Fonts in LaTeX

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August 29, 2011

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Being able to customize fonts in your `.tex` document can be tricky at times, or as easy as loading a package or two. In this tutorial I will talk through various ways on how to accomplish it.

1 UTF8 usage

This can be accomplished by several ways. Older LaTeX compilers do not assume, that the input will be given in Unicode character, and thus, if you try to type something like šąla or clichè, then it will give you errors unless the filet itself is encoded in utf8 and the compiler 'knows' that the input encoding is utf8 and that can be easily achieved by using package called `inputenc` and it should be executed as follows:

```
1 \usepackage[utf8]{intputenc} % for utf8
```

If you need to produce LaTeX documents with short Cyrillic snippets, then it would be best to check out this website[1] as it explains most of the nuances about different font handling in different char-sets.

For a complete guide how to set up your LaTeX document for various languages there is a wonderful list on the the LaTeX wikibook[2].

2 The Font Catalogue

There is a very good resource for fonts, which outlines how to make different fonts working and it includes notes whether the mathematics mode is supported with those fonts. The resource is located at LaTeX font catalogue website and you will find the information you search.

As for fonts without the support for mathematical symbols, I would advice you **against** using them unless you do not use any mathematical typesetting in your documents (e.g. this is good for letters and other text-only documents). However, if you need to do that, please consult professionals, some geek-written blogs or just people who are more experienced in that field.

Now let's talk about commands involved setting different fonts. Usually you should declare in your preamble, that you will use Type1 fonts, which look better and most of the scientific journals require them. Here is how to do it:

```
1 \usepackage[T1]{fontenc}
```

[1] The URL is http://win.ua.ac.be/~nschloe/content/latex-and-cyrillic-text-snippets

[2] The URL is https://secure.wikimedia.org/wikibooks/en/wiki/LaTeX/Internationalization

And then you put a package responsible for defining the font:

Computer Modern fonts They are default, so you do not have anything to specify, however, there exist some packages which provide some variations of those fonts.

For example, if you want slightly enhanced version [3] just load the package `lmodern` after you load `fontenc`.

Times fonts Just put `\usepackage{mathptmx}` after the previous command;

Palatino Alternatively for palatino fonts, just write `\usepackage{mathpazo}` command;

If you want other types of fonts *with* 'math' support, then visit the TEX font catalogue.

3 XETEX or LuaTEX usage

There are also different compilers than the standard `latex`, `pslatex` or `pdflatex` (NB the first two are deprecated and only the third compiler is still developed on). The alternatives offer different feature set and might be more suitable for nowadays requirements, such as easier font set up or proper Unicode support built into the programs themselves. XETEX TEXflavour provide its own 2 compilers named `xetex` and `xelatex`, whereas LATEX people have chosen `lualatex` as the successor of the `pdflatex` compiler and it provides an easy way to include Lua programming scripts *inside* your LATEX document to do various tasks.

The Unicode problem in these alternative compilers is solved as they *do* assume that the input is encoded in Unicode formats and there are no errors when you enter Unicode text. What is more, they have much better support for changing fonts and `xetex` and `xelatex` compilers can even utilise TrueType or other modern font technologies. On the other hand this 'flexibility' might cause more additional issues, as the 'math' mode support for common fonts is usually very poor. That is why you should only use `xelatex` or `xetex` if you do not need mathematical expressions in your document and you *require* a different font. There is another issue though — the alternatives are not as time-proven and are still under heavy development and they do not integrate as well with older packages (e.g. `epstopdf`), which might be unacceptable in some situations.

[3] See this web page (`http://www.tug.dk/FontCatalogue/lmodern/`)