A sample LaTeX document

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Abstract

This article demonstrate a sample paper which produced by LaTeX.

1 Introduction

This is the output of a sample *.tex* document in PDF. One could investigate through the codes, commands and comments to find out how each of them parts have been done.

While this simple paper recaps only the most essential features, there are plenty of resources [1][2][3] that walk us through much fancier stuffs that could be done by LaTeX.

2 Reshaping Text

The following is a short list of common formats to reshape texts:

1. This is a **bold phrase**.
2. This is an *italic phrase*.
   (a) sub-item-a
   (b) sub-item-b
3. This one is underlined.

To avoid "*Plagiarism*" please cite lines. Using quotes, references, ... are various methods to do such. Plenty types of sources (Website, Article, Book Chapter, ...) [4] might be referred to using *BibTeX*.

3 Figures and Images

To display an image or a photo we may use *graphicx* package. Figure 1 shows one single photo.

It is also possible to do that with multiple images (2a) and (2b) side by side, using *subcaption* package.

Both of them images generated with LaTeX commands. We might as well build more advanced drawings using other extra packages. On top of that, there are always external softwares that could produce drawings in PDF output. We elaborate on that in section 5.

4 Math Expressions

An *inline* formula like, Einstein's Equation: $E = mc^2$. and then *multiple-line* equations:

$$sin^2x + cos^2x = \frac{a^2 + b^2}{c^2}$$

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

$$\Rightarrow sin^2x + cos^2x = 1$$

In addition, code scripts could be displayed *as-it-is*:

```
// a "hello-word" example in C:
#include <stdio.h>
void main() {
        printf("hello, world!");
        printf("\n");
}
```

5 Diagrams

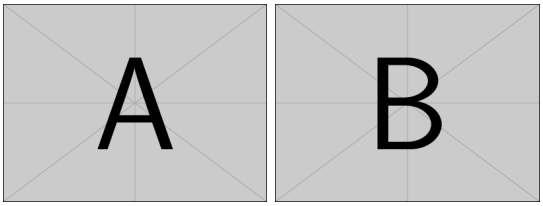
Scientific papers may include tables, matrices, graphs or other types of diagrams to display some information. In this section we represent a table 1 and a matrix 2 which is a specific form of a table. Figure 3 demonstrates a graph (via *Tikz*) represents the same information.

who	likes	whom
foo	1	bar
foo	1	baz
bar	1	foo
bar	0	baz
baz	0	foo
baz	0	bar

Table 1: Friendship

There are more methods to draw graphs. The following compares two other ones.

Figure 1: hot air balloons – `https://www.dike.lib.ia.us/images/sample-1.jpg/image_view_fullscreen`



(a) sample-image-a (b) sample-image-b

$$A_{(Friendship)} = \begin{array}{c} \\ foo \\ bar \\ baz \end{array} \begin{array}{c} \begin{array}{ccc} foo & bar & baz \end{array} \\ \begin{bmatrix} NA & 1 & 1 \\ 1 & NA & 0 \\ 0 & 0 & NA \end{bmatrix} \end{array}$$

Table 2: Matrix of Friendship

5.1 PyPI NetworkX

NetworkX is a Python package to study complex and dynamic networks [5]. With only a few lines of codes [1], we could draw a decent graph (Figure 4).

5.2 LibreOffice Draw

External Softwares could also become handy for this matter. Figure 5 has been built [2] by LibreOffice Draw [6].

[1] ".PY" source-code is available inside the same repo:sampleTeX/asset

[2] ".ODG" draw-file is available inside the same repo:sampleTeX/asset

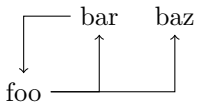


Figure 3: Graph of Friendship by CTAN:Tikz

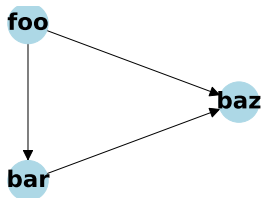


Figure 4: Graph of Friendship by PyPI:NetworkX

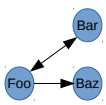


Figure 5: Graph of Friendship by LibreOffice:Draw

6 Bilingual

It is possible to drop some lines in non-ascii (UTF-8 like; Arabic, Persian, ...) among text. The following provides a combination of English and Arabic [3]. We need to distinguish different language using

```
\begin{arabtext}
...
\end{arabtext}
```

Example

Say Hello to

پارسی

and back to English again.

Whereas the entire paper (or most parts of it) could be in Persian. In such case, the *"xepersian"* package is strongly recommended. [4]

7 Conclusion

Summery of this article and explaining future works.

References

[1] "Latex introduction / quick-start guide." `https://www.latex-tutorial.com/quick-start/`, October 2017. Accessed on 2020.

[2] "Latex." `https://en.wikibooks.org/wiki/LaTeX`, May 2020. Accessed on 2020.

[3] "Templates." `https://www.overleaf.com/latex/templates`, 2020. Accessed on 2020.

[4] "Bibtex formats." `https://www.latex-tutorial.com/tutorials/bibtex/#Formats`, October 2017. Accessed on 2020.

[5] P. S. Aric Hagberg, Dan Schult, "networkx." `https://pypi.org/project/networkx/`, 2004-2019. Accessed on 2020.

[6] "Draw." `https://www.libreoffice.org/discover/draw/`. Accessed on 2020.

[3] Extra Persian letters also supported.

[4] "farsi.tex" tex-document is available inside the same repo:sampleTeX