

Scientific Writing and Communication

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Table of contents

Preface	3
1 Introduction	4
2 Writing/ Collaborative Writing Platforms	6
2.1 What is Overleaf?	6
2.2 LaTeX Documents	6
2.3 Advantages of Overleaf	6
2.4 Setting up an Overleaf Account	7
2.5 Create a new project	10
2.6 Text formatting	12
2.7 Working with images	12
2.8 Mathematical Equations	14
3 Summary	15
References	16

Preface

This is a Quarto book.

To learn more about Quarto books visit <https://quarto.org/docs/books>.

1 Introduction

This book introduces essential open-source tools for mastering the art of scientific writing.

1. Writing/ Collaborative Writing Platforms

- Overleaf: An online LaTeX editor for collaborative writing and publishing.

2. Computing

- R
- Python

3. Data visualization

- R: ggplot2
- Python: plotnine

4. Reproducible Research

- R and Python both: Quarto
- Python: Jupyter Notebooks
- R: RMarkdown, knitr

5. Paper Management

- Zotero
- Mendeley

6. Open Access Journals/ Research papers

- Directory of Open Access Journals (DOAJ): A community-curated online directory that indexes and provides access to high-quality, open access, peer-reviewed journals.

7. Research Collaboration and Networking

- ResearchGate

- Academia.edu

8. Version control

- Github

2 Writing/ Collaborative Writing Platforms

2.1 What is Overleaf?

Overleaf is an online LaTeX editor that allows users to create, edit, and collaborate on LaTeX documents in a web-based environment.

2.2 LaTeX Documents

LaTeX is a typesetting system commonly used for the production of scientific and mathematical documents due to its robust handling of complex formatting.

2.3 Advantages of Overleaf

1. Real-Time Collaboration

Multiple users can work on a document simultaneously, with changes visible in real-time.

2. Templates

Overleaf provides a variety of templates for different document types such as thesis, posters, presentations, etc., making it easier to get started.

3. Version Control

Integrated version control system tracks changes and allows users to revert to previous versions.

4. Rich Text Editing

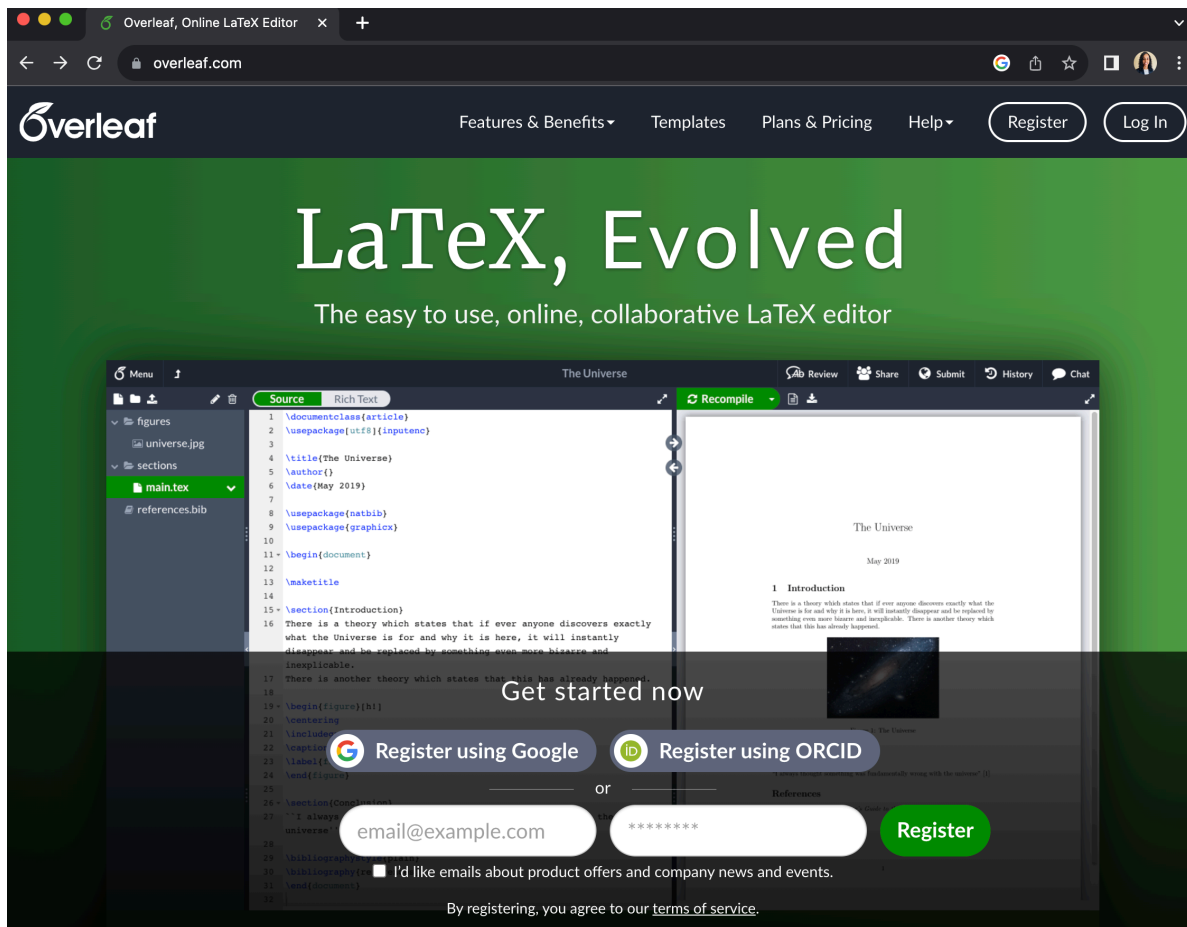
Combines the power of LaTeX with a user-friendly rich text editor for easy formatting.

5. Accessibility

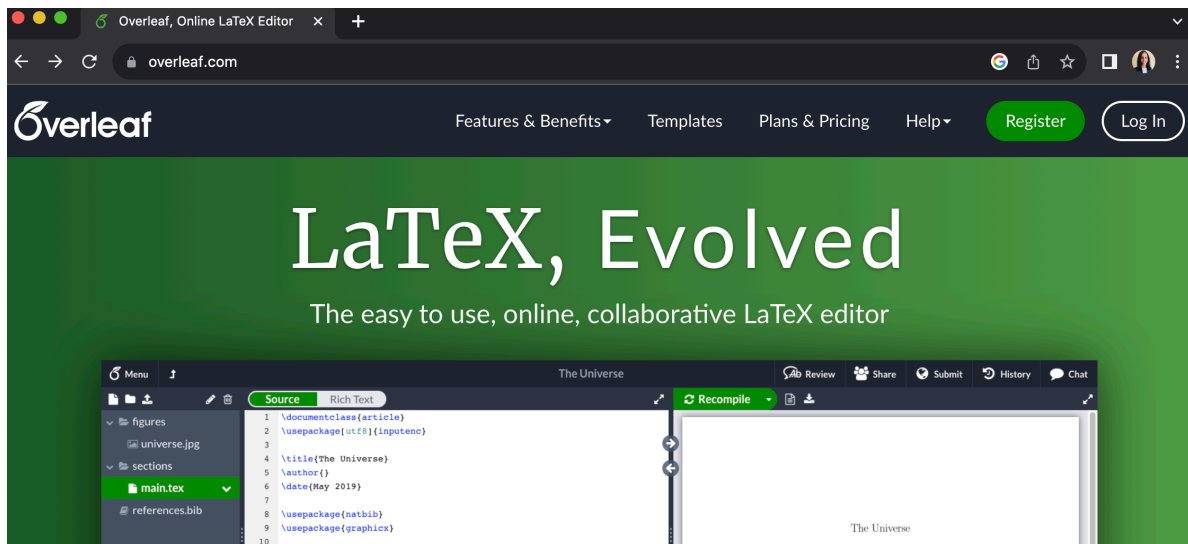
Access your documents from any device with an internet connection. Since it's web-based, there's no need to install LaTeX on your computer.

2.4 Setting up an Overleaf Account

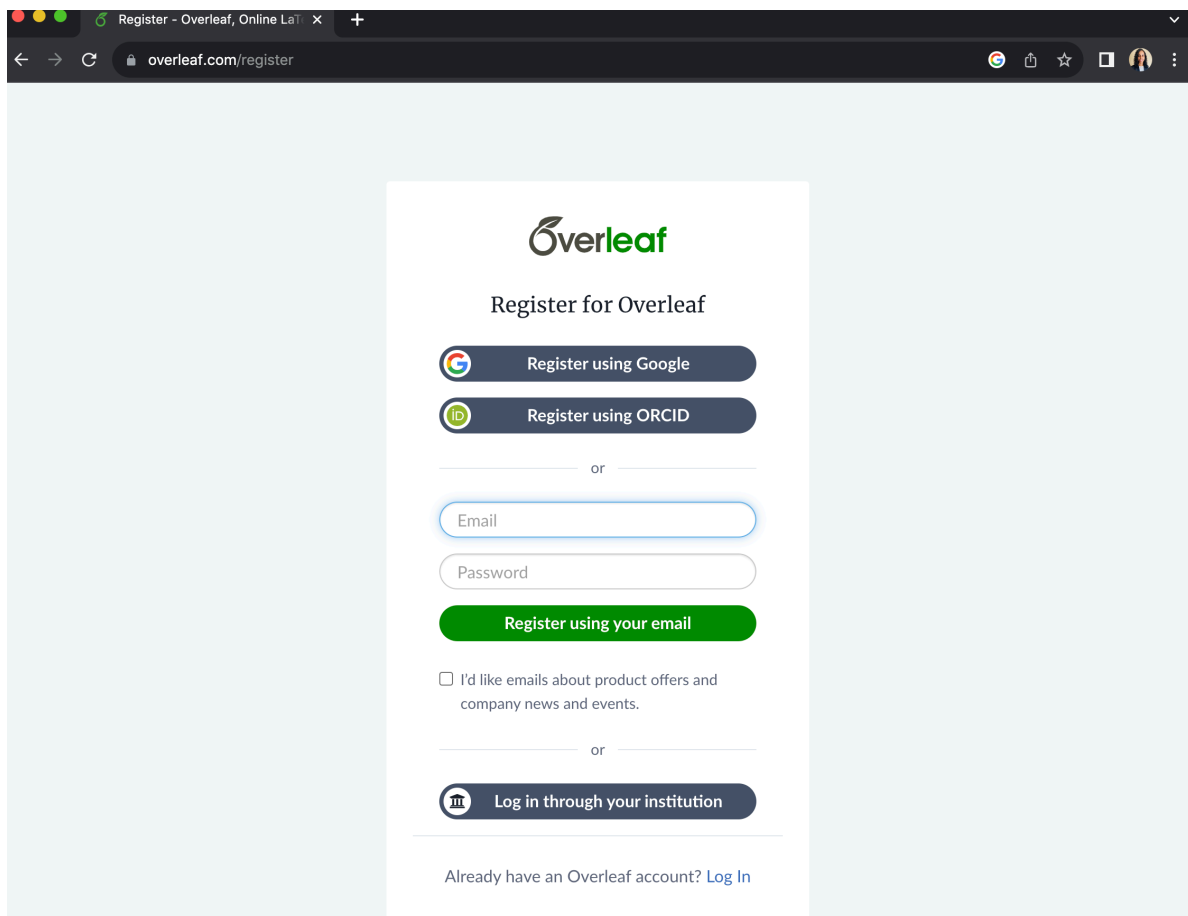
1. Go to <https://www.overleaf.com/>.



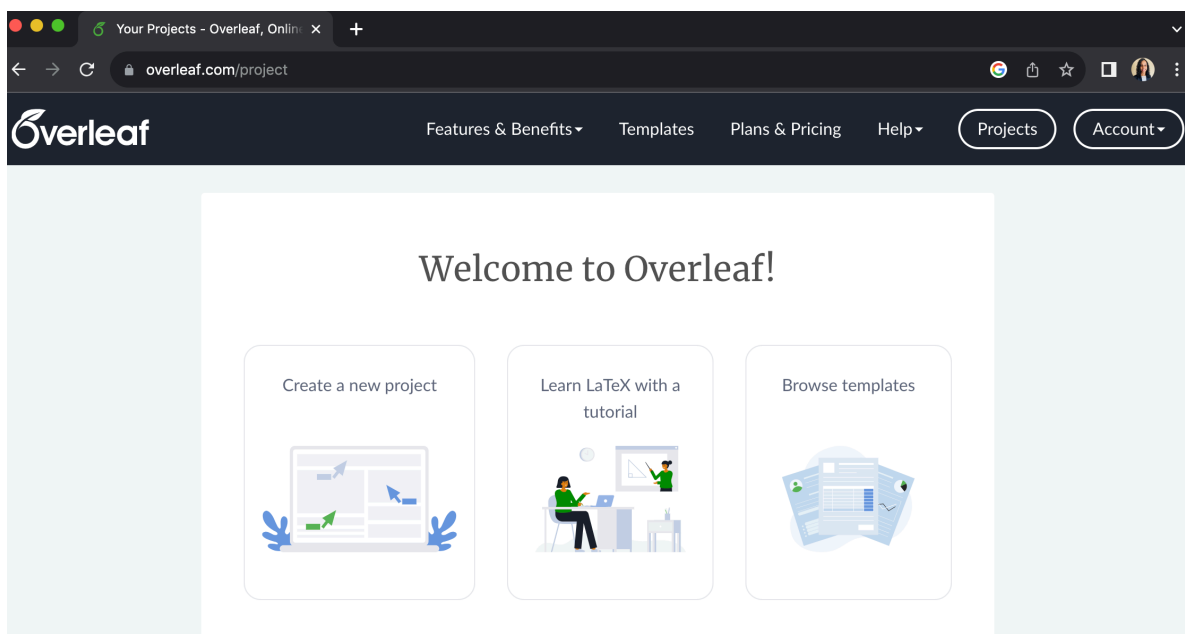
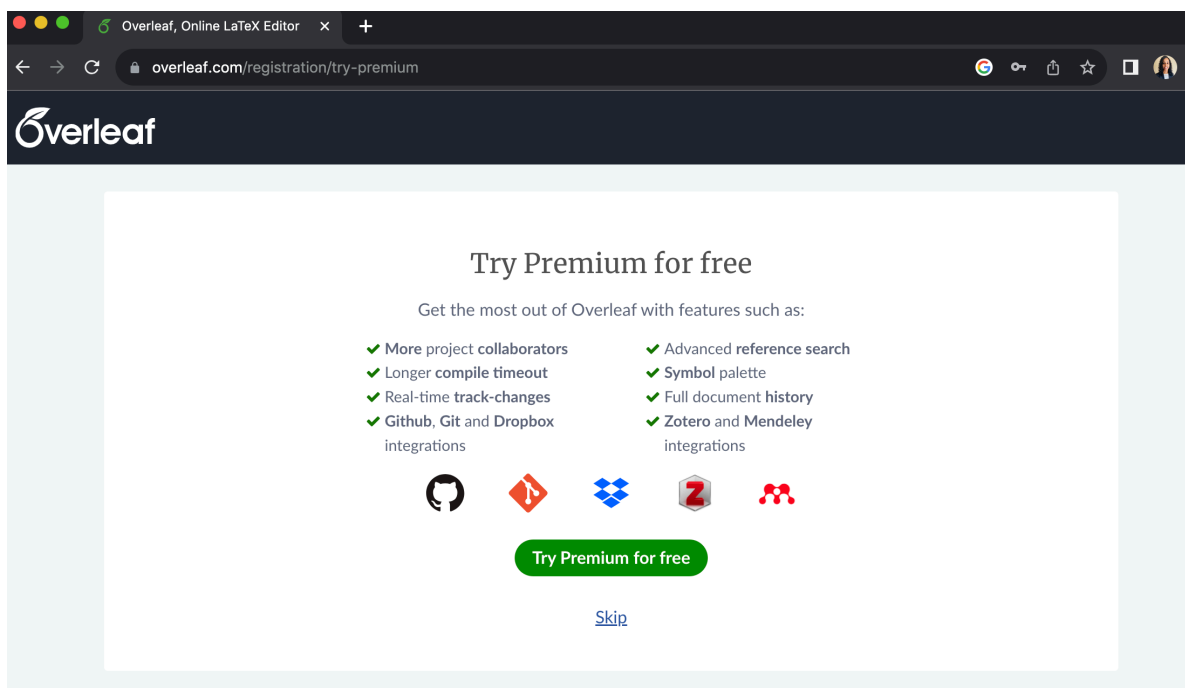
2. Click on Register



3. Register Overleaf by entering your details. I registered using my email.

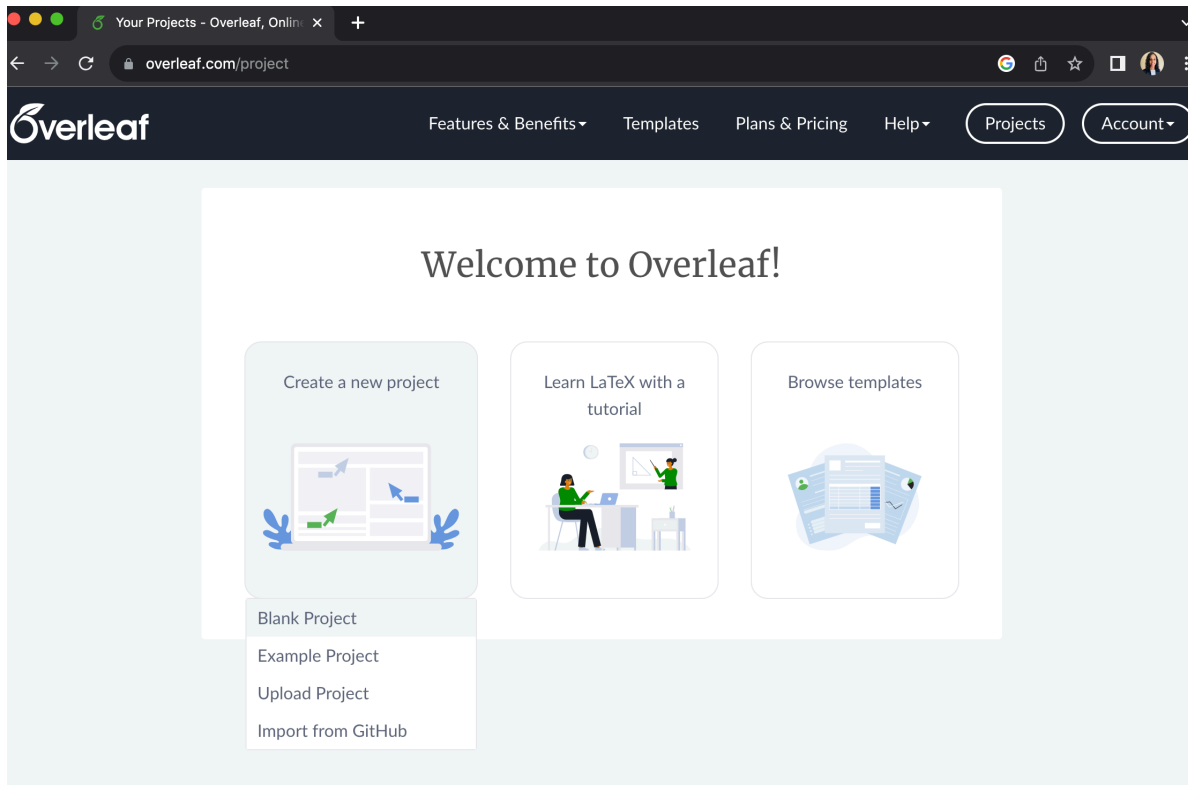


4. Skip “Try Premium for free”

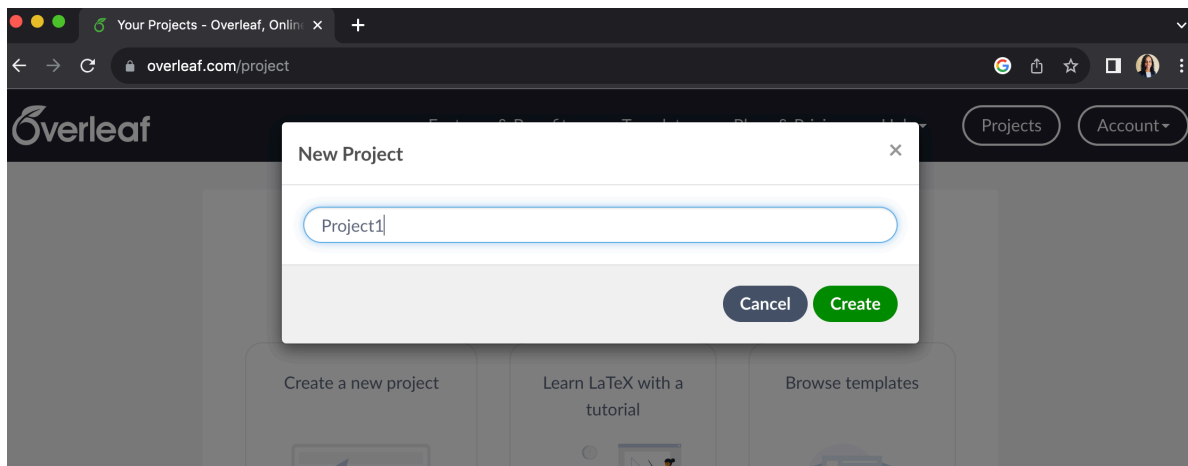


2.5 Create a new project

1. Create a new project -> Blank Project

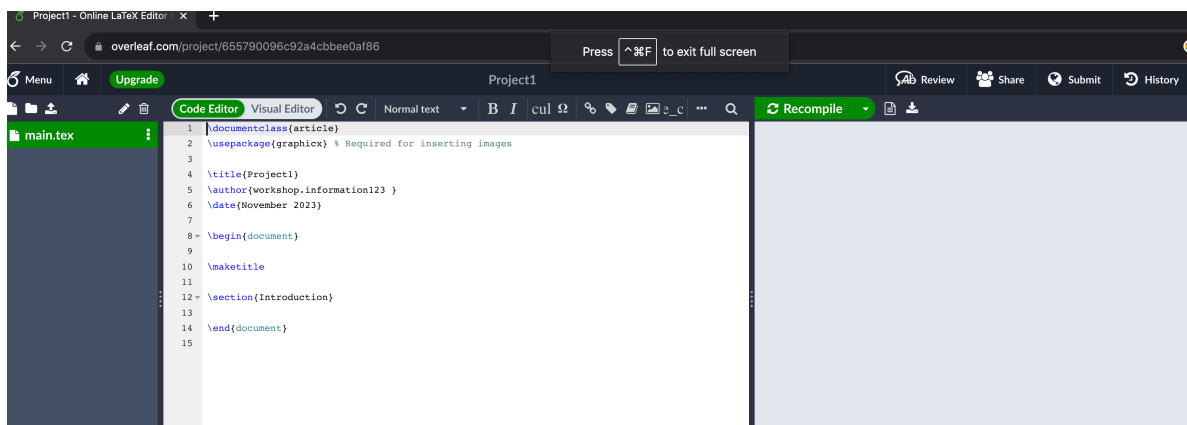


2. Give a name to your project

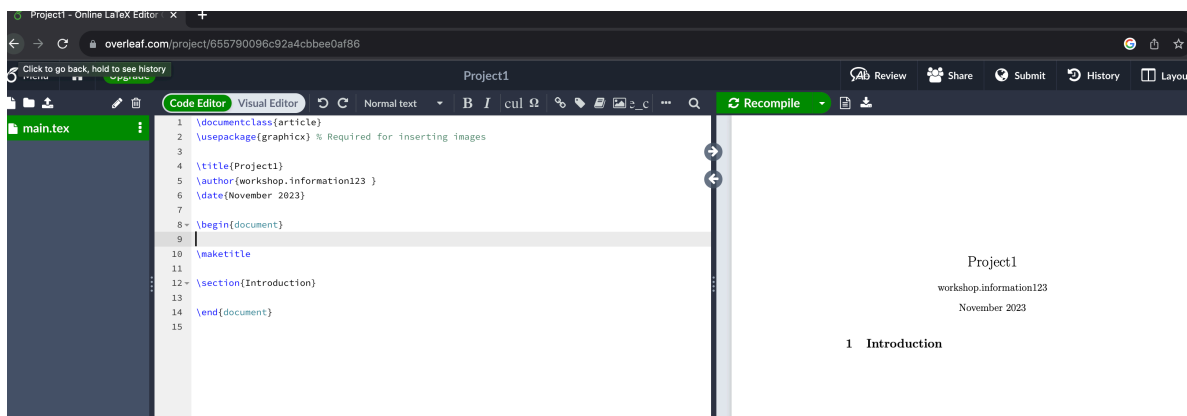


Your first overleaf document

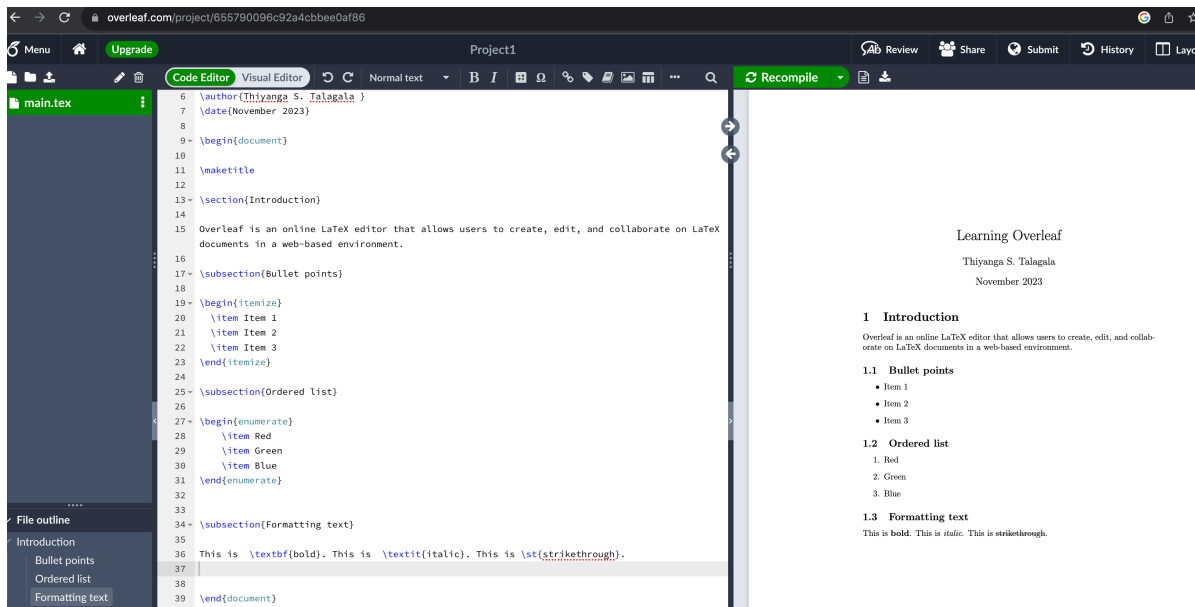
1. Template



2. Compile

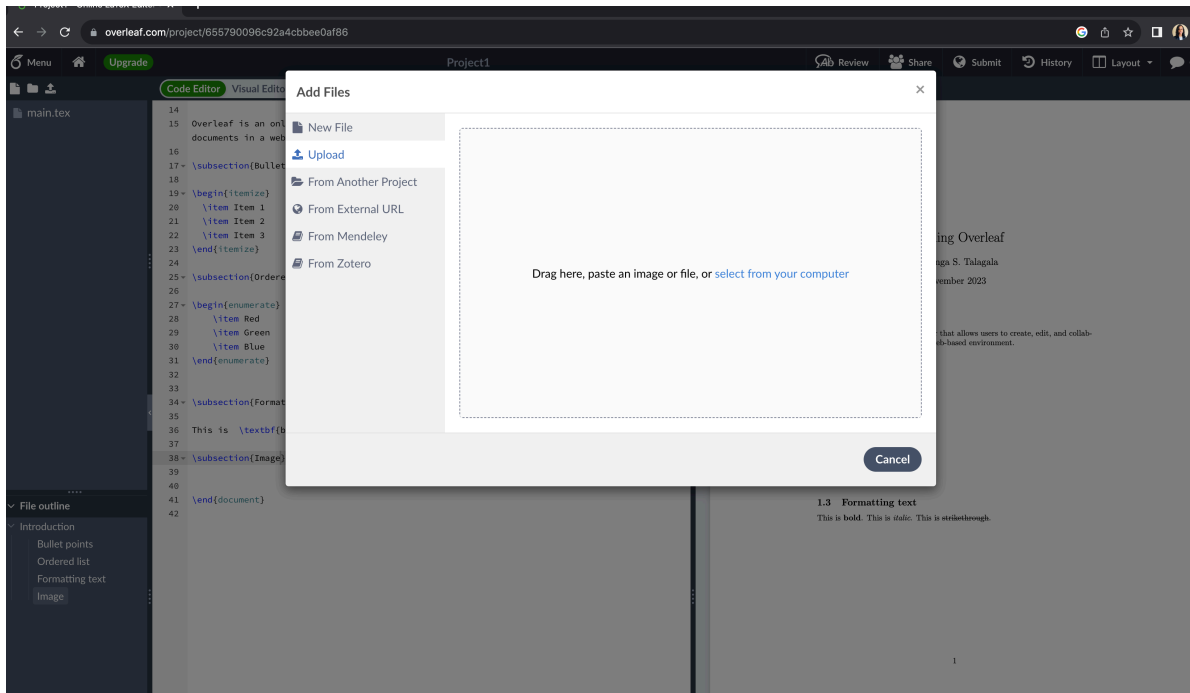


2.6 Text formatting

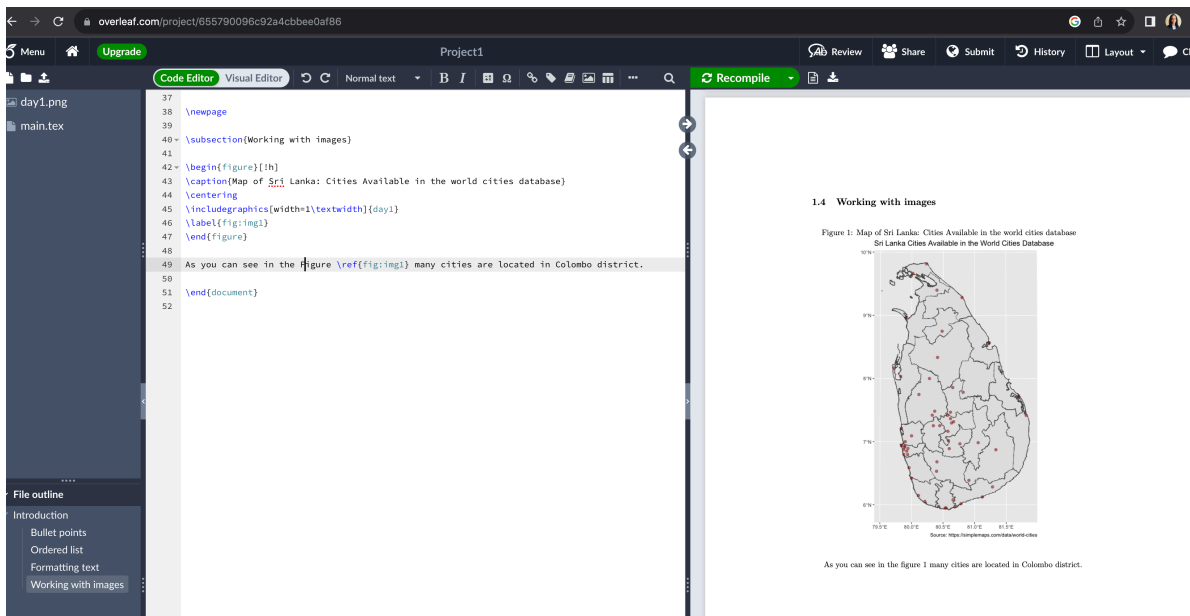


2.7 Working with images

1. Upload an image



2. Insert an image to the document



2.8 Mathematical Equations

The screenshot shows a LaTeX editor interface with a file explorer on the left, a code editor in the center, and a preview window on the right. The file explorer shows a project named 'Project1' with files 'day1.png' and 'main.tex'. The code editor shows the source code for 'main.tex', which includes sections for 'Equations', 'Method 1', 'Method 2', and 'Numbering Equations'. The preview window shows the rendered output of the code, including the section titles and the mathematical equations.

Source Code (main.tex):

```

52 \newpage
53 \subsection{Equations}
54
55 \subsubsection{Method 1}
56
57 The Pythagorean theorem  $x^2 + y^2 = z^2$  was
58 proved to be invalid for other exponents.
59 Meaning the next equation has no integer solutions:
60
61 
$$x^n + y^n = z^n$$

62
63
64 \subsubsection{Method 2}
65
66 The Pythagorean theorem  $x^2 + y^2 = z^2$  was
67 proved to be invalid for other exponents.
68 Meaning the next equation has no integer solutions:
69
70 
$$x^n + y^n = z^n$$

71
72
73 \subsubsection{Numbering Equations}
74
75 \begin{equation}
76 x^2 + y^2 = z^2
77 \end{equation}
78
79
80
81 % \usepackage{utf8}[inputenc]
82 % \usepackage{amsmath}
83
84 \begin{subequations}
85 \begin{align}
86 \frac{\mathrm{d}}{\mathrm{d}t} x &= x^2 \label{eqn:line-1} \\
87 \frac{\mathrm{d}}{\mathrm{d}t} x &= x^2 \label{eqn:line-2}
88 \end{align}
89 \end{subequations}
90
91 Look at the first line \ref{eqn:line-1}, and now look at the second line \ref{eqn:line-2}.
92 They are both part of the whole system \ref{eqn:all-lines}.
93
94 \end{document}
95

```

Preview Output:

1.5 Equations

1.5.1 Method 1

The Pythagorean theorem $x^2 + y^2 = z^2$ was proved to be invalid for other exponents. Meaning the next equation has no integer solutions:

$$x^n + y^n = z^n$$

1.5.2 Method 2

The Pythagorean theorem $x^2 + y^2 = z^2$ was proved to be invalid for other exponents. Meaning the next equation has no integer solutions:

$$x^n + y^n = z^n$$

1.5.3 Numbering Equations

$$x^2 + y^2 = z^2 \tag{1}$$

$$\frac{dx}{dt} = x^2 \tag{2a}$$

$$\frac{dx}{dt} = x^2 \tag{2b}$$

Look at the first line 2a, and now look at the second line 2b. They are both part of the whole system 2.

3 Summary

In summary, this book has no content whatsoever.

References