LaTeX
SEM 4 AND 6 GENERAL PAPER – SEC B1

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INTRODUCTION

- LaTeX is a macro package based on TeX and its purpose is to simplify TeX typesetting, especially for documents containing mathematical formulae

Basics

- Before starting, ensure you have LaTeX installed on your computer

The LaTeX syntax

- LaTeX uses a markup language in order to describe document structure and presentation
- LaTeX converts your source text, combined with the markup, into a high-quality document
- For the purpose of analogy, web pages work in a similar way: the HTML is used to describe the document, but it is your browser that presents it in its full glory - with different colours, fonts, sizes, etc

Spaces

- The LaTeX compiler normalises whitespace so that whitespace characters, such as or , are treated uniformly as ”space”: several consecutive ”spaces” are treated as one, ”space” opening a line is generally ignored, and a single line break also yields “space”
- A double line break , however, defines the end of a paragraph; multiple empty lines are also treated as the end of a paragraph

Reserved Characters

- The following symbols are reserved characters that either have a special meaning under LaTeX or are unavailable in all the fonts
- Non-ASCII characters can be typed in directly for most cases
- The other symbols and many more can be printed with special commands as in mathematical formulae or as accents

LaTeX commands

- Some commands need an argument, which has to be given between curly braces after the command name
- Some commands support optional parameters, which are added after the command name in square brackets
- The general syntax is: \commandname .

Comments

- When LaTeX encounters a % character while processing an input file, it ignores the rest of the current line, the line break, and all whitespace at the beginning of the next line
- This is an % stupid ifragilist% icexpialidocious This is an example: Supercalifragilisticexpialidocious Note that the % character can be used to split long input lines that do not allow whitespace or line breaks, as with Supercalifragilisticexpialidocious above
- The core LaTeX language does not have a predefined syntax for commenting out regions spanning multiple lines

Our first document

- We will produce the absolute bare minimum that is needed in order to get some output; the well-known Hello World!
- This is LaTeX's way of knowing that whenever it sees a backslash, to expect some commands
- Comments are not classed as a command, since all they tell LaTeX is to ignore the line

Compilation

Compilation process

- The general concept is to transform a plain text document into a publishable format, mostly a DVI, PS or PDF file
- This process is called compilation, which is done by an executable file called a compiler
- These compilers are basically used to compile Plain TeX, not LaTeX
- The output of pdflatex takes direct advantage of modern features of PDF such as hyperlinks and embedded fonts, which are not part of DVI
- The following diagram shows the relationships between the LaTeX source code and the formats you can create from it: The boxed red text represents the file formats, the blue text on the arrows represents the commands you

Generating the document

- LaTeX itself does not have a GUI , since it is just a program that crunches away at your input files, and produces either a DVI or PDF file
- Some LaTeX installations feature a graphical front-end where you can click LaTeX into compiling your input file
- The main differences between the DVI and PDF formats are: • DVI needs less disk space and it is faster to create
- DVI viewers are not very common, so you can consider using it for previewing your document while typesetting
- It also supports advanced typographic features: hanging punctuation, font expansion and margin kerning resulting in more flexibility available to the

Generating the document

- Nowadays it is the de facto standard for sharing and publishing documents, so you can consider using it for the final version of your document
- About now, you saw you can create both DVI and PDF document from the same source

Files

Picking suitable filenames

- Stick to lower-case letters without accents , the digits 0-9, the hyphen , and only one full point or period to separate the file extension
- Some operating systems do not distinguish between upper-case and lower-case letters, others do
- When you work with LaTeX, following list gives the most common file types you might encounter