide you on the scope of your project and whether the proposal is acceptable.

By the end of this topic, you should have completed the following:

- Thought of an initial project idea
- Found or developed a suitable project proposal template
- Discussed your initial project idea with your tutor

Topic 2: Analysis Specifications

2.1 Learning Objectives

On completion of this topic, you will be able to:

- Carry out the analysis of a computing aretefact.

2.2 Timings

Project Session:	2 hours
Tutorial:	2 hours
Private Study:	8.5 hours

2.3 Seminar Exercises

Take 5 minutes to write down at least two things that you either did not understand from the lecture or that you feel you need further clarification on. Feed these back to your tutor.

Your tutor will then compile a list on the board and go through each one in turn to ensure that all students understand the main concepts delivered in the lecture.

2.4 Private Study Exercises

You should spend approximately 8.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Task 1

Refer to your project guidelines. At this stage, you should have developed a draft project proposal for discussion and review with your tutor. If you have not done this, make sure this is completed and shown to your tutor as soon as possible.

You should also use this private study time for planning to start the analysis of the project based on your draft proposal.

Task 2

Prepare a progress statement to discuss with your tutor during your supervision sesison. This should include:

- The work completed thus far
- A forecast of work to be completed
- An updated project plan

By the end of this topic, you should have done the following:

- Thought of an initial project idea (Topic1)
- Found or developed a suitable project proposal template (Topic1)
- Discussed your initial project idea with your tutor (Topic 1)
- Drafted a project proposal
- Discussed your draft project proposal with your tutor
- Begun the analysis of your project based on the final project proposal

Topic 3: Design Specifications

3.1 Learning Objectives

On completion of this topic, you will be able to:

- Carry out the design of a computing aretefact.

3.2 Timings

Project Session:	2 hours
Tutorial:	2 hours
Private Study:	8.5 hours

3.3 Seminar Exercises

Take 5 minutes to write down at least two things that you either did not understand from the lecture or that you feel you need further clarification on. Also note at least two things that you are very clear on and understand fully from the lecture.You will feed this back to your tutor.

Your tutor will then split you into groups within which you should attempt to resolve all of the things that the group members did not understand.

3.4 Private Study Exercises

You should spend approximately 8.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Task 1

Refer to your project guidelines. At this stage, you should have a draft analysis of the system completed.

You should also use this private study time for planning the design phase of the project. Be prepared to discuss the progress of your project with your tutor and to show the written sections which should now be completed.

Task 2

Prepare a progress statement to discuss with your tutor during your supervision sesison. This should include:

- The work completed thus far
- A forecast of work to be completed
- An updated project plan

By the end of this topic, you should have done the following:

- Thought of an initial project idea (Topic1)
- Found or developed a suitable project proposal template (Topic1)
- Discussed your initial project idea with your tutor (Topic 1)
- Drafted a project proposal (Topic 2)
- Discussed your draft project proposal with your tutor (Topic 2)
- Begun the analysis of your project based on the final project proposal (Topic 2)
- Drafted an analysis of the system you are going to develop
- Discussed the draft analysis with your tutor

Topic 4: Test Scripts

4.1 Learning Objectives

On completion of this topic, you will be able to:

- Develop appropriate tests for a computing artefact.

4.2 Timings

Project Session:	2 hours
Tutorial:	2 hours
Private Study:	8.5 hours

4.3 Seminar Exercises

Presented below are two unit test scripts in the format that you should use for the test scripts in your project. Read through the test scripts and then work through the tasks.

Unit Test 1		Tests Class: EmployeeDetails	Designed By: John Smith	
Data Source: User Entry		Objective: Test basic functionality	Tester: John Smith	
Test Case	Description	Tasks	Expected Result	Actual Result
1.1	Test for basic functionality	Enter employee details: EMPLOYEE NUMBER: 123456 FIRST NAME: Steve SECOND NAME: MOSS	Record is added to the database	

Unit Test 2		Tests Class: SalaryDetails	Designed By: John Smith	
Data Source: User Entry		Objective: Test basic functionality	Tester: John Smith	
Test Case	Description	Tasks	Expected Result	Actual Result
1.1	Test for basic functionality	Enter employee details: EMPLOYEE NUMBER: 123456 SALARY: $20,000	Record is added to the database	

1. Convert the unit test scripts into an integration test script.
2. Define a unit test script for the Class JobDetails the inputs are EMPLOYEE NUMBER and JOB TITLE
3. Add the unit test script that you produced in task 2 to the integration test script that you produced in task 1.

4.4 Private Study Exercises

You should spend approximately 8.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Task 1

Refer to your project guidelines. At this stage, you should have completed a draft design.

You should also use this private study time for planning how you are going to test your system. Be prepared to discuss the progress of your project with your tutor and to show the written sections which should now be completed.

Task 2

Prepare a progress statement to discuss with your tutor during your supervision sesison. This should include:

- The work completed thus far
- A forecast of work to be completed
- An updated project plan

At the end of this topic you should have done the following:

- Thought of an initial project idea (Topic1)
- Found or developed a suitable project proposal template (Topic1)
- Discussed your initial project idea with your tutor (Topic 1)
- Drafted a project proposal (Topic 2)
- Discussed your draft project proposal with your tutor (Topic 2)
- Begun the analysis of your project based on the final project proposal (Topic 2)
- Drafted an analysis of the system you are going to develop (Topic 3)
- Discussed the draft analysis with your tutor (Topic 3)
- Drafted a design for the system you are going to develop
- Discussed the draft design with your tutor
- Drafted an initial plan for the testing of your system

Topic 5: Final Report

5.1 Learning Objectives

On completion of this topic, you will be able to:

- Start writing up their final report.

5.2 Timings

Project Session:	2 hours
Tutorial:	2 hours
Private Study:	8.5 hours

5.3 Seminar Exercises

The aim of the seminar session is to provide you with an opportunity to discuss the structure and content of the final report and gain a greater understanding of how it relates to your project.

This seminar does not have a particular practical exercise associated with it because what is important for this topic is that you understand the structure and content of the project report.

5.4 Private Study Exercises

You should spend approximately 8.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Task 1

Refer to your project guidelines. At this stage you should have completed draft unit testing test scripts..

You should also use this private study time for planning what tasks you still need to carry out for your project and to keep writing up your project so that you are on target to meet the hand in deadline.

Be prepared to discuss the progress of your project with your tutor and to show the written sections which should now be completed.

Task 2

Prepare a progress statement to discuss with your tutor during your supervision sesison. This should include:

- The work completed thus far
- A forecast of work to be completed
- An updated project plan

At the end of this topic you should have done the following:

- Thought of an initial project idea (Topic1)
- Found or developed a suitable project proposal template (Topic1)
- Discussed your initial project idea with your tutor (Topic 1)
- Drafted a project proposal (Topic 2)
- Discussed your draft project proposal with your tutor (Topic 2)
- Begun the analysis of your project based on the final project proposal (Topic 2)
- Drafted an analysis of the system you are going to develop (Topic 3)
- Discussed the draft analysis with your tutor (Topic 3)
- Drafted a design for the system you are going to develop (Topic 4)
- Discussed the draft design with your tutor (Topic 4)
- Drafted an initial plan for the testing of your system (Topic 4)
- Discussed the intial testing plan with your tutor
- Finalised the testing plan for the project

At this point ensure that you are up to date and have completed all the tasks above and that everything has been fully documented so that you can easily write up each stage of the project in the final report.

Topic 6: Topics 6-12: Project and Report Completion

6.1 Private Study

You should spend approximately 75 hours (12.5 hours per topic) on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Refer to your project guidelines. You should now complete your project and report, as well as prepare for your project demonstration and presentation.

Throughout this period you are expected to maintain contact with your tutor/supervisor and inform them of the progress you are making and any problems or questions you have. You should continue to prepare progress statements for each meeting with your tutor. You will also be expected to produce evidence of your work and demonstrate continually improving versions of your computing artefact in each meeting with your tutor.

You will need to manage your time carefully to ensure that you continue to work systematically through your project. It is now your responsibility to manage the project plan and ensure you keep making progress each week.

Appendix 1: Project Guidelines

1. Scope

This is an individual project that should cover, in detail, the analysis, design coding and testing of a computing project as outlined in the learning outcomes for the module. It should also give an overview of the approaches used for project management, configuration management and risk analysis.

2. The Project Proposal

The proposal is a blueprint for your project. The purpose of the proposal is to put forward your ideas about the project and allow your supervisor to judge whether the project is viable. The project proposal should be between 3 and 5 pages in length and include the following sections:

2.1 An overview of the computing artefact to be developed

What type of computing artefact you are going to develop? Why it is important to produce the computing artefact? What are the project aims and objectives?

For example: 'The computing artefact to be developed is an Information System because … A small firm currently maintains its records in paper based form. This is inefficient for the following reasons ... The solution will reduce overheads such as ... It will potentially allow savings of £xxx per year and open up the following business opportunities ... The aims of the project are … The objectives of the project are …')

2.2 The aims and objectives, scope and architecture

What are you going to develop? What features will and will not be developed? What architecture will you use to develop the system?

For example: 'The system will automate the following transactions ... It will provide an online Help system supporting the following features ... It will provide a user guide, focusing on the following ... It will not incorporate the following … because ... It will be developed in Java Version X and MySQL Version Y, to run on the following platforms ...'

2.3 Work Breakdown Structure and Gantt chart

This section needs to provide a breakdown of the main tasks and activities that you will need to undertake for the successful completion of your project. Indicate the key milestones with dates. *It is suggested that you use a tool such as Microsoft Project for producing this information.*

The project will not proceed until the plan is approved by your supervisor.

3. The Project Report

Your project report is an account of the work done in terms of the development of the computing artefact. It is important that you plan for the report to communicate with the people reading it. This means producing a report that your supervisor will enjoy reading. The project report should be a well-structured word processed document that is easy to read. The project report should be 6000 (+/- 500) words in length. The precise structure of the project report is presented below:

3.1 Title Page

This section should contain the following centred information:

- The full title of the project
- The full name of the author, followed by the student registration number in brackets
- The centre at which the author is studying

3.2 Abstract

This section should consist of a synopsis of the project (150-200 words) stating the nature and scope of the work undertaken, and a high level summary of the outcomes.

3.3 Contents Page

This section should show the page numbers of chapters, sections and sub-sections, a list of figures and tables, and a list of appendices.

3.4 Acknowledgements

This section is optional, but you may wish to pay tribute to particular people who have given you special assistance or support.

3.5 Introduction

This chapter provides the context of your work in terms of:

- The system developed
- Justification for the method or framework used
- The solution that emerged
- The main aims and objectives of the project
- A short overview of the remaining chapters

Further guidance with respect to the content of this chapter is provided in Topic 5.

3.6 Analysis

This chapter consists of the analysis specification of the proposed system in terms of:

- Requirements
- Use Cases
- Architecture

Further guidance with respect to the content of this chapter is provided in Topic 2.

3.7 Design

This chapter consists of the design specification for the proposed system in terms of:

- Structural Model
- Behavioural Model

Further guidance with respect to the content of this chapter is provided in Topic 3.

3.8 Implementation

This chapter describes your approach to implementation in terms of:

- Choice of programming language
- System cutover from the development architecture to the implementation architecture
- Data migration from the development architecture and/or existing systems to the implementation architecture
- Training

Further guidance with respect to the content of this chapter is provided in Topic 5.

3.9 Other Project Issues

This chapter provides an account of your approach to project management, risk management, configuration management and testing. You need to describe what particular techniques you have used, why you have used these rather than others, and present a summary of your main results.

Further guidance with respect to project management, risk management and configuration managed is provided in Topic 1, whilst Topic 4 provides further guidance with respect to testing.

3.10 Conclusion

This chapter evaluates the substantive aspects of your work, within the context you have established in the Introduction. It also comments on the extent to which the original aims and objectives have been met. In addition, you might wish to comment on any envisaged future development of the system.

Further guidance with respect to the content of this chapter is provided in Topic 5.

3.11 References

All references you cite within the body of your report should be fully referenced in this section, using the Harvard Style. No reference should appear here unless it has been cited in the body of the report.

3.12 Appendices

Appendices may include any supporting material to which a reader might wish to refer, but which is not essential for the main body of the report. Appendices for the computing project may include some, or all, of the following:

- Requirements Catalogue
- Use Case Descriptions
- Detailed Class Definitions
- Test Scripts
- User Guide
- System Code
- External Client Documents where applicable (see Section 4 below)

4. The Project Presentation and Demonstration

Following completion of your project report, you will have 30 minutes to demonstrate the system developed and give a presentation about the content of the computing project. The demonstration and presentation will be assessed and contribute to your final mark.

The 30 minutes will be structured as follows:

- Demonstration (10 minutes)
- Questions related to the demonstration (5 minutes)
- Presentation (10 minutes)
- Questions related to the presentation (5 minutes)

The presentation should contain between 10 and 15 slides and should be structured as follows:

- An overview of the context/background of the project
- An overview of the analysis and design activities (high level model of the system, techniques used, key design decisions)
- An overview of the testing (techniques, a summary results, conclusions)
- A critique of the process (what went well, what didn't, what you have learned, what you would do differently next time)

PC and projection equipment will be available, so it is expected that you will give a PowerPoint presentation. The audience for the session will be your supervisor plus one other tutor.

5. Notes on Working with External Clients

You are not required to work with an external client to develop your project. However, if you are working with an external client the following must be included in an appendix:

- A letter of introduction from the Accredited Partner Centre to support the student.
- A memorandum of understanding (MOU) between the student and client. This document is typically prepared soon after a client has been chosen. Its purpose is to formally establish the specific details of the project work with the intention of protecting both the client and the student. It should cover:

- A specification of the system project, including expected functionality, timeline, and resources to be committed.
- Confidentiality of documents which may be passed from client to student.
- Liabilities of student to client in case of failure to deliver a working product.
- Financial compensation or remuneration. The MOU should make clear that the student is not to be paid for any project work undertaken.

Appendix 2: Project Assessment

There are four assessment components for the computing project:

- The Project Proposal: 10%
- The Project Report: 70%
- The Project Demonstration: 10%
- The Project Presentation: 10%

Each component will be marked out of 100 according to the following criteria.

The Project Proposal

Mark Range	Descriptor	Criteria
0-29	Poor Failure	• The overview of the computing artefact to be developed is either unclear or missing • The aims and objectives, scope and architecture are either unclear or missining • The work breakdown structure and Gantt chart are either unclear or missing
30-39	Marginal Failure	• The overview of the computing artefact to be developed is either unclear or missing • The aims and objectives, scope and architecture are either unclear or missining • The work breakdown structure and Gantt chart are either unclear or missing
40-49	Marginal Pass	• The overview of the computing artefact to be developed is vague, but appropriate • The aims and objectives, scope and architecture are vague, but appropriate • The work breakdown structure and Gantt chart are vaque, but appropriate
50-59	Average Pass	• The overview of the computing artefact to be developed is partially clear, but appropriate • The aims and objectives, scope and architecture are partially, but appropriate • The work breakdown structure and Gantt chart are partially, but appropriate
60-69	Merit	• The overview of the computing artefact to be developed is generally clear and appropriate • The aims and objectives, scope and architecture are generally clear and appropriate • The work breakdown structure and Gantt chart are generally clear and appropriate

70+	Distinction	• The overview of the computing artefact to be developed is very clear and appropriate • The aims and objectives, scope and architecture are very clear and appropriate • The work breakdown structure and Gantt chart are very clear and appropriate

The Project Report

Mark Range	Descriptor	Criteria
0-29	Poor Failure	• The Introduction is unclear and too short • The Analysis is unclear and uses inappropriate models • The Design is unclear and uses inappropriate models • The Implementation of the system is unclear • Other Project Issues are unclear and inappropriate • The Conclusion unclear and too short • References are missing
30-39	Marginal Failure	• The Introduction is either unclear or too short • The Analysis is either unclear or uses inappropriate models • The Design is either unclear or uses inappropriate models • The Implementation of the ssystem is unclear • Other Project Issues are either unclear or inappropriate • The Conclusion is either unclear or too short • References are missing
40-49	Marginal Pass	• The Introduction is vague, but appropriate • The Analysis is vague, but uses appropriate models • The Design is vague, but uses appropriate models • The Implementation of the system is vague • Other Project Issues are vague, but appropriate • The Conclusion vague, but appropriate • References are used poorly and are not in the Harvard style
50-59	Average Pass	• The Introduction is partially clear, but appropriate • The Analysis is partially clear, but uses appropriate models • The Design is partially clear, but uses appropriate models • The Implementation of the system is partially clear • Other Project Issues are partially clear, but appropriate • The Conclusion partially clear, but appropriate • References are used adequately and are not in the Harvard style

60-69	Merit	• The Introduction is generally clear and appropriate • The Analysis is generally clear and uses appropriate models • The Design is generally clear and uses appropriate models • The Implementation of the system is generally clear • Other Project Issues are generally clear and appropriate • The Conclusion generally clear and appropriate • References are used well and are in the Harvard style
70+	Distinction	• The Introduction is very clear and appropriate • The Analysis is very clear and uses appropriate models • The Design is very clear and uses appropriate models • The Implementation of the system is very clear • Other Project Issues are very clear and appropriate • The Conclusion generally clear and appropriate • References are used well and are in the Harvard style

The Project Demonstration

Mark Range	Descriptor	Criteria
0-29	Poor Failure	• System is unusable. • System does not have a help subsystem. • System uses interfacing that is inconsistent. • System is unstable and constantly runs into errors.
30-39	Marginal Failure	• System is nearly unusable. • System does not have a help subsystem. • System uses interfacing that is inconsistent. • System is unstable and constantly runs into errors.
40-49	Marginal Pass	• System barely meets expectations. • System does not have a help subsystem. • System uses interfacing that is inconsistent. • System is nominally stable and runs into frequent errors.
50-59	Average Pass	• System somewhat meets expectations. • System has a simplistic help subsystem. • System uses interfacing that is usable but lacks general consistency. • System is somewhat stable but has some noticeable errors.
60-69	Merit	• System meets expectations. • System has a usable help subsystem. • System uses consistent interfacing. • System is generally stable and has just some minor software errors.
70+	Distinction	• System meets or exceeds functional expectations. • System has comprehensive help subsystems • System uses consistent interfacing. • System is stable and generally error-free. • System is of unusual scope or type.

The Project Presentation

Mark Range	Descriptor	Criteria
0-29	Poor Failure	• Unclear overview of the context/background of the project • Inappropriate and incomplete models used to overview the the analysis and design activities • Unclear and incomplete overview of testing • Unclear and incomplete critique of the process • Poor and inadequate presentation with unacceptably low use of visual materials • Failure in answering any questions
30-39	Marginal Failure	• Unclear overview of the context/background of the project • Inappropriate or incomplete models used to overview the the analysis and design activities • Unclear or incomplete overview of testing • Unclear or incomplete critique of the process • Presentation is not sufficient in content and little use of visual materials • Poor performance in answering questions
40-49	Marginal Pass	• Vague overview of the context/background of the project • Appropriate, but incomplete models used to overview the the analysis and design activities • Vague overview of testing • Vague critique of the process • Presentation is adequate in content, but makes little use of visual materials • Adequate performance in answering questions
50-59	Average Pass	• Partially clear overview of the context/background of the project • Appropriate, but incomplete models used to overview the the analysis and design activities • Partially clear overview of testing • Partially clear critique of the process • Presentation is of an acceptable standard and logically structured, with good use of visual materials • Fair performance in answering questions

60-69	Merit	• Generally clear overview of the context/background of the project • Appropriate and complete models used to overview the the analysis and design activities • Generally clear overview of testing • Generally clear critique of the process • Presentation is generally well organised with very good use of visual materials • Competent in answering questions
70+	Distinction	• Very clear overview of the context/background of the project • Appropriate and complete models used to overview the the analysis and design activities • Very clear overview of testing • Very clear critique of the process • Presentation is very well-organised and structured with excellent use of visual materials • Very competent in answering questions