

Intro To L^AT_EX

OSDG X Theory Group

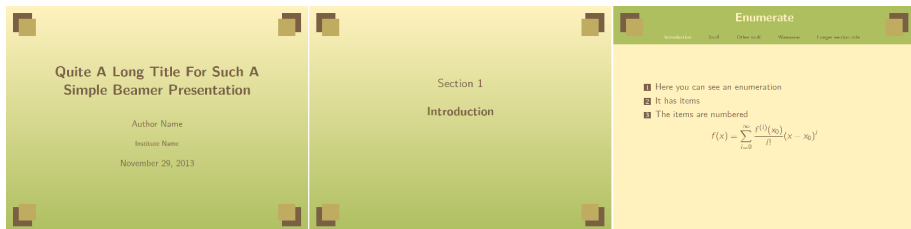
April 7, 2024

Topics Covered

- Beamer
- Mathmode
- Cross References and Bibliographies
- Tables
- Graphics and Figures
- TikZ and plotting
- Templates

Beamer

- A beamer is one of the 10 \LaTeX document classes.
- Beamer is used heavily for making great looking and standardized presentations (Eg: CambridgeUS theme)
- They can be simple like this one, but are also highly customizable like the one shown below
- The best part is, they are in PDF format.



Beamer

Task-1

Try solving the task-1. The solution is...

Beamer

Task-1

Try solving the task-1. The solution is...

```
\documentclass{beamer}

\title{Discrete Structures}
\usetheme{Boadilla}
\author{Ashok Kumar Das}

\begin{document}
\begin{frame}{Types of functions}
  \begin{block}{Theorem}
    | If a function  $f: X \rightarrow Y$ , then  $f: X \rightarrow \text{Im}(f)$ 
    | is a bijection.
  \end{block}
  \begin{block}{Theorem}
    | If a function  $f: X \rightarrow Y$  is 1-1, and  $X$  and  $Y$  are finite sets
    | of the same size,  $|X| = |Y|$ , then  $f: X \rightarrow Y$  is a bijection.
  \end{block}
\end{frame}
\end{document}
```

Mathmode

Task-2

Try solving the task-2

$$\int_1^x \sum_{p \leq u} \left\lceil \frac{\log u}{\log p} \right\rceil \log p \cdot du = \frac{\hbar}{2\pi i} \int_{c-i\infty}^{c+i\infty} \frac{x^{s+1}}{s(s+1)} \left(-\frac{\partial \zeta'(s)}{\partial \zeta(s)} \right) \cdot ds$$

Mathmode

Task-2

Try solving the task-2

$$\int_1^x \sum_{p \leq u} \left\lceil \frac{\log u}{\log p} \right\rceil \log p \cdot du = \frac{\hbar}{2\pi i} \int_{c-i\infty}^{c+i\infty} \frac{x^{s+1}}{s(s+1)} \left(-\frac{\partial \zeta'(s)}{\partial \zeta(s)} \right) \cdot ds$$

Here's the solution.

Mathmode

Task-2

Try solving the task-2

$$\int_1^x \sum_{p \leq u} \left\lceil \frac{\log u}{\log p} \right\rceil \log p \cdot du = \frac{\hbar}{2\pi i} \int_{c-i\infty}^{c+i\infty} \frac{x^{s+1}}{s(s+1)} \left(-\frac{\partial \zeta'(s)}{\partial \zeta(s)} \right) \cdot ds$$

Here's the solution.

```
$$ \int_1^x \sum_{p \leq u} \left\lceil \frac{\log u}{\log p} \right\rceil \log p \cdot du \\ = \frac{\hbar}{2\pi i} \int_{c-i\infty}^{c+i\infty} \frac{x^{s+1}}{s(s+1)} \left( -\frac{\partial \zeta'(s)}{\partial \zeta(s)} \right) \cdot ds $$
```


Citations and Bibliographies

Task-3

Try solving the task 3. The solution is...

Citations and Bibliographies

Task-3

Try solving the task 3. The solution is...

```
\documentclass{article}
\usepackage[colorlinks=true,citecolor=blue]{hyperref}
\bibliographystyle{ieeetr}

\begin{document}
Here are the citations for Aftab's
first\cite{https://doi.org/10.1002/admt.202001023}
and second\cite{https://doi.org/10.1002/adma.201504236}
latest work.
\bibliography{sources}
\end{document}
```

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You can find the sources.bib file renamed to 'h' in the 'test3' directory.

Tables

Task-4

Try the task-4, the solution is...

Tables

Task-4

Try the task-4, the solution is...

```
\documentclass{article}
\usepackage{multirow}

\begin{document}

\begin{tabular}{|r|c|c|}
\hline
\multirow{2}{*}{SNo.} & \multicolumn{2}{c|}{Begin of Table} \\
\cline{2-3}
& Something & something else \\
\hline
1 & line 1 & line else 1 \\
2 & line 2 & line else 2 \\
3 & line 3 & line else 3 \\
\hline
\end{tabular}

\end{document}
```

Figures and Diagrams

Task-5

Try to solve the Task-5. The solutions are...

Figures and Diagrams

Task-5 Solution for 1st part

```
\documentclass{article}
\usepackage[language=english]{lipsum}
\usepackage{graphicx}

\begin{document}

\section{first four}
\lipsum[1-4]

\begin{figure}[!ht]
  \includegraphics[width=5in]{iamhere.webp}
\end{figure}

\section{next three}
\lipsum[5-7]

\section{last two}
\lipsum[7-9]
\end{document}
```

Figures and Diagrams

Task-5 Solution for 2nd part

```
\documentclass{article}
\usepackage[language=english]{lipsum}
\usepackage{graphicx}

\begin{document}

\section{first four}
\lipsum[1-4]

\begin{figure}[!hb]
  \includegraphics[width=5in]{iamhere.webp}
\end{figure}

\section{next three}
\lipsum[5-7]

\section{last two}
\lipsum[7-9]
\end{document}
```

Figures and Diagrams

Task-5 Solution for 3rd part

```
\documentclass{article}
\usepackage[language=english]{lipsum}
\usepackage{graphicx}

\begin{document}

\section{first four}
\lipsum[1-4]
\\ \includegraphics[width=5in]{iamhere.webp}

\section{next three}
\lipsum[5-7]

\section{last two}
\lipsum[7-9]
\end{document}
```


Some useful Tricks

Task-6

Try to solve Task-6. The solution is...

Some useful Tricks

Task-6

Try to solve Task-6. The solution is...

```
\documentclass{article}

\usepackage{enumitem}

\newenvironment{mycases}
{\begin{enumerate}[label={\textbf{Case \arabic*}}, align=left]}
{\end{enumerate}}

\begin{document}
I have a solution, which works on some conditions.
\begin{mycases}
  \item When something happens \\
  Then I do this
  \item When another thing happens \\
  Then I do another thing
\end{mycases}
\end{document}
```

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