

# Enumerations as an interesting form of text appearance

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## Abstract

The paper presents classical types of enumerations and the ways to create them. The rules for single- and multi-sentence as well as nested enumerations are discussed. Even if  $\LaTeX$  is treated as a king in the science and technical departments of higher education institutions, we will show that sometimes the king's gown might be in need of mending. We will discuss methods that are available for changing the appearance of enumerations in their wide and varied usage (printed text, multimedia presentations).

## Introduction

One can successfully defend the proposition that one needs to know quite a lot to typeset a good-looking text using an ordinary word processor, and also that one has to learn quite a lot to do things with  $\LaTeX$  in one's own way. As a consequence, documents typeset with  $\LaTeX$  usually have a friendly, familiar, look. This feature and the fact that no other tool exists which typesets mathematics better than the  $\TeX$  family makes  $\LaTeX$  an unquestioned king of technical departments at universities. As is well known, one doesn't question the king. If something was typeset with  $\LaTeX$  then, by default, it is typeset well.

Although trying to improve something good might not turn out to be the best idea, in the rest of this article we will try to find "something better" using the example of enumerations. Nowadays it is almost impossible not to stumble upon enumerations at almost every "corner". We will describe "classical" rules of typesetting enumerations and then discuss their relationship to the enumerations readily available with  $\LaTeX$ .<sup>1</sup>

## 1 The classics of enumerations

Several centuries of typesetting experience brought with it a typesetting canon. Typography, the "art of printing", has quite a lot to offer in a seemingly narrow area as enumerations. Enumerations (or lists) may be categorized depending on the nature of the "constituting points".

If consecutive items constitute a single sentence (Example 1) then we have a single-sentence enumeration. In such a case the enumeration can be typeset properly in several ways: treating it as a single text

<sup>1</sup> Only Polish typography rules will be discussed, but they might be of general interest.

paragraph (Example 1) or putting each item into a new line (Examples 2–4).

According to the rules of annotating consecutive items, lower case letters or Arabic numerals are used, after which the closing bracket follows (Examples 1–3). Periods should not be used as, except for abbreviations, they denote the end of a sentence and we have here a single-sentence enumeration. When each of the items is placed on a separate line, an em-dash might be used (Example 4).

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(...) you always have at least four choices... a) the two opposites and then b) the middle ground and c) "taken under further contemplation."<sup>2</sup>

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### Example 1: Single-sentence enumeration

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(...) you always have at least four choices...  
a) the two opposites and then  
b) the middle ground and  
c) "taken under further contemplation."<sup>2</sup>

---

### Example 2: Single-sentence enumeration

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(...) you always have at least four choices...  
1) the two opposites and then  
2) the middle ground and  
3) "taken under further contemplation."<sup>2</sup>

---

### Example 3: Single-sentence enumeration

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<sup>2</sup> Clarissa Pinkola Estés, *Women Who Run With the Wolves: Myths and Stories of the Wild Woman Archetype*, Ballantine Books, 1997.

---

(...) you always have at least four choices. . .  
 — the two opposites and then  
 — the middle ground and  
 — “taken under further contemplation.”<sup>2</sup>

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**Example 4:** Single-sentence enumeration

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It is enough to concentrate a little to see that the seemingly simplest things and events from everyday experience can awaken a feeling of an impenetrable mystery:

- 1) time, freedom, existence, space;
  - 2) cause, awareness, matter;
  - 3) number, love, “I”, death.<sup>3</sup>
- 

**Example 5:** Commas and single-sentence enumerations

In single sentence enumerations the period is used only once, at the end of the last item of the enumeration. The preceding items are terminated with commas or — if the items contain many commas already — with semicolons. This rule is illustrated by Example 5.

If the contents of an enumeration cannot be expressed in the form of one sentence, then we have to deal with a multi-sentence enumeration. Each item takes the form of an arbitrary number of full, individual, sentences. To annotate the consecutive items of such an enumeration, numbers or uppercase letters followed by a period should be used. The period informs that “what will immediately follow is the beginning of a sentence.” Important to note is that for both single- and multi-sentence enumerations the sentences (not their annotations) begin at the same distance from the page edge. A multi-sentence enumeration, typeset in the classical way, is given in Example 6.

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Consider this:

A. Rafer Johnson, the decathlon champion, was born with a club foot.

B. Winston Churchill was unable to gain attendance to the prestigious Oxford or Cambridge universities because he “was weak in the classics.”

C. In 1905, the University of Bern turned down a doctoral dissertation as being irrelevant and fanciful. The young physics student who wrote the dissertation was Albert Einstein, who was disappointed but not defeated.<sup>4</sup>

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**Example 6:** Multi-sentence enumeration

<sup>3</sup> Leszek Kołakowski, *Mini wykłady o maxi sprawach*, seria druga, Znak, Kraków 1999.

<sup>4</sup> Jack Canfield, Mark Victor Hansen, *A 3rd Serving of Chicken Soup for the Soul*, Health Communications, 1996.

Enumerations might be *nested*, which means that an enumeration becomes an item of a different, higher ordered item. One can thus talk about a hierarchy of enumerations which should be clearly distinguished in the typeset text so that no ambiguity arises as to which “matrioshka” is put into which. The following rule applies when annotating items of a multilevel enumeration: When moving from the main (outermost) enumeration to the most nested enumeration, i.e., from the biggest to the smallest “matrioshka”, the consecutive items are labeled with

- uppercase roman numerals,
- uppercase letters,
- Arabic numerals,
- lower case letters.

Some of the labeling types might be omitted but their order should be kept. The period or closing bracket is used depending on whether the enumeration is single- or multi-sentence.

L<sup>A</sup>T<sub>E</sub>X allows up to four levels of enumerations of the type *itemize* or *enumerate*. The typesetting rules say that — if possible — nested enumerations should be limited to two levels. Example 7 illustrates multilevel enumerations.

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- A. Outermost enumeration — 1<sup>st</sup> item:
    - 1) first item of a subordinate single-sentence enumeration,
    - 2) second item,
    - 3) third item,
  - B. Outermost enumeration — 2<sup>nd</sup> item:
    1. An item of a nested enumeration, which is a multi-sentence enumeration and may consist of an arbitrary number of of sentences:
      - a) first element,
      - b) second element,
      - c) third element.
    2. Second item.
    3. Third item.
  - C. Outermost enumeration — 3<sup>rd</sup> item.
  - D. Outermost enumeration — 4<sup>th</sup> item.
- 

**Example 7:** Multi-level enumerations

## 2 Tradition and L<sup>A</sup>T<sub>E</sub>X

In the previous section we sketched the traditional Polish conventions for typesetting enumerations. Perhaps the Anglo-Saxon tradition is completely different (what are the rules?), hence the default numbering and bulleting rules in the L<sup>A</sup>T<sub>E</sub>X environments

- 
- Level 1, item 1
    - Level 2, item 1
      - \* Level 3, item 1
        - Level 4, item 1
- 

**Example 8:** An enumeration based on the  $\LaTeX$  *itemize* environment.

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- 1. Level 1, item 1
    - (a) Level 2, item 1
      - i. Level 3, item 1
        - A. Level 4, item 1
- 

**Example 9:** An enumeration based on the  $\LaTeX$  *enumerate* environment.

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- item 1,
  - item 2,
  - item 3.
- 

```
\renewcommand{\labelitemi}{---}
\begin{itemize}
  \item item 1,
  \item item 2,
  \item item 3.
\end{itemize}
```

---

**Example 10:** “The classics” in the  $\LaTeX$  environment *itemize*

*enumerate* and *itemize* — Examples 8 and 9. Anyway, if we treat the rules described above as a classic ensemble, then in principle we will feel properly dressed wearing it for any occasion. It suffices to redefine some internal  $\LaTeX$  commands to get the desired look of the labels (Examples 10 and 11).

### 3 Classics, $\LaTeX$ and tiny details

A paragraph is a self-contained unit of text constituting a logical entity, “indivisible” from the point of view of the information conveyed; hence it is obvious that the following information should make exactly one paragraph:

*Remember that whichever day of the week it is you always have the following choice for supper: a) to eat or b) not to eat. For breakfast you have no choice: you must eat it!*

The same text formatted as a single-sentence enumeration (Example 12) confuses the reader by making the impression that the consecutive lines do not have much in common. This is caused by too much space between the consecutive items. Moreover, because the vertical space between the preceding paragraph and the enumeration is exactly the same as

- 
- I. Level 1, item 1
    - A. Level 2, item 1
      - 1. Level 3, item 1
        - a. Level 4, item 1
- 

```
\renewcommand{\labelenumi}{\Roman{enumi}.}
\renewcommand{\labelenumii}{\Alph{enumii}.}
\renewcommand{\labelenumiii}%
  {\arabic{enumiii}.}
\renewcommand{\labelenumiv}{\alph{enumi}.}
\begin{enumerate}
  \item Level 1, item 1
  \begin{enumerate}
    \item Level 2, item 1
    \begin{enumerate}
      \item Level 3, item 1
      \begin{enumerate}
        \item Level 4, item 1
      \end{enumerate}
    \end{enumerate}
  \end{enumerate}
\end{enumerate}
```

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**Example 11:** “The classics” in the  $\LaTeX$  environment *enumerate*

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Remember that whichever day of the week it is you always have the following choice for supper:

- to eat or
- not to eat.

For breakfast you have no choice: you must eat it!

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**Example 12:** A (confusing) single-sentence enumeration presented with standard spacing

between the enumeration and the following paragraph, one may be under the impression that the items of the enumeration have no logical relation to any of these paragraphs — each item of the enumeration seems to live its own life — but this is not so. We could live undisturbed by such a tiny detail, but — quietly — would prefer the result to be presented as in Example 13. (The exact spacing adjustment will vary with the class used.)

The *enumerate* and *itemize* environments have no means to take into account if the typeset enumeration is single- or multi-sentence because they simply “don’t know” anything of this nature. Therefore, one should take care to produce a less confusing spacing of the items. The scheme presented in Example 15 concerns itself with lengths defined in  $\LaTeX$ , at least some of which we can modify in the *enumerate* and *itemize* environments, just before the first item.

Remember that whichever day of the week it is you always have the following choice for supper:

- to eat or
- not to eat.

For breakfast you have no choice: you must eat it!

**Example 13:** A single-sentence enumeration as an entity

```
Remember that whichever day of the week
it is you always have the following
choice for supper:\vspace{-.6ex}
\renewcommand{\labelitemi}{---}
\begin{itemize}
\setlength{\parskip}{0ex}
\setlength{\itemsep}{0ex}
\item to eat or
\item not to eat.
\end{itemize}\vspace{-.6ex}
For breakfast you have ...
```

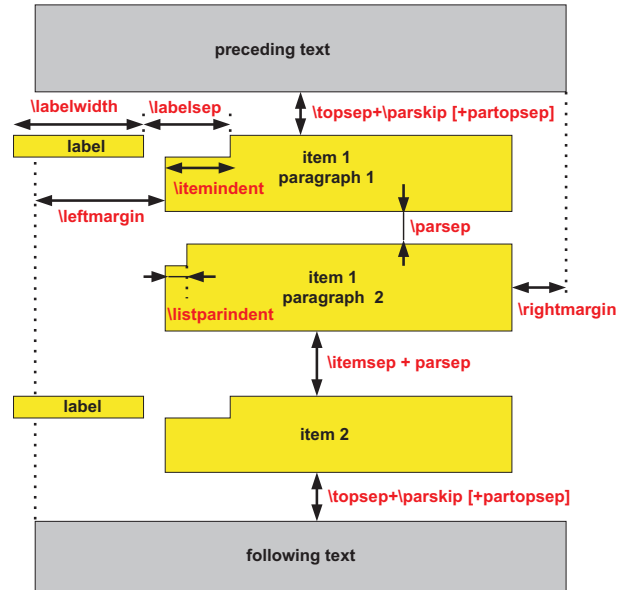
**Example 14:** How to typeset Example 13

An analysis of the code presented in Example 14 and a comparison with the output in Example 15 leads to the conclusion that the scheme of the meaning of the various lengths within the enumeration environment, although copied by many sources (also by [1]), is not very well in sync with the current practice. This one tiny detail should be remembered.

#### 4 “Modern” enumerations

The classical methods of typesetting enumerations work well for paper publications. They are completely unsuitable for multimedia presentations, flyers or technical documentation. Such creations are typeset so as to facilitate quick access to various portions of text which, similar to dictionary entries, are self-contained entities.

Accordingly, the nature of enumerations is different. Spacing is more important and the same is true of the shape and position (with respect to the contents of the enumeration) of the symbols used to label the consecutive items—these are usually just entries. The nature of the symbols has also changed—they play a different role than in the classical enumerations. They are now rather “road signs” saying: “here is the beginning of the information which might be important for you.” Therefore they should be readable, of a proper size and, if possible, in a color contrasting with the color of the item’s



**Example 15:** Enumerations and L<sup>A</sup>T<sub>E</sub>X’s lengths

text (especially so in presentations).

It seems that the creator of L<sup>A</sup>T<sub>E</sub>X had a pre-cognition of the direction the world would roll. To create a “modern” enumeration, not yet covered by any norm, it suffices to change the labeling of the items. And so, Example 6, typeset to the classical rules, might be modified by changing the spacing and the way items are aligned (standard L<sup>A</sup>T<sub>E</sub>X enumeration)—Example 16—or by also modifying the item label—Example 17. Example 18 is given to show that we do not need to throw away all of the features of the classical enumerations, especially in brochures or flyers.

#### Summary

The world moves on, we are changing, enumerations change as well. It remains to wait for the day when an announcement found on our doormat will make us happy instead of dandering up—to our joy, the leaflet will be typeset with L<sup>A</sup>T<sub>E</sub>X ...

#### References

- [1] Kopka H., Daly P. W.: *A Guide to L<sup>A</sup>T<sub>E</sub>X*, 4<sup>th</sup> Edition, Addison-Wesley, 2003
- [2] Chwałowski R.: *Typografia typowej książki*, Helion, Gliwice 2002
- [3] Polish norms: PN-78/N-01222/03, BN-76/7440-03

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Consider this:

- A. Rafer Johnson, the decathlon champion, was born with a club foot.
- B. Winston Churchill was unable to gain attendance to the prestigious Oxford or Cambridge universities because he “was weak in the classics.”<sup>4</sup>

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**Example 16:** Multi-sentence enumeration differently

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Consider this:

- ▶ Rafer Johnson, the decathlon champion, was born with a club foot.
- ▶ Winston Churchill was unable to gain attendance to the prestigious Oxford or Cambridge universities because he “was weak in the classics.”<sup>4</sup>

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**Example 17:** Multi-sentence enumeration differently

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■ *First year:* Sugar, I’m worried about my little baby girl. You’ve got a bad snuffle. I want to put you in the hospital for a complete checkup. I know the food is lousy, but I’ve arranged for your meals to be sent up from Rossini’s.

■ *Second year:* Listen, honey, I don’t like the sound of that cough. I’ve called Dr. Miller and he’s going to rush right over. Now will you go to bed like a good girl just for me, please?

■ *Third year:* Maybe you’d better lie down, honey. Nothing like a little rest if you’re feeling bad. I’ll bring you something to eat. Have we got any soup in the house?

■ *Fourth year:* Look, dear. Be sensible. After you’ve fed the kids and washed the dishes, you’d better hit the sack.

■ *Fifth year:* Why don’t you take a couple of aspirin?

■ *Sixth year:* If you’d just gargle or something instead of sitting around barking like a seal.

■ *Seventh year:* For heaven’s sake, stop sneezing. What are you trying to do, give me pneumonia?<sup>5</sup>

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**Example 18:** Enumeration — modern and “about life”

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<sup>5</sup> A. L. McGinnis, *The Romance Factor*, Harper & Row, 1990.