Math 291: Lecture 6

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Outline

Beamer

- Beamer is a document class that allows you to create Presentations using LaTeX.
- This presentation was made using beamer.
- Beamer documents must be built using the profile LaTex => PS => PDF.

Getting Started

Open TeXniCenter and start a document in the following way:

```
\documentclass{beamer}
\begin{document}
\end{document}
```

The Very Basics

There are a few commands that are fundamental to creating a Beamer file.

1. Each frame is delimited by:

   ```
   \begin{frame}
   ```

   ```
   \end{frame}
   ```

2. To give your frame a title use the command

   ```
   \frametitle{}
   ```

3. The

   ```
   \pause
   ```

   command allows you to pause midframe.

In your example document, input the commands necessary to create the following slide, then build your example file.

Triangle Numbers

For any $n \geq 1$

$$\sum_{k=1}^{n} k = \frac{n(n-1)}{2}.$$

Triangle Numbers

Now place a pause between the commands for $n \geq 1$ and those for $\sum_{k=1}^{n} k = \frac{n(n-1)}{2}$ and rebuild your file.

Outline

Bells and Whistles

- We often will want to customize documents to make them look nicer.
- We may want to divide the document into sections and to have an outline that appears before each section.
- We may want a title page, or color accenting.
- We may want a nice bulleted list like this one.
- We'll spend this section talking about how to accomplish these things.

Title Page

To create a title page you need to put the following commands BEFORE the command

`\begin{document}`.

- `\title{Triangle Numbers}`
- `\author{Your Name Here}`
- `\institute[abbreviated institute]{Your University Here}`

Add these to your example document.

Title Page

Your first slide should contain ONLY the text:

```
\begin{frame}

\titlepage

\end{frame}
```

Add these to your document and build to see what happens.

Table of Contents

If you want the table of contents to show up before each section, use the following command.

```
\AtBeginSection{\begin{frame}\frametitle{Outline}
\tableofcontents[currentsection]\end{frame}}
```

This is telling Beamer to put a frame with title "Outline" and the Table of Contents with the Current Section highlighted.
Add this command to the preamble of your document. We will add section references that will be part of the outline later.

My First Section

After your titlepage frame, add a new frame with the following:

```
\begin{frame}

\tableofcontents

\end{frame}
```

After this frame put:

```
\section{Triangle Numbers}
```

Build your document, and open it. What do you notice about your table of contents?
Now Build it a SECOND time and see what changes.

Another Section

Add another section to the end of your talk entitled Inductive Proofs. Build twice and open your document to make sure it worked.

Using Themes

- You'll notice that your presentation slides look completely different from both this presentation and those done during previous weeks.
- You are using the "no theme" or "base" beamer style.
- The style can be changed in many ways. It can be done manually, or you can choose from many nice prepackaged beamer themes.
- We are about to pick a single premade theme and we will just stick with that for now.

The following link will take you to a website for the Beamer User Manual.
A Link to the Beamer User's Guide: see pages 145 and following
In the preamble of your document type:

```
\usetheme{<pick a cool theme from the list>}
```

More Themes

For this talk I didn't use one of the prepackaged themes. I created my own theme using the inner, outer and font theme commands.

1. `\useinnertheme{rounded}`
2. `\useoutertheme{infolines}`
3. `\usefonttheme{structureitalicserif}`
4. `\usecolortheme{}`

Outline

Now You See It

We've learned how to use the

```
\pause
```

command.
There are two other commands that are very useful for displaying information on slides. They are the commands

```
\only and \onslide
```

The Only Command

The

`\only<options>{Content}`

command works as follows.

```
This text is on all slides.
\only<1,3>{This text is on slides 1 and 3.}
\only<2-4>{This text is on slides 2 through 4.}
\only<1,3->{This text is on slides 1, 3
and all subsequent slides.}
```

This text is on all slides. This text is on slides 1 and 3. This text is on slides 1, 3 and all subsequent slides.

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The Onslide Command

The difference between the "onslide" command and the "only" command is as follows:

- With the "only" command, text that doesn't appear on the slide is treated as if it has been removed from the frame.
- With the onslide command, it appears as if the text has just been covered up (so it still takes up the same space).

On the next frame we do the exact same example from the previous frame except using the onslide command.

An Onslide Example

```
This text is on all slides.
\onslide<1,3>{This text is on slides 1 and 3.}
\onslide<2-4>{This text is on slides 2 through 4.}
\onslide<1,3->{This text is on slides 1, 3
and all subsequent slides.}
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Covering

In the onslide example we mentioned that the text was covered. We can choose how well Beamer will cover the text. Use the command

```
\setbeamercovered{transparent=#}
```

(The lower the number - given as a percentage, the lighter the background text is)
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Inductive Proof

Example:
Inductive Proofs Consist of three main steps.
The Base Case
The Inductive Hypothesis
The Inductive Step

Inductive Proof

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The Base Case

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Inductive Proof

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The Base Case

The Inductive Hypothesis

The Inductive Step

Lists and Covering

To make the previous list into an enumerated list we'll have to do something different with our overlay arguments. To use overlay arguments in lists use the commands

```
\item<slide #s>Content
```

1. The Base Case
2. The Inductive Hypothesis
3. The Inductive Step

Note: The media incorporated in this presentation was added using the "multimedia" package.

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Thank You!

4 8 15 16 23 42

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