

A Beamer Tutorial in Beamer

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April 4, 2007

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Foundations of Computer Science

Outline

- 1** About Beamer
- 2 Templates
- 3 Frames
- 4 Sections and Subsections
- 5 Text
- 6 Alignment and Spacing
- 7 Lists
- 8 Overlays
- 9 Tables
- 10 Frame Structures
- 11 Graphics
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Advantages of Beamer

- The standard commands of \LaTeX also work in Beamer. If you can write basic \LaTeX , you can easily make a Beamer presentation.
- A table of contents will automatically be created, complete with clickable links to each section and subsection you create in your presentation.
- You can easily create overlays and dynamic effects.
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- Each theme is designed to be highly usable and readable. This makes the presentation more professional looking and easier for the audience to follow.

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More Advantages of Beamer

- The layout, colors, and fonts used in a presentation can easily be changed globally, but you also have control over the most minute detail.
- You can create presentations using the same source you wrote for your \LaTeX articles.
- The final output is typically a **.pdf file**. Viewer applications for this format exist for virtually every platform.
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Where Can I Get Beamer?

Beamer is available as a **free** download from:
<http://latex-beamer.sourceforge.net>

It is *very* well documented in the
Beamer User Guide
which is included in the Beamer package.

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Using Pre-Made Templates

- The fastest way to get started with Beamer is to use a pre-made template.
- One template is included with the Beamer distribution:
`beamer/solutions/conference-talks/
conference-ornate-20min.en.tex`
- Just *copy* the template file, *paste* it in the desired location, and *modify* the contents.

Test Your Template

- If you are using the template provided with the Beamer class, it will already be complete with example information.
- To see how the example presentation looks, compile your \LaTeX code **twice**.
- Open your favorite PDF viewer (ie: Adobe Reader) and open the newly created .pdf file located in the same directory as your template file. Change your view to “Full Screen”.
- Notice that a *table of contents is automatically created*, the *sections and subsections are hyper-linked*, and there is a row of *navigational buttons in the bottom right corner*.

Insert Title Information

The first commands you should modify will identify some key information about your presentation. These commands will be found in the preamble at the top of the .tex file. Other commands may be modified or commented out with a `%` to suit your needs.

Commands To Change

- `\title[short title]{long title}`
- `\subtitle[short subtitle]{long subtitle}`
- `\author[short name]{long name}`
- `\date[short date]{long date}`
- `\institution[short name]{long name}`

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Frames

Each Beamer project is made up of a series of **frames**. Each frame produces one or more slides, depending on the slide's *overlays*, which will be discussed later.

A Basic Frame

```
\begin{frame} [<alignment>]
  \frametitle{Frame Title Goes Here}
  Frame body text and/or  $\LaTeX$  code
\end{frame}
```

Frames

Frames are very simple to make. Simply write your own text or \LaTeX code between the begin/end frame commands.

The alignment option is centered `[c]` by default. The values `[t]` (top align) and `[b]` (bottom align) are also accepted.

A Basic Frame

```
\begin{frame}[t]  
  \frametitle{Algorithmic Combinatorics on Words}  
  \textit{Words}, or strings of symbols over..  
\end{frame}
```

Frames

- The `[plain]` option for the frame environment causes the headlines, footlines, and sidebars to be suppressed. This can be useful for showing large pictures.
- If you already have a \LaTeX document, you can simply wrap `\begin{frame}` and `\end{frame}` commands around the information you want to present.

Special Frame - Title Page

The **title page** frame simply displays a title page which contains much of the information you entered at the beginning of the document:

Title Page

```
\begin{frame}  
\titlepage  
\end{frame}
```

Special Frame - Title Page

By default, the `\titlepage` command creates a title page that includes:

- Title
- Author
- Affiliation
- Date
- Graphic

If any of these values are missing in the preamble, they will not be included on the title page.

Special Frame - Table of Contents

The **table of contents** frame dynamically creates a table of contents based on the sections and subsections that you designate throughout the presentation:

Title Page

```
\begin{frame}
  \frametitle{Outline}
  \tableofcontents[part=1,pausesections]
\end{frame}
```

Notice the argument `pausesections`. This allows the speaker to talk about the first section before the second is shown when reading the table of contents.

Putting Frames Together

Example

```
\begin{frame}
```

```
\titlepage
```

```
\end{frame}
```

```
\begin{frame}
```

```
\frametitle{Outline}
```

```
\tableofcontents[part=1,pausesections]
```

```
\end{frame}
```

```
\begin{frame}
```

```
\frametitle{Introduction}
```

```
Body text / code of the frame goes here.
```

```
\end{frame}
```

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Sections and Subsections

- Presentations are divided into sections, subsections, and sub-subsections.
- Each call to the `\section{section name}`, `\subsection{subsection name}`, or `\subsubsection{sub-subsection name}` command:
 - Inserts a new entry into the table of contents at the appropriate tree-level.
 - Inserts a new entry into the navigation bars.
 - Does *not* create a frame heading.
- Another version of the command, `\subsection*{section name}`, only adds an entry in the navigation bars, *not* the table of contents.

Sections and Subsections

Section specifications are declared *between* the frames, so they have no direct effect on what is shown *inside* each frame.

Example

```
...  
\end{frame}  
  
\section{Fine and Wilf's Theorem}  
\subsection{The Case of Two or Three Holes}  
\subsubsection{Definition 3.7}  
  
\begin{frame}  
...
```

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Common Text Commands and Environments

You can use the same text commands and environments in Beamer that you do in \LaTeX to change the way your text is displayed.

Common Text Commands

<code>\emph{Sample Text}</code>	<i>Sample Text</i>
<code>\textbf{Sample Text}</code>	Sample Text
<code>\textit{Sample Text}</code>	<i>Sample Text</i>
<code>\textsl{Sample Text}</code>	<i>Sample Text</i>
<code>\alert{Sample Text}</code>	Sample Text
<code>\textrm{Sample Text}</code>	Sample Text
<code>\textsf{Sample Text}</code>	Sample Text
<code>\color{green} Sample Text</code>	Sample Text
<code>\structure{Sample Text}</code>	Sample Text

Verbatim Text

It is often helpful to write code or formulas as **verbatim** text, which shows the text exactly as you type it, without any \LaTeX formatting. There are two ways to achieve this:

- For inline verbatim text, such as `sample text`, use the text command:

```
\verb|sample text|
```

- The *verbatim* environment is also available in Beamer and can be used in the same way as it is in \LaTeX :

```
\begin{verbatim}  
Sample text  
\end{verbatim}
```

NOTE: For either of these methods to work, the `[fragile]` option must be added to the frame environment.

(i.e. `\begin{frame}[fragile]`)

Semiverbatim Text

Beamer also defines the environment `semiverbatim`, which works like `verbatim` except that `\`, `{`, and `}` retain their meaning.

This allows you to access Beamer formatting commands. If you want the command or environment to be ignored, you simply put a `\` in front of it.

Example

```
Using the semiverbatim environment, you can
still format verbatim text with Beamer
commands or you can display commands
\alert{like this}.
```

Font Themes

Font themes change the attributes of the fonts used in the presentation. Each font theme has its own set of options, so to fully take advantage of the font theme, you should look up the options in the Beamer User Guide. To use a font theme, use the command:

```
\usefonttheme{serif}
```

You can choose from these font themes:

```
serif                structurebold  
structureitalicserif  structuresmallcapsserif
```

Font Sizes

Choosing the font size for normal text is quite easy. You must locate the line in the header of your .tex document that looks like this:

```
\documentclass{beamer}
```

Then, add the appropriate option so it looks like this:

```
\documentclass[10pt]{beamer}
```

Instead of using 10pt, you could use 11pt (default size), or 12pt (slightly larger). Other options are also available but require additional packages to be installed. More information can be found in the Beamer User Guide.

Font Families

Different **font families** can be chosen to personalize your presentation. Each font family resides in a separate package. To use a different font family, add the following command to your preamble:

```
\usepackage{helvet}
```

Not all font families are available in every Beamer installation, but at least some of the following families will typically be available:

```
serif      avant      bookman    chancery   charter  
euler      helvet     mathtime   mathptm    mathptmx  
newcent    palatino   pifont     utopia
```

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Alignment

A frame can be assigned a **left**, **center**, or **right alignment** with the `flushleft`, `center`, and `flushright` environments. For example:

```
\begin{center}  
  The center-aligned text goes here.  
\end{center}
```

Center Aligned Example

The center-aligned text goes here.

Spacing

- A vertical space can be indicated by using the `\vskip<number>pt` command. For example, `\vskip15pt` will produce a 15 point vertical space
- Horizontal spaces are indicated similarly with the command `\hskip<number>pt`
- Horizontal spaces are useful for indenting text or graphics
- Other measurements can also be used, such as centimeters:
`\vskip2cm`
- Negative values can also be used to squeeze text or graphics together: `\vskip-10pt` or `\hskip-1cm`

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Lists

Lists are often used in presentations to organize information in a manner that is easier for the audience to follow. Beamer includes three methods for displaying lists:

Itemize Used to display a list of items that do not have a special ordering.

Enumerate Used to display a list of numbered, ordered items.

Description Used to display a list that explains or defines labels.

Lists - Itemize

Each list environment is structured in a very similar way. Each new item is indicated by the `\item` command.

Example of Itemize

```
\begin{itemize}  
\item The first item  
\item The second item  
\item The third item  
\item The fourth item  
\end{itemize}
```

- The first item
- The second item
- The third item
- The fourth item

Lists - Enumerate

By using the `enumerate` environment instead of the `itemize` environment, the items are displayed in a numbered list.

Example of Enumerate

```
\begin{enumerate}  
\item The first item  
\item The second item  
\item The third item  
\item The fourth item  
\end{enumerate}
```

- 1 The first item
- 2 The second item
- 3 The third item
- 4 The fourth item

Lists - Description

The `description` environment is slightly different. Each item takes the term being described as an option. The environment itself takes an option as well, which should be the longest term being described. This will set the indentation so the descriptions line up with each other.

Example of Description

```
\begin{description}[Second Item]
\item[First Item] Description of first item
\item[Second Item] Description of second item
\item[Third Item] Description of third item
\item[Fourth Item] Description of fourth item
\end{description}
```

Lists - Description

As you can see, the terms are on the left and are correctly indented so that their descriptions line up. The terms are also assigned a different color to set them apart from the descriptions.

Example of Description - Result

First Item Description of first item

Second Item Description of second item

Third Item Description of third item

Fourth Item Description of fourth item

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Overlays

- Having parts of your slides appear incrementally aids the audience by bringing their attention to the information that is currently being discussed.
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Overlays - Pause

An easy way to implement an *overlay* is to place the `\pause` command between the parts you want to show up separately.

For example, you could separate three items like this:

```
\textbf{Step 1:} Compute the maximal suffix of  $w$  with respect to  $\preceq_l$  (say  $v$ ) and the maximal suffix of  $w$  with respect to  $\preceq_r$  (say  $v'$ ).
```

```
\pause
```

```
\textbf{Step 2:} Find words  $u$ ,  $u'$  such that  $w = uv = u'v'$ .
```

```
\pause
```

```
\textbf{Step 3:} If  $|v| \leq |v'|$ , then output  $(u, v)$ . Otherwise, output  $(u', v')$ .
```

Overlays - Pause

Step1: Compute the maximal suffix of w with respect to \preceq_l (say v) and the maximal suffix of w with respect to \preceq_r (say v').

Step 2: Find words u, u' such that $w = uv = u'v'$.

Step 3: If $|v| \leq |v'|$, then output (u, v) . Otherwise, output (u', v') .

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Overlay Specifications

For more advanced overlays, many commands and environments incorporate **overlay specifications**.

To understand overlay specifications, we must first understand how a frame is displayed in the presentation.

Most often, a frame will represent a single slide in the presentation. However, to display effects such as appearing text, multiple slides are revealed in succession to give the *illusion* of more material appearing in the same slide.

For example, `\pause` creates multiple separate slides. The first slide displays the information contained above the first `\pause`, the second slide displays the information down to the second `\pause`, and so on.

Overlay Specifications

- Overlay specifications are given in pointed brackets (\langle, \rangle) and indicate which slide the corresponding information should appear on.
- The specification $\langle 1 - \rangle$ means “display from slide 1 on.” $\langle 1 - 3 \rangle$ means “display from slide 1 to slide 3.” $\langle - 3, 5 - 6, 8 - \rangle$ means “display on all slides except slides 4 and 7.”
- Here is an example:

```
\begin{itemize}
  \item<1>      $abcdcabca$
  \item<1-2>    $abcabcabca$
  \item<1-2>    $accaccacca$
  \item<1>      $bacabacaba$
  \item<1, 3>   $cacdaccacc$
  \item<1-2>    $caccaccacc$
\end{itemize}
```

Overlay Specifications - Example

In this example, a multiple choice question is asked and only the correct answers will appear on the second and third slides.

Which of these words u have $p(u) = 3$? What about $p(u) = 4$?

- *abcadcabca*
- *abcabcabca*
- *accaccacca*
- *bacabacaba*
- *cacdaccacc*
- *caccaccacc*

Overlay Specifications - Example

In this example, a multiple choice question is asked and only the correct answers will appear on the second and third slides.

Which of these words u have $p(u) = 3$? What about $p(u) = 4$?

- *abcadcabca*
- *abcabcabca*
- *accaccacca*
- *bacabacaba*
- *cacdaccacc*
- *caccaccacc*

Overlay Specifications - Example

In this example, a multiple choice question is asked and only the correct answers will appear on the second and third slides.

Which of these words u have $p(u) = 3$? What about $p(u) = 4$?

- *abca~~d~~cabca*
- *abcab~~c~~abca*
- *accacc~~a~~cca*
- ***bacabacaba***
- *cacdacc~~a~~cc*
- *caccacc~~a~~cc*

Overlay Specifications

Overlay specifications can also be used to make certain text commands take effect at different times. For example, this code applies the *alert* command only on specified slides:

Example Code

```
\alert{Alert on all slides}  
\alert<2>{Alert on slide 2}  
\alert<3>{Alert on slide 3}  
\alert<1,3>{Alert on slides 1 and 3}  
\alert<-2,4>{Alert on slides 1, 2 and 4}
```

Note: If you want each item of a list to appear in order, use the [`<+-->`] option. (i.e. `\begin{itemize} [<+-->])`

Overlay Specifications - Example

Result of Code

Alert on all slides

Alert on slide 2

Alert on slide 3

Alert on slides 1 and 3

Alert on slides 1, 2 and 4

Overlay Specifications - Example

Result of Code

Alert on all slides

Alert on slide 2

Alert on slide 3

Alert on slides 1 and 3

Alert on slides 1, 2 and 4

Overlay Specifications - Example

Result of Code

Alert on all slides

Alert on slide 2

Alert on slide 3

Alert on slides 1 and 3

Alert on slides 1, 2 and 4

Overlay Specifications - Example

Result of Code

Alert on all slides

Alert on slide 2

Alert on slide 3

Alert on slides 1 and 3

Alert on slides 1, 2 and 4

Overlay Specifications

Overlay specifications can be used with these commands to achieve the default effect:

<code>\textbf<2>{Sample}</code>	Sample
<code>\textit<2>{Sample}</code>	Sample
<code>\textsl<2>{Sample}</code>	Sample
<code>\alert<2>{Sample}</code>	Sample
<code>\textrm<2>{Sample}</code>	Sample
<code>\textsf<2>{Sample}</code>	Sample
<code>\color<2>{green} Sample</code>	Sample
<code>\structure<2>{Sample}</code>	Sample

Note: The effect will only appear on the second slide.

Overlay Specifications

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<code>\textbf<2>{Sample}</code>	Sample
<code>\textit<2>{Sample}</code>	<i>Sample</i>
<code>\textsl<2>{Sample}</code>	<i>Sample</i>
<code>\alert<2>{Sample}</code>	Sample
<code>\textrm<2>{Sample}</code>	Sample
<code>\textsf<2>{Sample}</code>	Sample
<code>\color<2>{green} Sample</code>	Sample
<code>\structure<2>{Sample}</code>	Sample

Note: The effect will only appear on the second slide.

Overlay Specifications - Special Commands

Some commands have special overlay specification effects:

<code>\onslide<1,2></code>	Text only appears on specified slides. If no text is given, any text following the command will only appear on the specified slides.
<code>\only<1,2></code>	Text only appears on specified slides. When the text is hidden, it will occupy no space.
<code>\visible<1,2></code>	Text appears on specified slides and is completely transparent, but still occupies space.
<code>\invisible<1,2></code>	The opposite of visible.

Overlay Specifications - Special Commands

<code>\alt<1,2></code>	Takes two arguments: one for the default text and a second for the alternate text. The default text shows up on the specified slides. The alternate text shows up on all unspecified slides.
<code>\temporal<1,2></code>	Takes three arguments: one for the text that will appear if the current slide comes before the specified slides, a second for the text that appears while currently on the specified slides, and a third for the text that appears after the specified slides have appeared.
<code>\uncover<1,2></code>	The text will only be "uncovered" on the specified slides. On other slides, the text will still be typeset and will appear transparent.

Overlay Specifications - Environments

Environments can also be overlay specification aware. For most environments, the entire environment will only appear on the specified slides.

Example

```
\begin{frame}
  \begin{theorem}<1->
    There exists an infinite set.
  \end{theorem}

  \begin{proof}<2->
    This follows from the axiom of infinity.
  \end{proof}
\end{frame}
```

Overlay Specifications - Environments

For each of the basic commands that take overlay specifications, there is an equivalent environment that will also take overlay specifications.

Command	Corresponding Environment
<code>\only</code>	<code>onlyenv</code>
<code>\alt</code>	<code>altenv</code>
<code>\visible</code>	<code>visibleenv</code>
<code>\uncover</code>	<code>uncoverenv</code>
<code>\invisible</code>	<code>invisibleenv</code>

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Tables

Simple tables can be created in Beamer with the `tabular` environment. We will begin with a simple table and add more detail as we go along.

- Tables start with the command `\begin{tabular}{ccc}`.
- `{ccc}` tells us the number of columns as well as the alignment of each column. This table has three columns; each column is center aligned.
- Columns can be aligned to the left `{l}`, center `{c}`, or right `{r}`.
- Alignments can be mixed up. For example, `{lcr}`.
- Tables are constructed in rows. An `&` divides each cell and each row must end with `\\`.
- `\end{tabular}` closes the table.

Tables

A typical Beamer table will start out like this:

Example Beamer Table

```
\begin{tabular}{ccc}  
  cell 1 & cell 2 & cell 3 \\  
  cell 4 & cell 5 & cell 6 \\  
\end{tabular}
```

cell 1	cell 2	cell 3
cell 4	cell 5	cell 6

Tables

We can add `\hline` between rows to divide rows more clearly:

Example Beamer Table

```
\begin{tabular}{ccc}  
  \hline  
  cell 1 & cell 2 & cell 3 \\  
  \hline  
  cell 4 & cell 5 & cell 6 \\  
  \hline  
\end{tabular}
```

cell 1	cell 2	cell 3
cell 4	cell 5	cell 6

Tables

We can add a “|” between column indicators to divide columns more clearly:

Example Beamer Table

```
\begin{tabular}{|c|c|c|}  
  cell 1 & cell 2 & cell 3 \\  
  cell 4 & cell 5 & cell 6 \\  
\end{tabular}
```

cell 1	cell 2	cell 3
cell 4	cell 5	cell 6

Tables

Use `\textbf` and multiple `\hline` commands to create a header:

Example Beamer Table

```
\begin{tabular}{c||c|c|c|}
  & \textbf{header 1} & & & \\
  \textbf{header 2} & & \textbf{header 4} & & \\
  \hline
  \hline
  \textbf{header 4} & cell 1 & cell 2 & cell 3 & \\
  \hline
  \textbf{header 5} & cell 4 & cell 5 & cell 6 & \\
\end{tabular}
```

	header 1	header2	header 3
header 4	cell 1	cell 2	cell 3
header 5	cell 4	cell 5	cell 6

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Structuring a Frame

Beamer provides many ways to *structure* your frames so they appear well organized and are easy for the audience to follow. This section will focus on:

- Columns
- Blocks
- Boxes (Borders)

Columns

The column environment is called as shown below:

```
\begin{columns}
  \column{.xx\textwidth}
  First column text and/or code

  \column{.xx\textwidth}
  Second column text and/or code
\end{columns}
```

where **xx** is the percentage of the width of the slide.

Columns - Example

Here is a simple example:

```
\begin{columns}
  \column{.5\textwidth}
    Column Number 1
  \column{.5\textwidth}
    Column Number 2
\end{columns}
```

Which gives us:

Column Number 1

Column Number 2

Blocks

Blocks can be used to separate a specific section of text or graphics from the rest of the frame:

```
\begin{block}{Introduction to {\LaTeX}}
```

```
``Beamer is a {\LaTeX}class for creating presentations  
that are held using a projector...''
```

```
\end{block}
```

Introduction to \LaTeX

“Beamer is a \LaTeX class for creating presentations that are held using a projector...”

Blocks

Other block environments are also available. Each environment can be used in place of `block` and has its own color scheme to keep your examples well organized.

Other Block Environments

Content Type	Corresponding Environment
Generic	<code>block</code>
Theorems	<code>theorem</code>
Lemmas	<code>lemma</code>
Proofs	<code>proof</code>
Corollaries	<code>corollary</code>
Examples	<code>example</code>
Hilghted Title	<code>alertblock</code>

Columns and Blocks

We can combine columns and blocks to make a much cleaner looking presentation.

```
\begin{columns}[t]
  \column{.5\textwidth}
    \begin{block}{Column 1 Header}
      Column 1 Body Text
    \end{block}
  \column{.5\textwidth}
    \begin{block}{Column 2 Header}
      Column 2 Body Text
    \end{block}
\end{columns}
```

Gives us...

Columns and Blocks

Column 1 Header

Column 1 Body Text

Column 2 Header

Column 2 Body Text

Notice that the `[t]` argument to the `columns` command top-aligned our blocks so they are vertically even as opposed to vertically centered on the slide.

Text Boxes

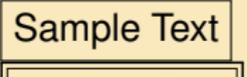
Borders can also be used to add structure and organization to your presentation. To access these commands, you must first add `\usepackage{fancybox}` to the preamble of your file. Here are some examples:

Text Border Examples

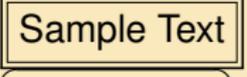
```
\shadowbox{Sample Text}
```

A rectangular box with a thick black shadow effect on the right and bottom sides, containing the text "Sample Text".

```
\fbox{Sample Text}
```

A simple rectangular box with a thin black border, containing the text "Sample Text".

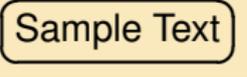
```
\doublebox{Sample Text}
```

A rectangular box with a double black border, containing the text "Sample Text".

```
\ovalbox{Sample Text}
```

An oval-shaped box with a thin black border, containing the text "Sample Text".

```
\Ovalbox{Sample Text}
```

A rounded oval-shaped box with a thin black border, containing the text "Sample Text".

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Graphics

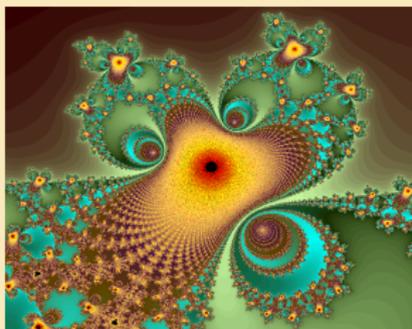
- Including graphics in a \LaTeX presentation is fairly simple, although limited.
- There are multiple packages with varying ease of use and graphic quality.
- For this tutorial, we will use the `graphics` package. Be sure to add `\usepackage{graphics}` to the preamble of your \LaTeX file.
- The `graphics` package supports the most common graphic formats `.pdf`, `.jpg`, `.jpeg`, and `.png`. Other formats must be converted to a supported format in an external editor.

Graphics

A graphic can be added in the same way it is added in a \LaTeX document by invoking the `\includegraphics` command.

Example Graphic

```
\includegraphics[height=3cm]{fractal.png}
```



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Themes

Themes can change the entire look and feel of your presentation. Different themes can be selected by using the

```
\usetheme{ }
```

command with one of the following arguments:

Antibes	Bergen	Berkeley	Berlin
Boadilla	Copenhagen	Darmstadt	Dresden
Frankfurt	Goettingen	Hannover	Ilmenau
Juanlespins	Madrid	Malmoe	Marburg
Montpellier	Paloalto	Pittsburgh	Rochester
Singapore	Warsaw		

Color Themes

If you like the layout of a certain theme but dislike the color, you can easily invoke a **color theme**, which is a set of complimentary colors for all the elements of your presentation. To use a color theme, place

```
\usecolortheme{default}
```

in the preamble of your .tex document and replace *default* with the theme of your choice:

```
albatross    crane       beetle     dove  
fly         seagull    wolverine beaver
```

Inner Color Themes

Inner color themes specify only colors of inner elements, most notably the colors of blocks. They are selected the same way regular color themes are chosen:

```
\usecolortheme{lily}
```

You can choose from:

```
lily  orchid  rose
```

Outer Color Themes

Outer color themes change the palette colors, which are the colors the headline, footline, and sidebar are based on. They are selected the same way regular color themes are chosen:

```
\usecolortheme{whale}
```

You can choose from:

```
whale  seahorse  dolphin
```

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Slide Transitions

- The PDF format offers a standardized way of defining transition effects from one slide to the next. For example, whatever was shown before the slide with the transition effect may dissolve to uncover the new slide.
- These effects should be used *sparingly* as to not distract from the content of the presentation.
- Be forewarned, different PDF viewers have different interpretations and levels of support for these effects.

Slide Transitions

A slide transition is composed of a single command. This command specifies which transitions should be used *when the frame is displayed*. We can include the `\transboxin` transition by placing the command anywhere in the affected frame.

Transboxin Slide Transition

```
\begin{frame}  
  \frametitle{Example of Transboxin}  
  \transboxin  
  Frame Body Text  
\end{frame}
```

Slide Transitions

- Slide transitions are overlay specification aware, so `\transboxin<2>` will cause the second slide of the frame to use the `\transboxin` effect.
- There are two possible options for each transition:
 - `duration=<seconds>` specifies the number of seconds the transitions effect needs.
 - `direction=<degree>` specifies the direction for directed effects.

Slide Transition Commands

The following transitions are available:

<code>\transblindshorizontal</code>	Horizontal blinds pulled away
<code>\transblindsvertical</code>	Vertical blinds pulled away
<code>\transboxin</code>	Move to center from all sides
<code>\transboxout</code>	Move to all sides from center
<code>\transdissolve</code>	Slowly dissolve what was shown before
<code>\transglitter</code>	Glitter sweeps in specified direction
<code>\transslipverticalin</code>	Sweeps two vertical lines in
<code>\transslipverticalout</code>	Sweeps two vertical lines out
<code>\transhorizontalin</code>	Sweeps two horizontal lines in
<code>\transhorizontalout</code>	Sweeps two horizontal lines out
<code>\transwipe</code>	Sweeps single line in specified direction
<code>\transduration{2}</code>	Show slide specified number of seconds

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More Information

Thank you for taking the time to read through this \LaTeX Beamer tutorial. You should now have the basic knowledge you need to make elegant, professional-looking presentations.

If you have any questions regarding the contents of this tutorial or \LaTeX Beamer, please refer to the *Beamer User Guide*, which is included with the Beamer package, or follow this link:

<http://www.ctan.org/tex-archive/macros/latex/contrib/beamer/doc/>.