École Centrale de Lyon

Report

LaTeX workspace

Help guide & Gallery

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Bilel Omrani: *LaTeX workspace*, Help guide & Gallery, © August 2020

Dedicated to ….

Contents

List of Acronyms

FPS	Frame per Second

Glossary

computer	a programmable machine that receives input, stores and manipulates data, and provides output in a useful format

Nomenclature

This is the preable of the nomenclature.

Probability

This is an intertext in the nomenclature

Ω	Sample space

Sets

$\mathbb{N}$	Set of the natural numbers
$\mathbb{R}$	Set of the real numbers

Part I

Basic use cases

Chapter 1

Text

1.1. Paragraphs

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Notes — Use the `notes` environment to display a note box.

1.2. Lists

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut,placerat ac, adipiscing vitae, felis.

1. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum

ut, placerat ac, adipiscing vitae, felis.

2. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpisegestas. Mauris ut leo.

3. a) Cras viverra metus rhoncus sem.
   b) Nulla et lectus vestibulumurna fringilla ultrices.

4. hasellus eu tellus sit amet tortor gravida placerat. Integersapien est, iaculis in, pretium quis, viverra ac, nunc.

- Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.
- Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpisegestas. Mauris ut leo.
  - Cras viverra metus rhoncus sem.
  - Nulla et lectus vestibulumurna fringilla ultrices.
- hasellus eu tellus sit amet tortor gravida placerat. Integersapien est, iaculis in, pretium quis, viverra ac, nunc.

1.3. Margin lines

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Use the `\marginpar` macro to insert text on the margin

Chapter 2

Tables & figures

2.1. Tables

The class file provides custom macros `L`, `R` and `C` that can be used in conjunction with `tabularx` for automatic line wrapping within cells. Use the `S` to typeset numeric columns with `siunitx`.

Title 1	Title 2	Title 3
Element 1	Some text	10.355
Element 2	A little more text over here	2.543
Element 3	A long line of text to test automatic line wrapping	28.730

Table 2.1 | Simple table example

Use `\mcx` and `\mrx` for multicolumn and multirow cells.

Sample	I		II	
	A	B	C	D
S1	5	8	12	2
S2	6	9	2	6
S3	7	9	5	8
S4	8	9	8	2

Table 2.2 | Table with `\mcx` and `\mrx` macros

Use the `longtable` environment (or `xltabular` if you want to provide the width of the table as an argument) to display tables across multiple pages.

Table 2.3 | Example of longtable

Title 1	Title 2	Title 3
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
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One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778

Continued on next page

Table 2.3 | Example of longtable

Title 1	Title 2	Title 3
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778
One	abcdef ghjijklmn	123.456778

2.2. Figures

Use the `subfigure` environment for subfigures.

(a) Image 1 (b) Image 2

Figure 2.1 | An example of subfigure

Chapter 3

Maths

3.1. Equations

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$$\sum_{k=1}^{\infty} \frac{1}{k^2} = \frac{\pi^2}{6}. \tag{3.1.1}$$

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$$\begin{aligned} f(x) &= x(x-1)^2 \\ &= x(x^2 - 2x + 1) \\ &= x^3 - 2x^2 + x. \end{aligned}$$

3.2. Theorems

Theorem 3.2.1 *This is an important theorem.*

Proof. The proof is left as an exercise. ■

You can also define a restatable theorem. Useful for restating the theorem when the proofs are in the appendices.

Theorem 3.2.2 (Goldbach's conjecture) *Every even integer greater than 2 can be expressed as the sum of two primes.*

And then, we recall Theorem 3.2.2.

Theorem 3.2.2 (Goldbach's conjecture) *Every even integer greater than 2 can be expressed as the sum of two primes.*

Chapter 4

Algorithms & code blocks

4.1. Algorithms

Use the `algorithm` environment to display algorithms in pseudocode. A list of algorithms can be generated using the macro `\listofalgorithms`.

Algorithm 1 Counting mismatches between two packed DNA strings

```
function DISTANCE(x, y)
    δ ← 0
    for i ← 1 to n do
        if x_i ⊕ y_i ≠ 0 then                ▷ ⊕: bitwise exclusive-or
            δ ← δ + 1
        end if
    end for
    return δ
end function
```

4.2. Code blocks

You can use `\mintinline{latex}{$a+b$}` to highlight source code inline. Use the `code` environment to display a code block. A list of listings can be generated using the macro `\listoflistings`.

```
class Person:
    def __init__(self, name="John", age=22):
        self.name = name
        self.age = age
```

Listing 1 | Code snippet

Part II

Advanced use cases

Chapter 5

PythonTEX integration

5.1. Console

Use the `pyconsole` environment to interactively show results in a Python console.

```
>>> 1+2
3
```

Other programming languages are supported, check the PythonTEX documentation.

5.2. Automatic figure generation

Figure 5.1 is automatically built from `create_figure.py` and rendered using LATEX.

Figure 5.1 | Figure automatically generated from `create_figure.py`

Use the `pysub` environment to get values from Python to LATEX. Here $a = -0.061$ and $b = 3.815$. Here is an equation that we would like to reference in the plot:

$$y = ax + b. \tag{5.2.1}$$

5.3. Automatic table generation

The following table is generated automatically from `create_table.py` using PythonTeX integration.

Table 5.1 | Table automatically generated from `create_table.py`

Name	GPA
John	3.89
Peter	2.85
Eva	3.67

Chapter 6

Glossary, index & nomenclature

6.1. Glossary

The Computer is an entry defined in the glossary. Use `glossary.tex` to define new entries. You can also define acronyms like Frame per Second (FPS) and refer to it with `\acrlong` (Frame per Second) or `\acrshort` (FPS).

6.2. Index

Use the `\index` macro to register a word in the index. For example, here we index the word index. We can also create subentries.

6.3. Nomenclature

Use the `\nomenclature` macro to add symbols to the nomenclature. Use the optional argument to specify a group. For instance, we can add the symbol Ω to the nomenclature. We can also add $\mathbb{N}$ and $\mathbb{R}$. You can customize the headers of the nomenclature by editing `nomencl_header.tex`.

Appendices

Appendix A

Appendix

Use `\appendices` to switch to appendices.

Index