

# Summary of LaTeX's Dynamic Bibliography Formatting with BibTeX

L<sup>A</sup>T<sub>E</sub>X offers a significant advantage in dynamically formatting bibliographies and references, particularly through the use of BibTeX. BibTeX, developed by **Oren Patashnik** and **Leslie Lamport** in the 1980s, simplifies reference management in LaTeX documents.

# Key Advantages

- ▶ **Dynamic Bibliography Management:** Adding new references doesn't require manual reordering of the bibliography or updating numerous references. BibTeX automates these adjustments.
- ▶ **Simplified Citation Process:** Citations are easily added to the text using `\cite{<tag>}`. The bibliography is automatically formatted according to the chosen style.

# How BibTeX Works

To implement BibTeX, the following lines are included in the LaTeX document, usually at the end:

```
\bibliography{<bib file name>}  
\bibliographystyle{<style>}
```

Using BibTeX alters the typical LaTeX compilation process.

- ▶ Run pdflatex, then bibtex twice, and pdflatex again.

Overleaf simplifies this process by including it in the whole compilation process.

# BibTeX Styles

- ▶ **plain:** This is one of the original BibTeX styles. It formats entries in a simple, straightforward manner and sorts them alphabetically by author.
- ▶ **alpha:** This style creates labels from the author's name and the year of publication. It's handy for author-year citations.
- ▶ **abbrv:** Similar to the plain style, but it abbreviates first names and journal names. It's useful for more compact bibliographies.
- ▶ **IEEEtran:** Used for formatting bibliographies in the style of the Institute of Electrical and Electronics Engineers (IEEE).
- ▶ **acm:** For formatting according to the style guidelines of the Association for Computing Machinery (ACM).

- ▶ `apa`: Adheres to the formatting guidelines of the American Psychological Association. Requires additional packages like `apacite`.
- ▶ `nature`: Mimics the citation style of the journal 'Nature'. This style is often used in scientific publications.
- ▶ `chicago`: This style follows the guidelines of the Chicago Manual of Style. Useful for humanities and social sciences.
- ▶ `mla`: Suitable for documents adhering to the Modern Language Association format, commonly used in the humanities.
- ▶ `amspain`: Used for formatting in the style of the American Mathematical Society, particularly suitable for mathematics and related disciplines.

# The bib file

This file contains bibliography entries in a specific format.

Each entry includes details like title, author, publication year, and publisher.

Order is irrelevant.

Here's a sample:

```
@book{Macdonald1998,  
  title={Symmetric functions and Hall polynomials},  
  author={Macdonald, Ian Grant},  
  year={1998},  
  publisher={Oxford university press}  
}
```

# Citing in the LaTeX Document

- ▶ For citations within the document, use  
`\cite[<options>]{<tag>}`
- ▶ Using our previous example, the tag was Macdonald1998.  
By `\cite[Theorem 3.14]{Macdonald1998}`, the proof is complete.
- ▶ Users need only to know the tags for the references they want to cite. BibTeX takes care of the rest.