REPUBLIC OF TURKEY

GEBZE TECHNICAL UNIVERSITY

FACULTY OF ENGINEERING

A LaTeX TEMPLATE FOR GEBZE TECHNICAL UNIVERSITY

USAMA DERBASHI

POST - BACHELOR'S THESIS

COMPUTER ENGINEERING

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SUPERVISOR
ASST. PROF. ALP ARSLAN BAYRAKÇI

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GEBZE TECHNICAL UNIVERSITY	POST - BACHELOR'S THESIS JURY APPROVAL FORM

The thesis of Usama Derbashi, which was defended on 08/07/2022 in front of the jury formed by the decision of the board of Gebze Technical University, Faculty of Engineering number 314/159 dated 14/06/2021, was accepted as Post - Bachelor's Thesis in the field of computer engineering.

JURY

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APPROVAL

The decision of the board of Gebze Technical University, Faculty of Engineering number 314/159 dated 14/06/2021.

Signature/Stamp

ABSTRACT

This a student-made template following the thesis template guidelines of Gebze Technical University[1]. I decided to create it out of frustration that a *technical, research-focused* university does not have a proper LaTeX template, where most publications encourage on using LaTeX to make it easier to comply, and instead opt into an old outdated MSWord template.

The template is a recreation of the original MSWord template, and not in any way a new thing. The reason behind that is that despite it being easier to create a template from the ground up, it is harder to convince the administration of moving to a new territory, not to mention that I am pro-choice, (I want people to choose LaTeX over MSWord, not for LaTeX to be imposed upon them like MSWord was imposed upon us,) and I am not ready to create an MSWord template.

Keywords: LaTeX, Template, Thesis

ÖZET

Bu, Gebze Teknik Üniversitesi'nin tez yazım kılavuzunun [1] takip eden öğrenci yapımı bir şablon. *Teknik, araştırma odaklı* bir üniversitenin uygun bir LaTeX şablonuna sahip olmadığı, çoğu yayının uyumluluğu kolaylaştırmak için LaTeX'i kullanmaya teşvik ederken, ve bunun yerine eski bir MSWord şablonunu tercih ettiği için hayal kırıklığı yaşayıp bu şablonu yaratmaya karar verdim.

Şablon, orijinal MSWord şablonuyla uyuma halindedir ve hiçbir şekilde yeni bir şey değildir. Bunun nedeni, sıfırdan bir şablon oluşturmanın daha kolay olmasına rağmen, yönetimi yeni bir şablona taşınmaya ikna etmenin daha zor olması, ayrıca ben seçim yanlısıyım, (İnsanların LaTeX'i seçmesini istiyorum, MSWord'ün bize empoze edildiği gibi LaTeX'in onlara empoze edilmesin). Ayrıca bir MSWord şablonu oluşturmaya hazır değilim.

Anahtar Kelimeler: LaTeX, Şablon, Tez

ACKNOWLEDGEMENT

Big thank you to Asst. Prof. Zafeirakis Zafeirakopoulos for encouraging me to start the project, Melike İlteralp for helping me in the first steps, Sibel Gülmez for creating the undergrad cover page (although I have refactored it, it is still based on her work), Asst. Prof. Alp Arslan Bayrakçı for giving the use of the template a green light for the undergraduate students (Autumn 2021) and giving me some feedback ideas on how to improve it, which alongside the feedback of numerous students who used it that semester led to the improved V.2 where I have moved from a package with a lot of functions to a class with most things defined there, which was inspired by the IEEEtran class.

CONTENTS

LIST OF SYMBOLS AND ABBREVIATIONS

Symbol or Abbreviation	:	**Explanation**
BM	:	Back-matter
FM	:	Front-matter
MM	:	Main-matter

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1. USAGE

1.1. Project Structure

In order to use the project more efficiently I thought an explanation of the structure of the project would be a good place to start to further the understanding of the different elements of the project. Figure 1.1 shows the structure.

1.2. Backmatter and Frontmatter

As mentioned in the structure, these directories (`./Body/Backmatter` and `./Body/Frontmatter`) contain `.tex` files with the chapters preceding and succeeding the main body of the thesis, like abstract, list of acronyms, and appendices. The comments in the files themselves indicate where and what to write. Please don't edit the areas not meant to be edited.

1.3. Mainmatter

The `./Body/Mainmatter` directory is to house the `.tex` files of the main body of the thesis to be later included in the `./main.tex` (see Section 1.6). They can be named anything and organised within the directory in any way deemed fit. The example has two files (`C1.tex` and `C2.tex`) demonstrating a way of using the files, but it can be used in any other way, name or convention deemed appropriate by the user.

1.4. Imgs and refs.bib

As mentioned in the structure, `./Imgs` is a directory to house the images to be used in the figures of the thesis. The files in the directory could be further organised into subdirectories, but the file `./Imgs/gtu_logo.jpg` to stay in its place.

As for `refs.bib`, this is a BibTeX file to be filled in with the references to be

```
.
├── Body                # A directory to host the .tex files of the thesis
│   ├── Backmatter      # A directory with predefined .tex files containing the chapters succeeding the main thesis
│   ├── Frontmatter     # A directory with predefined .tex files containing the chapters preceding the main thesis
│   └── Mainmatter      # A directory holding the .tex files of the main body of the thesis
├── Imgs                # A directory with the images to be used in the thesis
├── GTUThesis.cls       # The class file, containing the custom function and style of the thesis
├── main.tex            # The main .tex file where the thesis is declared and the rest is included
└── refs.bib            # The BibTeX reference file
```

Figure 1.1: The structure of the project, if too small please refer to the Github repo[2]

used for the thesis. (copied from the publisher or scholar.google.com)

1.5. GTUThesis.cls

This is the file containing the custom functions and style of the GTU thesis. See Chapter 2 for the documentation. ***DO NOT*** modify this file unless you know what you're doing and sure about the changes you want to do.

1.6. main.tex

This is the main `.tex` file where the user firstly declares the document class as `GTUThesis` and then fills in the GTU-fields, followed by the used packages, and then starts the document environment, where they are expected to call the `GTUMakeFront` and `GTUMakeBack` functions respectively right after the start and before the end of the document environment. See Chapter 2 for the documentation.

Between the `GTUMakeFront` and `GTUMakeBack` functions the user can include the files of the Main matter (recommended, see Section 1.3) using the include function as follows:

```
\include{./Body/Mainmatter/FILE.tex}
```

or write their thesis in the way they see fitting.

1.7. Important Note

DO NOT delete, rename, or move the following files or directories because their paths are hard-coded:

- `./Body`
- `./Body/Backmatter`
- `./Body/Backmatter/Appendices.tex`
- `./Body/Backmatter/CV.tex`
- `./Body/Frontmatter`
- `./Body/Frontmatter/Abstract.tex`
- `./Body/Frontmatter/Acknowledgement.tex`
- `./Body/Frontmatter/ListOfAcro.tex`
- `./Body/Frontmatter/Ozet.tex`

- ./Imgs
- ./Imgs/gtu_logo.jpg
- ./GTUThesis.cls
- ./refs.bib

2. GTUTHESIS CLASS

`GTUThesis.cls` (see Section 1.5) is the star of the show here, where the style of the thesis of GTU is defined. The user is expected to use some functions, and the demo `main.tex` shows how it is used. But for the sake of completion, here is the documentation for the functions which the user is expected to call in their main.

2.1. Declare Class

```
\documentclass[lang,degree]{GTUThesis}
```

The `lang` and `degree` options are set to set the language of the thesis (including titles and predefined text), and the degree which mainly changes some slight things in the Frontmatter. `lang` can take either `en` or `tr` with the former being the default, and `degree` takes either `undergrad` or `graduate` with the latter being the default.

2.2. GTU Fields

These are the fields required to be filled in at the beginning of the documents, they all take one argument in the following matter

```
\GTUField{argument}
```

and they are the following.

2.3. GTU Make

These are two functions which produce the front-matter and the back-matter of the thesis.

`\GTUMakeFront`

The function above produces the front-matter including the cover, the lists of content, figures, tables, and acronyms etc. in the correct order and in the correct format for the declared class's arguments (see Section 2.1 for more).

`\GTUMakeBack{arg}`

The function above produces the back-matter including the bibliography, and the optional CV and appendices. `arg` is a string that takes in the optional sections which the user wants to add comma separated (`cv` for the CV and `ap` for the appendices). If the user still doesn't want any optional sections, they still have to add the empty `{}` since the function waits for an argument which can be an empty string. So, the valid uses of the function are

Table 2.1: GTU-fields and their arguments

GTU Field	**Taken Argument**
GTUAuthor	Name of the author of the thesis (student)
GTUTitle	The title of the thesis
GTUFaculty	The faculty or institute of the author
GTUDepartment	The department of the author
GTUProject	The project the author is working on (ex. PhD thesis)
GTUSupervisor	Name of the supervisor
GTUYear	The year of the publication of the thesis
GTUJury	Names of the jury for the thesis (comma separated)
GTUDefenceDate	The date when the author presents the project to the jury
GTUDecreeNo	The decree number of the jury formation (only graduate)
GTUDecreeDate	The above decree's date (only graduate)

```
\GTUMakeBack{} % for only bibliography
\GTUMakeBack{cv} % for bibliography and CV
\GTUMakeBack{ap} % for bibliography and appendices
\GTUMakeBack{cv,ap} % for bibliography, CV, and appendices
```

2.4. A Section to catch some other things

Let $X_1, X_2, \ldots, X_n$ be a sequence of independent and identically distributed random variables with $\mathrm{E}[X_i] = \mu$ and $\mathrm{Var}[X_i] = \sigma^2 < \infty$, and let

$$S_n = \frac{X_1 + X_2 + \cdots + X_n}{n} = \frac{1}{n}\sum_{i}^{n} X_i \tag{2.1}$$

denote their mean. Then as n approaches infinity, the random variables $\sqrt{n}(S_n - \mu)$ converge in distribution to a normal $\mathcal{N}(0, \sigma^2)$.

" Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius vel, egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetuer odio sem sed wisi. [1] "

[1]The text in this quote was created with `lipsum` package

BIBLIOGRAPHY

[1] *Gtu thesis writing manual (turkish)*, https://www.gtu.edu.tr/Files/Yonetmelik_ve_Yonergeler/Y%C3%B6netmelikler/Tez%20Yaz%C4%B1m%20K%C4%B1lavuzu%20-GT%C3%9C06012015.pdf.

[2] *My github repo*, https://github.com/uderbashi/GTU_Thesis_LaTeX_Template.

CV

I am Usama I. I. Derbashi, a graduate from the department of Computer Engineering in Gebze Technical University. I have started my studies there in Autumn 2017, and I have graduated in Spring 2022.

One of my frustrations, which I have heard my graduate-level friends at the uni complain about was the horrible MSWord template, which they were expected to follow. One friend said they reviewed his work once and sent it back for some slider he nudged by mistake. My friends mostly used LaTeX for their publications, and it seemed to be easy to move work between a draft for the thesis and for a conference, and with MSWord you lose a lot of this interoperability between different works and projects. Plus, a LaTeX template once set, the writer no longer thinks a lot about the issues of formatting and only focuses on what is important. . . writing. And that's why I decided to do this.

APPENDICES

Appendix 1: Github Repo

All of the users are welcome to take my Github repo[2], fork my work, and open merge requests in case they has any issue with my work. I am still reachable via email for any inquiries.

Appendix 2: License

This work is under the **MIT License**. You are allowed to take the code and do whatever you want with it. I am not held liable for any effects of the code.

But I would really appreciate if you could open a merge request to get the changes you made back to the repo, although you are allowed to ignore this request if you want to.