

# Learning L<sup>A</sup>T<sub>E</sub>X from scratch

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# 1 Introduction to L<sup>A</sup>T<sub>E</sub>X

This is my first document. I'll be using latex for the rest of my life. I should not forget that the submission deadline for ICL Assignment 1 is on Saturday 6th, 2025 before 23.59 Kigali Time.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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## 2 Add graphics to my document

We can include images in our document.



Figure 1: Image of a cat.

### 3 Including two images side-by-side

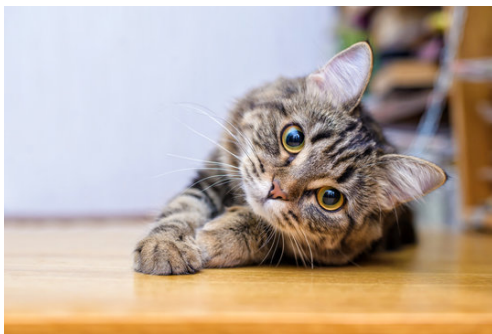


Figure 2: First image of a cat.

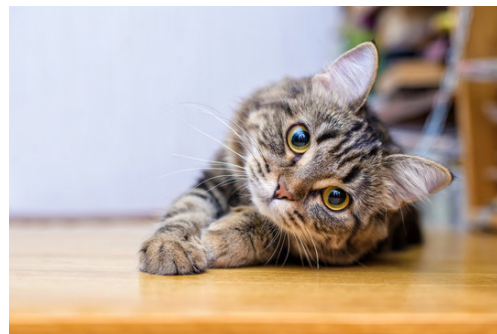


Figure 3: Second image of a cat.

From figure 1 we can see a cute cat. The two figures 2 and 3 are displayed side-by-side.

If you want to type faster than me go to [RataType.com](https://RataType.com)  
Go back to the section 1 (introduction).

## 4 Tables

If you want to insert a table in your L<sup>A</sup>T<sub>E</sub>X document, use the environment `\begin{table}\begin{tabular} ... \end{tabular}\end{table}`

```
greet (){
  echo "Hello, World!"
}
```

Table 1: Students' table

First name	Surname	Country
Lois	Kasongo	Zambia
Mustapha	Abdelhakim	Chad
Bonawewo	NULL	NULL

Table 2: Students' table (2)

First name	Surname	Country
Lois	Kasongo	Zambia
Mustapha	Abdelhakim	Chad
Bonawewo	NULL	NULL

From Table 1 and Table 2, blabla.

## 5 Math equations

### 5.1 Inline mathematics

#### 5.1.1 This is a subsubsection ...

To solve the quadratic equation  $ax^2 + bx + c = 0$ , we calculate the discriminant  $\Delta = b^2 - 4 \times a \times c$ .

### 5.2 Outline mathematics

The variable  $X$  is from a normal distribution if its density is given by  $f_X(x) =$

$$\frac{1}{\sqrt{2\pi\sigma^2}} \exp \left\{ -\frac{(x-\mu)^2}{2\sigma^2} \right\}, \quad x \in \mathbb{R}.$$

$$f_X(x) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp \left\{ -\frac{(x-\mu)^2}{2\sigma^2} \right\}, \quad x \in \mathbb{R}.$$

### 5.2.1 Numbered equations

The variable  $X$  is from a normal distribution if its density is given by

$$f_X(x) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp \left\{ -\frac{(x-\mu)^2}{2\sigma^2} \right\}, \quad x \in \mathbb{R}. \quad (1)$$

From the equation (1), we can ...

### 5.2.2 Aligned and numbered equations

$$2^x = 8 \quad (2)$$

$$\implies x \log 2 = \log 8 \quad (3)$$

$$\implies x = \frac{\log 8}{\log 2} \quad (4)$$

$$2^x = 8$$

$$\implies x \log 2 = \log 8 \quad (5)$$

$$\implies x = \frac{\log 8}{\log 2}$$

A variable  $X \sim \mathcal{U}[a, b]$ ,

$$f_X(x) = \begin{cases} \frac{1}{b-a}, & \text{if } x \in [a, b] \text{ or } a \leq x \leq b \\ 0, & \text{otherwise.} \end{cases} \quad (6)$$

### 5.2.3 Matrices

$$\begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{array}$$

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

$$\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$$

$$\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$$

To know about about climate and health analyses in Rwanda, check Iradukunda et al. (2025); Kenne et al. (2024).

## 6 Further reading

If you want to:

- Explore other classes (report, book, beamer)
- Make beamer presentations
- Enumerate in  $\text{\LaTeX}$
- Write algorithms
- Draw with TikZ
- Set counters
- Write a class
- Upload a project to Overleaf<sup>1</sup>
- Customized tables
- Compile R in  $\text{\LaTeX}$ . Work with colors in  $\text{\LaTeX}$

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<sup>1</sup>to <https://overleaf.com>

## References

- Iradukunda, P., Uwilingiyimana, C., and Rutikanga, J. U. (2025). Assessing the effects of climate change on agriculture productivity across rwanda's provinces and kigali city. *African Journal of Applied Statistics*, 11(1):1553–1576.
- Kenne, A. D., Toure, M., Logamou Seknewna, L., and Ketsemen, H. L. (2024). Subseasonal prediction of summer temperature in west africa using artificial intelligence: A case study of senegal. *International Journal of Intelligent Systems*, 2024(1):8869267.