

# L3cture app - reminder

We will use the L3cture app developed by a recent MMath student today.

If you've installed the app, connect to Eduroam wifi with your standard university username and password and start it.

If you haven't got a smartphone, or don't want to take part, that's fine!

# Lecture question

# Packages

L<sup>A</sup>T<sub>E</sub>X documents with the simple preamble

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\begin{document}
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are good for starting out, but you will find things they cannot do. For example, suppose we want to use the symbol  $\mathbb{R}$  for the real numbers.

Searching online, it seems we want `\mathbb{R}`, but this causes an error.



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To display this symbol we need to include the package of AMS symbols, `amssymb`, with the command `\usepackage{amssymb}` in the preamble.

There are other common symbols that are in the `amssymb` package, so you should put `\usepackage{amssymb}` in all your documents.

# AMS packages



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in the preamble. I suggest you do the same!

**Other packages**

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# Lecture question

# Environments

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\begin{itemize}
\item this
\item list.
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Itemize and enumerate are examples of *environments*. Every environment starts with a `\begin{...}` command and ends with an `\end{...}` command.

There are lots of environments ready to use in  $\text{\LaTeX}$ . For example, the environment `align` is used to line-up '='-signs in multi-line equations and the `verbatim` environment is used to enter computer code.

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**Activity.** Look at the circulated document.

# Lecture question

**Entering computer code**

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The `verbatim` environment solves this problem, and is useful for entering small bits of computer code.



For example,

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```
\begin {verbatim}
```

```
Here's the \emph{emphasise} command
```

```
\end {verbatim}
```

For example,

```
\begin {verbatim}
Here's the \emph{emphasise} command
\end {verbatim}
```

produces

```
Here's the \emph{emphasise} command
```

For example,

```
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Here's the \emph{emphasise} command  
\end {verbatim}
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produces

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rather than

For example,

```
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Here's the \emph{emphasise} command
\end {verbatim}
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produces

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rather than

```
Here's the emphasise command
```

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For example, the `listings` package has an environment called `lstlisting`, which allows long scripts to appear with line-numbers, commands highlighted and more.

The following was created with `listings`.

```
1 # A simple python script , for fun
2
3 name = input("What is your name? ")
4
5 for i in range(1,10):
6     print(" Hello" ,name)
7
8 if name=="Sam" :
9     print("What are you doing here? I told you to
10         leave me alone! Please leave , and close the
11         door behind you.")
else :
    print(" Nice to meet you!")
```

**Activity.** The circulated document (also on the course website) was created with a fairly minimal  $\text{\LaTeX}$ -file. Can you work out which commands were used where? In pairs, annotate the document to recreate the  $\text{\LaTeX}$ -code as closely as possible, looking out for environments in particular.

**Activity.** The circulated document (also on the course website) was created with a fairly minimal  $\text{\LaTeX}$ -file. Can you work out which commands were used where? In pairs, annotate the document to recreate the  $\text{\LaTeX}$ -code as closely as possible, looking out for environments in particular.

Here's how the  $\text{\LaTeX}$  looks.

```
\documentclass{article}
```

```
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```

```
\usepackage{parskip}
```

```
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```

```
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```

```
\title{Lecture 3 Activity}
```

```
\author{Sam Marsh}
```

```
\date{}
```



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```

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\usepackage{parskip}
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```

```
\author{Sam Marsh}
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```
\date{}
```

```
\begin{document}
```

```
\documentclass{article}

\usepackage{parskip}

\title{Lecture 3 Activity}
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\date{}

\begin{document}

\maketitle
```

`\section{Python}`

```
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```

```
\subsection{About Python}
```

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`\emph{Python}` is a programming language  
which is as capable as it is accessible.  
In my opinion,

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In my opinion,
```

```
\begin{itemize}
```

```
\item it is as easy to use as \emph{BASIC}  
(the first programming language I ever  
learnt), and
```

```
\item it is sophisticated enough to do pretty  
much anything the programmer wants to do.
```

```
\end{itemize}
```

```
\subsection{First script}
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A good first script to try is

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\begin{verbatim}
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for i in range(1,10):
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\end{verbatim}
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\subsection{First script}
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A good first script to try is

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\begin{verbatim}
name = input("What is your name? ")
for i in range(1,10):
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which asks for the user's name, assigns the input string to the variable 'name' then outputs 'Hello (name)' 9 times. I think it's quite easy to see why!

```
\section{The perfect formula?}
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is considered by some to be the perfect mathematical formula, linking the fundamental concepts  $0$ ,  $1$ ,  $e$ ,  $\pi$ , addition and equality in a very simple expression.

I do quite like it, although I'm not as struck by it as some people are.

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`\end{document}`

**More on presentation**

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For example, you just received marked homework from MAS110. Did you get comments on how to present your ideas?

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- 'proof by example' (you can only disprove by counter-example!).

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# Lecture question

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**Proposition 3.1.**

*propositions and*

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**Proposition 3.1.**

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**Proposition 3.1.**

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and refer to them later.