Latex Tips

Monday, January 2, 2012

Why would someone want to use "complicated" latex instead of Word?

Word can be a very good start to begin with when we make a simple document and the document does not have so many equations in the middle of sentences or separate equations. As far as I can tell the best thing Latex does is the equation rendering. If you simple compare the latex version of sentence and word version sentence include the mathematics, you can easily see what is the difference between them.

Latex

$$th_x(t) = \frac{\sum_{j=0}^{u_x} s_x(t-j)h_x(t-j)}{t_0}, \quad (2)$$

where $s_x(t)$ is the time period from time slot $t-1$ to time slot t of VM x, and $h_x(t) = 1$ if VM x is scheduled from time slot $t-1$ to time slot t and $h_x(t) = 0$ otherwise. If VM x is scheduled at time t, $th_x(t)$ increases. Otherwise, $th_x(t)$ decreases by $\frac{th_x(t-1)}{t_0}$. Intuitively, if $th_x(t)$ increases, the utility value decreases and VM x will have fewer chances to be scheduled in subsequent time slots.

Word

$$th_x(t) = \frac{\sum_{j=0}^{u_x} s_x(t-j)h_x(t-j)}{t_0}, \quad (2)$$

where $s_x(t)$ is the time period from time slot $t-1$ to time slot t of VM x, and $h_x(t)=1$ if VM x is scheduled from time slot $t-1$ to time slot t and $h_x(t)=0$ otherwise. If VM x is scheduled at time t, $th_x(t)$ increases. Otherwise, $th_x(t)$ decreases by $\frac{th_x(t-1)}{t_0}$. Intuitively, if $th_x(t)$ increases, the utility value decreases and VM x will have fewer chances to be scheduled in subsequent time slots.

As you can see from two figures, they are quite different in writing equations in the document. This is the reason I recommend latex all the time. I even took one course required latex as the default editing tool. Otherwise, a part of my scores was deducted because of not using it. Once you make a format fitting to you, you do not need to worry about making a format again. Cool!

Here, I provide the easiest way to start latex in different operating systems: Windows, MAC OS X, and Linux.

Windows

1. [Editor] Install WinEdt (other edit tools can be found in Tex Editors wiki)
2. [PostScript Print] Install Generic PostScript Printer for dummy printing of .ps file type
3. [Latex Compiler] Install MiKTeX to download latex-related tools
4. [PostScript Viewer] Install GSView to see PostScript file

New packages should go to following folders:
C:\Documents and Settings\All Users\Application Data\MiKTeX\X.Y for all users
C:\Documents and Settings\USER_NAME\Application Data\MiKTeX\X.Y(version) for USER_NAME
Packages to \tex\latex\packagename, bibliographic styles to \bibtex\stylename

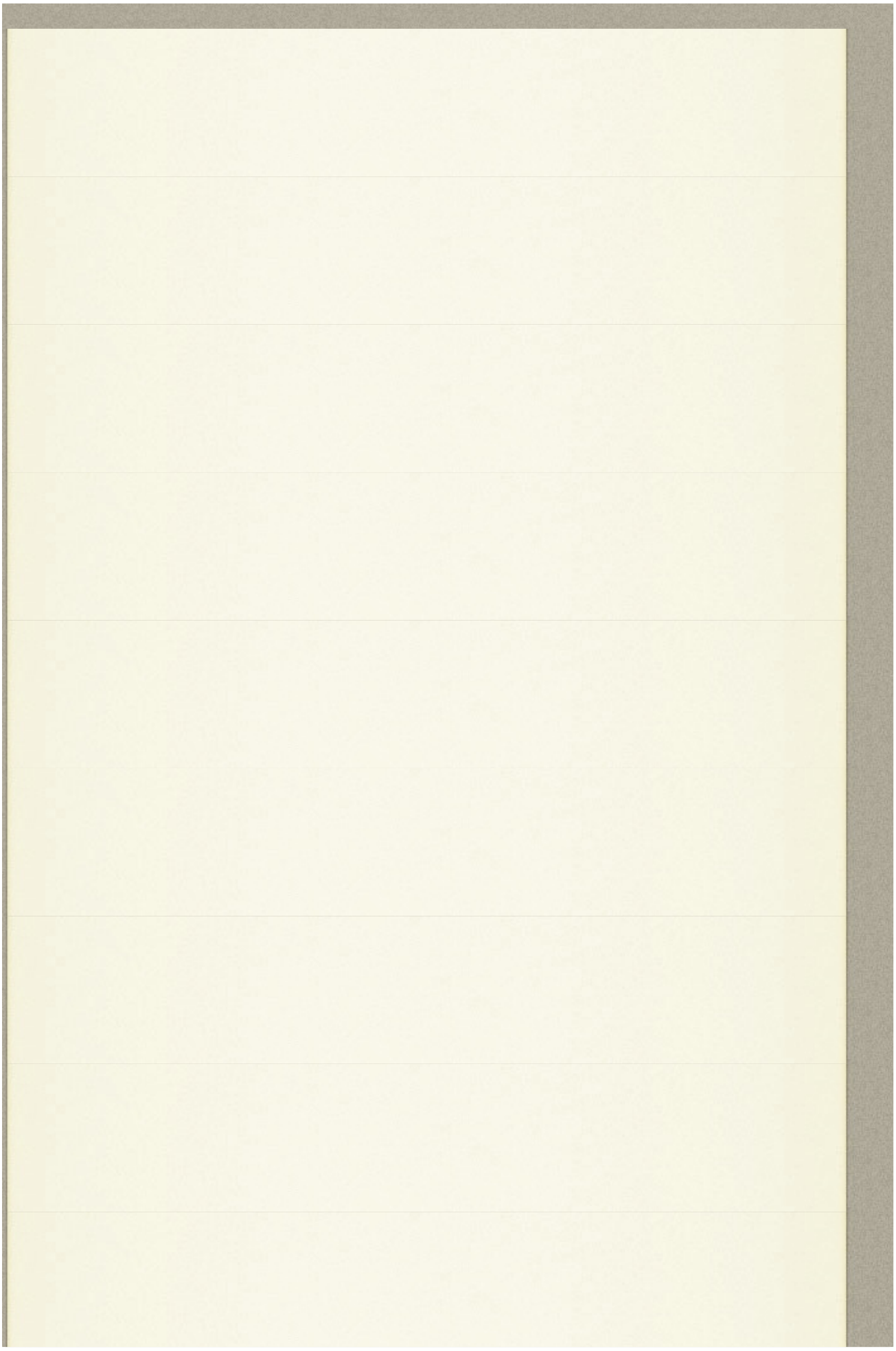
Open example file with WinEdt to confirm that you can compile properly, and press Latex in the WinEdt menu. Then, it will generate *.pdf file and show you how it looks.

MAC OS X

Latex installation for MAC OS X is easier than Windows. Just follow one step.
Install MacTex Package for Editor, PostScript, and Latex Compiler

Tex folder is created under Applications folder. You can execute TexShop to edit the tex program and load example file.
Change Typeset to "LaTeX" and press Typeset button, and it will show the pdf file.

Linux (Ubuntu)



Open example file with gedit and execute latex to see pdf file

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\fancyhead[R]{\thepage of \pageref{LastPage}}
\fancyfoot[L]{Jinho Hwang}
\fancyfoot[C]{GWU}
\fancyfoot[R]{CS}
}

\fancyhf{}
\renewcommand{\headrulewidth}{0pt} % remove header lines and reset formats
\renewcommand{\footrulewidth}{0pt} % remove footer lines and reset formats

% define the rest of pages header and footer
\fancyhead[L]{Course Report}
\fancyhead[C]{XXXX-XX}
\fancyhead[R]{\thepage of \pageref{LastPage}}
\fancyfoot[L]{Jinho Hwang}
\fancyfoot[C]{GWU}
\fancyfoot[R]{CS}
```

For detail, please refer to Page layout in Latex.