

Algorithms and Data Structures

Chapter 18: B-Trees

(based on book “Introduction to Algorithms” of Cormen et al.)

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Outline

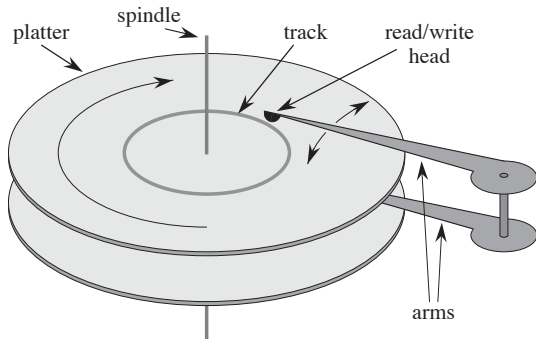
- ① Introduction
- ② Definition of a B-Tree
- ③ Frames and text
- ④ Itemization and enumeration
- ⑤ Blocks and other environments

Outline

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Double-column frame

This is the top of the second column.



Outline

- 1 Introduction
- 2 Definition of a B-Tree**
- 3 Frames and text
- 4 Itemization and enumeration
- 5 Blocks and other environments

Definition of a B-Tree




- ▶ Rooted tree with root $T.root$

Definition of a B-Tree

- ▶ Rooted tree with root $T.root$
- ▶ All leaves have the same depth.

Theme options

To change *logo*, options are:

- ▶ kul (default, used if no option is specified) 
- ▶ kulak for Campus Kulak Kortrijk 
- ▶ 1rd for KU Leuven Research & Development 

Example:

```
\usetheme[kulak]{kuleuven2}
```


Theme options

To customise *title page*, options are:

- ▶ `standard` (default, used if no option is specified)
- ▶ `sedes` title page includes *Sedes Sapientiae* ↘

Example:

```
\usetheme[sedes,1rd]{kuleuven2}
```



Title page image

Optionally, you can add your own title page graphic by declaring `titlegraphic` (does not work in combination with `sedes` option).

Example:

```
\titlegraphic{ \includegraphics{mytitlepagepic.png} }
```

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Positioning

Frame option [c] for text at the centre of the frame

Positioning

Frame option [b] for text at the bottom of the frame

Footline

Frame option [plain] to remove footline on individual frame

To remove footline from *all* frames delete this line from preamble in .tex file:

```
\setbeamertemplate{footline}[body]
```

This frame has no title.

Double-column frame

This is the top of the first column.

This is the top of the second column.

Text alignment

Left justified environment ...

Center environment ...

Right justified environment ...

Ragged right command ...

Centering command ...

Ragged left command ...

Flush left command ...

Flush right command ...

Colour palette

Recommended, predefined colours

- ▶ black
- ▶ KU Leuven primary blue, secondary blue, and dark blue
- ▶ ← white, when background is dark
- ▶ 50% gray , for text and 5% gray for background
- ▶ red text colour, used for alert text

Font styles

Sans-serif family of Modern Latin font

- ▶ Normal text
- ▶ **Bold**
- ▶ *Italic, Emphasis, Slanted*
- ▶ Underline
- ▶ SMALL CAPS
- ▶ Typewriter

Font sizes

- ▶ tiny
- ▶ scriptsize
- ▶ footnotesize
- ▶ small
- ▶ normalsize
- ▶ large
- ▶ Large
- ▶ LARGE
- ▶ huge
- ▶ Huge

Equations and math

Equations and other mathematical symbols use serif typeface:

$$f(x) = ax^2 + bx + c$$

Style of individual symbols can be changed manually:

$$\hat{\beta} = \arg \min_b (\mathbf{y} - \mathbf{X}\mathbf{b})^T \mathbf{\Omega}^{-1} (\mathbf{y} - \mathbf{X}\mathbf{b})$$

$$G_t = \alpha e^{-\beta e^{-\gamma \cdot t}}$$

To change all math into sans-serif delete this line from the preamble in .tex file:

```
\usefonttheme[onlymath]{serif}
```

Graphics

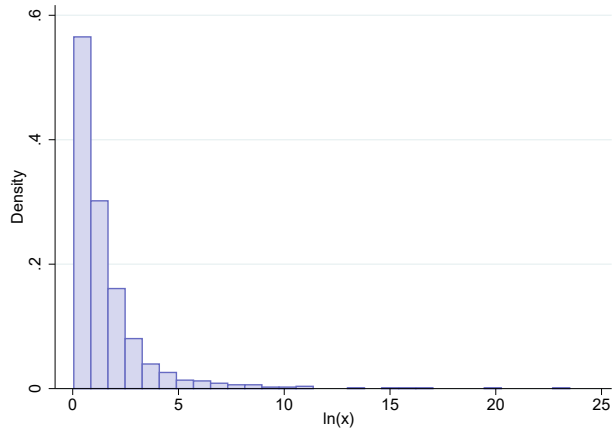


Figure: Example graphic

Tables

Table: Example table

	(1)	(2)	(3)
x_1	0.705*** (0.107)	0.215** (0.0964)	0.123 (0.105)
x_2	0.476*** (0.0489)		0.114** (0.0519)
x_3		0.592*** (0.0361)	0.538*** (0.0436)
Constant	0.0478 (0.0487)	0.0576 (0.0427)	0.0511 (0.0426)
Observations	500	500	500
R-squared	0.711	0.776	0.779

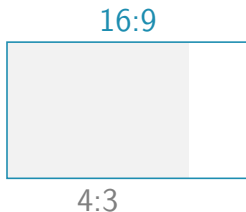
Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Widescreen

Default screen ration is 4:3. Load the following package in the preamble to make all frames wider to 16:9 ratio:

```
\usepackage[orientation=landscape,size=custom,  
width=16,height=9,scale=0.5,debug]{beamerposter}
```

Title page or other frames should not get distorted because of it.



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Itemize

(default)

- ▶ Itemize style
- ▶ Itemize style
 - Itemize subitem
 - Itemize subitem
 - Itemize subsubitem
 - Itemize subsubitem
 - Itemize subitem
- ▶ Itemize style

Itemize

(extra space between items)

- ▶ Itemize style

- ▶ Itemize style
 - Itemize subitem

 - Itemize subitem

 - Itemize subitem

- ▶ Itemize style

Enumerate

(default)

- 1 Enumerate style
- 2 Enumerate style
 - 1 Enumerate subitem
 - 2 Enumerate subitem
 - 1 Enumerate subsubitem
 - 2 Enumerate subsubitem
 - 3 Enumerate subitem
- 3 Enumerate style

Enumerate

(option l) + pause

- | Enumerate style

- || Enumerate style

 - | Enumerate subitem

 - || Enumerate subitem

Enumerate

(option I) + pause

- I Enumerate style

- II Enumerate style

- I Enumerate subitem

- II Enumerate subitem

- I Enumerate subsubitem

- II Enumerate subsubitem

Enumerate

(option I) + pause

- I Enumerate style

- II Enumerate style

 - I Enumerate subitem

 - II Enumerate subitem

 - I Enumerate subsubitem

 - II Enumerate subsubitem

 - III Enumerate subitem

- III Enumerate style

Enumerate

(option i.)

- i. Enumerate style
- ii. Enumerate style
 - i. Enumerate subitem
 - ii. Enumerate subitem
 - i. Enumerate subsubitem
 - ii. Enumerate subsubitem
 - iii. Enumerate subitem
- iii. Enumerate style

Enumerate

(option A.) + effects

A. Enumerate style

B. Enumerate style

Enumerate

(option A.) + effects

A. Enumerate style

B. Enumerate style

A. Enumerate subitem

Enumerate

(option A.) + effects

A. Enumerate style

B. Enumerate style

A. Enumerate subitem

B. Enumerate subitem

A. Enumerate subsubitem

B. Enumerate subsubitem

Enumerate

(option A.) + effects

A. Enumerate style

B. Enumerate style

A. Enumerate subitem

B. Enumerate subitem

A. Enumerate subsubitem

B. Enumerate subsubitem

C. Enumerate subitem

Enumerate

(option A.) + effects

A. Enumerate style

B. Enumerate style

A. Enumerate subitem

B. Enumerate subitem

C. Enumerate subitem

C. Enumerate style

Enumerate

(option a + extra space)

- a Enumerate style
- b Enumerate style
 - a Enumerate subitem
 - b Enumerate subitem
 - a Enumerate subsubitem
 - b Enumerate subsubitem
 - c Enumerate subitem
- c Enumerate style

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Theorems and other blocks

Title of the bloc

Text for generic block

Example block title

Text for example block

Alert block title

Text for alert block

Theorems and other blocks

Theorem environment

Theorem

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

Definition environment

Definition

Here is definition text

Example environment

Example

Theorems and other blocks

Proof environment

Proof.

Proof text. ☐

Proof with custom title

Proof with any name and optionally without full stop in the title ☐

Corollary environment

Corollary

$$x + y = y + x$$

Boxes

'Beamer color box' with five different pre-set colour combinations

box1 scheme

box2 scheme
second line

box3 scheme, aligned
right

box4 scheme, aligned
left

box5

Quotes

Quote

Quote environment is for a short quotation, or a series of small quotes, separated by blank lines.

Quotation

Quotation environment is for use with longer quotations, of more than one paragraph, because it indents the first line of each paragraph.

Quotation environment is for use with longer quotations, of more than one paragraph, because it indents the first line of each paragraph.
– WikiBooks L^AT_EX guide

Quotes

Verse

*Verse environment
is for quotations where
line breaks are important.*

Verbatim

Verbatim text is ideal for typesetting program source code. To use it in Beamer the frame needs option `[fragile]`.

Abstract environment

Abstract

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Pellentesque quis pharetra sapien, non tempor tortor. Vestibulum gravida mauris ac lorem semper, vel vulputate mauris tincidunt. Sed diam ante, dignissim consequat pulvinar in, placerat eu nibh. Donec congue id elit sit amet iaculis.

Proin pellentesque vel ex in fermentum. Pellentesque suscipit odio ut accumsan feugiat. Aliquam erat volutpat. Sed feugiat cursus eros, sit amet vestibulum ipsum pulvinar at. Sed eget porttitor purus. Duis nec nunc ex. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae.

Buttons

Standard buttons

Link to Figure 1

► Extra frame

►► Button with long title and no link

◀

These buttons can link to any frame, figure, table, theorem, section, or anything else with defined label

Ending frame (version 1)

Ending frame (version 2)

Extra slide

Because of frame option [noframenumbering] this frame is not counted in the total number of frames.

This button with cross-referencing link that will take you back to the frame:

[◀ Back to Buttons](#)