LaTeX Seminar Report Title

A project report submitted in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE
IN
COMPUTER SCIENCE

Submitted by

Author Name (PS-XxX-xXx-XXXX)

Supervised by

Your Supervisor's Name
Supervisor Designation

DEPARTMENT OF COMPUTER SCIENCE
GAUHATI UNIVERSITY, ASSAM
March 13, 2024

DEPARTMENT OF COMPUTER SCIENCE

GAUHATI UNIVERSITY

GUWAHATI - 781014
ASSAM

CERTIFICATE

This is to certify that the dissertation entitled **LaTeX Seminar Report Title** submitted by **Author Name**, for partial fulfilment for the requirement of award of the degree of Master of Science in **COMPUTER SCIENCE**, Gauhati University is a work carried out by him/her under my supervision and guidance of **Your Supervisor's Name**.

Date: March 13, 2024
Place: Gauhati University

Anjana Kakoti Mahanta
Head of the Department
Department of Computer Science

DEPARTMENT OF COMPUTER SCIENCE

GAUHATI UNIVERSITY

GUWAHATI - 781014
ASSAM

CERTIFICATE

The project report entitled **LaTeX Seminar Report Title** submitted by **Author Name**, for partial fulfilment for the requirement of award of the degree of Master of Science in **COMPUTER SCIENCE**, Gauhati University has been examined.

Internal Examiner
Date:
Place: Gauhati University

External Examiner
Date:
Place: Gauhati University

DEPARTMENT OF COMPUTER SCIENCE
GAUHATI UNIVERSITY
GUWAHATI - 781014
ASSAM

CERTIFICATE

This is to certify that the project report entitled **LaTeX Seminar Report Title** submitted by **Author Name**, for partial fulfilment for the requirement of award of the degree of Master of Science in **COMPUTER SCIENCE**, Gauhati University is a work carried out by him under my supervision and guidance.

To the best of my knowledge, the work has not been submitted to any other institute for the award of any other degree or diploma.

Date: March 13, 2024
Place: Gauhati University

Your Supervisor's Name
Supervisor
Department of Computer Science

DECLARATION

I hereby declare that the seminar report entitled **LaTeX Seminar Report Title** has been completed by me and submitted in partial fulfilment for the requirement of award of the degree of **Master of Science in COMPUTER SCIENCE**, Gauhati University. I also declare that any or all contents incorporated in the report has not been submitted in any form for the award of any other degree of any other institute or university.

Date: March 13, 2024
Place: Gauhati University

Author Name
Roll No.: PS-XxX-xXx-XXXX
Programme: Masters in COMPUTER SCIENCE
Semester: Fourth Semester

ACKNOWLEDGEMENT

I acknowledge and express my gratitude to my project guide, **Your Supervisor's Name**, Supervisor Designation, Department of Computer Science, Gauhati University, for her unwavering support, encouragement and valuable advice throughout this project. Her expertise and guidance helped shape the direction of my work.

I also extend my sincere thanks to **Prof. Anjana Kakoti Mahanta**, Department of Computer Science, Gauhati University, for her support in this project. Her insights and inputs have been invaluable in enhancing the quality of my work.

I would like to express my gratitude to all the faculty members of the Computer Science Department, Gauhati University, for their support and encouragement throughout this project.

Date: March 13, 2024 Author Name

Abstract

LaTeX Seminar Report Title

This project aims to design and develop a custom, high-level language compiler. The compiler will be implemented incrementally, allowing it to accept a significant language subset and generate assembly code for a selected target architecture. The motivation behind this project stems from the need for a compiler that adheres to fundamental software engineering principles while offering concise and expressive concepts.

The development process will follow a step-by-step approach, from designing the language's grammar to adding more complex features. Each stage will yield a fully working compiler for a specific subset of the source language. By adopting this incremental methodology, the project seeks to provide a deep understanding of the different components of a compiler, including lexical analysis, parsing, semantic analysis, and code generation.

The resulting compiler will provide a practical resource for students, researchers, and developers interested in compiler design and contribute to advancing the field. It will demonstrate the application of various concepts and techniques in language implementation, software optimization, and system-level programming.

Additionally, the project acknowledges the importance of considering the target architecture during compilation. The generated assembly code will be tailored to the specific requirements and capabilities of the selected architecture, ensuring optimal performance and compatibility.

This project strives to deliver a well-designed and efficient compiler that bridges the gap between theoretical concepts and practical implementation. The project aims to contribute to language implementation and empower developers to build robust and efficient software systems by combining principles of software engineering, compiler design, and target architecture optimization.

Keywords: Compiler, Language Design, Programming Languages, Raspberry Pi

Contents

List of Figures

List of Tables

Listings

Chapter 1

Introduction

Chapter 2

How to use the template

This is a practical guide into how to use this template, by explaining the role of the different folders and files.

If some practices seem like overkill for a 20 page proposal (splitting the content across different files), that is because it probably is, but we built it this way because this thesis template is structured identically. That means that you will be able to incorporate this document into your thesis seamlessly.

2.1 Folders

The main folder contains three folders detailed here:

- **Assets.** This folder should contain all the images that you will use in your thesis. It can contain subfolders, for example one for each chapter. To include an image from the main text, use something like `\includegraphics{subfolder/image.jpg}` without worrying about the `Images` path.
- **MainText.** This folder contains a series of LaTeX files that form the main text: introduction, chapters, conclusion, appendices and published articles. The introduction and conclusion as they are now are not numbered, which creates a few difficulties with the headers of the thesis. Those are solved by including the commands `\unnumberedchapter{}` and `\numberedchapter` before including the files in `xxx_Thesis.tex`. If you want the introduction and conclusion to be numbered, re-write and treat them as regular chapters.
- **Preamble.** This folder contains a series of LaTeX files with the pages that will appear before the main text. Please write (or copy and paste) your own text in those files and delete the dummy text when appropriate. The files are:
  - `abbreviations.tex` — List of abbreviations. If the list goes over one page, create another table.
  - `abstract.tex` — Abstract. Follow directions in the file.
  - `*.bib` — BibTeX files containing your bibliography.

2.2 `Dissertation.tex`

This is the main files, the only one that need to be compiled to build the document. Compile once with LaTeX, once with BibTeX and finally twice with LaTeX to get all the references right.

Let's go through each section and comment them briefly. [1] The last section will emphasize the differences between the two files.[2]

2.2.1 TITLE PAGE

Creates the title page.

2.2.2 PREAMBLE PAGES

Structures the style (header) for the preamble pages and builds them. Do not modify.

2.2.3 LIST OF CONTENTS/FIGURES/TABLES

Creates the list of contents. Do not modify.

2.2.4 THESIS MAIN TEXT

Structures the style for the main text chapters and builds them.

2.2.5 BIBLIOGRAPHY

Builds the bibliography. The style of the bibliography can be defined in `Preamble/mydefinitions.tex`.

2.2.6 APPENDICES

Structures the style for the appendices and builds them. The appendices are numbered with letters but are structured like regular chapters.

Chapter 3

Figures, tables and images

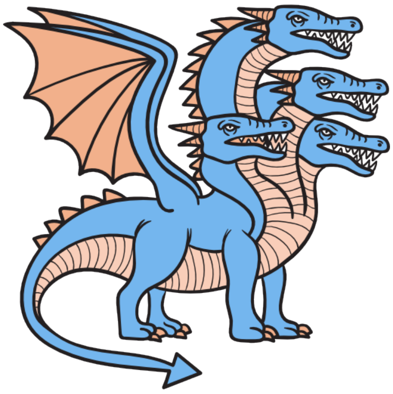
3.1 Figures

Refer to figure like this: Figure 3.1 or this (Fig. 3.1). If you want to include a list of figure, you can use a short version of the caption as shown in Figure 3.1.

3.2 Tables

Refer to tables this this: Table 3.1.

Figure 3.1: Short caption (if wanted). Full caption with all the details here.



This secret image won't be numbered and won't appear in the List of Figures because of the *

Table 3.1: Short heading for the List of Tables.

Parameter	Value
Δ	0, 150
α	85
ϵ	6
κ	6.8
γ	0.2

Full caption with all the details here.

Parameter	Value
Δ	0, 1500
α	850
ϵ	60
κ	68
γ	2

This secret table won't be numbered and won't appear in the List of Figures because of the *

Chapter 4

Codes, timeline

4.1 Codes

```
x := −2 + y
```

Listing 4.1: My Captions

```
int main() {
    //compound statement #1
    int a = 1;
    {
        //compound statement #2
        a = 2;
            if (a) {
                //compound statement #3
                a = 4;
        }
    }
}
```

Listing 4.2: caption text

For intext code insertation we can do it like this.

```
// Hello.java
import javax.swing.JApplet;
import java.awt.Graphics;

public class Hello extends JApplet {
    public void paintComponent(Graphics g) {
        g.drawString("Hello, world!", 65, 95);
    }
}
```

4.2 Timeline

10 Sept 2022	Start .
16 Sept 2022	Finish Primary Research .
19 Sept 2022	Explore Problem Statement .
20 Sept 2022	Criteria Selection .
23 Sept 2022	Proposed Methodology .
30 Sept 2022	Started Working Theoritical solution .
30 Oct 2022	Started Working Practical solution .
05 Nov 2022	Submited progress report .
07 Nov 2022	Second Seminar .
25 Nov 2022	Finalize Literature review, Methodology and the Language Designing .
20 Dec 2022	Submit Progress Report to Guide .

Bibliography

[1] A. W. Appel. *Modern Compiler Implementation in ML*. Cambridge University Press, 1988.

[2] J. Lee. Ansi c grammar, April 30, 1985. URL `https://www.lysator.liu.se/c/ANSI-C-grammar-l.html`.

Appendix A

About Appendices

Appendices are optional and should only be used if necessary.

Appendix B

Script

The following file is used, hence can be imported directly from the file.

```
# random_script.py

import math
# initialize x and n with values
x = 4
n = 3
# approach 1
result_val = x ** n
print("%d␣raised␣to␣the␣power␣%d␣is␣%d" % (x,n,result_val))
# approach 2
result_val = pow(x,n)
print("%d␣raised␣to␣the␣power␣%d␣is␣%d" % (x,n,result_val))
# approach 3
result_val = math.pow(x,n)
print("%d␣raised␣to␣the␣power␣%d␣is␣%5.2f" % (x,n,result_val))
```