

# The `multinotes` package

D Evans  
(Cardiff University)  
`evansd8@cf.ac.uk`

version 1.0: 2024-10-01

A package for typesetting multilingual lecture notes and exercise sheets.

## Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Package options</b>	<b>1</b>
<b>3</b>	<b>Languages</b>	<b>2</b>
<b>4</b>	<b>Lecture notes</b>	<b>3</b>
<b>5</b>	<b>Exercises</b>	<b>3</b>
<b>6</b>	<b>Implementation</b>	<b>4</b>

## 1 Introduction

This package provides tools for typesetting bilingual lecture notes in various formats, and adopts some macros and environments from the `exam` document class for producing exercise sheets.

The most recent version of the package can be found at

<https://github.com/cerigos/texmf/tex/latex/>

## 2 Package options

Certain languages can be defined and included by passing their names as package options, which can be useful for typesetting different versions of a document using `\PassOptionsToPackage` commands. Languages currently implemented are shown in the following table: the declaration, macro and environment names are based on the two-letter and three-letter codes of ISO-639.

option	declaration	macro	environment
welsh	cy	cym	cymraeg
breton	br	bre	brezhoneg
irish	ga	gae	gaelige
catalan	ca	cat	catala
basque	eu	eus	euskara
english	en	eng	english
french	fr	fra	francais
spanish	es	spa	espanol

The following options control the layout.

<b>parallel</b>	Typeset languages in separate columns.
<b>slides</b>	Typeset in landscape mode with screen-friendly fonts.

The following options control the visibility of different elements.

<b>blanks</b>	Remove contents of <code>\blank</code> cmds and <b>blankbox</b> envs.
<b>noproofs</b>	Exclude <code>\prf</code> commands and <b>proof</b> environments.
<b>blankproofs</b>	Replace <code>\prf</code> commands and <b>proof</b> environments by blanks.
<b>noanswers</b>	Exclude <code>\ans</code> commands and <b>answer</b> environments.
<b>blankanswers</b>	Replace <code>\ans</code> commands and <b>answer</b> environments by blanks.
<b>student</b>	Equivalent to choosing <b>blanks</b> , <b>noproofs</b> and <b>noanswers</b> .

### 3 Languages

A language is specified by its **babel** name.

<code>\definlanguage</code>	Define the declaration name, macro name and environment name
<code>\setlanguagestyle</code>	Set style options (fonts etc.)
<code>\includelanguage</code>	Include in document
<code>\excludelanguage</code>	Exclude from document
<b>multicols</b> ( <i>env.</i> )	Environment for parallel typesetting (one column per language)
<code>\multicolson</code>	Switch parallel mode on
<code>\multicolsoff</code>	Switch parallel mode off
<code>\mcspan</code>	Typeset content across all columns (in common mode)
<code>\mcsync</code>	Synchronize columns
<code>\zz</code>	Revert to common mode (unmarked content)

## 4 Lecture notes

**blankbox** (*env.*) Environment for displayed blank box (responds to **blanks** option).

**\blank** Command for inline blank box (responds to **blanks** option).

**\blankson** Switch to override **blanks** option.

**\blanksoff** Switch to override **blanks** option.

**proof** (*env.*) Environment for displayed proof box (responds to **blankproofs** and **noproofs**).

**\prf** Command for inline proof box (responds to **blankproofs** and **noproofs**).

**answer** (*env.*) Environment for displayed answer box (responds to **blankanswers** and **noanswers**).

**\ans** Command for inline answer box (responds to **blankanswers** and **noanswers**).

**\filin** Command for inline fill-the-blank box (responds to **blankanswers**).

**\textcolour** Set default font colour.

**\backgroundcolour** Set background colour.

**\showcolour** Set font colour for blank boxes.

**\proofcolour** Set font colour for proof boxes.

**\setanswercolour** Set font colour for answer boxes.

**\framedblankboxes** Choose framed blank boxes (inline and displayed).

**\framedproofs** Choose framed proof boxes (inline and displayed).

**\framedanswers** Choose framed answer boxes (inline and displayed).

**\setboxrule** Set width of the frame border (default is zero).

**\setstretchfactor** Set stretch factor for blank boxes (to accomodate handwriting).

**\setimagestretchfactor** Set stretch factor for blank images (to accomodate hand-drawing).

## 5 Exercises

Inspired by `exam.cls`, responsive to **blankanswers** and **noanswers** options.

**questions** (*env.*) List environment for questions.

**parts** (*env.*) List environment for parts of a question.

**subparts** (*env.*) List environment for subparts of a part.

**\question** Item type for the **questions** environment.

**\part** Item type for the **parts** environment.

**\subpart** Item type for the **subparts** environment.

**choices** (*env.*) List environment for multiple choice options (choose one).

**checkboxes** (*env.*) List environment for multiple answer options (choose zero or more).

**\choice** Item type for incorrect choices within **choices** and **checkboxes** environments.

**\correctchoice** Item type for correct choices within **choices** and **checkboxes** environments.

## 6 Implementation

*Load packages*

```
1 \RequirePackage{amsmath,amsfonts,amssymb,amsthm}
2 \RequirePackage{caption}
3 \RequirePackage{comment}
4 \RequirePackage{etoolbox}
5 \RequirePackage{float}
6 \RequirePackage{geometry}
7 \RequirePackage{graphicx}
8 \RequirePackage{paracol}
9 \RequirePackage{setspace}
10 \RequirePackage{tikz}
11 \RequirePackage{xifthen}
12 \RequirePackage{xstring}
13 \RequirePackage{xspace}
14
15 \RequirePackage{tcolorbox}
16 \tcbuselibrary{breakable}
17 \tcbuselibrary{skins}
```

### 6.1 Options

*Language options*

```
18 \newif\ifmultinotes@welsh
19 \newif\ifmultinotes@breton
20 \newif\ifmultinotes@irish
21 \newif\ifmultinotes@catalan
22 \newif\ifmultinotes@basque
23 \newif\ifmultinotes@english
24 \newif\ifmultinotes@french
25 \newif\ifmultinotes@spanish
26 \DeclareOption{welsh}{\multinotes@welshttrue}
27 \DeclareOption{breton}{\multinotes@bretontrue}
28 \DeclareOption{irish}{\multinotes@irishtrue}
29 \DeclareOption{catalan}{\multinotes@catalantrue}
30 \DeclareOption{basque}{\multinotes@basquettrue}
31 \DeclareOption{english}{\multinotes@englishttrue}
32 \DeclareOption{french}{\multinotes@frenchtrue}
33 \DeclareOption{spanish}{\multinotes@spanishttrue}
34 \newif\ifmultinotes@parallel
35 \DeclareOption{parallel}{\multinotes@paralleltrue}
```

*Lecture notes options*

```
36 \newif\ifmultinotes@blanks
37 \newif\ifmultinotes@nosketches
38 \newif\ifmultinotes@noproofs
39 \newif\ifmultinotes@blankproofs
40 \newif\ifmultinotes@noanswers
41 \newif\ifmultinotes@blankanswers
42 \DeclareOption{blanks}{\multinotes@blankstrue}
```

```

43 \DeclareOption{nosketches}{\multinotes@nosketchestru}
44 \DeclareOption{noproofs}{\multinotes@noproofstrue}
45 \DeclareOption{blankproofs}{\multinotes@blankproofstrue}
46 \DeclareOption{noanswers}{\multinotes@noanswerstrue}
47 \DeclareOption{blankanswers}{\multinotes@blankanswerstrue}
48 \DeclareOption{tutor}{}
49 \DeclareOption{student}{
50     \multinotes@blankstrue
51     \multinotes@blankproofstrue
52     \multinotes@noanswerstrue
53 }
54 \DeclareOption{compact}{
55     \multinotes@nosketchestru
56     \multinotes@noproofstrue
57     \multinotes@noanswerstrue
58 }
59 \newif\ifmultinotes@slides
60 \DeclareOption{slides}{\multinotes@slidestru}
61 \ProcessOptions*
62 \relax

```

## 6.2 Language tools

Languages are referred to by their **babel** names. As languages are successively included in the document, the following macro records their names, which are then passed to the **babel** package via the custom macro `\loadbabel` defined below.

```

63 \newcommand{\multinotes@babeloptions}{}

```

### 6.2.1 Define language

Usage example: `\definelanguage{welsh}{cy}{cym}{cymraeg}` will define

- three internal commands: `\welshdec`, `\welshcmd` and `\welshenv`,
- a declaration `\cy` which maps to `\welshdec`,
- a command `\cym{...}` which maps to `\welshcmd{...}`,
- an environment ‘`cymraeg`’ which maps to environment ‘`welshenv`’.

---

**Important.** Language environments are implemented as `comment` environments, which allows us to discard their contents when required. The `comment` package documentation states that

“... all text included between `\begin{comment}` and `\end{comment}` is discarded. The opening and closing commands should appear on a line of their own. No starting spaces, nothing after it.”

Not sticking to this can produce some very confusing errors! This also applies to the `proof` and `answer` environments defined below.

---

```

64 \newcommand{\definelanguage}[4]{
65 % \g@addto@macro{\multinotes@babeloptions}{#1, }
66 \expandafter\def\csname multinotes@#1dec\endcsname{\multinotes@commonstyle\multinotes@ren
67 \expandafter\def\csname #2\endcsname{\csname multinotes@#1dec\endcsname}
68 \expandafter\def\csname multinotes@#1cmd\endcsname##1{
69 \expandafter\def\csname #3\endcsname{\csname multinotes@#1cmd\endcsname}
70 \expandafter\def\csname multinotes@#1envname\endcsname{#4}
71 \specialcomment{#4}{}{}
72 \excludacomment{#4}
73 \expandafter\def\csname multinotes@#1style\endcsname{}
74 }

```

## 6.2.2 Include language

Usage example: `\includelanguage{welsh}`

On inclusion the language is assigned a sequential number, which specifies its column number in multicolumn environments.

The `\switchcolumn` command is defined only within `paracol` environments: this provides a test criterion to decide whether column switching is required.

```

75 \newcommand{\multinotes@selectlanguage}[1]{\ifpackageloaded{babel}{\selectlanguage{#1}}{}}
76 \newcounter{multinotes@numlangs}
77 \newcommand{\includelanguage}[1]{
78 \g@addto@macro{\multinotes@babeloptions}{#1, }
79 \expandafter\newcounter{multinotes@#1number}
80 \expandafter\setcounter{multinotes@#1number}{\value{multinotes@numlangs}}
81 \stepcounter{multinotes@numlangs}
82 \expandafter\def\csname multinotes@#1dec\endcsname{%
83 \ifundefined{switchcolumn}{}{\switchcolumn[\value{multinotes@#1number}]}%
84 \csname multinotes@#1style\endcsname%
85 \multinotes@selectlanguage{#1}%
86 }%
87 \expandafter\def\csname multinotes@#1cmd\endcsname##1{%
88 \ifundefined{switchcolumn}{}{\switchcolumn[\value{multinotes@#1number}]}%
89 \csname multinotes@#1style\endcsname%
90 \multinotes@selectlanguage{#1}%
91 ##1%
92 \multinotes@commonstyle\xspace%
93 }%
94 \renewenvironment{\csname multinotes@#1envname\endcsname}{%
95 \ifundefined{switchcolumn}{}{\switchcolumn[\value{multinotes@#1number}]}%
96 \csname multinotes@#1style\endcsname%
97 \multinotes@selectlanguage{#1}%
98 }{}%
99 }%

```

## 6.2.3 Language style

Usage example: `\setlanguagestyle{welsh}{\slshape\color{red}}`

```

100 \newcommand{\setlanguagestyle}[2]{\expandafter\def\csname multinotes@#1style\endcsname{#2}}
101 \newcommand{\multinotes@commonstyle}{\normalfont\color{\multinotes@CurrentColour}}

```

```
102 \newcommand{\setcommonstyle}[1]{\renewcommand{\multinotes@commonstyle}{#1}}
```

#### 6.2.4 Parallell typesetting

The *multicols* environment is based entirely on the *paracol* environment, from the package of the same name. The number of columns needed is obtained from the *numlangs* counter value. Any options for *paracol* such as `\columnsep`, `\columnseprule` or `\localcounter` can be used directly.

```
103 \newenvironment{multicols}{\begin{paracol}}{\end{paracol}}
104 \newcommand{\mcsync}{\switchcolumn[0]*}
105
106 \newcommand{\multicolson}{
107   \ifnum\value{multinotes@numlangs}>1
108     \renewenvironment{multicols}{\begin{paracol}}{\end{paracol}}
109     \renewcommand{\mcsync}{\switchcolumn[0]*}
110   \fi
111 }
112 \newcommand{\multicolsoff}{
113   \renewenvironment{multicols}{\begin{paracol}}{\end{paracol}}
114   \renewcommand{\mcsync}{\switchcolumn[0]*}
115 }
116 \ifmultinotes@parallel
117   \multicolson
118 \fi
119
```

*Content to span multiple columns (temporary suspension of parallel mode)*

```
120 \newcommand{\mcspan}[1]{\multinotes@commonstyle%
121   \@ifundefined{switchcolumn}{\begin{paracol}}{\end{paracol}}%
122   \ifthenelse{\isempty{#1}}{\begin{paracol}}{\end{paracol}}%
123   \switchcolumn[0]*%
124   }%
125   \switchcolumn*[{#1}]%
126   }%
127   }%
128 }
```

#### 6.2.5 Declarations

We define a ‘terminator’ declaration `\zz`, similar to `\normalfont` or `\normalsize`, which is used to end the effect of language declarations such `\en` or `\cy`.

```
129 \newcommand{\zz}{\multinotes@commonstyle}
```

Here is some TeX magic for dealing with declarations: when a language is excluded, everything between a corresponding declaration and the next non-alphabetical/numerical/space character should be removed. This doesn’t always work as intended!

```
130 \def\multinotes@remove{\afterassignment\checkit\let\char=}%
131 \def\checkit{%
```

```

132 \ifcat\char\null %
133 \let\char=\null%
134 \fi%
135 \ifcat\char\space%
136 \let\next=\multinotes@remove%
137 \else%
138 \ifcat\char x%
139 \let\next=\multinotes@remove%
140 \else%
141 \ifcat\char 1%
142 \let\next=\multinotes@remove%
143 \else%
144 \let\next=\relax%
145 \fi%
146 \fi%
147 \fi%
148 \next%
149 }%

```

- `abc {\en Test}{\cy Prawf} abc is ok.`
- `abc {\en Test \cy Prawf} abc is moody.`
- `abc \en Test \cy Prawf \zz abc is moody`

### 6.3 Lecture notes

*Global variables to allow local override of options `blanks`, `noproofs` etc.*

```

150 \newif\ifmultinotes@blanksopt
151 \ifmultinotes@blanks\multinotes@blanksopttrue\fi
152 \newcommand{\blanksoff}{\ifmultinotes@blanksopt\multinotes@blanksoptfalse\fi}
153 \newcommand{\blankson}{\ifmultinotes@blanksopt\multinotes@blanksopttrue\fi}
154 \newif\ifmultinotes@blankproofsopt
155 \ifmultinotes@blankproofs\multinotes@blankproofsopttrue\fi
156 \newif\ifmultinotes@noproofsopt
157 \ifmultinotes@noproofs\multinotes@noproofsopttrue\fi
158 \newcommand{\proofsoff}{
159 \ifmultinotes@blankproofsopt\multinotes@blankproofsoptfalse\fi
160 \ifmultinotes@noproofsopt\multinotes@blankproofsoptfalse\fi
161 }
162 \newcommand{\proofson}{
163 \ifmultinotes@noproofsopt\multinotes@noproofsopttrue\fi
164 \ifmultinotes@noproofsopt\multinotes@noproofsopttrue\fi
165 }
166 \newif\ifmultinotes@blankanswersopt
167 \ifmultinotes@blankanswers\multinotes@blankanswersopttrue\fi
168 \newif\ifmultinotes@noanswersopt
169 \ifmultinotes@noanswers\multinotes@noanswersopttrue\fi
170 \newcommand{\answersoff}{
171 \ifmultinotes@blankanswersopt\multinotes@blankanswersoptfalse\fi
172 \ifmultinotes@noanswersopt\multinotes@blankanswersoptfalse\fi
173 }
174 \newcommand{\answeron}{

```



```

175 \ifmultinotes@noanswersopt\multinotes@noanswerstrue\fi
176 \ifmultinotes@noanswersopt\multinotes@noanswerstrue\fi
177 }

```

### *Runtime flags*

```

178 \newif\ifmultinotes@blankmode
179 \newif\ifmultinotes@imgblankmode

```

### *Colours*

```

180 \newcommand{\multinotes@BackgroundColour}{white}
181 \newcommand{\multinotes@TextColour}{black}
182 \newcommand{\multinotes@ShowColour}{black}
183 \newcommand{\multinotes@ProofColour}{black}
184 \newcommand{\multinotes@SolutionColour}{black}
185 \newcommand{\multinotes@AnswerColour}{black}
186 \AtBeginDocument{
187   \color{\multinotes@TextColour}
188   \pagecolor{\multinotes@BackgroundColour}
189 }

```

### *Set colours*

```

190 \newcommand{\textcolour}[1]{\renewcommand{\multinotes@TextColour}{#1}}
191 \newcommand{\backgroundcolour}[1]{\renewcommand{\multinotes@BackgroundColour}{#1}}
192 \newcommand{\showcolour}[1]{\renewcommand{\multinotes@ShowColour}{#1}}
193 \newcommand{\proofcolour}[1]{\renewcommand{\multinotes@ProofColour}{#1}}
194 \newcommand{\answercolour}[1]{\renewcommand{\multinotes@AnswerColour}{#1}}

```

### *Stretch factors for blank boxes (to accomodate big handwriting)*

```

195 \newcommand{\multinotes@StretchFactor}{1}
196 \newcommand{\multinotes@ImageStretchFactor}{1}
197 \newcommand{\setstretchfactor}[1]{\renewcommand{\multinotes@StretchFactor}{#1}}
198 \newcommand{\setimagestretchfactor}[1]{\renewcommand{\multinotes@ImageStretchFactor}{#1}}

```

### *Frames*

```

199 \newif\ifmultinotes@framedblankboxes
200 \newif\ifmultinotes@framedproofs
201 \newif\ifmultinotes@framedanswers
202 \newcommand{\framedblankboxes}{\multinotes@framedblankboxstrue}
203 \newcommand{\framedproofs}{\multinotes@framedproofstrue}
204 \newcommand{\framedanswers}{\multinotes@framedanswerstrue}
205 \newcommand{\setboxrule}[1]{\renewcommand{\multinotes@BoxRule}{#1}}

```

### *Runtime parameters*

```

206 \newcommand{\multinotes@CurrentColour}{black}
207 \newcommand{\multinotes@CurrentBoxRule}{Opt}
208 \newcommand{\multinotes@CurrentBoxTitle}{}
209 \newcommand{\multinotes@BoxRule}{Opt}
210 \newcommand{\multinotes@makeboxtitle}{%
211   \textcolor{\multinotes@TextColour}{\noindent\multinotes@CurrentBoxTitle}%
212 }

```

## 6.4 Inline boxes

### *Inline blankbox*

```

213 \newcommand\multinotes@inlineboxsize{normal}
214 \newcommand{\inlineboxsize}[1]{\renewcommand{\multinotes@inlineboxsize}{#1}}
215 \newcommand{\blank}[1]{#1}
216 \ifmultinotes@blanks
217   \renewtcbox{\blank}{
218     on line,
219     size=\multinotes@inlineboxsize,
220     colback=\multinotes@BackgroundColour,
221     coltext={\ifmultinotes@blanks\multinotes@BackgroundColour\else\multinotes@ShowColour\fi}
222     boxrule={\ifmultinotes@blanks\multinotes@BoxRule\else0pt\fi}
223   }
224 \fi

```

### *Inline fillbox*

```

225 \newcommand{\fillbox}[1]{#1}
226 \ifmultinotes@blankanswers\else
227   \renewtcbox{\fillbox}{
228     on line,
229     size=\multinotes@inlineboxsize,
230     arc=0pt,
231     boxsep=1pt,left=10pt,right=10pt,
232     boxrule=\multinotes@BoxRule,
233     colback=\multinotes@BackgroundColour,
234     coltext={
235       \ifmultinotes@noanswers\multinotes@BackgroundColour
236       \else\ifmultinotes@blankanswers\multinotes@BackgroundColour
237       \else\multinotes@AnswerColour
238       \fi\fi
239     },
240   }
241 \fi

```

### *Inline answer box*

```

242 \newcommand{\ans}[1]{
243   \ifmultinotes@noanswers\else
244     \ifthenelse{\isempty{#1}}{
245       {\renewcommand{\multinotes@CurrentBoxTitle}{#1}}%
246       {\renewcommand{\multinotes@CurrentBoxTitle}{}}%
247     \renewtcbox{\ans}{
248       on line,
249       title=\sl\multinotes@CurrentBoxTitle,
250       coltitle=\multinotes@AnswerColour,
251       attach title to upper={\strut},
252       size=\multinotes@inlineboxsize,
253       arc=1pt,
254       boxsep=1pt,left=5pt,right=5pt,
255       boxrule=\multinotes@BoxRule,
256       colback=\multinotes@BackgroundColour,
257       coltext={
258         \ifmultinotes@blankanswers\multinotes@BackgroundColour

```

```

259         \else\ifmultinotes@noanswers\multinotes@BackgroundColour
260         \else\multinotes@AnswerColour
261         \fi\fi
262     },
263 }
264 \fi

```

## 6.5 Display boxes

### *Box template*

```

265 \newenvironment{multinotes@tcbox}{%
266     \begin{tcolorbox}[
267         breakable,
268         notitle,
269         boxrule={\multinotes@BoxRule},
270         colback={\multinotes@BackgroundColour},
271         before={\smallskip},
272         after={},
273         coltext={\multinotes@CurrentColour},
274         skin=enhanced,
275         height fixed for = first and middle,
276         ignore nobreak,
277         before upper={\parindent0em\noindent},
278         flushleft upper
279     ]%
280     \begingroup
281 }{
282     \endgroup
283     \end{tcolorbox}
284 }

```

### *Basic display box*

```

285 \newenvironment{multinotes@basicbox}[1][{}]{
286     \ifthenelse{\isempty{#1}}{%
287         {\renewcommand{\multinotes@CurrentBoxTitle}{}}%
288         {\renewcommand{\multinotes@CurrentBoxTitle}{#1}}
289     \ifmultinotes@blankmode
290         \renewcommand{\multinotes@CurrentColour}{\multinotes@BackgroundColour}
291         \setstretch{\multinotes@StretchFactor}
292         \begin{multinotes@tcbox}
293         \ifthenelse{\isempty{#1}}{\multinotes@makeboxtitle}
294     \else
295         \par
296         \ifthenelse{\isempty{#1}}{\multinotes@makeboxtitle}
297         \color{\multinotes@CurrentColour}
298     \fi
299 }{
300     \ifmultinotes@blankmode
301         \end{multinotes@tcbox}
302         \setstretch{1}
303     \fi
304     \multinotes@blankmodefalse

```

```

305     \color{\multinotes@TextColour}
306 }

```

### *Basic framed box*

```

307 \newenvironment{multinotes@framedbox}[1][{}]{
308     \ifthenelse{\isempty{#1}}{%
309         {\renewcommand{\multinotes@CurrentBoxTitle}{}}%
310         {\renewcommand{\multinotes@CurrentBoxTitle}{#1}}
311     \ifmultinotes@blankmode
312         \renewcommand{\multinotes@CurrentColour}{\multinotes@BackgroundColour}
313         \setstretch{\multinotes@StretchFactor}
314     \else
315         \color{\multinotes@CurrentColour}
316     \fi
317     \begin{multinotes@tcbox}
318     \ifthenelse{\isempty{#1}}{}{\multinotes@makeboxtitle}
319 }{
320 \mbox{
321     \end{multinotes@tcbox}
322     \ifmultinotes@blankmode
323         \setstretch{1}
324     \fi
325     \multinotes@blankmodefalse
326     \renewcommand{\multinotes@CurrentColour}{\multinotes@TextColour}
327     \color{\multinotes@TextColour}
328 }

```

### *Blankbox*

```

329 \newenvironment{blankbox}[1][{}]{
330     \def\boxtitle{}
331     \ifthenelse{\isempty{#1}}{}{\def\boxtitle{#1}}
332     \renewcommand{\multinotes@CurrentColour}{\multinotes@ShowColour}
333     \ifmultinotes@blanks
334         \multinotes@blankmodetrue
335     \fi
336     \ifmultinotes@framedblankboxes
337         \begin{multinotes@framedbox}[\sl\boxtitle]
338     \else
339         \begin{multinotes@basicbox}[\sl\boxtitle]
340     \fi
341 }{%
342     \ifmultinotes@framedblankboxes
343         \end{multinotes@framedbox}
344     \else
345         \end{multinotes@basicbox}
346     \fi
347 }

```

### *Proof box*

```

348 \let\proof\@undefined
349 \let\endproof\@undefined
350 \ifmultinotes@noproofs
351     \excludecomment{proof}

```

```

352 \else
353   \newenvironment{proof}[1] []{
354     \renewcommand{\multinotes@CurrentColour}{\multinotes@ProofColour}
355     \ifmultinotes@blankproofs
356       \multinotes@blankmodetrue
357     \fi
358     \ifthenelse{\isempty{#1}}{
359       \ifmultinotes@framedproofs
360         \begin{multinotes@framedbox}[\sl\proofname]
361       \else
362         \begin{multinotes@basicbox}[\sl\proofname]
363       \fi
364     }{%
365       \ifmultinotes@framedproofs
366         \begin{multinotes@framedbox}[#1]
367       \else
368         \begin{multinotes@basicbox}[#1]
369       \fi
370     }
371   }{%
372     \ifmultinotes@framedproofs
373       \end{multinotes@framedbox}
374     \else
375       \end{multinotes@basicbox}
376     \fi
377   }
378 \fi

```

`answer (env.)` *Answer box*

```

379 \let\answer\@undefined
380 \let\endanswer\@undefined
381 \ifmultinotes@noanswers
382   \excludecomment{answer}
383 \else
384   \newenvironment{answer}[1] []{
385     \renewcommand{\multinotes@CurrentColour}{\multinotes@AnswerColour}
386     \ifmultinotes@blankanswers
387       \multinotes@blankmodetrue
388     \fi
389     \ifthenelse{\isempty{#1}}{
390       \ifmultinotes@framedanswers
391         \begin{multinotes@framedbox}[\sl\answername]
392       \else
393         \begin{multinotes@basicbox}[\sl\answername]
394       \fi
395     }{%
396       \ifmultinotes@framedanswers
397         \begin{multinotes@framedbox}[#1]
398       \else
399         \begin{multinotes@basicbox}[#1]
400       \fi
401     }
402   }{

```

```

403         \ifmultinotes@framedanswers
404             \end{multinotes@framedbox}
405         \else
406             \end{multinotes@basicbox}
407         \fi
408     }
409 \fi

```

## 6.6 Floats for sketches, figures and videos

`\sketchbox` *Custom float for sketch boxes. Caption `\sketchname` is always typeset at the top-left. Mandatory argument is the height of the box as a proportion of `\textheight`. Optional argument is a subtitle which appears in parentheses after the caption.*

```

410 \floatstyle{boxed}
411 \newfloat{sketch}{!ht}{l}{osk}
412 \newcommand{\sketchbox}[2][{}]{
413     \ifmultinotes@nosketches\else
414         \renewcommand{\sketchbox}[2][{}]{
415             \begin{sketch}[H]
416                 \color{\multinotes@CurrentColour}
417                 \vspace{1ex}\hspace{1ex}\textsl{\sketchname}%
418                 \ifthenelse{\isempty{#1}}{}{( #1)}\par%
419                 \parbox{\textwidth}{\vspace{#2\textheight}}%
420                 \end{sketch}%
421             }
422 \fi

```

`\includevideo` *Custom float for videos*

```

423 \newcommand{\includevideo}[2][1]{\url{#2}}
424 \floatstyle{boxed}
425 \newfloat{video}{!ht}{l}{ov}[section]
426 \floatname{video}{Video}
427 \captionsetup[video]{labelfont=normalfont}

```

*Make `\includegraphics` respond to blankmode*

```

428 \let\oldincludegraphics=\includegraphics
429 \renewcommand\includegraphics[2][{}]{
430     \ifmultinotes@blankmode
431         \scalebox{\multinotes@ImageStretchFactor}{
432             \phantom{\oldincludegraphics[#1]{#2}}
433         }
434     \else
435         \oldincludegraphics[#1]{#2}
436     \fi
437 }

```

*Display alternative image under under blankmode*

```

438 \newlength\imageheight
439 \newlength\imagewidth
440 \newcommand{\includetwographics}[3][scale=1]{

```

```

441 \ifmultinotes@blankmode
442     \settoheight{\imageheight}{\oldincludegraphics[#1]{#2}}
443     \settowidth{\imagewidth}{\oldincludegraphics[#1]{#2}}
444     \scalebox{\multinotes@ImageStretchFactor}{
445         \oldincludegraphics[height=\imageheight,width=\imagewidth,keepaspectratio]{#3}
446     }
447 \else
448     \oldincludegraphics[#1]{#2}
449 \fi
450 }

```

*Replace tikz picture by blank box (moody)*

```

451 \newcommand{\blanktikz}{%
452     \ifmultinotes@blankmode
453         \tikzset{every picture/.append style={
454             scale=\multinotes@ImageStretchFactor,
455             execute at end picture={
456                 \draw[fill=\multinotes@BackgroundColour]
457                     (current bounding box.south west)
458                     rectangle
459                     (current bounding box.north east);
460             }}}
461     \fi
462 }

```

## 6.7 Slides

*Set fonts and landscape mode for slides*

```

463 \providecommand{\framebreak}{}
464 \ifmultinotes@slides
465     \renewcommand{\framebreak}{\newpage}
466     \geometry{a4paper,landscape}
467     \geometry{margin=20mm}
468     \renewcommand{\familydefault}{\sfdefault}
469     \RequirePackage[T1]{fontenc}
470     \RequirePackage{lmodern}
471     \RequirePackage{exscale}
472     \RequirePackage{scrextend}
473     \changeontsizes{16pt}
474     \renewcommand\baselinestretch{1.1}
475     \setlength{\parskip}{0.5ex}
476     \setlength{\parindent}{0ex}
477     \addtolength{\topskip}{4ex}
478     \addtolength{\tabcolsep}{1ex}
479     \renewcommand{\arraystretch}{1.3}
480     \addtolength{\arraycolsep}{0.5ex}
481 \fi

```

## 6.8 Exercise sheets (inspired by exam.cls)

*Check that exam.cls is not already loaded.*

```
482 \@ifclassloaded{exam}{\%
```

### Counters and labels

```
483 \newcounter{question}
484 \newcounter{partno}
485 \newcounter{subpart}
486 \newcounter{choice}
487 \newcommand\questionlabel{\arabic{question}.}
488 \newcommand\partlabel{(\alph{partno})}
489 \newcommand\subpartlabel{(\roman{subpart})}
```

### Default symbols (circle for MC, square for MA)

```
490 \newcommand\choicechar[1]{\def\choice@char{#1}}
491 \newcommand\chosenchar[1]{\def\chosen@char{#1}}
492 \newcommand\checkboxchar[1]{\def\checkbox@char{#1}}
493 \newcommand\checkedchar[1]{\def\checked@char{#1}}
494 \newcommand\bigsquare{\raisebox{0.5ex}{\fbox{\phantom{\rule{0.5ex}{0.5ex}}}}}
495 \choicechar{$\bigcirc$}
496 \chosenchar{$\text{\rlap{\,$\checkboxmark$}}\bigcirc$}
497 \checkboxchar{$\bigsquare$}
498 \checkedchar{$\rlap{\hskip 0.2ex\raisebox{0.2ex}{\checkboxmark}}\bigsquare$}
```

### Hooks for customisation

```
499 \newcommand\questionshook{}
500 \newcommand\partshook{}
501 \newcommand\subpartshook{}
502 \newcommand\choiceshook{}
503 \newcommand\checkboxeshook{}
```

### Questions, parts and subparts.

```
504 \newenvironment{questions}{
505   \def\@queslevel{question}
506   \def\question{\@checkqueslevel{question}\item}
507   \def\subpart{\@checkqueslevel{subpart}\item}
508   \list{\questionlabel}{
509     \usecounter{question}
510     \settowidth{\leftmargin}{10.\hskip\labelsep}
511     \labelwidth\leftmargin\advance\labelwidth-\labelsep
512     \partopsep=0pt\questionshook
513   }}{\endlist}
514 \newenvironment{parts}{
515   \def\@queslevel{part}
516   \def\part{\@checkqueslevel{part}\item}
517   \list{\partlabel}{
518     \usecounter{partno}\def\makelabel##1{\hss\llap{##1}}
519     \settowidth{\leftmargin}{(m)\hskip\labelsep}
520     \labelwidth\leftmargin\advance\labelwidth-\labelsep
521     \topsep=0pt\partopsep=0pt\partshook
522   }}{\endlist}
523 \newenvironment{subparts}{
524   \def\@queslevel{subpart}
525   \list{\subpartlabel}{
526     \usecounter{subpart}\def\makelabel##1{\hss\llap{##1}}
```



```

527         \settowidth{\leftmargin}{vii.\hskip\labelsep}
528         \labelwidth\leftmargin\advance\labelwidth-\labelsep
529         \topsep=0pt\partopsep=0pt\subpartshook
530     }}{\endlist}

```

*Choices and checkboxes (MC and MA)*

```

531 \newif\if@correctchoice
532 \newcommand\CorrectChoiceEmphasis[1]{\def\CorrectChoice@Emphasis{#1}}
533 \CorrectChoiceEmphasis{\bfseries}
534 \newenvironment{choices}{
535     \list{\choice@char}{
536         \usecounter{choice}
537         \settowidth{\leftmargin}{W.\hskip\labelsep}
538         \def\choice{\if@correctchoice\endgroup\fi\item}
539         \def\CorrectChoice{
540             \if@correctchoice\endgroup\fi
541             \ifmultinotes@noanswers\item
542             \else\ifmultinotes@blankanswers\item
543             \else
544                 \begingroup
545                 \@correctchoicetrue
546                 \CorrectChoice@Emphasis
547                 \item[\chosen@char]
548             \fi\fi
549         }
550         \let\correctchoice\CorrectChoice
551         \topsep=2pt\partopsep=0pt\choiceshook
552     }
553 }{\if@correctchoice\endgroup\fi\endlist}
554 \newenvironment{checkboxes}{
555     \list{\checkbox@char}{
556         \usecounter{choice}
557         \settowidth{\leftmargin}{W.\hskip\labelsep}
558         \def\choice{\if@correctchoice\endgroup\fi\item}
559         \def\CorrectChoice{
560             \if@correctchoice\endgroup\fi
561             \ifmultinotes@noanswers\item
562             \else\ifmultinotes@blankanswers\item
563             \else
564                 \begingroup
565                 \@correctchoicetrue
566                 \CorrectChoice@Emphasis
567                 \item[\checked@char]
568             \fi\fi
569         }
570         \let\correctchoice\CorrectChoice
571         \topsep=2pt\partopsep=0pt\choiceshook
572     }
573 }{\if@correctchoice\endgroup\fi\endlist}

```

*Nesting check and indentation trick.*

```

574 \def\@checkqueslevel#1{
575     \begingroup

```

```

576     \def\@temp{#1}
577     \ifx\@temp\@queslevel\null
578     \else\ClassError{multinotes}{
579         I found a #1 where I expected to find a \@queslevel
580         \MessageBreak
581     }{}
582     \fi\endgroup
583 }
584 \long\def\uplevel#1{
585     \par\bigskip\vbox{
586         \leftskip=\@totalleftmargin
587         \advance\leftskip-\leftmargin
588         \advance\@totalleftmargin-\leftmargin
589         \advance\linewidth\leftmargin
590         #1
591     }
592     \nobreak
593 }

End \@ifclassloaded{exam} check.

594 }

```

## 6.9 Language options and multilingual captions

### 6.9.1 Process package options (built-in languages)

```

595 \ifmultinotes@welsh\definlanguage{welsh}{cy}{cym}{cymraeg}\fi
596 \ifmultinotes@breton\definlanguage{breton}{br}{bre}{brezhoneg}\fi
597 \ifmultinotes@irish\definlanguage{irish}{ga}{gae}{gaelige}\fi
598 \ifmultinotes@catalan\definlanguage{catalan}{ca}{cat}{catala}\fi
599 \ifmultinotes@basque\definlanguage{basque}{eu}{eus}{euskara}\fi
600 \ifmultinotes@english\definlanguage{english}{en}{eng}{english}\fi
601 \ifmultinotes@french\definlanguage{french}{fr}{fra}{français}\fi
602 \ifmultinotes@spanish\definlanguage{spanish}{es}{spa}{español}\fi

```