NTNU
Norwegian University of
Science and Technology

Example Game Programming Thesis. With a long title to test the wrapping of the box

Author(s)

Simon McCallum
Ivar Farup

Bachelor in Game Programmering
20 ECTS
Department of Computer Science
Norwegian University of Science and Technology,

18.05.2016

Supervisor(s) Rune Hjelsvold

Sammendrag av Bacheloroppgaven

Tittel:	**Norwegian title.**
Dato:	18.05.2016
Deltakere:	Simon McCallum Ivar Farup
Veiledere:	Rune Hjelsvold
Oppdragsgiver:	Norwegian University of Science and Technology
Kontaktperson:	Erik Helmås, erik.helmas@ntnu.no, 61135000
Nøkkelord:	Norway, Norsk
Antall sider:	16
Antall vedlegg:	
Tilgjengelighet:	Åpen

Sammendrag: Dette bør være pånorsk, jeg tenkte jeg skulle legge til litt mer tekst åsørge for at det gikk over flere linjer. Jeg måsjekke påsiden nummer Feild som det kanskje burde være kun de sidene uten vedlegg. Foreløpig returnerer den siste siden av hele dokumentet. Hvis jeg ikke kan finne ut av det, vil jeg gi to innganger, gmtnumberpages og gmtappnumber. Det burde gjøre jobben. (done in google translate so it is bad norwegian)

Summary of Graduate Project

Title:	**Example Game Programming Thesis. With a long title to test the wrapping of the box**
Date:	18.05.2016
Authors:	Simon McCallum Ivar Farup
Supervisor:	Rune Hjelsvold
Employer:	Norwegian University of Science and Technology
Contact Person:	Erik Helmås, erik.helmas@ntnu.no, 61135000
Keywords:	Thesis, Latex, Template, IMT
Pages:	16
Attachments:	
Availability:	Open

Abstract: This is the short description of a bachelor thesis. It should contain a short introduction to the area of the thesis and what the thesis contributes to that area.

Preface

We would like to thank Erik Hjelmås for motivating the development of a LaTeX template for GUC's master's theses. This has expanded to include the Bachelor programmes and now has been altered to be useful for NTNU i Gjøvik

Contents

List of Figures

List of Tables

1 Introduction

With a new beginning there is a new template.

This thesis template is being developed during the first semester of the new NTNU. The purpose is to help unify student production of bachelor theses. Hopefully it will be used by many of the student in the now largest University in Norway.

This template has three roles. One as an example of using LaTeX, the second as an example structure for a development focused bachelor thesis, and finally as information about how to use LaTeX.

1.1 Using LaTeX

The best place to find information and help is TexExchange `www.wikibooks.org` [1].

1.1.1 Writing

Part of the justification for using LaTeXis that it encourages you to think about the word independent of the layout. The layout of the thesis should be done by experts. That is what LaTeXgive you, and expert's advice on how to lay out a thesis.

When writing get the text into the document and then worry about cleaning it up after. Sitting paralised without writing anything does not help the document.

If it helps, summarise the paragraphs you plan to write in a few words and enter them as a list of ideas or objectives for the paragraph. This allows you to see the structure of the thesis before you have written it all down.

2 Requirements

The title of the thesis should be set using the `\thesistitle` command, and the date of the thesis should be set using the `\thesisdate` command. This makes the title and date appear in the running header, like in this document.

2.1 Page Layout

The geometry of the page has been set using the `\geometry` command.

2.2 Fonts

Due to limited LaTeX support for the Georgia font, Charter has been chosen instead. For mathematical formula, the Euler fonts are used, since they blend more nicely with the Charter than the standard LaTeX fonts:

$$f(x) = \int_0^x g(\tau)\,d\tau$$

For inline math you can use `\(` and `\)` for example $f(x) = \frac{x^2}{1+x^2}$. This also allows you to use `/` and `\`. You need to include the `{}` when you want the special character to have other letters immediately after it.

2.3 Sectioning Commands

The standard LaTeX sectioning commands are used for both numbered and unnumbered sections. The top level is given by the `\chapter` command. This starts a new right page. The two lower levels are obtained using the `\section` and `\subsection` commands. The standard LaTeX `\subsubsection` and `\paragraph` commands have been disabled since their use is not encouraged by the thesis guidelines. When you use these they will not be given numbers. They still appear in the document with highlighting but not in the table of contents.

2.3.1 The subsection

This is an example of a subsection.

The subsubsection

This is an example of a subsubsection.

The paragraph

This is an example of a paragraph with a heading.

2.4 Floats (Figures and Tables)

Figures are placed in the `figure` environment. An example is shown in Figure 1. You can make nicer graphs using gnuplot, for example see Figure 4.

Figure 1: An example figure. If the caption is shorter than one line, it is centered. If it goes over more than one line, it is left and right justified. Furthermore, it is suggested that an alternative short caption is given in order to produce a good list of figures.

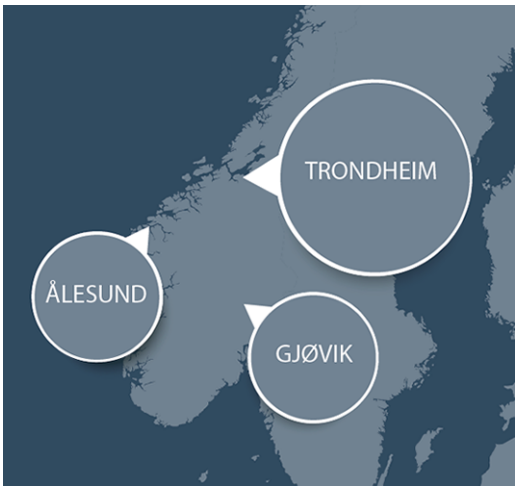

Figure 2: The map shows the three main campuses of NTNU.

Tables are placed in the `table` environment. An example is given in Table 1. Figures and tables float freely around in the document in accordance with standard LaTeX behavior.

The captions are placed *below* both for the figures and the tables. The caption is set in 9pt. If the caption is shorter than one line, it is centered.

2.5 Quotes

Quotes are inserted using the standard LaTeX `quote` environment. The environment has been changed so that a 9pt font is used:

> "And I looked, and, behold, a whirlwind came out of the north, a great cloud, and a fire infolding itself, and a brightness was about it, and out of the midst thereof as the colour of amber, out of the midst of the fire. Also out of the midst thereof came the likeness of four living creatures."

Figure 3: A standard stylus

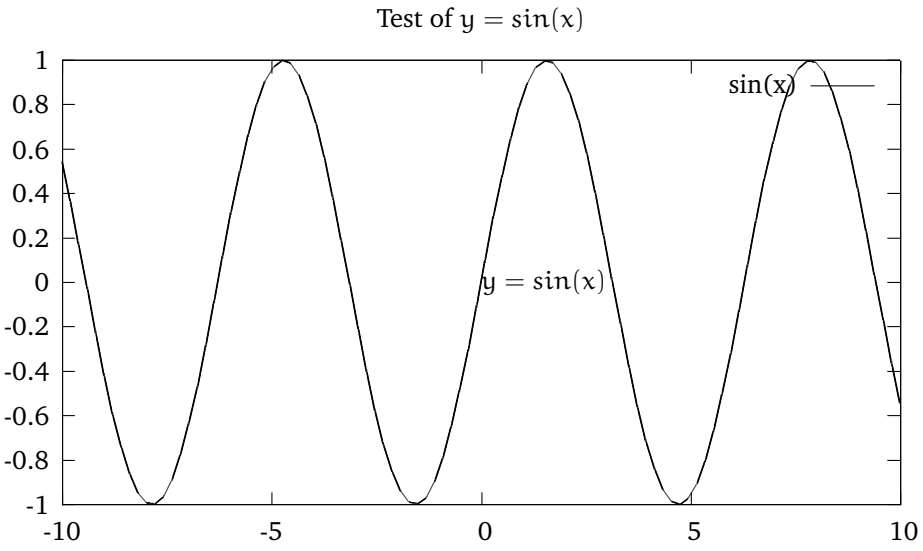

Figure 4: This is a gnuplot graph of $y = \sin(x)$. Notice how the LaTeX fonts are preserved in the graph. This is done using gnuplot and the simple text file included in the sample template.

Age	IQ	
10	100	
20	100	
30	150	
40	100	
50	100	

Table 1: An example table.

age	IQ
10	100
20	100
30	150
40	100
50	100

Figure 5: An example table using simplecsv.

2.6 Lists

Point lists and enumerated lists are made by using the standard `itemize` and `enumerate` environments, respectively. The spacing is going to be changed in accordance with the specification. For `itemize`, the results look like this:

- First item.
- Second item. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate.
- Third item also has subitems:
  - First subitem.
  - Second subitem.
  - Third subitem.

and for `enumerate` like this:

1. First item.
2. Second item. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate.
3. Third item also has subitems:
   1. First subitem.
   2. Second subitem.
   3. Third subitem.
      a. First subitem.
      b. Second subitem.
      c. Third subitem.

You may also want to use descriptive lists

First the first item.

Second the second item. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate. Here I will put some long text, just to illustrate.

What now the third item also has subitems:

1. First subitem.
2. Second subitem.

3. Third subitem.

2.7 Bibliographic References

You should cite articles [2], books [3], anthologies [4] and web publications [5] like this.

A particular bibliography style file for NTNU named `ntnubachelorthesis.bst` has been developed based upon the standard BibTEX `unsrt` style.

3 Technical Design

This chapter in the thesis would have the technical design of the project. It would contain the design details for the architecture of the solution, program flow, and the details of the components.

For this template we discuss the technology used to make a LaTeX thesis.

There are a large number of packages the make using LaTeX easier. The `ntnubachelorthesis` class is built upon the standard LaTeX `report` class. All commands from the `report` class can be used.

3.1 Packages Used by ntnuthesis

testing In addition to the `report` document class, `ntnuthesis` makes direct use of the following packages that must hence be present:

geometry: used for setting the sizes of the margins and headers.

fontenc: used with option `T1` for forcing the Cork font encoding (necessary for the Charter font).

charter: load Charter as the default font.

euler: load the Euler math fonts.

babel: to load language specific strings. Reasonable options include `british`, `american`, `norsk`, `nynorsk` and `samin`.

3.2 Other Relevant Packages

The author of a thesis might want to use a bunch of different packages to those described in Section 3.1 in order to have all features needed for their document. In particular, it is advised to use the following:

inputenc: to allow LaTeX to use more than 7-bit ASCII for its input. Most often, the option `latin1` will do.

graphicx: to include graphics.

hyperref: this is a very nice package that makes cross links in pdf documents. Use with option `dvips` or `pdftex` in accordance with the driver that you use. Unfortunately, hyperref is not completely bugfree...

We can use itemization lists

- This is a test of itemize
- This is the second item
  - even deeper in the lists

    - this is a second sub item
        - Is there no end to item depth
        - This is definately the deepest
- ending the first list

4 Development Process

This chapter would contain the process by which you worked on your thesis. This gives an indication of the way in which the working environment effected the final product or result.

For this example of usage we can talk about some of the tools we use and how to get them to integrate with LaTeX.

4.1 Figures and Diagrams

Diagrams, Figures, and graphs are very important as part of the visual presentation of your thesis. There are many ways to generate graphical assets for your thesis. The ones presented below are just some of the ways you could use. There are many others, and unfortunately there is no best way of doing these this.

4.1.1 Graphs

The simplest way to generate graphs is also perhaps the ugliest. That is to use Microsoft Excel and save the graph as a bitmap and then include it.

Microsoft Excel

include example of using MS EXCEL

Gnuplot

include example with code for gnuplot

4.1.2 Diagrams

Drawing UML diagrams and program flow is also often used by software development theses.

MetaUML

work a nice example of UML for those who want to have the UML diagrams

Inkscape

A nice way to use Inkscape is to use the output to PDF and then the Latex option within the output. This allows you to have all the nice text of Latex in the actual diagram. worked example

5 Implementation

This has the description of how you actually went about implementing the project. This should be focused on the interesting challenges and how those related to the project.

add more here. if you are reading this you can see that I am using todo as a way to indicate where the updates should be

6 Deployment

This is for those you will actually be getting code out beyond the end of the thesis. This describes how the code is deployed on the test servers and into the testing environment. Having the code running on your own machines is nice, but you need a process so that you can share your code with other people and have it actually run without them having to have a copy of a compiler and recompile your code.

lots to talk about for deployment and code revision

7 Testing and User Feedback

If you are developing software you must do some testing with users. This chapter describes those tests and what you learnt from the tests. This should include the selections of questions that you were intending to answer when you started the test.

talk about the different types of testing. Bugs vs Features etc.

8 Discussion

The results you have collected and the process you when through to develop the project have been presented earlier. This Chapter is used to talk about your interpretations of results or the process. It might be a discussion of the language you used. A tool that you started to use but then stopped using for some reason. It could give insight into the evolution of your process.

give more examples of discussions

9 Conclusion

This is where you provide an overview of the thesis now that it is finished. What are the critical things that can be learnt from the thesis for the reader.

This is additional text.

9.1 Future Work

Where would the project go from here.

again more examples and discussion about what it means to plan

there are many more things to say

Bibliography

[1] 2016. Tex exchange. http://tex.stackexchange.com/. (Visited Jan. 2016).

[2] Askvall, S. 1985. Computer supported reading vs. reading text on paper: A comparison of two reading situasions. *International Journal on Man-Machine Studies*, 4(22), 425–439.

[3] Card, S. K., Moran, T. P., & Newell, A. 1983. *The psychology of human-computer interaction*. Erlbaum.

[4] Lancaster, F. W. & Warner, A. 1985. Electronic publication and its impact on the presentation of information. In *The technology of text: Principles for structuring, designing, and displaying text*, Jonassen, D. H., ed, 292–309. Educational Technology Publications.

[5] Meldon, W. 1997. Reading from the web. http://www.mit.edu/compsci/humanfactors/report9734.html. (Visited Nov. 2000).

A Meeting Logs

You should include in the Appendix a log of your meeting.

A.1 Temporal record of meetings

11.01.2016 - Bachelor Information Meeting

Discussion of the process and setup of the thesis. Deadlines for submission of documentation. Introduction to the process and the sessions to help with writing the thesis....

12.01.2016

Met with supervisor to discuss the project. Actions:

1. decide on a writing tool
2. install development environment
3. draft agreements by next week.