KV6003 Individual Computing Project - Project Terms of Reference —

Carl Slatter

5th October 2020

1 Background

For your project dissertation you need to write a *Terms of Reference (ToR)* document, and a project report. This document demonstrates the structure of a proposed Terms of Reference document written in LaTeX.

> This should describe the "context" of the proposed project and answer the question, "Why this project?", both from your own perspective as a student undertaking a final year computing project, and that of any client. It should show what makes this proposal a worthwhile computing final year project. *It must make clear both the application area or area of investigation and the computing aspects of your work.*

LaTeX and its companion BibTeX are a good pair of tools for writing your documentation. They have been in use in computer science and related fields since the 1970s, I have been using them since the mid 1980s, they are still in wide use and the ecosystem is continuously updated.

They are a system of markup languages, like HTML or Markdown; which gives them a steep learning curve initially. However as they are all just text files they can be worked on with any editor, can be logged into github or other revision systems, in effect you can treat the files as '*code*'.

Don't forget to reference background material. BibTeX makes this simple. You can have one or more `.bib` files, these are easy to populate from academic search tools, such as Google-scholar, and the Library's search facilities. A bibliography file looks something like figure 1. In the text use the label in a citation command `\citep[pages 2--4]{k+r}` the toolset puts the right form of citation [Kerngihan and Ritche, 1988, pages 2–4] into the text.

Where you want the bibliography to go use the `\bibliography{c,unix}` command, with a comma separated list of `.bib` files (without the extension).

2 Proposed Work

. The project must exhibit a level of difficulty appropriate to final year honours BSc work, and be of a size that can be attempted in the time available; this section should define the topic and project work in enough detail for the markers to be

```
@book{k+r,
        Author = {Brian Kerngihan and Denis Ritche},
        Edition = {Second},
        Publisher = {Prentice Hall},
        Title = {The C Programming Language},
        Year = 1988
}
```

Figure 1: Sample BibTeX content

sure that it is suitable. The more detail and discussion you produce at this stage, the stronger the foundation for the actual project work.

You should emphasise the computing aspects you expect to be involved in, including those specifically relevant to your programme. Remember that you are undertaking the project as part of a BSc programme in a computing-related discipline, and avoid being side-tracked into areas that are not relevant to your course.

3   Aims and Objectives

There should only be one or two aims

3.1   Aims

To show how LaTeX and tools can be used to write a dissertation

3.2   Objectives

Your objective list is a series of measurable objectives, can you tick each one off as *done*? I usually expect between 8 and 12 objectives

The **enumerate** environment is useful here for generating a numbered list. You can put `\label{}` commands in with a keyword `\label{understand-problem}` and then refer to the label with a `\ref{understand-problem}` command, it puts the number of the objective in the text

```
See objective \ref{understand-problem}
```
See objective 1

1. **Classify the problem domain** this is where you develop an understanding of the nature of the problem/project

2. **Identify Techniques to solve** What Algorithms are you to use, how is a database structured,

3. **Select tools to use** What languages, software, hardware; are you using?

4. **Design the system to be build** Its requirements, the **test plan**, the architecture (Layer model/Model-View-Controller)

5. **Build the system** I'd include testing here, as the result is a *working wywtem*

4 Skills

This is where you can cover the skills you have relevant to the project and the new skills you are going to acquire during the project.

1. Programming in C, see module KFxxx
2. Hardware Design

5 Resources

This is an important section, it lists the hardware and software you are going to need for the project.

5.1 Hardware

For Hardware this is more critical, as we need to identify any hardware we have, or that you are going to buy. We do have an ordering mechanism in the Department, but time and budget are critical constraints here.

5.2 Software

In the case of software, there isn't usually an issue, unless you're needing huge amounts of run-time (we don't have a super-computer handy).

6 Structure and Contents of the Report

Here you set out the likely chapters you will have in your report. Usually each objective lends itself to one or more chapters. You can refer back to the objectives set.

6.1 Report Structure

Introduction Sets out the background and motivation for the project. Summarises the work done, the results, the conclusions, and the recommendations for future work. It is a one chapter summary of the *entire* project.

Defining the problem Objective 1 requires a precise definition of the problem you are solving. Don't forget to reference good source material [Schulzrinne, 2017] and [Talbot, 2013]. See section 2.

Possible Solutions Discuss the possible solutions, compare the alternatives, and select the one to use for the implementation.

6.2 List of Appendices

What Appendices you will include. A copy of the TOR should be the first, followed by the Ethics form and the Risk Assessment.

Others might include design documentation, code listings, tables of results (if too large to include in the main text).

7 Marking Scheme

The marking scheme sets out what criteria we are going to use for the project.

Project Type General Computing or Software Engineering projects

Project Report State which chapters constitute the *Analysis*, the *Synthesis*, and the *Evaluation*. This help me when marking to know when to stop reading one section and put a mark down for it.

Product List the deliverables that make up the *Product*. Code, design, requirements specifications, test plans, etc.

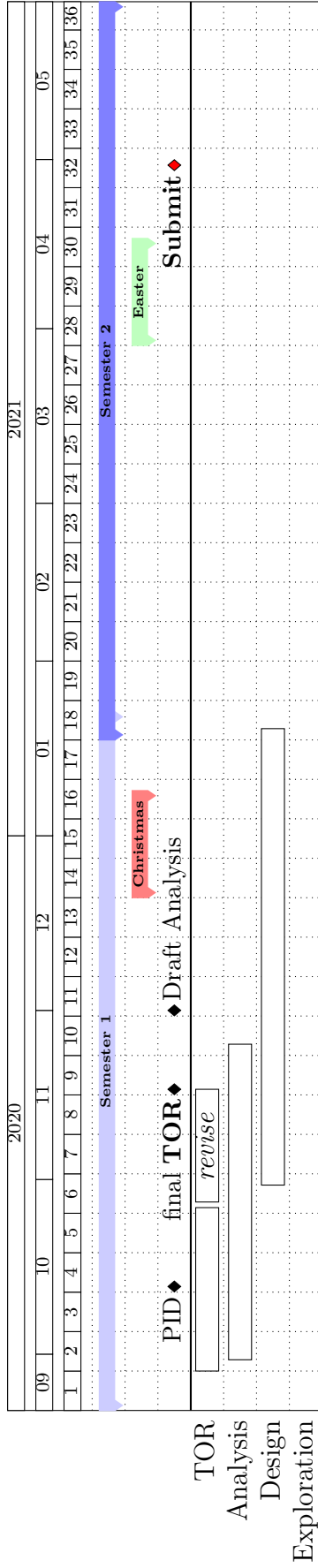For the *Fitness for Purpose* and *Build Quality* list the critera used to asses the product by

Fitness for Purpose

- meet requirements identified
- other appropriate measures

Build Quality

- Requirements specification and analysis
- Design Specification
- Code quality
- Test plan and Results

8 Project Plan

9 Bibliography

Brian Kerngihan and Denis Ritche. *The C Programming Language.* Prentice Hall, second edition, 1988.

Henning Schulzrinne. Writing systems and networking articles, 2017. URL `http://www.cs.columbia.edu/~hgs/etc/writing-style.html`.

Nicola L. C. Talbot. *Using LaTeX to Write a PhD Thesis*, volume 2 of *Dickimaw LaTeX Series*. Dickimaw Books, Norfolk, UK, 2013. ISBN 978-1-909440-02-9. URL `http://www.dickimaw-books.com/latex/thesis/`.

A   Ethics Form

```
\includepdf[pages=1-3]{ethics.pdf}
```

northumbria
UNIVERSITY NEWCASTLE

Department of Computer Science and Digital Technologies

UNDERGRADUATE COMPUTING PROJECTS: ETHICS REGISTRATION AND APPROVAL FORM

Section One: Registration *[To be completed by student]*

Title of research project/dissertation	
Researcher's name	
Programme of study	
Academic Year	
Module code	
Supervisor's name	
Second marker's name	
Start Date of Project	

Brief outline of research topic:

Specimen

Short description of proposed research methods including identification of participants:

Ethical considerations in the research project	YES	NO
1. Does your research involve an external organisation or partner?	☐	☐
2. Does your research involve human participants?	☐	☐
3. If yes to Q.2, will you inform the participants about the research?	☐	☐
4. Will you obtain their consent using the standard consent form?	☐	☐
5. Is any deception involved?	☐	☐
6. Do any participants constitute a 'vulnerable group'? (refer to definition of Vulnerable People)	☐	☐
7. Will the research involve the following information?		
Commercially sensitive	☐	☐
Personally sensitive	☐	☐
Politically sensitive	☐	☐
Legally sensitive	☐	☐
8. Is the research likely to have any significant environmental impacts?	☐	☐
9. Are there likely to be any risks for the participants in your research?	☐	☐
10. Are there likely to be any risks for you in conducting the research?	☐	☐
11. If yes [to 5, 6, 7, 8, 9 or 10 above] have you identified steps to address the issues and mitigate any risks to participants, yourself or the environment?	☐	☐

Statement to explain how any issues identified above will be addressed and what steps will be taken to mitigate such risks or adverse impacts

Ethical category of research project

Based on the above Ethical Considerations and with reference to the University's Ethical Scrutiny Risk Assessment tool identify the Ethical category of your research project (refer to http://www.northumbria.ac.uk/static/5007/respdf/riskassesmenttool for further guidance):

[Please tick as appropriate]

Red	☐	vulnerable participants; human tissue; sensitive data; risks to participants & researchers etc.
Amber	☐	human participants requiring informed consent; commercially sensitive information etc.
Green	☐	no participants involved; secondary data only; no sensitive data

---

I have read the University and the Faculty Ethics Policy and Procedures and confirm that the answers I have given above are correct. Where issues arise under items 5, 6, 7, 8, 9 or 10 [above] I have described in writing how I intend to approach these issues in the research.

Researcher's signature　　　　　　　　　...

Date　　　　　　　　　　　　　　　...

Section 1 Ethics Registration to be submitted to Principal Supervisor or Module Tutor and allocated to a reviewer as follows:

Green risk - may be approved by Supervisor
Amber risk - to be submitted for approval by one independent reviewer (second marker)
Red risk - to be submitted for approval by two independent members of Faculty Research Ethics Committee

B   Risk Assessment Form

```
\includepdf[pages=1-3]{risk-assesment.pdf}
```