IAT_EX Quick Start

by Arun K. Subramaniyan, ${\tt asubrama@purdue.edu}$

 ET_{EX} is a typesetting system. Simply, we as authors write the text and ET_{EX} places it on the page. ET_{EX} is a macro package and acts as a frontend to T_{EX} . Donald Knuth created T_{EX} in 1982 as a remedy for the poor quality of publishing in the mathematical sciences. Leslie Lamport wrote E_{EX} to make T_{EX} easier to use, and thus created the most popular way of using T_{EX} .

2 Why use I₄T_EX ?

There are many excellent documents written on this topic and I am just paraphrasing from them.

- Produces the best output.
- Standard for typesetting scientific documents.
- Easy to use with mathematical symbols.
- Meaning based structuring (Automatic).
- Its FREE!

An excellent set of reasons for using LATEX can be found at $http://www.ctan.org/what_is_tex.html.$

3 Installation

IATEX is highly popular and its users actively participate in enhancing IATEX. As a result hundreds of related packages are available. The downside is that a new user often finds it confusing to choose packages to install. To get you started quickly I have put together the list below for different platforms that will work best for new users.

- Windows
 - $proT_EXt \rightarrow LAT_EX$ processor
 - TeXnicCenter \rightarrow editor
- Unix/Linux
 - TeX Live or teTeX \rightarrow LATeX processor
 - *Emacs* \rightarrow editor
- Mac
 - $\ \mathrm{MacT}_{E\!X} \rightarrow \mathrm{I\!AT}_{E\!X} \ \mathrm{processor}$
 - $-LyX \rightarrow \text{editor}$

Note that in selecting the above packages, emphasis was on ease of installation. As you become proficient in $I\!\!\!^{A}T\!\!_{E}X$, you will want to use more sophisticated packages not mentioned above. However, this guide is intended for beginners and the above list is more than enough to start producing great professional looking documents. You will find a complete list of packages related to $T\!_{E}\!X$ at the CTAN website http://www.ctan.org/.

I have downloaded the above packages and burnt them on CDs. You are welcome to borrow them for installing on your computer.

4 Getting Started

\documentclass{article}
\begin{document}
A minimal \LaTeX\ document.
\end{document}

 \rightarrow A minimal $\[AT_EX\]$ document.

Some general pointers:

- Commands start with a "\" (backslash)
- Documents start with \documentclass{. . .}
 - Specifies the type of document. article, report, book and letter are the basic documentclasses included with LAT_EX . Most institutions have their own class definitions. For example, a student submitting a thesis to Purdue University will use this command : \documentclass{puthesis}

5 Environments

The region enclosed by **\begin{name}** ... **\end{name}** is called an environment. Some common environments are: *equation*, *figure*, *table* etc. Text within environments are typeset differently depending on the environment's specifications.

5.1 Typesetting Mathematics

\alpha	α	x^y	x^y	\pm	\pm
\psi	ψ	x_y	x_y	\times	×
∖omega	ω	x_y^z	x_u^z	\approx	\approx

5.1.1 Calculus Examples

 $\texttt{lint_0^linfty} \to \int_0^\infty \quad \boxed{} \texttt{lint} \to \int \int$

 $frac{partial u}{partial x} \rightarrow \frac{\partial u}{\partial x}$

An exhaustive reference for math can be found at : www.ams.org/tex/short-math-guide.html.

5.2 Figures & Tables

Figures and tables do not look nice if broken between pages. To solve the problem LATEX treats them as "floating" environments. By "floating" we mean that the figure/table will be placed in an appropriate position, i.e., not exactly at the specified location but at a location that is aesthetically pleasing and closest to the specified location. Often, figures and tables are placed inside their respective environments. For instance,

\begin{figure} \includegraphics{graph} \end{figure}

- A thorough discussion of dealing with figures can be found at www.ctan.org/tex-archive/info/epslatex.pdf
- www.grad.iit.edu/latex/LaTeX/TableHelp1.pdf has a nice list of tricks to produce good tables.

6 Output Formats

A LATEX source file can be used to produce a variety of output formats like .dvi, .ps, .pdf, .rtf, .html, .xml.

7 Further Reading

- 1. " $\square T_E X : A \text{ Document Preparation System}$ " by Leslie Lamport from the creator of $\square T_E X$
- "The Not So Short Introduction to L^AT_EX2_ε" by T. Oetiker
 www.ctan.org/tex-archive/info/lshort/english/lshort.pdf
- 3. http://tex.loria.fr/english/general.html has an exhaustive list of ${\rm I\!AT}_{\rm E\!X}$ references.