Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

BachoT_EX 2025

30th April 2025

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Introduction

Programming in TEX

TEX and programming

LuaTEX

rawing

..... |-.-.

Analysis

Introduction

Advanced Lectures Using T_FX & C_o

Jean-Michel Hufflen

Contents

Programming in TFX

T_EX and programming

LuaTFX

Drawing

Final project

Analysis

every 4 or 5 years.

At French universities, education curricula must be revised

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Content

Introduction

Programming in TEX

TEX and programming

_uaT<u>E</u>X

rawing

rawing

al project

nalysis

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

.uaT_EX

inal project

Analysis

onclusion

4 D > 4 A > 4 E > 4 E > 9 Q P

(enhanced cursus, \sim from 20 to 30 students).

At French universities, education curricula must be revised

Advanced Lectures Using TEX & Co

> Jean-Michel Hufflen

Content

Introduction

Programming in TEX

TEX and programming

Lua IEX

Drawing

tual austa

. . .

Analysis

Conclusion

At French universities, education curricula must be revised every 4 or 5 years.

...–2024 \longleftarrow Introduction to LATEX, teaching unit for 1st-year university students in Computer Science and Physics (enhanced cursus, \sim from 20 to 30 students).

 $2024-2028 \Longrightarrow$ This unit moves to the 2nd-year programme.

Advanced Lectures Using TEX & Co

> Jean-Michel Hufflen

Contents

Introduction

Programming in

TEX and

LuaTEX

Drawing

-Final projec

Analysis

Conclusion

At French universities, education curricula must be revised every 4 or 5 years.

...–2024 \leftarrow Introduction to LATEX, teaching unit for 1st-year university students in Computer Science and Physics (enhanced cursus, \sim from 20 to 30 students).

 $2024-2028 \Longrightarrow$ This unit moves to the 2nd-year programme. What about *this year*'s students?

Advanced Lectures Using T_FX & C_o

> Jean-Michel Hufflen

Introduction

At French universities, education curricula must be revised every 4 or 5 years.

...-2024 \leftarrow Introduction to LATEX, teaching unit for 1st-year university students in Computer Science and Physics (enhanced cursus, \sim from 20 to 30 students).

 $2024-2028 \Longrightarrow$ This unit moves to the 2nd-year programme. What about this year's students? (But sections were separated.)

Programming in TEX

Programming with *macros* (\neq functions or methods).

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

00111011110

Introduction

Programming in TEX

TEX and programming

LuaTEX

Drawir

inal project

Analysis

Programming in TEX

Programming with macros (\neq functions or methods). Programming dynamically (except for using the \edef command).

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

0011101110

Introduction

Programming in TEX

TEX and programming

LuaTEX

.....

0

nal project

nalysis

Programming in TEX

Programming with *macros* (\neq functions or methods). Programming *dynamically* (except for using the \edef

Robust / fragile commands.

command).

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

Introduction

Programming in TEX

TEX and programming

LuaTEX

rawing

rawing

nal project

nalysis

TEX is a kind of *legacy program*

Long/short commands.

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

-na iEv

Prawing

.

nal projec

nalysis

TFX is a kind of *legacy program*

Long/short commands.

Old/modern parsing techniques.

Advanced Lectures Using T_FX & C_o

Jean-Michel Hufflen

Programming in TEX

12/5/12

TEX is a kind of legacy program

Long/short commands.

Old/modern *parsing* techniques. Old/modern *programming* techniques. Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

0011101110

Introduction

Programming in TEX

TEX and programming

LuaTEX

Drawin

taal aastaa

Analysis

onclusion

4 D > 4 B > 4 E > 4 E > E 990

13/5/12

Mixing two languages

First contact with such a technique ← task sharing.

Advanced Lectures Using TFX & Co

> Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

LuaTEX

rawing

.

nal proje

nalysis

onclusion

14/6/12

Mixing two languages

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

LuaTEX

. .

taal aastaa

Analysis

Conclusion

First contact with such a technique \iff task sharing. With programs using Python \implies left as a project of documentary research.

LuaTEX

Some computation with arrays, lists (tables in Lua), then intelligent display with TEX macros.

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

LuaTEX

Drawing

_

nalvsis

Introduction to TikZ's syntax

Processing Excel's outputs ← pgfplotstable package.

Advanced Lectures Using TFX & Co

> Jean-Michel Hufflen

Content

Introduction

Programming in TEX

TEX and programming

LuaTE

Drawing

inal project

nalysis

Introduction to TikZ's syntax

Processing Excel's outputs \iff pgfplotstable package. Then the TikZ package and some of its libraries.

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

0011101110

Introduction

Programming in TEX

TEX and programming

LuaTE

Drawing

Analysis

An imaginary company, with accounts given in an Excel file.

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Content

Introduction

Programming in TEX

TEX and programming

ua IEX

)rawing

rawing

Final project

Analysis

An imaginary company, with accounts given in an Excel file.

⇒ Format them as arrays, then by diagrams.

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

uaTEX

rawing

. .

Final project

Analysis

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Content

Introduction

Programming in TEX

TEX and programming

Lua IEX

Drawing

Final project

Analysis

Conclusion

Concidion

An imaginary company, with accounts given in an Excel file.

Format them as *arrays*, then by *diagrams*.

People \(\bigcup \text{Lua structure, determining the employees'} \)

average age (in fact, students of the two sections).

Advanced Lectures Using T_FX & C_o

> Jean-Michel Hufflen

Final project

22/9/12

An imaginary company, with accounts given in an Excel file.

 \implies Format them as *arrays*, then by *diagrams*.

People \(\subseteq Lua \) structure, determining the employees'

average age (in fact, students of the two sections).

Changing the display of the employees' names should be easy.

Index of these employees.

Advanced Lectures Using TEX & Co

> Jean-Michel Hufflen

Content

Introduction

Programming in TEX

TEX and programming

LuaTEX

Drawing

Final project

nalveie

Analysis

Conclusion

An imaginary company, with accounts given in an Excel file.

Format them as arrays, then by diagrams.

People \(\bigcup \) Lua structure, determining the employees' average age (in fact, students of the two sections).

Changing the display of the employees' names should be easy.

Index of these employees.

Advanced Lectures Using T_FX & C_o

> Jean-Michel Hufflen

Final project

An imaginary company, with accounts given in an Excel file.

Changing the display of the employees' names should be easy.

People \(\subseteq Lua \) structure, determining the employees' average age (in fact, students of the two sections).

 \implies Format them as *arrays*, then by *diagrams*.

This company implements physic formulas.

Advanced Lectures Using T_FX & C_o

Jean-Michel Hufflen

Final project

An imaginary company, with accounts given in an Excel file. \implies Format them as *arrays*, then by *diagrams*.

People \(\subseteq Lua \) structure, determining the employees'

average age (in fact, students of the two sections).

Changing the display of the employees' names should be easy. Index of these employees.

This company implements physic formulas.

Collaborative work.

Feedback

Globally good, especially about ways of drawing.

Advanced Lectures Using T_FX & C_o

Jean-Michel Hufflen

Analysis

Feedback

Globally good, especially about ways of *drawing*. Computer Science students interested in notions related to the history of programming.

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

Introduction

Programming in TEX

TEX and programming

-ua i Ex

Drawing

nal project

mar projec

Analysis

Feedback

Globally good, especially about ways of *drawing*. Computer Science students interested in notions related to the history of programming. Extensions to free software \Longrightarrow synergy.

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

Introduction

Programming in TEX

TEX and programming

_uaT<u>E</u>X

rawing

rawing

nal project

Analysis

Non-Computer Science students

when they look for a placement.

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

Drawing

inal project

Analysis

Conclusion

These students do not have great hindsight, so they do not think to extend LATEX, but many of them use it for resumes,

Interesting experiment

But one-shot.

Advanced Lectures Using TEX & Co

Jean-Michel Hufflen

Content

Introduction

Programming in TEX

TEX and programming

-na iEv

rawing

rawing

nal project

nalysis

Conclusion

4 D > 4 B > 4 E > 4 E > E 990

Interesting experiment

Advanced Lectures Using TFX & Co

Jean-Michel Hufflen

Contents

Introduction

Programming in TEX

TEX and programming

LuaTEX

. .

tual austrai

nalysis

Conclusion

But one-shot.

I confess that the batches of students—in Computer Science as well as in Physics—were very good.