

Beamer v3.0 Guide

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Why Beamer?

Pros:

- Both `dvi`/`ps`/`ps2pdf`¹ and `pdf \LaTeX` supports²
- Rich `overlay` and `transition` effects
- Navigational bars and symbols
- Outputs: screen, transparency, handouts, and notes
- Emulation of other PDF presentation tools such as *Prosper* and *Foil \TeX*

Cons:

- Difficult to design a template

¹You need this route if you use `PSTricks`.

²No `dvipdfm` support!

Basic Code I

- Beamer class loading with themes

```
\documentclass[slidestop,compress,mathserif]{beamer}  
\usepackage[bars]{beamerthemetree} % Beamer theme v 2.2  
\usetheme{Antibes} % Beamer theme v 3.0  
\usecolortheme{lily} % Beamer color theme
```

Basic Code I

- Beamer class loading with themes

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\documentclass[slidestop,compress,mathserif]{beamer}  
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\settheme{Antibes} % Beamer theme v 3.0  
\usecolortheme{lily} % Beamer color theme
```

- Cover title

```
\title{}  
\author{}  
\institute{}  
\begin{document}  
\begin{frame} % Cover slide  
  \titlepage  
\end{frame}  
% Instead, you can use \frame{\titlepage} (Beamer v 2.2 macro)
```

Basic Code II

- Main slide frame

```
\section{Introduction}           % Bookmark information
\subsection{History}            % Bookmark information
\begin{frame}[options]
  \frametitle{History}
  ... slide contents ...
\end{frame}
```

With v 2.2 macro:

```
\frame[options]{\frametitle{History}%
... slide contents ...
}%
```

Five Themes

- The main difference between v 3.0 and v 2.2 is *Beamer themes*.
- Five theme categories:
 - Presentation Themes – *Slide template*
 - Color Themes – *Color scheme for slide template*
 - Font Themes
 - Inner Themes
 - Outer Themes
- Example

```
\documentclass[slidestop,compress,mathserif]{beamer}  
%\usepackage[bars]{beamerthemetree} % Beamer theme v 2.2  
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\usecolortheme{lily} % Beamer color theme
```

- Go to [► Themes](#) for more information.

Beamer Options for Layout

- `[slidestop]` puts frame titles on the top left corner (default=`[slidescentered]`).
- `[compress]` makes all navigation bars as small as possible (default=`[uncompressed]`).
- `[red]` changes navigation bars and titles to reddish color.
 - `blue`: Default color scheme
 - `red`: Used in this presentation
 - `brown`
 - `blackandwhite`: Good for transparencies

Beamer Options for Output

- Default: PDF screen (size 128mm \times 96 mm)³.
 - `[handout]` for PDF handouts.
 - `[trans]` for PDF transparency.
- ⇒ For handout and trans, you need some extra work to enlarge the size. Click [here](#) to see an example!
- `[notes=hide/show/only]` for notes. Hide notes (default), add notes to the PDF screen, or notes only PDF.

³Monitor's 4:3 aspect ratio.

Additional Beamer Options

- `[hyperref={bookmarks=false}]` removes bookmarks.
- `[cjk]` for CJK typesetting. \Rightarrow For hangul, use `hfont` package.
- `\usepackage[utf8]{inputenc}` for Unicode.

Frame Options

- `\frame[plain]{\frametitle{}}..` for plane frame style as *used in this slide!*
- `[containsverbatim]` for using `verbatim` environment and `\verb` command.
- `[allowframebreaks]` for automatic split of frames if the contents do not fit in a single slide.
- `[shrink]` for shrinking the contents to fit in a single slide.
- `[squeeze]` for squeezing vertical space.

Transparency Effects

- All overlayed stuffs are covered (default)
- `\beamertemplatetransparentcoveredhigh` makes all covered text highly transparent
- `\beamertemplatetransparentcovereddynamicmedium` makes all covered text quite transparent, but is a dynamic way. The range of dynamics is smaller.

Text and Math Fonts I

- Excellent support for selecting text and math fonts.
- Default text and math fonts: **CMSS** and **CMR Math**
 - You should *avoid* CMR Math in presentation
 - Example: <http://faq.ktug.or.kr/wiki/uploads/MathFonts.pdf>
- Beamer option **[sans]** for text font (default)
 - `mathsans` is default.
 - Equivalent to `\usefonttheme{default}`
- Beamer option **[serif]** for text font
 - `mathserif` is default.
 - Equivalent to `\usefonttheme[options]{serif}`
- Beamer option **[mathsans/mathserif]** for math font

Text and Math Fonts II

- Beamer option `[professionalfonts]` to turn off Beamer's internal font rewriting (\Rightarrow Equivalent to `\usefonttheme{professionalfonts}`)
- Additional font theme macros
 - `\usefonttheme{structurebold}` for bold faced structures (titles, headlines, footlines, sidebars, ...)
 - `\usefonttheme{structureitalicserif}`
 - `\usefonttheme{structuresmallcapsserif}`
- Font settings in this document:

```
\documentclass[mathserif]{beamer} % sans (text) + mathserif
\usepackage{lucidaso}           % Lucida Bright (S0 Version)
\usepackage[small]{eulervm}     % Euler VM
```

Font Size

- Default font size: 11pt (At the full screen mode this font size corresponds to 22 pt.)
- Available font size options: 8pt, 9pt, 10pt, 11pt, 12pt, 14pt, 17pt, 20pt

Color Definition

- Beamer loads `xcolor` package by Uwe Kern, which also supports `color` and `pstcol`.
- 'xcolor' definition
 - `\xdefinecolor{lavendar}{rgb}{0.8,0.6,1}`
 - `\xdefinecolor{olive}{cmyk}{0.64,0,0.95,0.4}`
 - `\colorlet{structure}{green!60!black}` for color substitution
 - Predefined colors: red, green, blue, cyan, magenta, yellow, black, darkgray, gray, lightgray, orange, violet, purple, and brown
- If you want to use the options of 'color' package, pass `[color=option]` option to Beamer.
- If you want to use 'pstcol', pass `[xcolor=pst,dvips]` option to Beamer. Now you should use `'dvips/ps2pdf'`

More colors in 'xcolor' package

- Color mixing is very easy!

color	example	meaning
green!80!gray	text	80% green + 20% gray
green!60!gray	text	60% green + 40% gray
green!40!gray	text	40% green + 60% gray
-green	text	remove green from above

- You can use **animate** (Beamer macro) or **multido** (PSTricks macro) for fade-in and fade-out!

Highlighting Colors

- Beamer also has theme-specific highlighting colors:
 - `\alert{text}` \Rightarrow `text`
 - `\structure{text}` \Rightarrow `text`
- To change these colors:
 - `\usecolortheme[named=yellow]{structure}` to change to yellow.
 - `\setbeamercolor{alerted_text}{fg=cyan}`⁴ to change to cyan.

⁴'_' means space.

Background Colors

- To set **solid** background color,
`\beamersetaveragebackground{color}` or
`\beamertemplatesolidbackgroundcolor{color}`
- To set **gradient** background color,
`\beamertemplateshadingbackground{color1}{color2}`. \Rightarrow The
colors in this slide is `{blue!5}{yellow!10}`.
- To set **grid** background,
`\beamertemplategridbackground[grid_space]`.

Color Example

- Color changes in
 - Navigational bars
 - Background
 - `structure{..}` color

Color Example

- Color changes in
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 - Background
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- Code:

```
\colorlet{mystruct}{structure} % Save current structure
\colorlet{structure}{magenta} % New structure
\usestructuretemplate{\color{structure}}{} % \structure{..}
\beamertemplateshadingbackground{yellow!50}{magenta!50} % New background
\frame{%
  ...
}%
% Back to the original "structure" and bg color schemes
\colorlet{structure}{mystruct}
\beamertemplateshadingbackground{blue!10}{yellow!10}
```

Verbatim w/o Overlays

- ‘\verb’ or ‘verbatim’ cannot be *directly* used in Beamer!
- If there is **no overlay**, use `\frame[containsverbatim]`

```
\frame[containsverbatim]{\frametitle{..}%  
  \begin{verbatim}  
    .. verbatim contents ..  
  \end{verbatim}  
}%
```

- Now in-line verbatim is possible with ‘\verb’.
- Color and size can be easily changed.

Inline Verbatim with Overlays

- My solution: `\path{..}` instead of `\verb.`
 - Color: `Hello`, `Hello`
 - Size: `Hello`, `Hello`, `Hello`

Inline Verbatim with Overlays

- My solution: `\path{..}` instead of `\verb.`
 - Color: `He11o`, `He11o`
 - Size: `He11o`, `He11o`, `He11o`
- Beamer solution: `\defverb\command|contents|` outside the frame.
 - Define `\defverb\myverb|He11o,World!|`
 - Then use `\myverb` \Rightarrow `He11o, World!`

Verbatim with Overlays

- Use *lstlisting* environment instead of *verbatim* environment.
- Define `\defverbatim[colored]\command{contents}` outside frame.
- 'contents' are the `listing` environment.

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- ‘contents’ are the `listing` environment.
- Example:

```
\defverbatim[colored]\testcode{%  
  \begin{lstlisting}[frame=single,emph={ga},emphstyle=\color{olive}]  
    ...  
  \end{lstlisting}}%  
\frame{%  
  \testcode  
}%
```

Figures Intro

- Standard \LaTeX `figure` environment can be used.
- Beamer also loads *pgf* package. So PGF command, `\pgfimage[]\{file\}`, is also possible.
- `\includegraphics`, `\pgfimage`, and `\pdfuseimage` understand `overlays`.

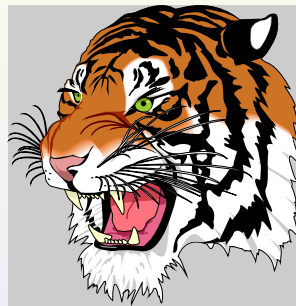


Figure: Tiger

PGF Macros



- **PSTricks** and **PGF** can be used for locating figures *exactly*.
- Grid size of slide: $(LL \times UR) = (0\text{cm}, -7\text{cm}) \times (11\text{cm}, 1\text{cm})$
- PGF macro for locating figures:

```
\pgfputat{\pgfxy(0,-6.5)}{\pgfbox[1left,base]{\pgfimage[width=1cm]{tiger}}}
```

- If you use the same figure several times, use **\pgfdecalreimage** and **\pgfuseimage**. Or just use **\includegraphics**.



Figures inside Columns

- Figures inside 'columns' environment need exact position.

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```
\begin{columns}
\begin{column}{0.65\textwidth}
  A\\B
\end{column}
\begin{column}{0.35\textwidth}
  \pgfputat{\pgfxy(0,0)}{\pgfbox[left,top]{\includegraphics[width=\textwidth]{tig
\end{column}
\end{columns}
```

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```

\begin{columns}
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\end{column}
\begin{column}{0.35\textwidth}
  \pgfputat{\pgfxy(0,0)}{\pgfbox[left,top]{\includegraphics[width=\textwidth]{tiger}}
\end{column}
\end{columns}

```

- PSTricks macros (EPS with dvips)

```

\begin{columns}
\begin{column}{0.65\textwidth}
  A\\B
\end{column}
\begin{column}{0.35\textwidth}
  \rput[t](0,0){\includegraphics[clip=true,width=\textwidth]{tiger}}
\end{column}
\end{columns}

```

Zooming Figures

- Figures can be **zoomed**⁵ using `\framezoom<button overlay><zoomed overlay>(x,y)(w,h)`.
- (x, y) : Upper left coordinate point
 (w, h) : Width and height for zooming
- Example:

```
\frame{\frametitle{Zooming Figures -- Example}  
\framezoom<1><2>[border](0.5cm,0.5cm)(2cm,1.5cm)  
\framezoom<1><3>[border](1cm,3cm)(2cm,1.5cm)  
\framezoom<1><4>[border](3cm,2cm)(2cm,2cm)  
  
\pgfimage[height=6cm]{tiger}  
%\includegraphics[height=6cm]{tiger} is working, too!  
}%
```

⁵New in Version 2.2

Zooming Figures – Example



Click the border to zoom-in.

Zooming Figures – Example



Zooming Figures – Example



Zooming Figures – Example



Drawing Figures

- The most powerful and easiest-to-use package, *PSTricks*, does not work with pdf_latex due to fundamental differences in PS and PDF.

⁶Note that Beamer does not support dvipdfm.

Drawing Figures

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- *PGF* (portable graphics format) by the Beamer author.
 - Less powerful than PSTricks, but works fine.
 - Supports dvips, dvipdfm⁶, and pdf_latex.

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- *MetaPost*
 - Works with dvips/ps2pdf, dvipdfm, and pdf_latex

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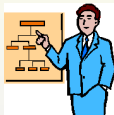
Drawing Figures

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- *PGF* (portable graphics format) by the Beamer author.
 - Less powerful than PSTricks, but works fine.
 - Supports dvips, dvipdfm⁶, and pdf_latex.
- *MetaPost*
 - Works with dvips/ps2pdf, dvipdfm, and pdf_latex
- I prefer *Beamer + PSTricks*.
⇒ See [beamer_pstricks.pdf](#) [1]

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Masking Figures

- Want to mask *white background* of your images?



+ =

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- Make a mask image in **256 Colors** and **JPEG Compression**⁷

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- Use `\pgfdec1aremask` in pdf package. But only works with **pdf_latex**!

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Masking Figures

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- Make a mask image in **256 Colors** and **JPEG Compression**⁷
- Use `\pgfdec\aremask` in pdf package. But only works with **pdf_latex**!
- Source code:

```
\pgfdec\aremask{mymask}{ppt.mask}           % Mask image: ppt.mask.jpg
\pgfimage[mask=mymask,interpolate=true]{ppt} % Masking ppt.png
```

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- Source code:

```
\pgfdec1aremask{mymask}{ppt.mask}           % Mask image: ppt.mask.jpg
\pgfimage[mask=mymask,interpolate=true]{ppt}  % Masking ppt.png
```

- But the mask image masks the whole slide! See the font outlines.

⁷I do not know the exact requirement.

Fancy Bullets

- 1 `\beamertemplateballitem` in the preamble
- 2 `itemize` environment \Rightarrow Fancy ball
- 3 `enumerate` environment \Rightarrow Fancy numbered ball (used here).

Fancy Bullets

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- ❷ `itemize` environment \Rightarrow Fancy ball
- ❸ `enumerate` environment \Rightarrow Fancy numbered ball (used here).

To use different enumerate templates,

```
\begin{enumerate}[minitemplate]  
  \item ...  
\end{enumerate}
```

where **mini template** can be 'A', 'a', 'i', 'I', '(A)', But the indentation may be changed (bug?)

- i Item 1
- ii Item 2

Framed Text – Predefined

- Beamer supports predefined framed texts:
 - **theorem**, **corollary**, **definition** in structure color frame
 - **examples** in green color frame
 - **block** in structure color frame with your own title
 - **alertblock** in alert color frame with your own title

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- They are aware of **overlay**
- But their color schemes are *theme dependent*

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Summary

Beamer is excellent!

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 - `theorem`, `corollary`, `definition` in structure color frame
 - `examples` in green color frame
 - `block` in structure color frame with your own title
 - `alertblock` in alert color frame with your own title
- They are aware of `overlay`
- But their color schemes are *theme dependent*
- Example:

Summary

Beamer is excellent!

- Sample code:

```
\begin{block}<+>{Summary}  
  Beamer is excellent  
\end{block}
```

Framed Text – User-defined

- `beamerboxesrounded` environment
- Example

Theorem

$$A = B$$

$$B = C$$

\Rightarrow

Theorem

$$A = C?$$

Framed Text – User-defined

- `beamerboxesrounded` environment
- Example

Theorem

$$A = B$$

$$B = C$$

⇒

Theorem

$$A = C?$$

- Source Code:

```
\setbeamercolor{uppercol}{fg=white,bg=ugreen}%  
\setbeamercolor{lowercol}{fg=black,bg=lgreen}%  
\begin{beamerboxesrounded}[upper=uppercol,lower=lowercol,shadow=true]{Theorem}  
  $A = B$.  
\end{beamerboxesrounded}}
```

Columns

- Use \LaTeX `minipage` environment or
- Use Beamer `columns` environment

```
\begin{columns}  
  \begin{column}[pos]{width}  
    ... contents ...  
  \end{column}  
  \begin{column}[pos]{width}  
    ... contents ...  
  \end{column}  
\end{columns}
```

Tables

- Standard \LaTeX table environment can be used.
- `\onslide` inside '`overprint`' environment for showing overlays in the right example.

Table Overlays:

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-------	-----	---------

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Table Overlays:

Cells	are	growing
step	by	
step.		Finished!

Transitions

- PDF supports **seven** transitions: Blinds, Box, Dissolve, Glitter, Replace, Split, Wipe.
- Transition commands are inside frame environment.
- Beamer transition commands understand **overlays**. Without overlays the transition is *global* to the current frame.

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- Overlaid transition examples:
 - Glitter at /Di 315 (default on this slide): `\transglitter[direction=315]`

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 - Glitter at /Di 315 (default on this slide): `\transglitter[direction=315]`
 - Boxout`\transboxout<3>`

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 - Boxout `\transboxout<3>`
 -Boxin: `\transboxin<4>`

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 - Glitter at /Di 315 (default on this slide): `\transglitter[direction=315]`
 - Boxout `\transboxout<3>`
 - Boxin: `\transboxin<4>`
 - Dissolve transition: `\transdissolve<5>`

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 - Boxout `\transboxout<3>`
 -Boxin: `\transboxin<4>`
 - Dissolve transition: `\transdissolve<5>`
 - Split vertical out: `\transsplitverticalout<6>`

Overlays - Overview

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- Beamer provides plenty of overlay commands.

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- Key overlay functions are:
 - Stepwise viewing
 - Replace
 - Highlighting

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- Beamer provides plenty of overlay commands.
- Key overlay functions are:
 - Stepwise viewing
 - Replace
 - Highlighting
- Various overlay counters: 'n', 'n-', '-n', 'n1-n2', '+-'

Pause for Stepwise Viewing

`pause` command⁸ for easy and simple overlays.

```
\begin{itemize}
\pause\item Every thing
\pause\item that has
\pause\item beginning
\pause\item has end.
\end{itemize}
```

⁸There is also `\unpause` command.

Pause for Stepwise Viewing

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\begin{itemize}
\pause\item Every thing
\pause\item that has
\pause\item beginning
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```

- Every thing

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- Every thing
- that has

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```

- Every thing
- that has
- beginning

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`pause` command⁸ for easy and simple overlays.

<code>\begin{itemize}</code>	• Every thing
<code>\pause \item Every thing</code>	• that has
<code>\pause \item that has</code>	• beginning
<code>\pause \item beginning</code>	• has end.
<code>\pause \item has end.</code>	
<code>\end{itemize}</code>	

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`pause` command⁸ for easy and simple overlays.

<code>\begin{itemize}</code>	• Every thing
<code>\pause\item Every thing</code>	• that has
<code>\pause\item that has</code>	• beginning
<code>\pause\item beginning</code>	• has end.
<code>\pause\item has end.</code>	
<code>\end{itemize}</code>	

Note that pause does not know `overlay counters`.

⁸There is also `\unpause` command.

Pause: Table Example

- Row increment in a table:

Pause: Table Example

- Row increment in a table:

Class	A	B	C	D
X	1	2	3	4

Pause: Table Example

- Row increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6

Pause: Table Example

- Row increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6
Z	5	6	7	8

Pause: Table Example

- Row increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6
Z	5	6	7	8

- Source code:

```
\rowcolors[] {1} {blue!20} {blue!10}
\begin{tabular}{l!{\vrule}cccc}
  Class & A & B & C & D \\ \hline
  X & 1 & 2 & 3 & 4 \pause \\
  Y & 3 & 4 & 5 & 6 \pause \\
  Z & 5 & 6 & 7 & 8 \\
\end{tabular}
```

Onslide for Stepwise Viewing

- `\onslide<n->stuff` shows stuff on the given slides.

Onslide for Stepwise Viewing

- `\onslide<n->stuff` shows stuff on the given slides.
- Example: Column increment in a table:

Class	A
X	1
Y	3
Z	5

Onslide for Stepwise Viewing

- `\onslide<n->stuff` shows stuff on the given slides.
- Example: Column increment in a table:

Class	A	B
X	1	2
Y	3	4
Z	5	6

Onslide for Stepwise Viewing

- `\onslide<n->stuff` shows stuff on the given slides.
- Example: Column increment in a table:

Class	A	B	C
X	1	2	3
Y	3	4	5
Z	5	6	7

Onslide for Stepwise Viewing

- `\onslide<n->stuff` shows stuff on the given slides.
- Example: Column increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6
Z	5	6	7	8

Onslide for Stepwise Viewing

- `\onslide<n->stuff` shows stuff on the given slides.
- Example: Column increment in a table:

Class	A	B	C	D
X	1	2	3	4
Y	3	4	5	6
Z	5	6	7	8

- Source code:

```
\rowcolors[] {1} {blue!20} {blue!10}
\begin{tabular}{l!{\vrule}c<{\onslide<2->}c<{\onslide<3->} %
               c<{\onslide<4->}c<{\onslide}c}
  Class & A & B & C & D \\
  X & 1 & 2 & 3 & 4 \\
  Y & 3 & 4 & 5 & 6 \\
  Z & 5 & 6 & 7 & 8 \\
\end{tabular}
```

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

```
\begin{itemize}
\item<2-> Every thing
\item<3-> that has
\item<4-> beginning
\item<5-> has end.
\end{itemize}
```

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

```
\begin{itemize}
```

```
\item<2-> Every thing
```

```
\item<3-> that has
```

```
\item<4-> beginning
```

```
\item<5-> has end.
```

```
\end{itemize}
```

- Everything

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

```
\begin{itemize}
```

```
\item<2-> Every thing
```

```
\item<3-> that has
```

```
\item<4-> beginning
```

```
\item<5-> has end.
```

```
\end{itemize}
```

- Everything

- that has

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

`\begin{itemize}`

`\item<2->` Every thing

`\item<3->` that has

`\item<4->` beginning

`\item<5->` has end.

`\end{itemize}`

- Everything
- that has
- beginning

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

`\begin{itemize}`

`\item<2->` Every thing

`\item<3->` that has

`\item<4->` beginning

`\item<5->` has end.

`\end{itemize}`

- Everything

- that has

- beginning

- has end.

Item I for Stepwise Viewing

`\item<n->` for incremental overlays with overlay counters.

```
\begin{itemize}
```

```
\item<2-> Every thing
```

```
\item<3-> that has
```

```
\item<4-> beginning
```

```
\item<5-> has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

- has end.

What if more items are *inserted*?

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]  
\item Every thing  
\item that has  
\item beginning  
\item has end.  
\end{itemize}
```

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

● Everything

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything

- that has

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

- has end.

Item II for Stepwise Viewing

`<+>` for incremental overlays w/o overlay counters.

```
\begin{itemize}[<+>]
```

```
\item Every thing
```

```
\item that has
```

```
\item beginning
```

```
\item has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

- has end.

Note that `\item<+>` can be used instead of global setting of `\begin{itemize}[<+>]`.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

```
\begin{itemize}
\item<1-> Every thing
\item<3-4> that has
\item<4> beginning
\item<2-5> has end.
\end{itemize}
```

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

```
\begin{itemize}
```

```
\item<1-> Every thing
```

```
\item<3-4> that has
```

```
\item<4> beginning
```

```
\item<2-5> has end.
```

```
\end{itemize}
```

● Everything

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

`\begin{itemize}`

`\item<1->` Every thing

`\item<3-4>` that has

`\item<4>` beginning

`\item<2-5>` has end.

`\end{itemize}`

● Everything

● has end.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

`\begin{itemize}`

`\item<1->` Every thing

`\item<3-4>` that has

`\item<4>` beginning

`\item<2-5>` has end.

`\end{itemize}`

- Everything

- that has

- has end.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

`\begin{itemize}`

`\item<1->` Every thing

`\item<3-4>` that has

`\item<4>` beginning

`\item<2-5>` has end.

`\end{itemize}`

- Everything

- that has

- beginning

- has end.

Item III for Stepwise Viewing

`\item<n1-n2>` for fine control of overlays.

`\begin{itemize}`

`\item<1->` Every thing

`\item<3-4>` that has

`\item<4>` beginning

`\item<2-5>` has end.

`\end{itemize}`

● Everything

● has end.

Replace

- Successive `\only<n>\{..\}`.

(Ex) `\only<1>\{GA\}``\only<2>\{MOGA\}``\only<3>\{pMOGA\}` \Rightarrow GA

Slide 1

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.

(Ex) `\only<1>\{GA\}``\only<2>\{MOGA\}``\only<3>\{pMOGA\}` \Rightarrow **MOGA**

Slide 2

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.

(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`

Slide 3

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.

(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`

- `\uncover<n>\{..\}` shows at given n.

(Ex) `\uncover<5>\{I am 5\}` \Rightarrow

Slide 4

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.
(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`
- `\uncover<n>\{..\}` shows at given n.
(Ex) `\uncover<5>\{I am 5\}` \Rightarrow `I am 5`

Slide 5

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.

(Ex) `\only<1>\{GA\}``\only<2>\{MOGA\}``\only<3>\{pMOGA\}` \Rightarrow `pMOGA`

- `\uncover<n>\{..\}` shows at given n.

(Ex) `\uncover<5>\{I am 5\}` \Rightarrow

Slide 6

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.
(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`
- `\uncover<n>\{..\}` shows at given n.
(Ex) `\uncover<5>\{I am 5\}` \Rightarrow
- `\invisible<n>\{..\}` hides at given n.
(Ex) `\invisible<8>\{Invisible at 8\}` \Rightarrow `Invisible at 8`

Slide 7

⁹See also highlighting section.

Replace

- Successive `\only<n>{..}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA} \Rightarrow` `pMOGA`
- `\uncover<n>{..}` shows at given n.
(Ex) `\uncover<5>{I am 5} \Rightarrow`
- `\invisible<n>{..}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8} \Rightarrow`

Slide 8

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.

(Ex) `\only<1>\{GA\}``\only<2>\{MOGA\}``\only<3>\{pMOGA\}` \Rightarrow `pMOGA`

- `\uncover<n>\{..\}` shows at given n.

(Ex) `\uncover<5>\{I am 5\}` \Rightarrow

- `\invisible<n>\{..\}` hides at given n.

(Ex) `\invisible<8>\{Invisible at 8\}` \Rightarrow `Invisible at 8`

Slide 9

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.
(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`
- `\uncover<n>\{..\}` shows at given n.
(Ex) `\uncover<5>\{I am 5\}` \Rightarrow
- `\invisible<n>\{..\}` hides at given n.
(Ex) `\invisible<8>\{Invisible at 8\}` \Rightarrow `Invisible at 8`
- `\alt<n>\{at n\}\{not at n\}` for two alternatives.
(Ex) `\alt<11>\{I am 11\}\{I am not 11\}` \Rightarrow `I am not 11`

Slide 10

⁹See also highlighting section.

Replace

- Successive `\only<n>{...}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA}` \Rightarrow `pMOGA`
- `\uncover<n>{...}` shows at given n.
(Ex) `\uncover<5>{I am 5}` \Rightarrow
- `\invisible<n>{...}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8}` \Rightarrow `Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11}` \Rightarrow `I am 11`

Slide 11

⁹See also highlighting section.

Replace

- Successive `\only<n>\{..\}`.
(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`
- `\uncover<n>\{..\}` shows at given n.
(Ex) `\uncover<5>\{I am 5\}` \Rightarrow
- `\invisible<n>\{..\}` hides at given n.
(Ex) `\invisible<8>\{Invisible at 8\}` \Rightarrow `Invisible at 8`
- `\alt<n>\{at n\}\{not at n\}` for two alternatives.
(Ex) `\alt<11>\{I am 11\}\{I am not 11\}` \Rightarrow `I am not 11`

Slide 12

⁹See also highlighting section.

Replace

- Successive `\only<n>{...}`.
(Ex) `\only<1>{GA}\only<2>{MOGA}\only<3>{pMOGA} \Rightarrow` `pMOGA`
- `\uncover<n>{...}` shows at given n.
(Ex) `\uncover<5>{I am 5} \Rightarrow`
- `\invisible<n>{...}` hides at given n.
(Ex) `\invisible<8>{Invisible at 8} \Rightarrow` `Invisible at 8`
- `\alt<n>{at n}{not at n}` for two alternatives.
(Ex) `\alt<11>{I am 11}{I am not 11} \Rightarrow` `I am not 11`
- `\temporal<n>{before}{at n}{after}` for three alternatives.⁹
(Ex) `\temporal<14>{I am 13}{I am 14}{I am 15} \Rightarrow` `I am 13`

Slide 13

⁹See also highlighting section.

Replace

- Successive `\only<n>\{...\}`.
(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`
- `\uncover<n>\{...\}` shows at given n.
(Ex) `\uncover<5>\{I am 5\}` \Rightarrow
- `\invisible<n>\{...\}` hides at given n.
(Ex) `\invisible<8>\{Invisible at 8\}` \Rightarrow `Invisible at 8`
- `\alt<n>\{at n\}\{not at n\}` for two alternatives.
(Ex) `\alt<11>\{I am 11\}\{I am not 11\}` \Rightarrow `I am not 11`
- `\temporal<n>\{before\}\{at n\}\{after\}` for three alternatives.⁹
(Ex) `\temporal<14>\{I am 13\}\{I am 14\}\{I am 15\}` \Rightarrow `I am 14`

Slide 14

⁹See also highlighting section.

Replace

- Successive `\only<n>\{...\}`.
(Ex) `\only<1>\{GA\}\only<2>\{MOGA\}\only<3>\{pMOGA\}` \Rightarrow `pMOGA`
- `\uncover<n>\{...\}` shows at given n.
(Ex) `\uncover<5>\{I am 5\}` \Rightarrow
- `\invisible<n>\{...\}` hides at given n.
(Ex) `\invisible<8>\{Invisible at 8\}` \Rightarrow `Invisible at 8`
- `\alt<n>\{at n\}\{not at n\}` for two alternatives.
(Ex) `\alt<11>\{I am 11\}\{I am not 11\}` \Rightarrow `I am not 11`
- `\temporal<n>\{before\}\{at n\}\{after\}` for three alternatives.⁹
(Ex) `\temporal<14>\{I am 13\}\{I am 14\}\{I am 15\}` \Rightarrow `I am 15`

Slide 15

⁹See also highlighting section.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The development of pMSGa is based on NSGA-II and PGAPack.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The main difference is sharing again and new density function.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The main difference is sharing again and new density function.
- `\onslide<n>` in `overprint` environment:
This is a first line.
This is a second, long line.

More Replaces

In case of subtle differences in the heights of replacements, `overlayarea` and `overprint` environments can be used.

- `\only<n>` in `overlayarea` environment:
The main difference is sharing again and new density function.
- `\onslide<n>` in `overprint` environment:
The previous two lines are replaced by this one.

Simple Highlighting

`\item <+ | alert@+>` for automatic highlighting.

```
\begin{itemize}
\item <+ | alert@+> Every thing
\item <+ | alert@+> that has
\item <+ | alert@+> beginning
\item <+ | alert@+> has end.
\end{itemize}
```

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

● Everything

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

● Everything

● that has

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- **beginning**

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Simple Highlighting

`\item <+ - | alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+ - | alert@+> Every thing
```

```
\item <+ - | alert@+> that has
```

```
\item <+ - | alert@+> beginning
```

```
\item <+ - | alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

Simple Highlighting

`\item <+-| alert@+>` for automatic highlighting.

<code>\begin{itemize}</code>	● Everything
<code>\item <+- alert@+></code> Every thing	● that has
<code>\item <+- alert@+></code> that has	● beginning
<code>\item <+- alert@+></code> beginning	● has end.
<code>\item <+- alert@+></code> has end.	
<code>\end{itemize}</code>	

- You can also use `\begin{itemize}[<+-|alert@+>]` instead of individual `'\item <+-| alert@+>'`.

Simple Highlighting

`\item <+-| alert@+>` for automatic highlighting.

```
\begin{itemize}
```

```
\item <+-| alert@+> Every thing
```

```
\item <+-| alert@+> that has
```

```
\item <+-| alert@+> beginning
```

```
\item <+-| alert@+> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- has end.

- You can also use `\begin{itemize}[<+-|alert@+>]` instead of individual `'\item <+-| alert@+>'`.
- You can also use `structure` instead of `alert`.

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
\item<2->\alert<2> Every thing
\item<2->\alert<3> that has
\item<2->\alert<4> beginning
\item<2->\alert<5> has end.
\end{itemize}
```

Alert for Highlighting

`\item<n->\alert<n>{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

- has end.

Alert for Highlighting

`\item<n->\alert<n>{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything

- that has

- beginning

- has end.

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything
- that has
- **beginning**
- has end.

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

```
\begin{itemize}
```

```
\item<2->\alert<2> Every thing
```

```
\item<2->\alert<3> that has
```

```
\item<2->\alert<4> beginning
```

```
\item<2->\alert<5> has end.
```

```
\end{itemize}
```

- Everything
- that has
- beginning
- **has end.**

Alert for Highlighting

`\item<n->\alert<n>\{stuff}` is better than the previous automatic one.

<code>\begin{itemize}</code>	● Everything
<code>\item<2->\alert<2></code> Every thing	● that has
<code>\item<2->\alert<3></code> that has	● beginning
<code>\item<2->\alert<4></code> beginning	● has end.
<code>\item<2->\alert<5></code> has end.	
<code>\end{itemize}</code>	

Note that `\item<2->\alert<2>` is same to `\item<2- | alert@2>`.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}\color{col2}..}` for active/inactive highlighting

Alternative for Highlighting

- `\alt<n>{\color{col1}..}{\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}{\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}{\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}{\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.

Alternative for Highlighting

- `\alt<n>{\color{col1}..}{\color{col2}..}` for active/inactive highlighting
- Example:
 - Everything
 - that has
 - beginning
 - has end.
- Source code:

```
\begin{itemize}
  \item<2-> \alt<2>{\color{blue} Everything}{\color{gray} Everything}
  \item<2-> \alt<3>{\color{blue} that has}{\color{gray} that has}
  \item<2-> \alt<4>{\color{blue} beginning}{\color{gray} beginning}
  \item<2-> \alt<5>{\color{blue} has end.}{\color{gray} has end.}
\end{itemize}
```

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.

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Temporal for Highlighting

- `\temporal<n>{before}{on}{after}` for incremental highlighting
- Ready?
 - Everything
 - that has
 - beginning
 - has end.
- Source code:

```
\def\hilite<#1>{%  
  \temporal<#1>{\color{gray}}{\color{blue}}%  
    {\color{blue!25}}}  
  
...  
\begin{itemize}  
  \hilite<3> \item Everything  
  \hilite<4> \item that has  
  \hilite<5> \item beginning  
  \hilite<6> \item has end.  
\end{itemize}
```

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.

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- Example

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- Example
 - **Everything** (`\color<3-4>{olive}{Everything}`)

Other Highlightings

- `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, and `\color` also understand overlays.
- Example
 - `Everything` (`\color<3-4>{olive}{Everything}`)
 - that has

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- Example
 - Everything (`\color<3-4>{olive}{Everything}`)
 - that has
 - **beginning** (`\color<5>[rgb]{.9,.5,.5}beginning`)

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- Example
 - Everything (`\color<3-4>\{olive\}{Everything}`)
 - that has
 - beginning (`\color<5>[rgb]{.9,.5,.5}beginning`)
 - has end.

Animation

- For dynamic presentation Beamer supports *transition*, *overlay*, and *animation*.
- Animation depends on your imagination and \LaTeX skill.

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- Supported animation types
 - Animate + Overlay
 - Animatevalue
 - Timed overlays (auto advancing)

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- Animation depends on your imagination and \LaTeX skill.
- Supported animation types
 - Animate + Overlay
 - Animatevalue
 - Timed overlays (auto advancing)
- Use with caution as animation needs *lots* of slides

Animate + Overlay

- `\animate<n>`¹⁰ for automatic stepwise viewing

¹⁰Remember that n can be n1-n2, n1-, or etc.

Animate + Overlay

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- Ready?

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Animate + Overlay

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- Source code:

```
\frame{\animate<3-6>\frametitle{Animate + Overlay}%  
...  
\begin{itemize}[<+>]  
  \item Everything  
  \item that has  
  \item beginning  
  \item has end.  
\end{itemize}
```

¹⁰Remember that n can be n1-n2, n1-, or etc.

Animatevalue

- `\animate<n>` to animate 'n' slides
- `\animatevalue<n>{name}{start}{end}` for specifying animation effects
 - name: counter or dimension
 - start and end values of the value

Flying Animation

- `\animate` and `\animatevalue` are used.
- This animation consumes 31 pages!
- Ready to explore?

Flying in from right!

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*Flying in from **right!***

left!

Flying Animation

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- This animation consumes 31 pages!
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*Flying in from **right!***

m left!

Flying Animation

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- This animation consumes 31 pages!
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*Flying in from **right!***

*from **left!***

Flying Animation

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*Flying in from **right!***

*in from **left!***

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*Flying in from **right!***

*ing in from **left!***

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Flying Animation - Source

```
\newcount\opaqueness
\newdimen\offset
\frame{\frametitle{Flying Animation}%
\animate<2-15,17-30>          % Actual animation values. Try <1-31>
\begin{itemize}
  \item[]
    \animatevalue<1-15>{\opaqueness}{0}{100}%
    \animatevalue<1-15>{\offset}{6cm}{0cm}%
    \begin{colormixin}{\the\opaqueness!averagebackgroundcolor}
      \hspace{\offset} Flying in from {\color{olive} right}!
    \end{colormixin}

  \item[]
    \animatevalue<17-31>{\opaqueness}{0}{100} % Starts at 17, not 16, to give
    \animatevalue<17-31>{\offset}{-5cm}{0cm} % one pause!
    \begin{colormixin}{\the\opaqueness!averagebackgroundcolor}
      \hspace{\offset} Flying in from {\color{olive} left}!
    \end{colormixin}
\end{itemize}
```

Timed Overlays

- Adobe Reader supports *timed overlays*, often called *auto advancing*.
- Two approaches
 - `\hypersetup{pdfpageduration=time}` from *hyperref* package + overlay macros
 - `\transduration<n>{time}` from *beamer* package + overlay macros
- See [beamer_pstricks.pdf](#) to see a fancy example.
- Try to do the same thing using PGF. Easy or not?

Presentation Themes

- `\usetheme[option]{name}`: Named to `beamertheme<name>.sty`.
- Old themes: bars, boxes, classic, default, lined, plain, shadow, sidebar, sidebardark, sidebardarktab, sidebartab, split, tree, **treebars**
- New themes (v3.0)
 - W/o navigation bar: default, boxes, Bergen, Madrid, Pittsburgh, Rochester
 - With a tree-like navigation bar: **Antibes**, JuanLesPins, Montpellier.
 - With a TOC sidebar: Berkeley, PaloAlto, Goettingen, Marburg, Hannover
 - With a mini frame navigation: Berlin, Ilmenau, Dresden, Darmstadt, Frankfurt, Singapore, Szeged
 - With section and subsection titles: Copenhagen, Luebeck, Malmoe, Warsaw

Color Themes


- `\usecolortheme[option]{name}`: Named to `beamercolortheme<name>.sty`.
- Four basic color themes:
 - Default and special-purpose themes: default, structure (e.g., `\usecolortheme[named=SeaGreen]{structure}`).
 - Complete color themes: albatross, beetle, crane, dove, fly, seagull
 - Inner color themes: lily, orchid
 - Outer color themes: whale, seahorse
- `\setbeamercolor{beamer_element}{color}` for color setup of Beamer elements
(Ex) `\setbeamercolor{frametitle}{fg=blue,bg=yellow}`

Font Themes

- `\usecolortheme[option]{name}`: Named to `beamerfonttheme<name>.sty`.
- New themes (v3.0): default, professional, serif, structurebold, structureitalicserif, structuresmallcapserif

[◀ Return to Theme](#)

Hyperlinks and Buttons

- Beamer provides additional options for hyperlinks and buttons.
- `\hyperlink{targetname}{\beamergetobutton{text}}` to create link.
- `\hypertarget{targetname}{text}` to create target.
- Some useful buttons are `\beamerbutton`, `\beamergetobutton`, and `\beamerreturnbutton`.
- To go to the last slide, click .

Notes

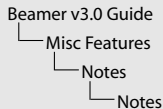
- To add notes to PDF screen, `\documentclass[notes]{beamer}`.
- To make only notes, `\documentclass[notesonly]{beamer}`.

Notes

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- Notes addition by adding `\note[options]{...}` after `\frame{...}`.

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- This slide has notes. Want to see them?



Notes

- To add notes to PDF screen, `\documentclass[notes]{beamer}`.
- To make only notes, `\documentclass[notesonly]{beamer}`.
- Notes addition by adding `\note[options]{...}` after `\frame{...}`.
- This slide has notes. Want to see them?

- Can you see me?
- Two note options for note are **itemize** and **enumerate**.
- `\beamertemplatenoteplain` for plain note page!

Merge for "trans" Output

- Beamer screen size = 128mm x 96mm
- Merge transparency output on letter paper for printing!

```
\documentclass{article} %  
\usepackage{pdfpages}  
\begin{document}  
\includepdf[nup=2x2,landscape,delta=5mm 5mm,%  
scale=0.95,pages={1-18}]{trans.pdf}  
\end{document}
```

- To return, click [◀ here](#).

Movie

- Beamer provides `multimedia` package.¹¹
- `\movie[options]{poster}{file_name}`
 - `poster`: Poster for the movie (empty, text, or image).
 - `file_name`: AVI or MPG.
 - Works with `pdflatex` and `dvips/ps2pdf` routes.
- Some useful options
 - `autostart`, `loop`, `repeat`, `palindrome`
 - `borderwidth`, `showcontrols`, `externalviewer`
- Example: `clock.avi`

¹¹New in Version 2.2. Can be used **independently**.

Sound

- Beamer provides `multimedia` package.
- `\sound[options]{poster}{file_name}`
 - Cannot be used with `dvips/ps2pdf` route.
 - File types depend on Acrobat Reader versions
- Some useful options
 - `autostart`, `automute`, `loop`, `repeat`.
 - `inlinesound` to embed sound files to PDF.
 - `channels` (1), `samplingrate` (44100), `bitspersample` (16),
encoding (μ law) are important!
- **Example:** `\sound[autostart,samplingrate=705000,bitspersample=16,
channels=2]{Example}{notify.wav}`

Footer Design

- To add logo, `\logo{stuff}` in the preamble.
 - The logo will place in the right bottom corner.
 - How to change it? – See below!
- To redesign the footer, apply the following code:

```
\usefoottemplate{\vbox{%  
  \tinycolouredline{structure!25}%  
  {\color{white}\textbf{\insertshortauthor\hfill%  
    \insertshortinstitute}}%  
  \tinycolouredline{structure}%  
  {\color{white}\textbf{\insertshorttitle}\hfill}%  
}}
```

Emulations of Other Packages

- You can use **FoilT_EX**, (HA)Prosper, Seminar, or T_EXPower slides **within** Beamer.
- Not perfect, but you can *easily* import your slides written from the above four classes.
- Prosper example:

```
\usepackage{beamerprosper}           % Required
...
\overlays{8}{%
\begin{slide}{Prosper Emulation Example}
\begin{itemize}
\item Backward writing is easy and simple:
\fromSlide{8}{{\color{green} P}}%
\fromSlide{7}{{\color{blue} R}}%
\fromSlide{6}{{\color{magenta} O}}%
\fromSlide{5}{{\color{cyan} S}}%
\fromSlide{4}{{\color{yellow} P}}%
\fromSlide{3}{{\color{olive} E}}%
\fromSlide{2}{{{\color{red} R}}}}
\end{itemize}
\end{slide} }%
```

Prosper Result

- This slide is written with **Prosper syntax!**
- Backward writing is easy and simple:

Prosper Result

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R

Prosper Result

- This slide is written with Prosper syntax!
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ER

Prosper Result

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PER

Prosper Result

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SPER

Prosper Result

- This slide is written with **Prosper syntax!**
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OSPER

Prosper Result

- This slide is written with Prosper syntax!
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ROSPER

Prosper Result

- This slide is written with Prosper syntax!
- Backward writing is easy and simple:

PROSPER

Hangul

- If you installed H_AT_EX, load `\usepackage{hfont}`.
 - `\textgs{...}` ⇒ 아름다운 한글 그리고 金杞朱
 - Click  to return.
- Note: Hangul bookmarks and Hangul search in PDF are only supported by `dvipdfm(x)`. But Beamer does not support `dvipdfm(x)`.
- Beamer option `[cjk]` is supported.
- `\usepackage[utf8]{inputenc}` is supported.

Other Macros

- To remove navigation symbols,
`\usenavigationsymbolstemplate{}`.

Last Slide

- This page is directed from the button you clicked.
- To go back, click [◀ here](#).

Reference



Ki-Joo Kim, *Ki-Joo's L^AT_EX Documents*
(<http://www.geocities.com/kijoo2000/>).



Michael Wiedmann, *Screen Presentation Tools* (<http://www.miwie.org/presentations/presentations.html>).