

Sample Beamer Presentation

A Comprehensive Demo of LaTeX Beamer Features

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Outline

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What is Beamer?

- A LaTeX document class for creating presentations
- Supports overlays, animations, and transitions
- Perfect for academic and technical presentations
- Produces high-quality PDF output

Key Features

Beamer provides professional themes, automatic numbering, and seamless integration with LaTeX's mathematical typesetting.

Why Use LaTeX for Presentations?

Advantages:

- Consistent formatting
- Superior math support
- Version control friendly
- Cross-platform

Use Cases:

- Academic conferences
- Technical talks
- Research presentations
- Teaching materials

Text Formatting Options

- **Bold text** for emphasis
- *Italic text* for definitions
- Underlined text for highlighting
- Monospace text for code
- Colored text for visual appeal

Important Note

Beamer supports all standard LaTeX formatting commands and provides additional presentation-specific features.

Itemize Lists:

- First level
 - Second level
 - Third level
- Back to first level

Enumerate Lists:

- ➊ First point
- ➋ Second point
 - ➌ Sub-point A
 - ➍ Sub-point B
- ➎ Third point

Mathematical Equations

Inline Mathematics

The quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ is fundamental to algebra.

Display Mathematics

$$\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi} \quad (1)$$

Aligned Equations

$$f(x) = x^2 + 2x + 1 \quad (2)$$

$$f'(x) = 2x + 2 \quad (3)$$

$$f''(x) = 2 \quad (4)$$

Mathematical Theorems

Theorem (Pythagorean Theorem)

For a right triangle with legs a and b and hypotenuse c :

$$a^2 + b^2 = c^2$$

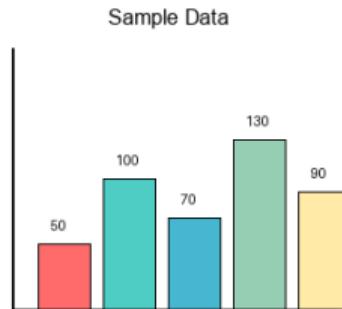
Proof.

Consider a square with side length $(a + b)$ and rearrange the areas to demonstrate the relationship. □

Corollary

If $a = b = 1$, then $c = \sqrt{2}$.

Including Images



- Images can be resized using width and height parameters
- Supported formats: PDF, PNG, JPG, EPS
- Images can be centered, left-aligned, or right-aligned

Example

The chart above shows sample data visualization capabilities.

Multiple Images

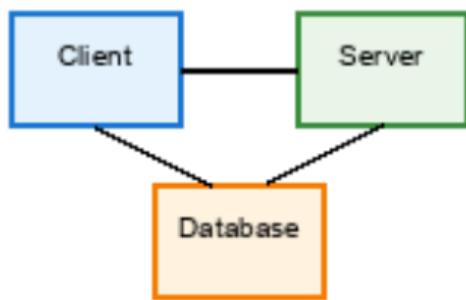


Figure 1: System Architecture

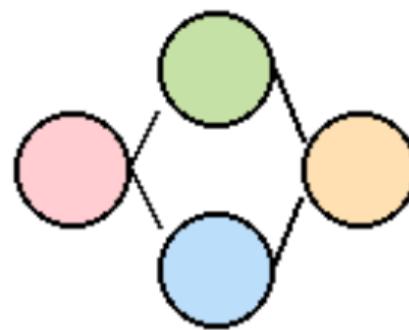


Figure 2: Data Flow

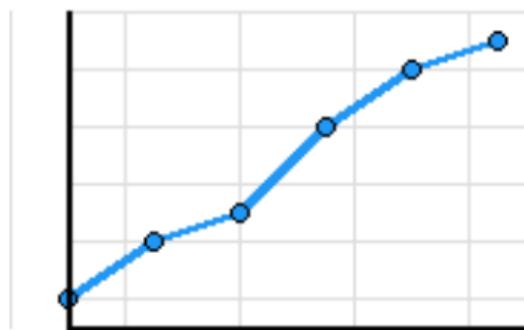


Figure 3: Results

Three different visualization approaches for the same dataset.

Data Tables

Algorithm	Time Complexity	Space Complexity
Bubble Sort	$O(n^2)$	$O(1)$
Quick Sort	$O(n \log n)$	$O(\log n)$
Merge Sort	$O(n \log n)$	$O(n)$
Heap Sort	$O(n \log n)$	$O(1)$

Table: Comparison of Sorting Algorithms

- Tables can include mathematical expressions
- Column alignment can be specified
- Borders and rules can be customized

Code Listings

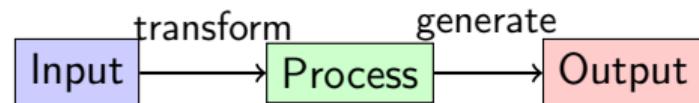
Python Example

```
def fibonacci(n):
    if n <= 1:
        return n
    return fibonacci(n-1) + fibonacci(n-2)

# Calculate first 10 Fibonacci numbers
for i in range(10):
    print(f"F({i}) = {fibonacci(i)}")
```

- Syntax highlighting for multiple languages
- Line numbers can be added
- Code can be formatted within blocks

TikZ Diagrams



- TikZ allows creation of custom graphics directly in LaTeX
- Diagrams are vector-based and scale perfectly
- Integrates seamlessly with mathematical notation

Overlays and Progressive Display

- This appears on all slides

Overlays and Progressive Display

- This appears on all slides
- This appears starting from slide 2

Overlays and Progressive Display

- This appears on all slides
- This appears starting from slide 2
- This appears starting from slide 3

Overlays and Progressive Display

- This appears on all slides
- This appears starting from slide 2
- This appears starting from slide 3
- This appears starting from slide 4

Overlays and Progressive Display

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- This appears starting from slide 2
- This appears starting from slide 3
- This appears starting from slide 4

Final Point

Overlays allow you to control when content appears, creating a dynamic presentation effect.

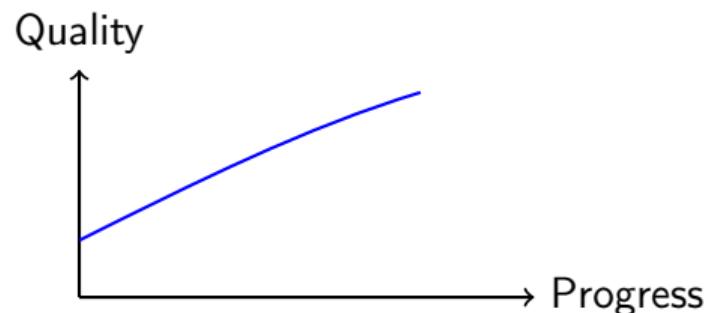
Column Layouts

Left Column

- Point A
- Point B
- Point C

Right Column

- ➊ First
- ➋ Second
- ➌ Third



- **Text Formatting:** Bold, italic, colors, and more
- **Mathematics:** Superior equation typesetting
- **Graphics:** Images, TikZ diagrams, and charts
- **Code:** Syntax-highlighted listings
- **Layouts:** Columns, blocks, and overlays
- **Themes:** Professional presentation styles

Key Takeaway

LaTeX Beamer provides everything needed for professional technical presentations with the power and consistency of the LaTeX typesetting system.

Thank You!

Questions and Discussion



Thank You!

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<https://github.com/jsmith/presentations>