

Лабораторная работа №7

Презентации в LaTeX — класс beamer

Мунтаха Сидратул

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Российский университет дружбы народов, Москва, Россия

Цель работы

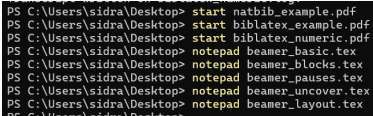
Изучить приёмы создания презентаций в LaTeX с использованием класса **beamer**, включая:

- структуру слайдов;
- работу с блоками (**block**, **exampleblock**);
- пошаговое раскрытие элементов с **\pause**;
- точное управление отображением через **\uncover**;
- изменение тем и цветовых схем.

Подготовка файлов

В рабочей директории размещены файлы:

- beamer_basic.tex
- beamer_blocks.tex
- beamer_pauses.tex
- beamer_uncover.tex
- beamer_layout.tex



```
PS C:\Users\sidra\Desktop> start natbib_example.pdf
PS C:\Users\sidra\Desktop> start biblatex_example.pdf
PS C:\Users\sidra\Desktop> start biblatex_numeric.pdf
PS C:\Users\sidra\Desktop> notepad beamer_basic.tex
PS C:\Users\sidra\Desktop> notepad beamer_blocks.tex
PS C:\Users\sidra\Desktop> notepad beamer_pauses.tex
PS C:\Users\sidra\Desktop> notepad beamer_uncover.tex
PS C:\Users\sidra\Desktop> notepad beamer_layout.tex
PS C:\Users\sidra\Desktop>
```

Рис. 1: Открытие файлов

Компиляция примеров

Первая компиляция:

- отсутствует файл `.nav`;
- предупреждение `rerunfilecheck`.

Результат: 3-страничная презентация.

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-basic-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-bibliography-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-environment-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-months-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-numbers-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-English.dict)
No file beamer_basic.nav.

[1(c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map)]
[2]
[3] (./beamer_basic.aux)

Package rerunfilecheck Warning: File 'beamer_basic.out' has changed.
(rerunfilecheck)               Rerun to get outlines right
(rerunfilecheck)               or use package 'bookmark'.

) <c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb> <c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb> <c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss8.pfb>
Output written on beamer_basic.pdf (3 pages, 36691 bytes).
Transcript written on beamer_basic.log.
```

Файл демонстрирует работу блоков.

```
PS C:\Users\sidra\Desktop> pdflatex beamer_blocks.tex
This is pdfTeX, Version 3.141592653-2.6-1.40.28 (TeX Live 2025) (preloaded format=pdflatex)
 restricted \write18 enabled.
entering extended mode
(./beamer_blocks.tex
LaTeX2e <2025-06-01> patch level 1
L3 programming layer <2025-09-02>
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamer.cls
Document Class: beamer 2025/08/13 v3.76 A class for typesetting presentations
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasemodes.sty
(c:/texlive/2025/texmf-dist/tex/latex/etoolbox/etoolbox.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasedecode.sty))
(c:/texlive/2025/texmf-dist/tex/generic/iftex/iftex.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbaseoptions.sty
(c:/texlive/2025/texmf-dist/tex/latex/graphics/keyval.sty))
(c:/texlive/2025/texmf-dist/tex/latex/geometry/geometry.sty
(c:/texlive/2025/texmf-dist/tex/generic/iftex/iftvtx.sty))
(c:/texlive/2025/texmf-dist/tex/latex/pgf/math/pgfmath.sty
(c:/texlive/2025/texmf-dist/tex/latex/pgf/utilities/pgfrcs.sty
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-common.tex)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-latex.def)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfrcs.code.tex
```

Рис. 3: Компиляция blocks

Результат:

- предупреждение о повторной компиляции,
- создан 1-страничный PDF.

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-bibliography-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-environment-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-months-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-numbers-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-English.dict)
No file beamer_blocks.nav.

[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]
(./beamer_blocks.aux)

Package rerunfilecheck Warning: File 'beamer_blocks.out' has changed.
(rerunfilecheck)               Rerun to get outlines right
(rerunfilecheck)               or use package 'bookmark'.

) <c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb> <c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb>
Output written on beamer_blocks.pdf (1 page, 23184 bytes).
Transcript written on beamer_blocks.log.
```

Рис. 4: Завершение blocks

Пример с `\pause`:

```
PS C:\Users\sidra\Desktop> pdflatex beamer_pauses.tex
This is pdfTeX, Version 3.141592653-2.6-1.40.28 (TeX Live 2025) (preloaded format=pdflatex)
 restricted \write18 enabled.
entering extended mode
./beamer_pauses.tex
LaTeX2e <2025-06-01> patch level 1
L3 programming layer <2025-09-02>
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamer.cls
Document Class: beamer 2025/08/13 v3.76 A class for typesetting presentations
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasemodes.sty
(c:/texlive/2025/texmf-dist/tex/latex/etoolbox/etoolbox.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasedecode.sty))
(c:/texlive/2025/texmf-dist/tex/generic/iftex/iftex.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbaseoptions.sty
(c:/texlive/2025/texmf-dist/tex/latex/graphics/keyval.sty))
(c:/texlive/2025/texmf-dist/tex/latex/geometry/geometry.sty
(c:/texlive/2025/texmf-dist/tex/generic/iftex/ifvtex.sty))
(c:/texlive/2025/texmf-dist/tex/latex/pgf/math/pgfmath.sty
(c:/texlive/2025/texmf-dist/tex/latex/pgf/utilities/pgfrcs.sty
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-common.tex)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-latex.def)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfrcs.code.tex
(c:/texlive/2025/texmf-dist/tex/generic/pgf/pgf.revision.tex)))
(c:/texlive/2025/texmf-dist/tex/latex/pgf/utilities/pgfkeys.sty
```

Рис. 5: Компиляция pauses

Результат: 5 страниц, соответствующие числу появлений объектов.

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-  
English.dict)  
No file beamer_pauses.nav.  
  
[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]  
[2]  
[3]  
[4]  
[5] (./beamer_pauses.aux)  
  
Package rerunfilecheck Warning: File 'beamer_pauses.out' has changed.  
(rerunfilecheck)          Rerun to get outlines right  
(rerunfilecheck)          or use package 'bookmark'.  
  
><c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/tex  
live/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb><c:/texlive/2025  
/texmf-dist/fonts/type1/public/amsfonts/cm/cmss8.pfb>  
Output written on beamer_pauses.pdf (5 pages, 37984 bytes).  
Transcript written on beamer_pauses.log.
```

Рис. 6: Завершение pauses

Использование `\uncover<n>`:

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-bibliography-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-environment-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-months-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-numbers-dictionary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-English.dict)
No file beamer_uncover.nav.
(c:/texlive/2025/texmf-dist/tex/latex/amsfonts/umsa.fd)
(c:/texlive/2025/texmf-dist/tex/latex/amsfonts/umsb.fd)
[1(c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map)]
[2]
[3]
[4] (./beamer_uncover.aux)

Package rerunfilecheck Warning: File 'beamer_uncover.out' has changed.
(rerunfilecheck)                Rerun to get outlines right
(rerunfilecheck)                or use package 'bookmark'.

)<c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb><c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb>
Output written on beamer_uncover.pdf (4 pages, 51953 bytes).
```

Рис. 7: Компиляция uncover

Результат: 4 шага раскрытия.

Пример изменения темы и цветовой схемы.

```
PS C:\Users\sidra\Desktop> pdflatex beamer_layout.tex
This is pdfTeX, Version 3.141592653-2.6-1.40.28 (TeX Live 2025) (preloaded format=pdflatex)
 restricted \write18 enabled.
entering extended mode
(./beamer_layout.tex
LaTeX2e <2025-06-01> patch level 1
L3 programming layer <2025-09-02>
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamer.cls
Document Class: beamer 2025/08/13 v3.76 A class for typesetting presentations
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasemodes.sty
(c:/texlive/2025/texmf-dist/tex/latex/etoolbox/etoolbox.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasedecode.sty))
(c:/texlive/2025/texmf-dist/tex/generic/iftex/iftex.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbaseoptions.sty
(c:/texlive/2025/texmf-dist/tex/latex/graphics/keyval.sty))
(c:/texlive/2025/texmf-dist/tex/latex/geometry/geometry.sty
(c:/texlive/2025/texmf-dist/tex/generic/iftex/ifvtex.sty))
```

Рис. 8: Компиляция layout

И финальное открытие всех PDF:

```
[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]
[2] (./beamer_layout.aux)

Package rerunfilecheck Warning: File 'beamer_layout.out' has changed.
(rerunfilecheck)                Rerun to get outlines right
(rerunfilecheck)                or use package 'bookmark'.

)<c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/tex
live/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb><c:/texlive/2025
/texmf-dist/fonts/type1/public/amsfonts/cm/cmss8.pfb>
Output written on beamer_layout.pdf (2 pages, 38452 bytes).
Transcript written on beamer_layout.log.
PS C:\Users\sidra\Desktop> start beamer_basic.pdf
PS C:\Users\sidra\Desktop> start beamer_blocks.pdf
PS C:\Users\sidra\Desktop> start beamer_pauses.pdf
PS C:\Users\sidra\Desktop> start beamer_uncover.pdf
PS C:\Users\sidra\Desktop> start beamer_layout.pdf
PS C:\Users\sidra\Desktop>
```

Рис. 9: Открытые PDF

Просмотр слайдов

A tale of two primes

Bert

November 20, 2025

Navigation icons: back, forward, search, etc.

Bert A tale of two primes

Article

Some text about the article.

Navigation icons: back, forward, search, etc.

Bert A tale of two primes

Mathematics

A helpful tool for mathematicians.

Article

Example

This is an example of a block.

Euclid's theorem

This is a theorem.

This block has no header.

Article

Definition

This is a definition.

Navigation icons

Article

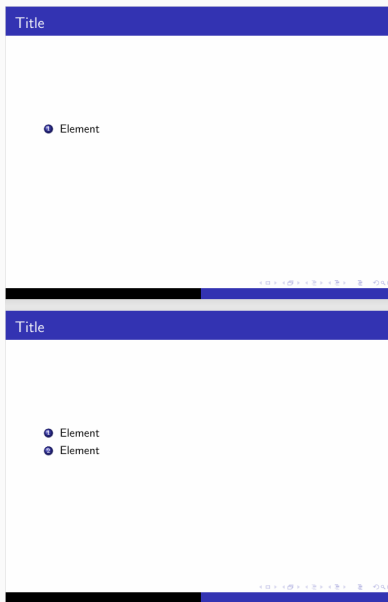
Definition

This is a definition.

Euclid's theorem

This is a theorem.

Navigation icons



Title

- ❶ Element
- ❷ Element
- ❸ Element

The image shows a screenshot of the Uncover presentation software interface. It displays two slides, one above the other, separated by a navigation bar. The top slide has a blue header with the word "Sets" and a white body with the text "A set is a collection of objects." The bottom slide also has a blue header with "Sets" and a white body with the text "A set is a collection of objects. For example:" followed by the mathematical expression $Z = \{\text{cow, pig, elephant}\}.$ The interface includes a navigation bar with a black bar on the left and a blue bar on the right, and a footer with navigation icons.

Sets

A set is a collection of objects.

Sets

A set is a collection of objects. For example:

$$Z = \{\text{cow, pig, elephant}\}.$$

Sets

A **set** is a collection of objects. For example:

$$Z = \{\text{cow, pig, elephant}\}.$$

We call the objects in Z the **elements** of Z .

Navigation icons: back, forward, search, etc.

Sets

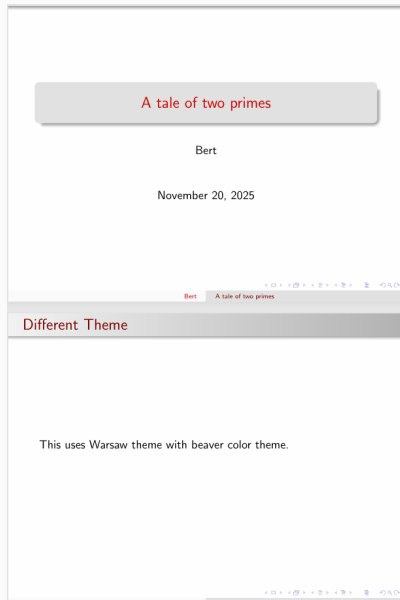
A **set** is a collection of objects. For example:

$$Z = \{\text{cow, pig, elephant}\}.$$

We call the objects in Z the **elements** of Z . We write

$$\text{cow} \in Z$$

Navigation icons: back, forward, search, etc.



Выводы

В ходе лабораторной работы были освоены:

- структура презентации beamer;
- работа с различными типами блоков;
- использование `\pause` и `\uncover` для анимации;
- применение тем (Warsaw, Copenhagen) и цветовых схем;
- анализ визуальных результатов и поведения механизмов beamer.

Работа подтвердила, что **beamer** предоставляет гибкие инструменты для создания научных и учебных презентаций в LaTeX.