

L^AT_EX: Online module 4

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Topics to be covered

- Lists
- Nested lists
- Examples

Lists

Various list environments used in \LaTeX are the following:

- Numbering
- Itemizing
- Description

Numbering

- List of items have numbering in this environment
- All the items should be enclosed within the following commands:
`\begin{enumerate}`
`\end{enumerate}`
- All the items should start with the command: `\item`

For example, if we want to display all the departments in the Mathematics faculty in the following manner:

- 1 Applied Mathematics
- 2 Pure Mathematics
- 3 Computer Science
- 4 Combinatorics and Optimization
- 5 Statistics and Actuarial Sciences

Please look at the code on the next page.

Example

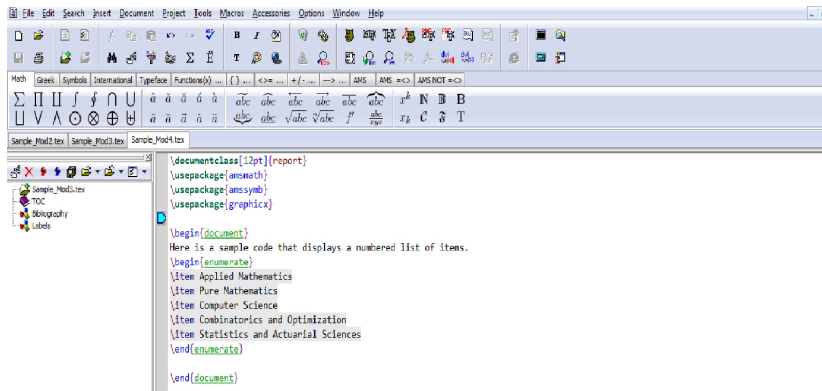


Fig1: Snap shot for creating numbered list

contd...

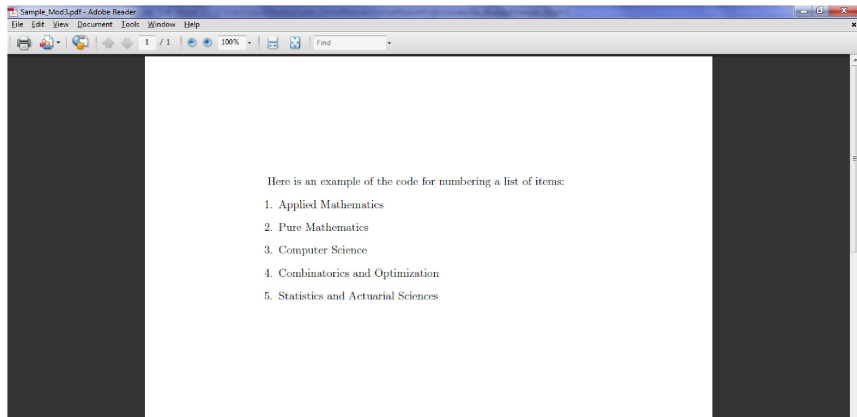


Fig2: Output of the previous slide

Unnumbered

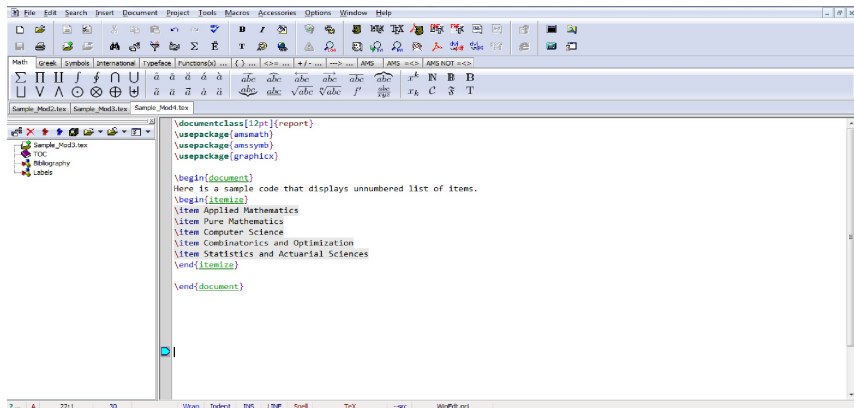
- List of items have no numbering in this environment
- All the items should be enclosed within the following commands:
`\begin{itemize}`
`\end{itemize}`
- All the items should start with the command: `\item`

For example, if we want to display all the departments in the Mathematics faculty in the following manner:

- Applied Mathematics
- Pure Mathematics
- Computer Science
- Combinatorics and Optimization
- Statistics and Actuarial Sciences

Please look at the code on the next page.

Example



The screenshot shows a LaTeX editor window with a menu bar (File, Edit, Search, Insert, Document, Project, Tools, Macros, Accessories, Options, Window, Help) and a toolbar. Below the toolbar is a palette with various mathematical symbols and functions. The main editor area displays the following LaTeX code:

```
\documentclass[12pt]{report}
\usepackage{amsmath}
\usepackage{amssymb}
\usepackage{graphicx}

\begin{document}
Here is a sample code that displays unnumbered list of items.
\begin{itemize}
\item Applied Mathematics
\item Pure Mathematics
\item Computer Science
\item Combinatorics and Optimization
\item Statistics and Actuarial Sciences
\end{itemize}

\end{document}
```

Fig3: Snap shot for creating unnumbered list

contd...

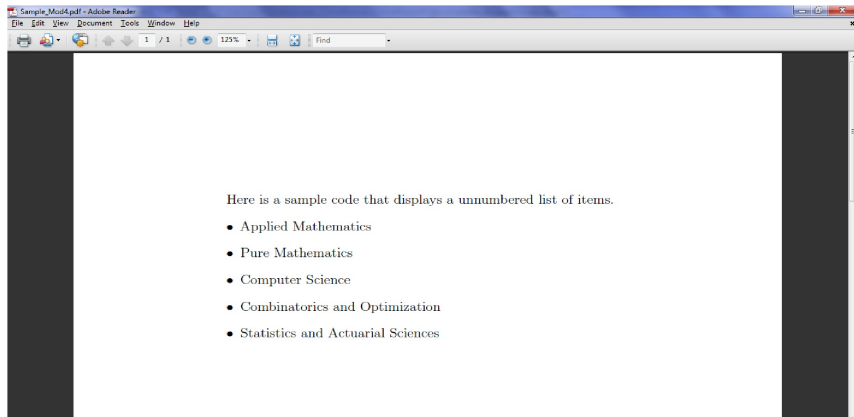


Fig4: Output of the previous slide

Description

- List of items have no numbering in this environment
- All the items should be enclosed within the following commands:
`\begin{description}`
`\end{description}`
- All the items should start with the command: `\item[]`
- Label should be written within the square brackets

contd...

For example, if you want a list of items to be of the following form:

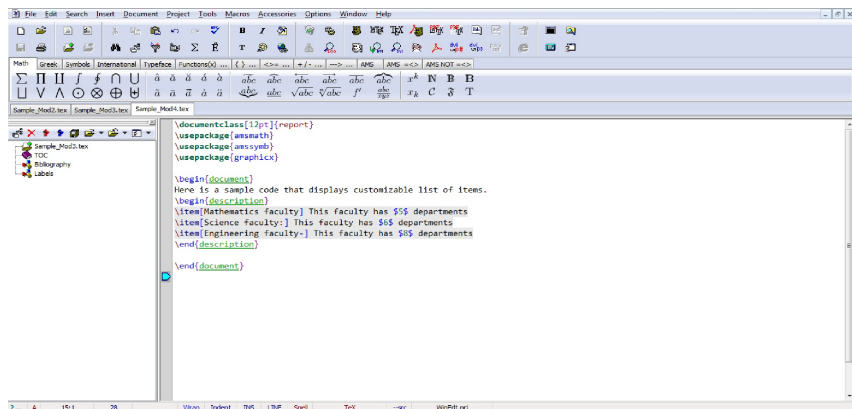
Mathematics faculty This faculty has 5 departments

Science faculty: This faculty has 6 departments

Engineering faculty- This faculty has 8 departments

In the above example, notice that either a blank space or a semi colon or a hyphen can be preceded by the label of an item.

Example



The screenshot shows a LaTeX editor window with a menu bar (File, Edit, Search, Insert, Document, Project, Tools, Macros, Accessories, Options, Window, Help) and a toolbar. Below the toolbar is a palette with categories: Math, Greek, Symbols, International, Typeface, Functions(x), and AMS. The main window displays the LaTeX source code for a document class and a list:

```
\documentclass[12pt]{report}
\usepackage{amsmath}
\usepackage{amssymb}
\usepackage{graphicx}

\begin{document}
Here is a sample code that displays customizable list of items.
\begin{description}
\item[Mathematics faculty] This faculty has $5$ departments
\item[Science faculty:] This faculty has $6$ departments
\item[Engineering faculty-] This faculty has $8$ departments
\end{description}

\end{document}
```

Fig5: Snap shot for creating customizable list

contd...

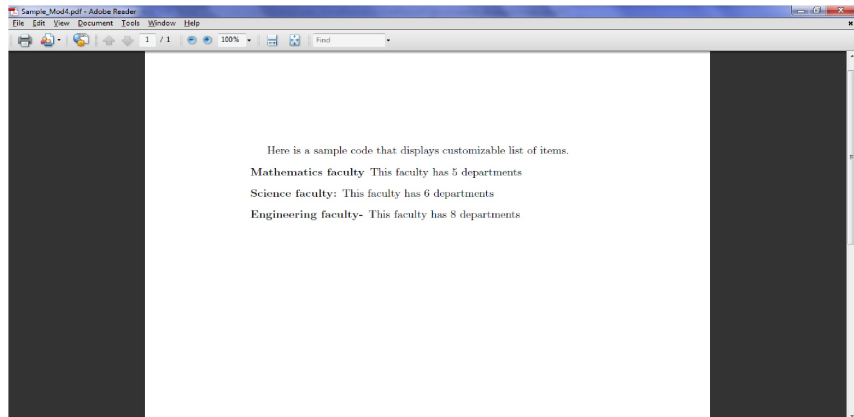


Fig6: Output of the previous slide

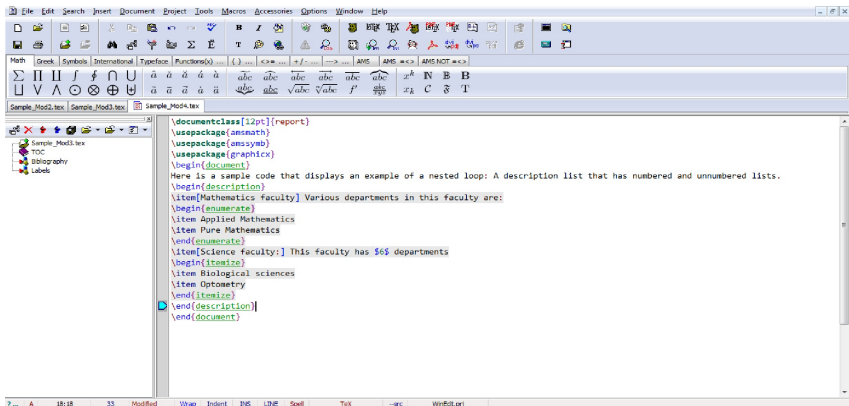
Nested lists

- Any number of items can be nested
- All kinds of permutations and combinations of lists can be generated

Examples include the following:

- 1 Numbered within an unnumbered and vice versa
- 2 Numbered within a description list and vice versa.
- 3 Unnumbered within a description list and vice versa.
- 4 Numbered within unnumbered

Example



The screenshot shows a LaTeX editor window with the following content:

```
\documentclass[12pt]{report}
\usepackage{amsmath}
\usepackage{amssymb}
\usepackage{graphicx}
\begin{document}
Here is a sample code that displays an example of a nested loop: A description list that has numbered and unnumbered lists.
\begin{description}
\item[Mathematics faculty] Various departments in this faculty are:
\begin{enumerate}
\item Applied Mathematics
\item Pure Mathematics
\end{enumerate}
\item[Science faculty:] This faculty has $6$ departments
\begin{itemize}
\item Biological sciences
\item Optometry
\end{itemize}
\end{description}
\end{document}
```

The editor interface includes a menu bar (File, Edit, Search, Insert, Document, Project, Tools, Macros, Accessories, Options, Window, Help), a toolbar with icons for file operations and editing, and a toolbar with mathematical symbols. The status bar at the bottom shows "18:18", "33", "Modified", "Wpao", "Indent", "INS", "LNE", "Swall", "TeX", "--src", and "WinEdt.pl".

Fig7: Snap shot for creating combinations of lists

contd...

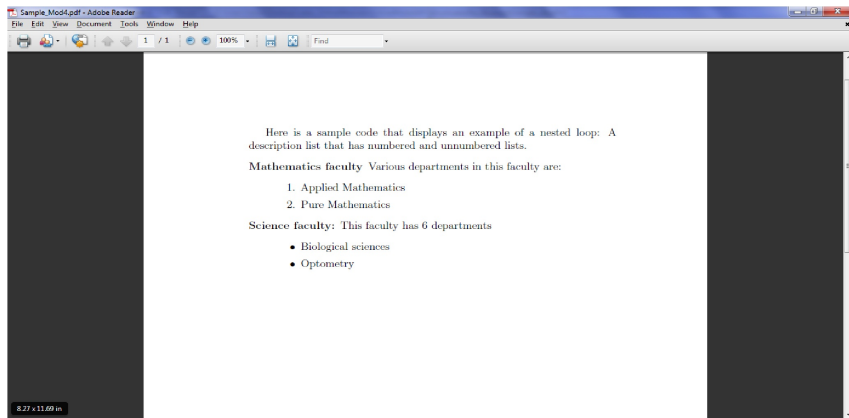


Fig8: Output of the previous slide

Quote

- Quote environment is used for short quotations within a paragraph
- Command to use sentences under the quote environment is:

```
\begin{quote}
```

```
\end{quote}
```

Example

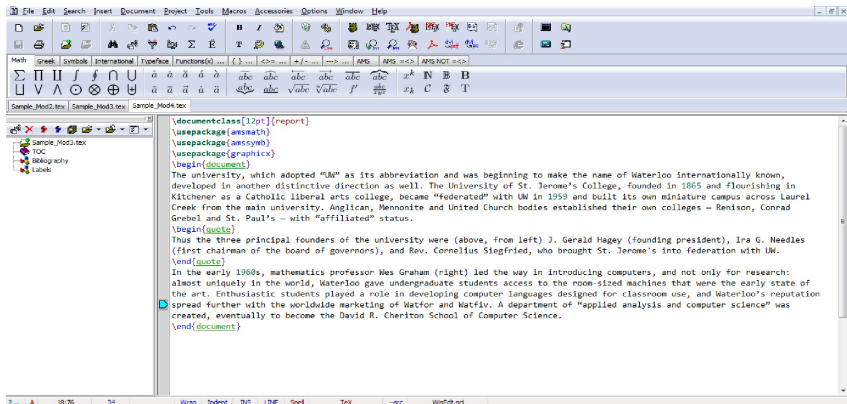


Fig9: Snap shot on using quote environment

contd...

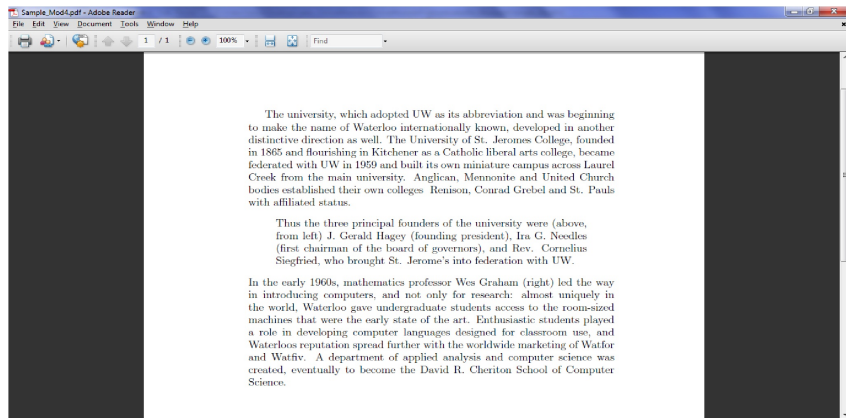


Fig10: Output of the previous slide

Exercises

Try to get the following output:

- Graduate courses
- Research areas
 - ① Mathematical physics
 - ② Differential equations
 - Mathematical Medicine-** Focuses on creation of mathematical models of various diseases processes.
 - Mathematical Biology-** A primary focus of current research in mathematical biology is understanding living organisms, either single - or multi-cellular.
- Post doctoral work