
**SCHOOL OF COMPUTING, INFORMATION TECHNOLOGY AND ENGINEERING**

# Final Year Undergraduate Computing Projects Incorporating modules: CN3041 Research Skills CN3061 Project

Session 2009/10

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# Contents

# 1 Final Year Undergraduate Computing Projects

## 1.1 Summary

This document contains three sections. The first section contains an introduction to and overview of final year undergraduate computing projects within the School of Computing, Information Technology and Engineering. The second section contains a description of the module CN3041 Research Skills. The third and final section contains a description of the module CN3061 Project. Together, these three sections describe the purpose and operation of final year undergraduate computing projects. This document should be read by all students undertaking a final year computing project as part of their programme of studies. This includes all students enrolled on the following programmes:

BSc Computing (single and major honours)
BSc Software Engineering (single and major honours)
BSc Computer Networks (single and major honours)
BSc Business Information Systems (single and major honours)
BSc Information Security Systems (single and major honours)

This document is also relevant to students who take the module CN3041 Research Skills but who do not take the module CN3061 Project. This includes students enrolled on the following programmes:

BSc Computing (joint honours)
BSc Software Engineering (joint honours)
BSc Computer Networks (joint honours)
BSc Business Information Systems (joint honours)
BSc Information Security Systems (joint honours)
BSc Combined Studies (single honours)

## 1.2 Introduction

Final year undergraduate computing projects are a 40 credit, two semester learning experience. In other words, you must study two modules over a period of two semesters in order to complete the final year computing project. The two modules are

- CN3041 Research Skills and
- CN3061 Project

Although these modules are closely related and both contribute towards the final year project, they nevertheless have separate and

distinct aims, learning outcomes, activities and assessment. Details of these can be found in Sections 2 and 3 of this document.

The module, CN3041 Research Skills, is a precursor of the module CN3061 Project. Therefore, before you can begin CN3061, you must have completed (although not necessarily passed) the module CN3041. For this reason, the modules cannot be studied in parallel. The work, including a literature review and project plan, that you produce during CN3041, should provide the foundations for the practical work to be undertaken in CN3061.

All students taking the module CN3041 will be required to produce the same assessment deliverables which includes the plan for the practical component of the project. However, only those students who subsequently take the module CN3061 will have the opportunity to actually undertake the practical work as part of their programme of studies.

## 1.3 The requirements of final year undergraduate computing projects

You may choose your own topic as the basis of your project. Alternatively, you can choose one of the projects suggested by members of staff, details of which are available via the UELPlus site for the CN3041 module. If you are interested in a staff project, you should contact the relevant member of staff at the earliest opportunity. Staff projects will normally be allocated to students on a first-come, first-served basis. There is no guarantee therefore that you will be allocated your chosen project. Whether you choose your own topic or a staff project, there are a number of conditions attached to your choice:

- Your project must contain both a theoretical and a practical component. In other words, you must research your chosen topic, identify a problem and then develop a solution to that problem. The research and identificaton phases must be carried out in the CN3041 module and the development of your solution in the CN3061 module. The total amount of study time required for each of the two modules is the same, 200 hours.
- Your project must be consistent with the aims and learning outcomes of the particular programme you are studying e.g. if you are a Software Engineering student then your project must contain some software engineering!
- Your project must involve study at an advanced level i.e. topics/issues appropriate to level 3 study. Projects which involve little more than the application of level 1 skills e.g. the

development of an Access database or the creation of static HTML web pages, are not appropriate.

- Your project must involve the solution of a problem by the application of information technology. The problem should meet a real need in a wider context. You will need to analyse the problem and design and implement one or more solutions using a systematic approach and appropriate tools and techniques.
- Your project should contain an element of originality. You should not be repeating the work of others or trying to solve a problem which has been solved before unless you are going about it in a new or novel way.
- You must critically evaluate both product and process i.e. the solutions that you have produced and the methods, tools and techniques that you have used to produce them.
- Your project must be feasible in terms of time, resources and the skills at your disposal but nevertheless should be challenging and provide opportunities for advancing your knowledge and expanding your skills set. You must have access to the facilities you will need to undertake your project. It is pointless attempting something which requires resources which neither you nor the University is in a position to provide. Your supervisor will be able to advise you regarding the availability of University resources.
- If your project involves the development of a system, application or software artefact for a client then that client must i) give his/her written consent to the project, ii) guarantee to provide you with access to the necessary resources including his/her time and iii) provide some form of evaluation of your work which can be documented in your final project report in the CN3061 module. Please note that it is not appropriate for you to fulfil the role of both client and developer.
- Whatever topic you choose as the basis of your project, it should be something that interests you. This is more a suggestion than a requirement. However, you will find it very difficult to maintain your enthusiasm over the period of the two semesters, if you choose a topic that does not particulary inspire you or does not 'scratch a personal itch'.
- If you are not taking the module CN3061, you still need to choose a topic for research for CN3041 and, as a result of that research, identify a problem which would benefit from a solution involving the application of information technology.

Please note that if you wish to be accredited with exemption from the British Computer Society (BCS) entrance examinations you must pass both CN3041 and CN3061 at the first attempt. (BCS accreditation for our programmes is being sought.)

## 1.4 The Project Proposal

Every project student is allocated a supervisor who will remain with that student for the duration of both the CN3041 and CN3061 modules. Before allocation can take place, you must submit a project proposal. The purpose of the proposal is to identify the aims and objectives of your project and the rationale for undertaking it. A proposal is needed for a number of reasons:

- So that we know what it is that you are trying to achieve, why you are trying to achieve it and that it is appropriate for a final year project.
- So that we can allocate you a suitably qualified supervisor.
- So that you know what it is that you are trying to achieve and, hence, you can plan your time accordingly.
- So that, at the end of the project, we can assess the extent to which you have achieved your aims and objectives.

You must submit your proposal by the end of the third week of teaching of CN3041. All proposals should be submitted via the UELPlus website for the CN3041 module and posted in the project proposal discussion forum as an attachment in either .doc or .pdf format. Proposals submitted by other means will not be accepted. An electronic copy of the proposal form will be made available for download from UELPlus. Please ensure that you use this when submitting your proposal.

Your proposal should contain the following:

⇒ Your programme name
⇒ The current year and semester
⇒ Your student number
⇒ The title of your project
⇒ The aims of your project
⇒ The objectives of your project
⇒ The rationale for your project
⇒ The facilities you require i.e. hardware and software
⇒ Suggested supervisor(s) (this is optional)

Bear in mind that you are writing a proposal for the entire duration of the final year project i.e. two semesters' and two modules' work. The proposal must therefore identify both the theoretical component to be carried out during the CN3041 module and the practical component to be carried out during the CN3061 module (even if you are not actually taking the CN3061 module).

Every effort will be made to ensure that you are allocated (one of) your suggested supervisor(s). However, this cannot be guaranteed.

The sooner you submit your proposal, the more likely you are to be allocated your chosen supervisor but the availability of and demand for supervisors will have to be taken into account.

Writing a proposal is perhaps the most difficult part of the entire project and problems with your proposal may seriously impact on the quality of the work that you produce in both the CN3041 and CN3061 modules. If you are having difficulty writing your proposal, please discuss your ideas with the module leader of CN3041 or other members of staff. Ideally, you should approach a member of staff who teaches on your particular programme to discuss your ideas.

Please read the sample project proposals in Appendix A and the examples of previous years' projects available via UELPlus before submitting your proposal.

Shortly after its submission, an initial assessment of your project proposal's suitability will be made. The outcome of this assessment will be communicated to you via the project proposal discussion forum on UELPlus.

## 1.5 Project Aims and Objectives

Your project proposal must contain both aims and objectives. Your aims should be succinct, i.e. no more than two short sentences, and should contain a statement of *what* you want to have achieved by the end of your project i.e. by the end of the CN3061 module. Your objectives should state *how* you intend to achieve your aims i.e. the deliverables required. The number of objectives that your proposal should contain is not fixed and will depend upon what you consider to be appropriate. However, the first few objectives will relate to deliverables to be produced during the CN3041 module, the last few to the CN3061 module.

If you find it difficult constructing your aims and objectives, try working backwards. Start by asking yourself 'What do I want to achieve?' Then ask yourself 'How do I achieve it?' The following example might be instructive.

*Step 1*

Imagine that you were interested in Linux and its viability as a desktop operating system. Your project aim might therefore be to assess the viability of Linux as a desktop operating system. It is worth noting at this point that, if your aim was to assess the viability of desktop Linux, you should reach some conclusion at the end of

your project about the viability of desktop Linux. Whether you conclude that it is, is not or may be viable is actually less important than the fact that you do reach some conclusions, you document those conclusions and that you base them on evidence presented in your project. If you do not do so then you have not done what you said you would do and this will be reflected in our assessment of your work!

*Step 2*

Having decided that your aim is to assess the viability of desktop Linux, you must now decide how you would do that assessment. There are potentially many ways in which an assessment could be performed but you would certainly need some assessment criteria (or critical success factors (CSFs) as they might be referred to in this instance) against which Linux could be assessed. Your criteria would depend, to large extent, on your definition of 'a desktop operating system'. Having devised a set of criteria or CSFs, you would then need to evaluate Linux against those CSFs and draw some conclusions on the basis of your evaluation. Extrapolating the key points from this process yields the following initial objectives:

- To define the term *desktop operating system* and to identify the factors (CSFs) critical to the successful adoption of a desktop operating system.

- To evaluate Linux against the CSFs

- To draw conclusions about the viability of desktop Linux based on the evaluation

The above objectives are a good start but some (particularly the first two) are too high level and hence it would be difficult to construct a project plan around them. They need further decomposition so that actual tasks and deliverables can be clearly identified and allocated to appropriate modules.

*Step 3*

How could the first two objectives be further refined? In the case of the first objective, an understanding of the term *desktop operating system* requires an understanding of the differences between a desktop and server-based operating system. You would therefore need to identify and explain the differences between a desktop and server-based operating system before you can establish a working definition of a desktop operating system. In the case of the second objective, you would need to devise a set experiments which would enable you to evaluate Linux against your CSFs, the most important

one of which is arguably usability. Devising suitable usability tests requires knowledge and understanding of usability issues. As part of your experiments, you might also wish to compare Linux against other desktop operating systems such as Windows XP or Apple's OS X. You now have a sufficiently detailed set of objectives in order to write your project proposal. See Section a) in Appendix A for details of a project proposal based on this discussion.

If you are still having problems expressing the objectives of your project in a clear and focussed manner then try to adapt the following standard template (around which most, if not all projects could be fitted) to your needs:

1. To analyse the problem for which the solution(s) is being sought.

2. To identify and evaluate the tools, techniques and methods that could be used to develop solution(s) to the stated problem.

3. To establish a set of criteria by which the solution(s) will be evaluated.

4. To implement one or more of the solution(s) and to document the implementation process.

5. To evaluate the solution(s) against the criteria established in 3.

6. To evaluate the tools, techniques and methods used in the implementation of the project.

7. To draw conclusions from 5 and 6 and to consider what has been learnt by carrying out this project.

The proposal which you submit by the end of week three is a working document. You will have opportunities to refine it in response to the initial assessment, subsequent discussions with your supervisor, feedback from the presentation in week 8 of the CN3041 module (see Section 2.7.1(i) for details) and as a result of the research that you conduct during the CN3041 module. It is very important to check that the practical work that you are proposing to carry out in the CN3061 module is feasible. This check should be peformed before the end of the CN3041 module i.e. it should be an integral part of your research in the CN3041 module. If the practical work is not feasible then you probably need to amend your project aims and objectives.

Whatever changes you make, your proposal should be finalised and agreed by your supervisor in time for the submission of the

coursework documentation in the CN3041 module. See Section 2.7 for details.

## 1.6 Project Planning

To make the most effective use of your time, you need to draw up a project plan for yourself. This should detail which activities you are going to undertake, when you are going to start them and when you expect to complete them. This plan should take into account factors such as the work load for the other modules that you are studying, holiday periods and the various deadlines specified in Sections 1.10, 2.7 and 3.6. The plan should detail activities for both semesters i.e. modules CN3041 and CN3061.

You should keep this plan up to date, as it will of course need amending over the period of the project.

### 1.6.1 Finding the Project Activities

The tasks identified in your project plan should be consistent with the objectives in your project proposal since these objectives are essentially your project deliverables. In the case of the example in Section 1.5 above, the main activities in the corresponding project plan might look like the following:

| **Main Activities** | |
|---|---|
| **A** | Investigate the differences between desktop and server-based operating systems. |
| **B** | Establish a working defintion of the term desktop operating system. |
| **C** | Identify CFS. |
| **D** | Investigate the concepts of usability and the principles of usability testing. |
| **E** | Devise experiments to enable the evaluation of Linux. |
| **F** | Devise experiments to facilitate comparison of Linux with other desktop operating systems. |
| **G** | Conduct the experiments identified in E. |
| **H** | Conduct the experiments identified in F. |
| **I** | Write conclusions based on G and H |
| **J** | Evaluate 'product and process' |
| **K** | Submit draft project report to supervisor |
| **L** | Make final amendments to project report |
| **M** | Submit final version of project report |

Most of the main activities will need to be broken down further. For example, activity **A** could be broken down into the following sub-activities:

| | |
|---|---|
| AA | Review leading operating systems textbooks and journals. |
| AB | Write up summary of operating systems review. |

Likewise, activity **G** could be broken down into

| | |
|---|---|
| GA | Set up the experiments identified in E. |
| GB | Conduct the experiments identified in E. |
| GC | Evaluate the results of the experiments in GB. |
| GD | Write up the results of the experiments and their evaluation. |

You could continue to develop the activity list in this way until it reaches a level of detail at which it is possible to allocate start dates and durations and to identify dependencies between tasks. However, it is not a good idea to break down activities into too many levels if they will not start for some considerable time.

Having identified your activities, you can then divide them between the two project modules, CN3041 and CN3061. In the case of the above example, activities A – F are research-focused and hence belong in CN3041. Activities G – M have a practical focus and belong in CN3061. Note also that the ultimate purpose of tasks E and F is to determine the feasibility of the practical component of the project. Unless a set of feasible experiments can be identified, the practical component of the project cannot proceed.

You are free to use whichever project planning tools you wish. Such tools include Work Breakdown diagrams, Gantt charts and CPA diagrams. Please note however that, as a minimum, you will be required to produce an up-to-date version of your project plan, in the form of a Gantt chart, as part of the assessment requirements for the CN3041 module.

## 1.7 Maximising the use of your time with your supervisor

Your project is your responsibility! Your supervisor's role is to provide you with academic guidance but not to do your project for you. Your supervisor is not obliged to chase you if you fail to keep appointments with him/her but there is a strong correlation

between attendance at and participation in supervision and a student's project mark. Furthermore, if you do not maintain regular contact with your supervisor during the two semesters you may be withdrawn from the CN3041 or CN3061 modules.

Your supervisor has a maximum of 6 hours over the period of two semesters to supervise you. Your time with your supervisor is limited. It is very important therefore that you make the most of this time. You should come to an agreement with your supervisor, as to how you could best benefit from his/her academic advice and you should mutually agree the time and date of meetings in advance. Typically, meetings with your supervisor will take place once a fortnight for 30 minutes. In some cases however, you may prefer to communicate via email. This is acceptable provided that it is by mutual consent and it enables both you and your supervisor to fulfill your responsibilities in an adequate manner.

To make the most effective use of your supervisor's time, you need to have a firm idea of what you wish to achieve during supervision. Appendix B contains a form (available via UELPlus) which is designed to help you do this. You must complete a copy of this form at the end of or very shortly after each session with your supervisor. Both of you need to sign the document and keep copies. Your supervisor will use these forms to keep an accurate record of your attendance. You need to include copies of your forms in the documentation that you submit at the end of each of the project modules.

You should make initial contact with your supervisor as soon as possible but no later than the end of the fifth week of teaching of CN3041 by which time allocation of supervisors should be complete. You should take a copy of your project proposal to the first session with your supervisor so that s/he can give you feedback.

## 1.8 Referencing Your Work

In both of the final year project modules, you will be asked to submit a significant piece of written work. In order to submit these pieces of work, you will need to undertake a review of literature, albeit with a different focus in each module. You are encouraged to use the electronic services available in both UEL and the libraries of the relevant professional bodies such as the British Computer Society, a body which you can join as a student member. Bear in mind however that, in all cases, it is essential that the references you use are accurately documented. Doing so avoids accusations of plagiarism and enables other people to build upon the work that you have done. You should use the Harvard system for referencing your work. Details of the Harvard system can be found at http://www.uel.ac.uk/lls/support/harvard1.htm. There is also an

on-line plagiarism prevention tutorial known as PLATO, available at https://www.uel.ac.uk/lls/plato/index.html.

To help you organise your references, you should keep a record of the sources of material that you use. These records should be kept in a database, or possibly on index cards (see Figure 1 below), then the indexing and subsequent easy transfer to your reference list can be done by sorting the records (or cards) into an appropriate order.

| | | | |
|---|---|---|---|
| Authors name and initials: | | Date of Publication: | |
| Title: | | | |
| Item type: | Book/Article/Other | Page numbers: | |
| | Journal Name: | Vol no: | Issue: |
| Place of publication: | | Publishers: | |
| Summary: | | | |

Recording Your Sources of Material
Fig. 1

Direct quotes should be given in quotation marks and, according to Cottrell (1999, p122), "used sparingly – and only if the words are really worth quoting". They should be indented if they are longer than 40 words or are a complete subsection of someone else's work.

Cottrell (1999, p122) also says that

> You must give a reference whenever you draw on a source of information:
> - As your inspiration
> - As the source of a particular theory, argument or viewpoint
> - For specific information, such as statistics, examples, or case studies
> - For direct quotations
> - For texts which you paraphrase rather than quote.

To help you improve your referencing skills, you should make use of the Turnitin service. This service can be accessed via the links on the home pages of the UELPlus sites for both project modules.

Please ensure that you use the correct link i.e. the link on the home page of the CN3041 UELPlus site for work relating to the CN3041 module and likewise for CN3061. You may submit your work to Turnitin as many times as you wish and you are encouraged to do so regularly. As part of the assessment of both project modules (see Section 1.9 below) you are required to submit a copy of your work to Turnitin. However, you should not wait until the end of each module until you submit your report to Turnitin. If there are problems at that stage then you will not have time to remedy them. Ideally you should submit your work to Turnitin after each chapter or section has been written. Adopting such an approach will help you to develop good habits more quickly.

## 1.9 Submitting Your Written Work

It is a good idea to let your supervisor have a copy of each section or chapter of your reports as they are completed rather than waiting until you think you have completed the reports in their entirety. By doing this, you can take account of your supervisor's comments at an early stage. This should also mean that when you submit the drafts of the final versions of your reports to your supervisor, changes should be limited to minor amendments and not major rewrites.

The final version of every piece of written work for both the CN3041 and CN3061 modules must be submitted to Turnitin. Printed copies must also be submitted to the CITE counter using the standard procedures. Work not submitted to both Turnitin and the counter by the deadline date will receive an automatic mark of 0% unless extenuating circumstances have been sought and granted.

Please be aware that your written work becomes part of the School's research material and may be used as a basis for another project or as a reference. If your reports contain sensitive information which should not be made public then you should inform the leader of the CN3041 module at the earliest opportunity. S/he will advise you about the necessary precautions to protect your sensitive information.

### 1.9.1 The Contents of Your Reports

Your reports should include the following sections:

- Title page showing the title, student number, programme, year and semester of submission.
- Abstract
- Acknowledgements (if you wish to acknowledge people that have helped you)

- Contents page(s)
- Body of report
- List of references
- Appendices

For precise details of the contents of individual reports, see Sections 2.7 and 3.6.2.

Please observe the following guidelines when writing your reports:

- Your reports must be word-processed. Hand written submissions will not be accepted.
- Pages must be numbered but you will find paragraph numbers easier for cross-referencing.
- Appendices should be relevant to the report in which they are included.
- Material must be accurate and presented in a structured manner.
- The information contained within your reports should be presented in such a way as to allow both staff and students in the future to read, understand and learn from you.

Your marks will suffer if your reports

- are longwinded, tortuous, ill-structured or otherwise difficult to read;
- do not make clear the sources you are using or uses them uncritically (criticism may not necessarily be adverse);
- are full of generalisations without supporting evidence or argument;
- fail to draw useful general conclusions from a body of detailed information;
- lack perception, logic, coherence or balance.

### 1.9.2 Size and Binding

Use A4 paper. Large diagrams may go on A3, folded paper.

Reports must be securely bound so that they do not fall apart whilst being marked or stored for subsequent use. You have a choice of binding; heat (glue) binding or spiral (wire) binding. Both the Docklands Campus library and the Print Centre (situated just off the atrium in the East Building of the Docklands Campus) offer a heat binding service. A spiral binding service is available only at the Print Centre.

### 1.9.3 Numbering and Headings

A well-established method is as follows:

Each section of your reports should have a title and start on a new page. These sections will be numbered 1, 2, 3 and so on.

Side headings may be used to subdivide sections. Within each section, subsections may be numbered .1, .2, .3 and so on.

Lists may be labelled (a), (b), (c) and so on, and within that, by (i), (ii), (iii) and so on. These are not necessary unless you wish to refer to selected items in the lists.

If desired, sections can be grouped, without affecting the numbering, into parts, labelled Part I, Part II, Part III and so on.

Appendices may be treated the same way with a number prefixed by 'A'. Thus 'A2.5' would be paragraph 5 of appendix 2.

### 1.9.4 Figures and Tables

Position them for easy reference when reading the text. Diagrams drawn too large, consisting of mostly blank paper are no help to the reader, so keep them neat with a reasonable information density. Tables and graphs should indicate axes and scales clearly and should be accompanied by a note on the source of the data or a reference, if the table/graph has been taken directly from the source.

Numbering can be simply Fig.1, Fig.2, Fig.3 (Smith, 2008, p99) etc., Table 1, Table 2, Table 3 (adapted from Jones, 2006, p67) and so on, each with a brief title.

## 1.10 Project Timeline

The table below summarises the key project milestones and deadlines. For further details of each milestone or deadline, please see the relevant parts of Sections 2 and 3.

| **1st Semester (CN3041)** | |
|---|---|
| **Teaching Week** | **Milestone/Deadline** |
| 3 (end of) | Submission of draft project proposal |
| 4 (end of) | Allocation of supervisors |
| 5 (end of) | Initial meeting with supervisor<br>Initial assessment of project proposals |
| 6 - 12 | Meetings with supervisors |
| 8 and 9 | Presentations |
| 10 (end of) | Submission of draft literature review/PDP to supervisor<br>Lectures and tutorials finish |
| 12 (Thursday) | Deadline for submission of literature review/PDP |

| **2nd Semester (CN3061)** | |
|---|---|
| **Teaching Week** | **Milestone/Deadline** |
| 1 – 12 | Meetings with supervisors |
| 2 (end of) | Introductory lectures finish |
| 6 (end of) | Interim assessment |
| 10 (end of) | Submission of draft final report to supervisor |
| 12 (Thursday) | Deadline for submission of final report |

## 2. Module CN3041 Research Skills

# Research Skills CN3041

## 2.1 Module Summary

| MODULE TITLE | CN3041 RESEARCH SKILLS | |
|---|---|---|
| Module Leader | Mike Kretsis: Room EB.G.34 Ext 2144 | |
| Objectives | Upon completion of this module you will be able to:<br>• Identify the nature and sources of information needed to write a research paper.<br>• Select and apply research methods and analytical techniques appropriate to Computing.<br>• Critically reflect on the ethical considerations of a chosen research topic.<br>• Constructively critique the research of others, identifying the strengths and weaknesses in technique, analysis and conclusions.<br>• Write a research project proposal and construct a realistic research timetable.<br>• Construct a literature review.<br>• Deliver a presentation on a chosen subject. | |
| Assessment | A 2,000 word project proposal (including literature review and project plan)<br>A 15 min. presentation<br>A Personal Development Plan | 50%<br>20%<br>30% |
| Schedule | Lectures<br>Tutorials/Seminars<br>Supervision<br>Essential and background reading, seminar reading and preparation, research activities, assignment preparation, preparation of Personal Development Plan<br>Total: | 12 hours<br>36 hours<br>3 hours<br>149 hours<br>200 hours |

| | |
|---|---|
| Recommended Texts | The Essence of Computing Projects - A Student's Guide, C. W. Dawson, Pearson Education, 2000<br><br>The Landscape of Qualitative Research, 2nd Ed., N. K. Denzin and Y. S. Lincoln, Eds., SAGE, 2003<br><br>Critical Thinking Skills – Developing Effective Analysis and Argument, S. Cottrell, Palgrave Macmillan, 2005<br><br>Writing Up Your University Assignments and Research Projects: A Practical Handbook, N. Murray and G. Hughes, Open University Press, 2008 |

## 2.2 Module Introduction

This module constitutes the first part of the two-part final year undergraduate computing project and is intended as a vehicle for the delivery of the theoretical components of the project. The sections below should be read in conjunction with Sections 1 and 3 of this document.

## 2.3 Aims

- To provide a vehicle for the
  - development of a comprehensive knowledge of good research and professional practices.
  - appreciation of the ethical and legal issues relating to research.
- To plan and prepare for the practical component of the final year undergraduate computing project.

## 2.4 Teaching and Learning Methods

This module is a student driven learning experience directed by the module tutors. The module is constructed as a series of lectures, tutorials, seminars and practical tasks providing a hands-on approach to materials presented in the lectures. The set of lectures will introduce the student to various components of research. The lectures, tutorials and seminars will guide students through research areas such as the identification of relevant research topics, how to carry out a literature review, suitable research methods, legal and ethical issues, project management and academic writing and presentation skills.

## 2.5 Module Schedule

| Teaching Week | Lecture Topic |
|---|---|
| 1-2 | Introduction to the Final Year Undergraduate Computing Project |
| 3 | Introduction to Research and Research Methods |
| 4 | Literature Reviews |
| 5 | Use of Electronic Sources |
| 6 | Presenting Your Project Proposal |
| 7 | Plagiarism and Referencing |
| 8 | Legal and Ethical Issues |
| 9 | Project Management for Final Year Projects |
| 10 | Personal Development Planning for Final Year Projects |

## 2.6 Lecture Schedule

### Weeks 1-2

| | |
|---|---|
| Topic | Introduction to the Final Year Undergraduate Computing Project |
| Lecture Content | These lectures will provide an introduction to and outline of the final year undergraduate computing project and explain how the modules which form a part of it relate to each other. |
| Learning Outcomes | Upon completion of this topic, you should be able to:<br>• Identify the requirements of the final year project.<br>• Write a draft project proposal for a suitable final year project.<br>• Distinguish between the Research Skills module, CN3041, and the Project module, CN3061, in terms of their purpose and contribution they make towards the final year project. |

**Week 3**

| | |
|---|---|
| Topic | Introduction to Research and Research Methods |
| Lecture Content | This lecture will outline the principles, characteristics and process of research and identify the various research methods relevant to computing. |
| Learning Outcomes | Upon completion of this topic, you should be able to:<br>• Distinguish between what is and what is not research.<br>• Identify the characteristics of 'good' research.<br>• Outline the research process and methods used therein.<br>• Identify the circumstances in which you would apply each of the methods to computing research. |

**Week 4**

| | |
|---|---|
| Topic | Literature Reviews |
| Lecture Content | This lecture presents a rationale for literature reviewing and identifies the various factors to consider when reviewing a piece of literature. |
| Learning Outcomes | Upon completion of this topic, you should be able to:<br>• Answer the questions "What is a literature review?" and "Why is it important?"<br>• Demonstrate a clear understanding of what questions to ask in order to review a piece of literature.<br>• Distinguish between the types of literature that can be reviewed.<br>• Identify the main factors to consider when reviewing a piece of literature in the context of the final year project. |

**Week 5**

| | |
|---|---|
| Topic | Use of Electronic Sources |
| Lecture Content | This lecture will identify the various electronic sources and journals available for research purposes, how they can be found, how they should be used and how they compare with printed sources and journals. |
| Learning Outcomes | Upon completion of this topic, you should be able to:<br>• Identify the various electronic sources and journals relevant to computing research.<br>• Locate these electronic sources and journals and use them.<br>• Explain the differences between electronic and printed sources and journals. |

**Week 6**

| | |
|---|---|
| Topic | Presenting Your Project Proposal |
| Lecture Content | This lecture will identify the key ingredients of a successful presentation of a project proposal. |
| Learning Outcomes | Upon completion of this topic, you should be able to:<br>• Identify the key elements of a successful presentation.<br>• Structure a presentation appropriately.<br>• Prepare suitable materials for a presentation.<br>• Plan and prepare your presentation for this module. |

**Week 7**

| | |
|---|---|
| Topic | Plagiarism and Referencing |
| Lecture Content | This lecture will introduce students to the issues relating to plagiarism and appropriate referencing. |
| Learning Outcomes | Upon completion of this topic, you should be able to:<br>• Show understanding of what it means to have plagiarised.<br>• Identify the effects of plagiarism.<br>• Reference your own work appropriately. |

**Week 8**

| | |
|---|---|
| Topic | Legal and Ethical Issues |
| Lecture Content | This lecture will give a detailed insight into why legal and ethical issues should be considered when carrying out a piece of research. |
| Learning Outcomes | Upon completion of this topic, you should be able to<br>• Demonstrate an awareness of the reasons for considering legal and ethical issues when embarking on a piece of research.<br>• Discuss specific legal and ethical issues that should be considered when carrying out a piece research.<br>• Identify the legal and ethical issues relevant to your project. |

**Week 9**

| | |
|---|---|
| Topic | Project Management for Final Year Projects |
| Lecture Content | This lecture will introduce students to the tools and techniques available to them for the management of their final year projects. |
| Learning Outcomes | Upon completion of this topic, you should be able to<br>• Prepare a detailed plan for the remainder of your project.<br>• Select tools appropriate for the management of your final year project. |

**Week 10**

| | |
|---|---|
| Topic | Personal Development Planning for the Final Year Project |
| Lecture Content | This lecture will introduce students to the role of personal development planning within the final year project. |
| Learning Outcomes | Upon completion of this topic, you should be able to<br>• Reflect upon your learning, performance and achievements within the context of the final year project.<br>• Articulate your project development needs and evaluate progress towards their achievement.<br>• Plan for your personal development in the context of the final year project. |

## 2.7 Assessment

The assessment of this module consists of two components, the first of which contains two parts. To pass this module, you must achieve an overall mark of 40% and a minimum mark of 30% in each of the two components.

Details of the components of assessment are as follows (weightings in brackets):

### 2.7.1 Component 1 - Presentation (20%) and Personal Development Plan (PDP) (30%)

#### (i) Presentation

Date:
Starting in teaching week 8 i.e. week commencing 12 April 2010. The precise date, time and venue will be confirmed during the semester.

Duration:
10 minutes plus 5 minutes for questions and feedback.

Purpose:
To formally assess your presentation skills and to give you informal feedback in relation to your project proposal.

Content:
Your presentation should include the following:

- Your project title
- Your project aims and objectives
- The rationale for your project
- An explanation of how your project satisfies the requirements specified in Section 1.3 of this handbook
- Your progress to date
- Your plan for the remainder of your project i.e. the remaining time within CN3041 and the 12 weeks available during CN3061

Assessment Criteria:
Your presentation will be marked out of 20. Equal weighting will be given to the following criteria:

- Structure of the presentation
    - Did your presentation have an introduction, a main body and a summary?
    - Did the various parts of your presentation fit together in a logical sequence / order?

- Content of the presentation
    - Did your presentation include the required content?

  - Was the level of detail appropriate for a 10 minute presentation?

- Use of visual aids
  - Did you make effective use of your visual aids?
  - Were your slides of a professonal appearance?
- Dealing with questions
  - Did you answer the questions adequately?
  - Did you answer the questions confidently?

Please note that the purpose of the presentation is NOT to formally assess your project proposal but to give you informal feedback which you can take back to your supervisor. Even if there are problems with your project proposal, you can still obtain good marks for your presentation if you satisfy the above criteria.

**(ii) Personal Development Plan (PDP)**

Date of submission:
12.00 on Thursday 13 May 2010. To be submitted as a single document together with your project proposal/literature review (See section 2.7.2 below).

Length of plan: 1,000 words

Purpose:
To provide you with an opportunity to assess your skills / knowledge in the context of your project.

Content:
Your plan should include the following:

- An identification and brief explanation of the skills / knowledge that are required to fulfil the aims and objectives of your project and which you already possess.
- An identification and brief explanation of the skills / knowledge that are required to fulfil the aims and objectives of your project but which you do not already possess.
- An identification of the actions that you need to take in order to acquire the skills / knowledge that you need.

Bear in mind that the project plan which you submit with your project proposal (see Section 2.7.2 below) should include tasks which will enable you to acquire the skills / knowledge that you lack.

Assessment Criteria:
Your plan will be marked out of 30.

- Existing skills / knowledge (10 marks)
  - Have you identified both the technical and soft skills / knowledge that you already possess?
  - Are these skills / knowledge relevant to your project proposal?
  - Have you explained where / how you obtained these skills / knowledge?
- Skills / knowledge gap (5 marks)
  - Have you identified both the technical and soft skills / knowledge that you do not currently possess?
  - Are these skills / knowledge relevant to your project proposal?
- Action plan (15 marks)
  - Have you explained how you plan to acquire the skills / knowledge that you need?
  - Have you specified activities with dates and durations which will enable you to acquire the skills / knowledge that you need?
  - Are the activities in your personal development plan both sensible and consistent with the tasks in your project plan?

Please note that it is not necessary to achieve a minimum mark of 30% in both parts of Component 1.

### 2.7.2 Component 2 - Project Proposal/Literature Review (50%)

Date of submission:
12.00 on Thursday 13 May 2010. To be submitted as a single document together with your personal development plan (see Section 2.7.1(ii) above).

Length of proposal: 2,000 words (exclusive of appendices)

Purpose:
To provide you with an opportunity to fulfil the initial objectives of your final year project and to conduct a literature review in preparation for the practical component of the project.

Content:
The overall structure of your report should be consistent with the guidelines in Section 1.9.1. The structure of the main body should reflect the objectives contained within your project proposal. Typically, you will have one section or chapter in your report for each of the objectives in your proposal which relate to the theoretical/research work of your project. You will also need to include a brief introduction and some conclusions. The example in Figure 2 below illustrates how the main body of the report might be structured for the project discussed in Section 1.5.

**Section 1 - Introduction**
This gives an introduction to the project, the real world problem that you are trying to solve and why you are undertaking it i.e. your rationale. It also points the reader to your project proposal, a copy of which is contained within the appendices.

**Section 2 – Desktop vs. Server-Based OSes**
In this section, you highlight the differences between desktop and server-based OSes. You finish this section with a definition of the term *desktop operating system* which will subsequently form the basis for constructing your critical success factors (CSFs).

**Section 3 – Factors critical to the success of a desktop OS**
Here you identify the factors critical to the success of a desktop OS. These will be used to construct the first set of experiments.

**Section 4 – Usability Testing**
Here you summarise the principles of usability testing which will be used to construct the second set of experiments.

**Section 5 – An Outline of the Experiments**
Here you briefly describe the various experiments that you plan to conduct during the CN3061 module thereby demonstrating that your project's practical work is feasible.

**Section 6 – Conclusions**
A short section whch summaries the key points identified during your research and the conclusions drawn.

The Main Body of the Report for the Example in Section 1.5 Fig. 2

The number of sections or chapters in your report do not necessarily have to match the number of research-based objectives in your project proposal. In the case of the example in Figure 2, you might decide that the material that you need to present under Section 2 is fairly straightforward and hence Sections 2 and 3 could be combined. Such a combination is perfectly acceptable provided that the overall structure of the report and the sequence of sections still makes sense in the context of your project proposal.

The appendices of your report should include the finalised version of your project proposal (in the form specified in Appendix A), a project plan (in the form of a Gantt chart) which identifies the tasks that you will undertake during the CN3061 module and copies of the Record of Supervision forms completed so far.

You should submit one non-returnable, printed bound copy of your report and one electronic copy, securely attached to the printed copy.

Assessment Criteria:
Your project proposal/literature review will be marked against the following criteria:

- Project proposal (5 marks)
  - Have you included an up-to-date proposal?
  - Is it in the correct form?
  - Is your project title clear and concise?
  - Do you objectives enable you to achieve your aims?
  - Is your rationale convincing?
  - Have you identified appropriate resources for your practical work in CN3061?
- Project plan (5 marks)
  - Is your plan in an appropriate format i.e. a Gantt chart?
  - Does it identify clearly the tasks that you need to undertake during the CN3061 module?
  - Are the tasks in your plan consistent with your stated project objectives?

    - Is the plan consistent with your needs as identified in your personal development plan?
    - Have you submitted copies of your Record of Supervision forms, duly completed?
- Literature review (25 marks)
    - Does your review fulfil the initial objectives of your project?
    - Have you used a wide range of sources (and not just relied on web pages)?
    - Are your sources current or too dated?
    - Does your review summarise clearly what you have learnt from the sources that you have used?
    - Is your review both analytical and critical of the sources that you have used?
    - Have you shown clearly that your practical work is feasible?
    - Have you identified the real world problem that your project will solve?
    - Have you used the Harvard system of referencing?
- Methodology (5 marks)
    - Have you identified the research method(s) that you have used and will use for any subsequent research undertaken during your project?
    - Is your choice of methods appropriate in the circumstances?
- Ethical issues (5 marks)
    - Have you identified the ethical issues relating to your project?
    - Have you explained how these issues will be addressed (if necessary)?
- Overall presentation (5 marks)
    - Is your work professionally presented?
    - Is your work well structured?
    - Have you used diagrams etc. where appropriate?

## 3. Module CN3061 Project

# Project CN3061

### 3.1 Module Summary

| MODULE TITLE | CN3061 PROJECT |
|---|---|
| Module Leader | Mike Kretsis: Room EB.G.34 Ext 2144 |
| Objectives | Upon completion of this module you will be able to:<br>• demonstrate a sound knowledge and understanding of the subject area to which your project pertains.<br>• manage your time to organise a sizeable piece of independent academic work.<br>• follow a professional approach to developing and documenting a non-trivial computing task. |
| Assessment | A professional document of 4,000 words (exclusive of appendices) 100% |
| Schedule | Supervision 3 hours<br>Practical work including analysis, design and implementation 137 hours<br>Evaluation: 20 hours<br>Writing up and document Preparation 40 hours<br>Total hours: 200 hours |
| Recommended Texts | The Essence of Computing Projects - A Student's Guide, C. W. Dawson, Pearson Education, 2000 |

## 3.2 Module Introduction

This module constitutes the second part of the two-part final year undergraduate computing project and is intended as a vehicle for the delivery of the practical components of the project. The practical work builds upon the theoretical foundations laid down by the module CN3041. The sections below should be read in conjunction with Sections 1 and 2 of this document.

## 3.3 Aims

- To enable students to apply academic and technical skills and techniques acquired throughout their undergraduate studies.
- To provide students with the opportunity to pursue individual study in depth in a subject relevant to the students' chosen programme.

## 3.4 Teaching and Learning Methods

This module is a student driven learning experience supported by the project supervisor with whom you worked during the CN3041 module. Apart from the first two weeks of the module (see the schedule below), there are no lectures or tutorials. The vast majority of your time will therefore be spent in private study. You will start this module with a project proposal which was finalised with your supervisor during the CN3041 module. The proposal will contain a significant practical task which builds upon the results of the research which you carried out during CN3041.

## 3.5 Module Schedule

| Teaching Week | Activity |
|---|---|
| 1 | Introductory lecture (Part One) |
| 1 - 12 | Meetings with supervisors |
| 2 | Introductory lecture (Part Two) |
| 6 | Interim Assessment |
| 10 | Lastest point at which draft final report should be submitted to supervisor |
| 11 | Draft final report returned to student |
| 12 | Submission of final report |

## 3.6 Assessment

The assessment of this module consists of two components. To pass this module, you must be assessed as satisfactory in the first component and achieve a minimum mark of 40% in the second component.

Details of the components of assessment are as follows (weightings in brackets):

### 3.6.1 The Interim Assessment (0%)

Date:
At the end of the sixth week of teaching of the semester.

Purpose:
The interim assessment does NOT contribute to your final module mark. Hence, it has a weighting of 0%. Its sole purpose is to determine whether your attendance and participation levels have been satisfactory, both of which are requirements for the successful completion of this module.

Content:
It is the responsibility of your supervisor, in consultation with the module leader, to assess your attendance and participation. You do not need to do anything specifically for the interim assessment other than ensure that you do attend and participate in project supervision and that you have made steady progress during the first six weeks of the semester.

Assessment Criteria:
There are three possible outcomes of the interim assessment:

- Your levels of attendance and participation have been satisfactory and you may therefore continue on the module.
- Your levels of attendance and participation have been unsatisfactory and you may not therefore continue on the module. You will be withdrawn from the module.
- Your levels of attendance and participation are a cause for concern. You will be permitted to continue on the module but your attendance and participation levels will be reviewed. If, at a later stage, there has been no improvement, you will be withdrawn from the module.

Please note that if you are withdrawn from the module, your mark will be capped when, and if, you subsequently re-register.

### 3.6.2 The final report (100%)

Date of submission:
14.00 on the Thursday of the 12th week of teaching of the semester. The actual date will be confirmed at the start of the semester in which you register for the CN3061 module.

Length of report: 4,000 words (exclusive of appendices)

Purpose:
To enable you to i) document the practical component of your project, ii) evaluate your project as a whole and iii) draw conclusions from your experience which relate back to your original project aims.

Content:
The final mark for this module is derived solely from the assessment of your report. So, if it is not in your report, then it will not be assessed!

The overall structure of your report should be consistent with the guidelines in Section 1.9.1. The structure of the main body should reflect the objectives contained within your project proposal. Typically, you will have one section or chapter in your report for each of the objectives in your proposal which relate to the practical work of your project. You will also need to include a brief introductory section and your conclusions (if they are not explicitly identified as one of your objectives). The example in Figure 3 below illustrates how the main body of the report might be structured for the project discussed in Section 1.5.

**Section 1 - Introduction**
This gives an introduction to the practical part of the project and indicates why you are undertaking it i.e. how the practical work relates to the original problem / project aims. It also points the reader to the key findings from your research / literature review in the CN3041 module (i.e. your definition of the term *desktop OS* and the CSFs which will be used for your evaluations) contained within the appendices.

**Section 2 – The Experiments**
In this section, you describe the experiments which you conducted in order to perform your evaluations.

**Section 3 – The Results of the Experiments**
Here you write up the outcome of your experiments and your evaluation thereof.

**Section 4 – Conclusions**
Here you make some statement about the viability of Linux as a desktop operating system with some justification which draws on the evidence that you have presented in earlier sections and, where appropriate, refers back to your research / literature review in CN3041. You also need to evaluate 'product and process' here i.e. the solutions that you have produced and the methods, tools and techniques that you have used to produce them.

The Main Body of the Report for the Example in Section 1.5
Fig. 3

The number of sections or chapters in your report do not necessarily have to match the number of practical-based objectives in your project proposal. In the case of the example in Figure 3, you might decide that the material that you need to present under Section 2 is complex and therefore needs to be broken down into 2 or more separate sections. Such a decomposition is perfectly acceptable provided that the overall structure of the report and the sequence of sections still makes sense in the context of your project proposal.

When you write your report, do not forget that the focus of this module is the practical work which builds upon the research activities and literature review which you carried out in CN3041. The content of your report should also reflect this practical focus. Do not be tempted to duplicate the results of your literature review in this report. There is insufficient room within the word limit and no marks will be awarded for it. (It is unnecessary, in any case, since a copy of your literature review should be included in an appendix to your report.)

You have limited time in which to complete your project and you may not therefore be able to completely cover all of your original objectives. This does not matter provided that your evaluation of 'product and process' identifies the gaps you have left and explains why they are there. You can also gain credit by explaining how your work might be followed up.

In addition to your literature review from the CN3041 module, the appendices should also contain the final version of your project proposal and copies of your Record of Supervision forms for the duration of the CN3061 module.

You should submit two non-returnable, printed bound copies and two electronic copies of your report, one copy securely attached to each of the printed copies. Program listings can be submitted on disk and need not be printed out but it is your responsibility to make clear in your report the contents of any disks submitted.

Please note also that your supervisor may request a demonstration of your work in addition to the submitted report.

Assessment Criteria:
You report will be assessed using the following four categories of assessment (weightings in brackets):

**(i) Project Management (25%)**

Areas of consideration include:
The relationship of the practical work to the literature review undertaken in the CN3041 module;
The logical development of the subject;
The relevance of the practical work to the project aims;
The extent to which the aims and objectives have been achieved.

**(ii) Practical Aspect (50%)**

Areas of consideration include:
The degree of difficulty;
The use of appropriate analysis and design methods/techniques;
The quality of the analysis;
The quality of the design;
The completeness, accuracy and precision of specifications;
The use of appropriate software tools and packages;
The quality of software produced;
The quality of test data;
The documentation of the system/practical to professional standards.

**(iii) Evaluation and conclusions (25%)**

Areas of consideration include:
The critical treatment of methods, tools and techniques used;
The evaluation of competing designs/solutions;

The evaluation of the final product;
The critical evaluation of findings;
The relationship of conclusions to the stated problem;
The significance of conclusions;
The identification of further areas for investigation.

**(iv) Quality of the report (0%)**

Areas of consideration include:
The appearance of the report;
The clarity of the report;
The completeness of the report;
The adequacy of referencing
The binding of the report.

Please note that the above areas of consideration will not always be applicable to every project. However, the four categories will be applied in all cases.

Categories i) – iii) will be assessed as follows:

**Categories**

| | **Project Implementation** | **Practical Aspect** | **Evaluation and Conclusions** |
|---|---|---|---|
| **Excellent** | | | |
| **Very Good** | | | |
| **Good** | | | |
| **Adequate** | | | |
| **Fail** | | | |

Please tick as appropriate

Category iv) will be assessed as follows:

| | **Quality of the Report** |
|---|---|
| **Satisfactory** | |
| **Unsatisfactory** | |

The classification is calculated using the formula in Figure 4 below.

Finally, the actual percentage awarded is calculated within the grade range given.

| | | |
|---|---|---|
| **Third** | i)<br>*and*<br>ii)<br>*and*<br>iii) | **Satisfactory** in Quality of the Report<br><br>Possibly a **fail** in Evaluation and Conclusions<br><br>at least **adequate** in Project Management & Practical Aspect |
| **Lower Second** | i)<br>*and*<br>ii) | **Satisfactory** in Quality of the Report<br><br>*Either*<br>**good** in Practical Aspect and **adequate** in Project Management and Evaluation and Conclusions<br>*or*<br>**good** in Project Management and Evaluation and Conclusions and **adequate** in Practical Aspect. |
| **Upper Second** | i)<br>*and*<br>ii) | **Satisfactory** in Quality of the Report<br><br>*Either*<br>**very good** in Practical Aspect and **good** in Project Management and Evaluation and Conclusions<br>*or*<br>**very good** in Project Management and Evaluation and Conclusions and **good** in Practical Aspect. |
| **First** | i)<br>*and*<br>ii) | **Satisfactory** in Quality of the Report<br><br>*Either*<br>**excellent** in Practical Aspect and **very good** in Project Management and Evaluation and Conclusions<br>*or*<br>**excellent** in Project Management and Evaluation and Conclusions and **very good** in Practical Aspect. |
| **Fail** | i)<br><br>*or*<br>ii) | A **fail** in *either* Project Management *or* Practical Aspect<br><br>**unsatisfactory** in Quality of the Report. |

Classification Algorithm
Fig. 4

## Appendix A - Sample Project Proposals

(a)

**Final Year Undergraduate Computing Project** **Proposal Form**

Programme: BSc Computing

Year: 2008
Semester: A

Student Number: 0123456

Title: Is Linux ready for the Desktop?

Aims: To assess the viability of Linux as a desktop operating system.

Objectives:

1. To identify the key differences between desktop and server-based operating systems and to establish a definition of the term *desktop operating system*.

2. To identify the factors critical to the success of a desktop operating system.

3. To investigate the various techniques used to conduct usability tests.

4. To devise a set of experiments which will enable i) an evaluation of Linux against the criteria in 2., ii) an evaluation of its usability and iii) a comparison of it with other desktop operating systems.

5. To conduct the experiments identified in 4. and to evaluate their results.

6. To draw conclusions about the viability of desktop Linux based on the evaluations in 5.

Rationale:

During the current economic climate, companies need to find ways of trimming their IT budgets. Open source software such as Linux provides one possible means of doing so. The purpose of this project is to produce an objective assessment so that IT managers can assess the feasibility of replacing their existing desktop OSes with Linux.

Facilities required: Ubuntu Linux, Windows XP, Apple OS X
A PC with a removable hard disk
A MacBook

Supervisor requested: Mike Kretsis

(b)

**Final Year Undergraduate Computing Project** **Proposal Form**

Programme: BSc Business Information Systems Year: 2008
Semester: A

Student Number: 0123456

Title: A Stock Management System for Barnet Hair Salons

Aims: To design and implement a web-based stock management system for a chain of local hairdressers.

Objectives:

1. To identify Barnet Hair Salons' core business activities and to determine the need for a web based stock management system.

2. To investigate the most appropriate tools for the development of the web based stock management system for Barnet Hair Salons.

3. To investigate HCI and usability issues which might impact upon the design of a web based stock management system for Barnet Hair Salons.

4. To design and implement a database system for stock management at Barnet Hair Salons.

5. To design and implement a web based front end for the database system in 4.

6. To evaluate the tools, techniques and methods used to design and implement the web based stock management system for Barnet Hair Salons.

Rationale:

Barnet Hair Salons is an expanding business which currently lacks an effective IT system. My proposed system will help the employees manage their business more effectively. The majority of employees at Barnet Hair Salons have very limited IT experience hence the emphasis placed on usability by my project proposal.

Facilities required: Microsoft SQL Server or MySQL
Microsoft IIS or Apache web server
Fireworks and Dreamweaver

Supervisor requested: Fritz Lang

(c)

**Final Year Undergraduate Computing Project** **Proposal Form**

Programme: BSc Computer Networks

Year: 2008
Semester: A

Student Number: 0123456

Title: Assessing the vulnerability of a School's Network Infrastructure

Aims: To assess the vulnerability of a large secondary school's computer network and to recommend measures for improved security.

Objectives:

1. To investigate the existing network infrastructure at the school and to identify the security measures currently in place.

2. To identify a number of tools which could be used to carry out a vulnerability assessment at the school.

3. To conduct a vulnerability assessment of the network at the school.

4. To recommend measures to be implemented for improved security at the school.

5. To evaluate the tools used to assess the vulnerability of the network at the school.

6. To draw conclusions about the value of vulnerability assessments and the ease with which they can be carried out.

Rationale:

I am currently employed by a large secondary school as a network administrator. The security of the school's computer network has been compromised on a number of occasions in the last two years. This project will help me to identify the causes of these security breaches and the measures that could be taken to prevent them from reoccurring. This will be beneficial to both me and my employer.

Facilities required: Nmap port scanner
Snort intrusion detection system
NetStumbler wireless network scanner
Nessus vulnerability scanner

Supervisor requested: Alexis Colby

(d)

**Final Year Undergraduate Computing Project** **Proposal Form**

Programme: BSc Software Engineering Year: 2008
Semester: A

Student Number: 0123456

Title: Objects, Agents, Square Pegs and Round Holes: Are Agents a Silver Bullet for Software Engineers?

Aims: To investigate the functionality offered by software agents in comparison to objects.

Objectives:

1. To define the terms *object* and *agent* in the context of software engineering.

2. To distinguish between *agent oriented* and *object oriented* software engineering.

3. To compare and contrast the functionality offered by agents with that offered by objects.

4. To show how agents can be used as a replacement for objects by i) the specification of and ii) the implementation of a prototype agent system.

5. To evaluate the relative merits of agents and objects.

6. To draw conclusions showing the circumstances in which agents might be useful replacements for objects and when objects might be better suited.

Rationale:

The advantages of object-oriented software are well known and understood. The advantages of agent-oriented software are much less understood. The purpose of my project is to illustrate the benefits of agent-oriented software so that software developers and IT managers can make informed choices about their development environments.

Facilities required: Java
JACK

Supervisor requested: Richard Stallman

## Appendix B – Record of Supervision

**Final Year Undergraduate Computing Project**
**Record of Supervision**

**Student No :** **Supervisor's Name:**
**Date:** **Time:**
**Location:**

**Summary of main points discussed:**

**Actions agreed for student:**

**Actions agreed for supervisor:**

**Date of next supervision:**

**Student's signature:**

**Supervisor's signature:**