

The First LaTeX Homework

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Abstract

This is the first LaTeX homework. It covers various features of LaTeX, ranging from simple sections to complicated mathematical formulas and bibliography generation.

1 Introduction

This document is used as a homework for practicing LaTeX. Learners are supposed to find other commands not covered in class on their own to produce the required output. Section 2 describes details about how to submit your work.

Most contents used in this document are taken from the book *A Guide to LaTeX* [1].

2 Instructions

For this first homework, you are to create and submit two files to Ajarn Chaiporn via email address `chaiporn.j@ku.ac.th`.

1. `hw1.tex` – A LaTeX document written to generate the *exact*¹ same output as this document, with only the following differences:
 - The name “Chaiporn Jaikaeo” under the title is replaced by your own name.
 - The student ID under the name is replaced by your own student ID.
 - The date under the student ID is replaced by the date on which your document is compiled.
2. `hw1.bib` – The bibliography database for your document, which contains only one `Book` entry.

¹It is ok to have slightly different page margins.

In order to receive full credits, these requirements must be met:

- Cross references, such as “Section 2”, must be used instead of hardcoding.
- The bibliography section must be automatically generated by `bibtex` using information stored in the file `hw1.bib`.

3 Mathematical Formulas

Mathematical formulas may occur within a line of text, as $(a+b)^2 = a^2+2ab+b^2$, or separated from the main text as

$$\int_0^\infty f(x)dx \approx \sum_{i=1}^n w_i e^{x_i} f(x_i)$$

In addition, a sequential equation number can be added to a math formula using the `equation` environment. For example,

$$\sqrt{x^2} = |x|. \tag{1}$$

3.1 Fractions

Short fractions are best represented using the slash character (`/`). More complicated fractions can employ the command `frac`. For example,

$$\frac{\frac{a}{x-y} + \frac{b}{x+y}}{1 + \frac{a-b}{a+b}}$$

3.2 Braces above and below formulas

The command `overbrace` and `underbrace` can be used to draw braces over or under a formula. For example,

$$\overbrace{a + b + \cdots + y + z}^{123} \\ \underbrace{\hspace{10em}}_{\alpha\beta\gamma}$$

References

- [1] Helmut Kopka and Patrick W. Daly. *A Guide to LaTeX: Document Preparation for Beginners and Advanced Users*. Addison-Wesley, 3rd edition, 1999.