

The **multinotes** package*

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A package for typesetting multilingual lecture notes and exercise sheets.

1 Introduction

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

The package repository is at

<https://github.com/dimbyd/multinotes/>

2 Package options

The following package options control the visibility of different elements.

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

3 Languages

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

`\definelanguage` Define the declaration name, macro name and environment name.
`\setlanguagestyle` Set language-specific style options (fonts, colours, etc.).

`\includelanguage` Include language in document.

`multicols` (*env.*) Environment for parallel typesetting (one column for each language).

`\multicolson` Switch parallel mode on.

`\multicolsoff` Switch parallel mode off.

`\multicolspan` Typeset content across all columns.

`\multicolsync` Synchronize columns.

4 Lecture notes

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

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

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

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

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

`answer` (*env.*) Environment for displayed 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).

`\blankson` Override global `blanks` option.

`\blanksoff` Override global `blanks` option.

`\blankproofson` Override global `blankproofs` option.

`\blankproofsoff` Override global `blankproofs` option.

`\noproofsoff` Override global `noproofs` option.

`\noproofson` Override global `noproofs` option.

`\blankanswersoff` Override global `blankanswers` option.

`\blankansweron` Override global `blankanswers` option.

`\noanswersoff` Override global `noanswers` option.

`\noansweron` Override global `noanswers` option.

*This document corresponds to `multinotes` v1.0, dated 2025/06/21.

5 Exercises

Inspired by `exam.cls`, responds 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{babel}
3 \RequirePackage{caption}
4 \RequirePackage{comment}
5 \RequirePackage{etoolbox}
6 \RequirePackage{float}
7 \RequirePackage{graphicx}
8 \RequirePackage{paracol}
9 \RequirePackage{setspace}
10 \RequirePackage{tcolorbox}
11 \RequirePackage{tikz}
12 \RequirePackage{titling}
13 \RequirePackage{translations}
14 \RequirePackage{trimspaces}
15 \RequirePackage{xifthen}
16 \RequirePackage{xstring}
17 \RequirePackage{xspace}
18 \RequirePackage{xparse}
19 \tcbuselibrary{breakable}
20 \tcbuselibrary{skins}
```

6.1 Options

```
21 \newif\ifmultinotes@blanks
22 \newif\ifmultinotes@noproofs
23 \newif\ifmultinotes@blankproofs
24 \newif\ifmultinotes@noanswers
25 \newif\ifmultinotes@blankanswers
26 \newif\ifmultinotes@nosketchboxes
```

```

27 \DeclareOption{blanks}{\multinotes@blankstrue}
28 \DeclareOption{noproofs}{\multinotes@noproofstrue}
29 \DeclareOption{blankproofs}{\multinotes@blankproofstrue}
30 \DeclareOption{noanswers}{\multinotes@noanswerstrue}
31 \DeclareOption{blankanswers}{\multinotes@blankanswerstrue}
32 \DeclareOption{nosketchboxes}{\multinotes@nosketchboxestru}
33 \DeclareOption{student}{
34     \multinotes@blankstrue
35     \multinotes@blankproofstrue
36     \multinotes@noanswerstrue
37 }
38 \DeclareOption{compact}{
39     \multinotes@nosketchboxestru}
40     \multinotes@noproofstrue
41     \multinotes@noanswerstrue
42 }
43 \DeclareOption*{\PackageWarning{multinotes}{Unknown option ‘\CurrentOption’}}
44 \ProcessOptions*
45 \relax

```

6.2 Language tools

Languages are referenced by their **babel** names.

6.2.1 Define language

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

This 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`’.
- an environment ‘`welsh`’ which also 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.”

Failure to ensure this can produce some very confusing errors! This also applies to the **proof** and **answer** environments defined below.

```

46 \newcommand{\multinotes@definelanguage}[4]{
47 \ifcsname multinotes@#1dec\endcsname\else
48     \expandafter\def\csname multinotes@#1dec\endcsname{\multinotes@commonstyle\multinotes@rem

```

```

49 \expandafter\def\csname #2\endcsname{\csname multinotes@#1dec\endcsname}
50 \expandafter\def\csname multinotes@#1cmd\endcsname##1{}
51 \expandafter\def\csname #3\endcsname{\csname multinotes@#1cmd\endcsname}
52 \expandafter\def\csname multinotes@#1envname\endcsname{#4}
53 \specialcomment{#4}{}{}
54 \excludecomment{#4}
55 \expandafter\def\csname multinotes@#1style\endcsname{}
56 \fi
57 }
58 \newcommand{\definelanguage}[1]{\multinotes@definelanguage{#1}}

```

6.2.2 Include language

Usage example: `\includelanguage{welsh}`

When a language is included it is assigned a sequential number, which specifies its column number in *paracol* environments. The `\switchcolumn` command is only defined within *paracol* environments, and therefore provides a criterion to decide whether column switching is required.

```

59 \newcommand{\multinotes@mainlanguage}{UKenglish}
60 \newcommand{\multinotes@selectlanguage}[1]{\@ifpackageloaded{babel}{\selectlanguage{#1}}{}}
61 \AtBeginDocument{\multinotes@selectlanguage{\multinotes@mainlanguage}}
62
63 \newcounter{multinotes@numlangs}
64
65 \newcommand{\multinotes@activatelanguage}[1]{
66   \babelprovide[import]{#1}
67   \expandafter\newcounter{multinotes@#1number}
68   \expandafter\setcounter{multinotes@#1number}{\value{multinotes@numlangs}}
69   \stepcounter{multinotes@numlangs}
70   \ifnum\value{multinotes@numlangs}=1\relax
71     \renewcommand{\multinotes@mainlanguage}{#1}
72   \fi
73   \expandafter\def\csname multinotes@#1dec\endcsname{%
74     \@ifundefined{switchcolumn}{}{\switchcolumn[\value{multinotes@#1number}]}}%
75     \csname multinotes@#1style\endcsname%
76     \multinotes@selectlanguage{#1}%
77   }%
78   \expandafter\def\csname multinotes@#1cmd\endcsname##1{%
79     \@ifundefined{switchcolumn}{}{\switchcolumn[\value{multinotes@#1number}]}}%
80     \csname multinotes@#1style\endcsname%
81     \multinotes@selectlanguage{#1}%
82     ##1%
83     \multinotes@commonstyle\xspace%
84   }%
85   \renewenvironment{\csname multinotes@#1envname\endcsname}{%
86     \@ifundefined{switchcolumn}{}{\switchcolumn[\value{multinotes@#1number}]}}%
87     \csname multinotes@#1style\endcsname%
88     \multinotes@selectlanguage{#1}%
89   }{}%
90 }
91 \newcommand{\includelanguage}[1]{
92   \multinotes@activatelanguage{#1}

```

```

93 \LoadDictionaryFor{#1}{translations-basic-dictionary}
94 \LoadDictionaryFor{#1}{translations-theorem-dictionary}
95 }

```

6.2.3 Language style

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

```

96 \newcommand{\setlanguagestyle}[2]{\expandafter\def\csname multinotes@#1style\endcsname{#2}}
97 \newcommand{\multinotes@commonstyle}{\normalfont\color{\multinotes@CurrentColour}}
98 \newcommand{\setcommonstyle}[1]{\renewcommand{\multinotes@commonstyle}{#1}}

```

6.2.4 Parallel typesetting

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

```

99 \newenvironment{multicols}{\fi}{}
100 \newcommand{\multicolsync}{\fi}
101 \newcommand{\multicolson}{
102   \ifnum\value{multinotes@numlangs}>1
103     \renewenvironment{multicols}{\begin{paracol}{\themultinotes@numlangs}}{\end{paracol}}
104     \renewcommand{\multicolsync}{\switchcolumn[0]*}
105   \fi
106 }
107 \newcommand{\multicolsoff}{
108   \renewenvironment{multicols}{\fi}{}
109   \renewcommand{\multicolsync}{\fi}
110 }
111 \AtBeginDocument{\multicolson}

```

Mark content to span across columns (used inside `multicols` environments)

```

112 \newcommand{\multicolspan}[1]{\multinotes@commonstyle%
113   \@ifundefined{switchcolumn}{\fi}{%
114     \ifthenelse{\isempty{#1}}{\fi}{%
115       \switchcolumn[0]%
116     }%
117     \switchcolumn*[{#1}]%
118   }%
119 }%
120 }

```

6.2.5 Declarations

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

```

121 \def\multinotes@remove{\afterassignment\checkit\let\char=}%
122 \def\checkit{%
123     \ifcat\char\null %
124         \let\char=\null%
125     \fi%
126     \ifcat\char\space%
127         \let\next=\multinotes@remove%
128     \else%
129         \ifcat\char x%
130             \let\next=\multinotes@remove%
131         \else%
132             \ifcat\char 1%
133                 \let\next=\multinotes@remove%
134             \else%
135                 \noexpand\char
136                 \let\next=\relax%
137             \fi%
138         \fi%
139     \fi%
140     \next%
141 }%

```

6.3 Lecture notes

Macros for proof, answer and sketch names.

```

142 \def\multinotes@proofname{\GetTranslation{Proof}}
143 \def\multinotes@answername{\GetTranslation{Answer}}
144 \def\multinotes@sketchname{\GetTranslation{Sketch}}

```

Global variables to allow local override of the blanks, blankproofs, noproofs, blankanswers and noanswers options.

```

145 \newcommand{\blanksoff}{\multinotes@blanksfalse}
146 \newcommand{\blankson}{\multinotes@blankstrue}
147 \newcommand{\blankproofsoff}{\multinotes@blankproofsfalse}
148 \newcommand{\blankproofson}{\multinotes@blankproofstrue}
149 \newcommand{\blankanswersoff}{\multinotes@blankanswersfalse}
150 \newcommand{\blankanswerson}{\multinotes@blankanswerstrue}

151 \newcommand{\noproofsoff}{
152     \multinotes@noproofsfalse
153     \multinotes@createProofEnvironment
154 }
155 \newcommand{\noproofson}{
156     \multinotes@noproofstrue
157     \excludecomment{proof}
158 }
159 \newcommand{\noanswersoff}{
160     \multinotes@noanswersfalse
161     \multinotes@createAnswerEnvironment
162 }
163 \newcommand{\noanswerson}{
164     \multinotes@noanswerstrue

```

```

165 \excludecomment{answer}
166 }

```

Runtime flags

```

167 \newif\ifmultinotes@blankmode
168 \newif\ifmultinotes@imgblankmode

```

Colours

```

169 \newcommand{\multinotes@BackgroundColour}{white}
170 \newcommand{\multinotes@TextColour}{black}
171 \newcommand{\multinotes@ShowColour}{black}
172 \newcommand{\multinotes@ProofColour}{black}
173 \newcommand{\multinotes@SolutionColour}{black}
174 \newcommand{\multinotes@AnswerColour}{black}
175 \newcommand{\multinotes@QEDSymbol}{}
176 \AtBeginDocument{
177   \color{\multinotes@TextColour}
178   \pagecolor{\multinotes@BackgroundColour}
179 }

```

Set colours

```

180 \newcommand{\textcolour}[1]{\renewcommand{\multinotes@TextColour}{#1}}
181 \newcommand{\backgroundcolour}[1]{\renewcommand{\multinotes@BackgroundColour}{#1}}
182 \newcommand{\showcolour}[1]{\renewcommand{\multinotes@ShowColour}{#1}}
183 \newcommand{\proofcolour}[1]{\renewcommand{\multinotes@ProofColour}{#1}}
184 \newcommand{\answercolour}[1]{\renewcommand{\multinotes@AnswerColour}{#1}}
185 \newcommand{\includeqedsymbol}[1]{\renewcommand{\multinotes@QEDSymbol}{#1}}

```

Stretch factors for blank boxes (to accomodate handwriting)

```

186 \newcommand{\multinotes@StretchFactor}{1}
187 \newcommand{\multinotes@ImageStretchFactor}{1}
188 \newcommand{\setstretchfactor}[1]{\renewcommand{\multinotes@StretchFactor}{#1}}
189 \newcommand{\setimagestretchfactor}[1]{\renewcommand{\multinotes@ImageStretchFactor}{#1}}

```

Frame options

```

190 \newif\ifmultinotes@framedblankboxes
191 \newif\ifmultinotes@framedproofs
192 \newif\ifmultinotes@framedanswers
193 \newcommand{\framedblankboxes}{\multinotes@framedblankboxstrue}
194 \newcommand{\framedblankboxesoff}{\multinotes@framedblankboxesfalse}
195 \newcommand{\framedproofs}{\multinotes@framedproofstrue}
196 \newcommand{\framedproofsoff}{\multinotes@framedproofsfalse}
197 \newcommand{\framedanswers}{\multinotes@framedanswerstrue}
198 \newcommand{\framedanswersoff}{\multinotes@framedanswersfalse}
199 \newcommand{\setboxrule}[1]{\renewcommand{\multinotes@BoxRule}{#1}}

```

Runtime parameters

```

200 \newcommand{\multinotes@CurrentColour}{black}
201 \newcommand{\multinotes@CurrentBoxRule}{Opt}
202 \newcommand{\multinotes@CurrentBoxTitle}{}
203 \newcommand{\multinotes@BoxRule}{Opt}
204 \newcommand{\multinotes@makeboxtitle}{%

```



```

205 \textcolor{\multinotes@TextColour}{\noindent\multinotes@CurrentBoxTitle}%
206 }%

```

6.4 Inline boxes

Inline blankbox

```

207 \newcommand\multinotes@inlineboxsize{normal}
208 \newcommand{\inlineboxsize}[1]{\renewcommand{\multinotes@inlineboxsize}{#1}}
209 \newcommand{\blank}[1]{#1}
210 \ifmultinotes@blanks
211   \renewtcbox{\blank}{
212     on line,
213     size=\multinotes@inlineboxsize,
214     colback=\multinotes@BackgroundColour,
215     coltext={\ifmultinotes@blanks\multinotes@BackgroundColour\else\multinotes@ShowColour\fi}
216     boxrule={\ifmultinotes@blanks\multinotes@BoxRule\elseOpt\fi}
217   }
218 \fi

```

Inline fillbox

```

219 \newcommand{\fillbox}[1]{#1}
220 \ifmultinotes@blankanswers\else
221   \renewtcbox{\fillbox}{
222     on line,
223     size=\multinotes@inlineboxsize,
224     arc=0pt,
225     boxsep=1pt,left=10pt,right=10pt,
226     boxrule=\multinotes@BoxRule,
227     colback=\multinotes@BackgroundColour,
228     coltext={
229       \ifmultinotes@noanswers\multinotes@BackgroundColour
230       \else\ifmultinotes@blankanswers\multinotes@BackgroundColour
231       \else\multinotes@AnswerColour
232       \fi\fi
233     },
234   }
235 \fi

```

Inline answer box

```

236 \newcommand{\ans}[1]{
237 \ifmultinotes@noanswers\else
238   \ifthenelse{\isempty{#1}}%
239     {\renewcommand{\multinotes@CurrentBoxTitle}{#1}}%
240     {\renewcommand{\multinotes@CurrentBoxTitle}{}}%
241   \renewtcbox{\ans}{
242     on line,
243     title=\sl\multinotes@CurrentBoxTitle,
244     coltitle=\multinotes@AnswerColour,
245     attach title to upper={\strut},
246     size=\multinotes@inlineboxsize,
247     arc=1pt,
248     boxsep=1pt,left=5pt,right=5pt,

```

```

249     boxrule=\multinotes@BoxRule,
250     colback=\multinotes@BackgroundColour,
251     coltext={
252         \ifmultinotes@blankanswers\multinotes@BackgroundColour
253         \else\ifmultinotes@noanswers\multinotes@BackgroundColour
254         \else\multinotes@AnswerColour
255         \fi\fi
256     },
257 }
258 \fi

```

Inline proof box

```

259 \newcommand{\prf}[1]{
260 \ifmultinotes@noproofs\else
261     \ifthenelse{\isempty{#1}}{
262         {\renewcommand{\multinotes@CurrentBoxTitle}{#1}}%
263         {\renewcommand{\multinotes@CurrentBoxTitle}{}}%
264     \renewtcbox{\prf}{
265         on line,
266         title=\sl\multinotes@CurrentBoxTitle,
267         coltitle=\multinotes@ProofColour,
268         attach title to upper={\strut},
269         size=\multinotes@inlineboxsize,
270         arc=1pt,
271         boxsep=1pt,left=5pt,right=5pt,
272         boxrule=\multinotes@BoxRule,
273         colback=\multinotes@BackgroundColour,
274         coltext={
275             \ifmultinotes@blankproofs\multinotes@BackgroundColour
276             \else\ifmultinotes@noproofs\multinotes@BackgroundColour
277             \else\multinotes@ProofColour
278             \fi\fi
279         },
280     }
281 \fi

```

6.5 Display boxes

Box template

```

282 \newenvironment{multinotes@tcbox}{%
283     \begin{tcolorbox}[
284         breakable,
285         notitle,
286         boxrule={\multinotes@BoxRule},
287         colback={\multinotes@BackgroundColour},
288         before={\smallskip},
289         after={},
290         coltext={\multinotes@CurrentColour},
291         skin=enhanced jigsaw,
292         opacityback=0,
293         height fixed for = first and middle,
294         ignore nobreak,

```

```

295         before upper={\parindent0em\noindent},
296         flushleft upper
297     ]%
298     \begingroup
299 }{
300     \endgroup
301     \end{tcolorbox}
302 }

```

Basic display box

```

303 \newenvironment{multinotes@basicbox}[1][]{
304     \ifthenelse{\isempty{#1}}{
305         {\renewcommand{\multinotes@CurrentBoxTitle}{}}%
306         {\renewcommand{\multinotes@CurrentBoxTitle}{#1}}
307     \ifmultinotes@blankmode
308         \renewcommand{\multinotes@CurrentColour}{\multinotes@BackgroundColour}
309         \setstretch{\multinotes@StretchFactor}
310         \begin{multinotes@tcbox}%
311         \ifthenelse{\isempty{#1}}{-}{\multinotes@makeboxtitle}\quad
312     \else
313         \par
314         \ifthenelse{\isempty{#1}}{-}{\multinotes@makeboxtitle}\quad
315         \color{\multinotes@CurrentColour}
316     \fi
317 }{
318     \ifmultinotes@blankmode
319         \end{multinotes@tcbox}
320         \setstretch{1}
321     \fi
322     \multinotes@blankmodefalse
323     \color{\multinotes@TextColour}
324 }

```

Basic framed box

```

325 \newenvironment{multinotes@framedbox}[1][]{
326     \ifthenelse{\isempty{#1}}{
327         {\renewcommand{\multinotes@CurrentBoxTitle}{}}%
328         {\renewcommand{\multinotes@CurrentBoxTitle}{#1}}
329     \ifmultinotes@blankmode
330         \renewcommand{\multinotes@CurrentColour}{\multinotes@BackgroundColour}
331         \setstretch{\multinotes@StretchFactor}
332     \else
333         \color{\multinotes@CurrentColour}
334     \fi
335     \begin{multinotes@tcbox}%
336     \ifthenelse{\isempty{#1}}{-}{\multinotes@makeboxtitle}
337 }{
338     \mbox{
339         \end{multinotes@tcbox}
340     \ifmultinotes@blankmode
341         \setstretch{1}
342     \fi
343     \multinotes@blankmodefalse

```

```

344 \renewcommand{\multinotes@CurrentColour}{\multinotes@TextColour}
345 \color{\multinotes@TextColour}
346 }

```

Blankbox

```

347 \newenvironment{blankbox}[1][1]{
348   \def\boxtitle{}
349   \ifthenelse{\isempty{#1}}{}{\def\boxtitle{#1}}
350   \renewcommand{\multinotes@CurrentColour}{\multinotes@ShowColour}
351   \ifmultinotes@blanks
352     \multinotes@blankmodetrue
353   \fi
354   \ifmultinotes@framedblankboxes
355     \begin{multinotes@framedbox}[\sl\boxtitle]
356   \else
357     \begin{multinotes@basicbox}[\sl\boxtitle]
358   \fi
359 }{%
360   \ifmultinotes@framedblankboxes
361     \end{multinotes@framedbox}
362   \else
363     \end{multinotes@basicbox}
364   \fi
365 }

```

Proof box

```

366 \newcommand\multinotes@createProofEnvironment{
367   \let\proof\@undefined
368   \let\endproof\@undefined
369   \newenvironment{proof}[1][1]{
370     \renewcommand{\multinotes@CurrentColour}{\multinotes@ProofColour}
371     \ifmultinotes@blankproofs
372       \multinotes@blankmodetrue
373     \fi
374     \ifthenelse{\isempty{##1}}{
375       \ifmultinotes@framedproofs
376         \begin{multinotes@framedbox}[\sl\multinotes@proofname]
377       \else
378         \begin{multinotes@basicbox}[\sl\multinotes@proofname]
379       \fi
380     }{%
381       \ifmultinotes@framedproofs
382         \begin{multinotes@framedbox}[##1]
383       \else
384         \begin{multinotes@basicbox}[##1]
385       \fi
386     }
387   }{%
388     \mbox{}\hfill\multinotes@QEDSymbol
389     \ifmultinotes@framedproofs
390       \end{multinotes@framedbox}
391     \else
392       \end{multinotes@basicbox}

```

```

393         \fi
394     }
395 }
396 \ifmultinotes@noproofs
397     \excludecomment{proof}
398 \else
399 \multinotes@createProofEnvironment
400 \fi

```

answer (*env.*) *Answer box*

```

401 \newcommand\multinotes@createAnswerEnvironment{
402     \let\answer\@undefined
403     \let\endanswer\@undefined
404     \newenvironment{answer}[1][]{
405         \renewcommand{\multinotes@CurrentColour}{\multinotes@AnswerColour}
406         \ifmultinotes@blankanswers
407             \multinotes@blankmodetrue
408         \fi
409         \ifthenelse{\isempty{##1}}{
410             \ifmultinotes@framedanswers
411                 \begin{multinotes@framedbox}[\sl\multinotes@answername]%
412             \else
413                 \begin{multinotes@basicbox}[\sl\multinotes@answername]%
414             \fi
415         }{
416             \ifmultinotes@framedanswers
417                 \begin{multinotes@framedbox}[##1]%
418             \else
419                 \begin{multinotes@basicbox}[##1]%
420             \fi
421         }
422     }{
423         \mbox{}\hfill\multinotes@QEDSymbol
424         \ifmultinotes@framedanswers
425             \end{multinotes@framedbox}
426         \else
427             \end{multinotes@basicbox}
428         \fi
429     }
430 }
431 \ifmultinotes@noanswers
432     \excludecomment{answer}
433 \else
434 \multinotes@createAnswerEnvironment
435 \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.*

```

436 \floatstyle{boxed}
437 \newfloat{sketch}{!ht}{losk}
438 \newcommand{\sketchbox}[2][{}]{
439 \ifmultinotes@nosketchboxes\else
440   \renewcommand{\sketchbox}[2][{}]{
441     \begin{sketch}[H]
442       \color{\multinotes@CurrentColour}
443       \vspace{1ex}\hspace{1ex}\textsl{\multinotes@sketchname}%
444       \ifthenelse{\isempty{#1}}{\{ (#1)\}\par%
445       \parbox{\textwidth}{\vspace{#2\textheight}}}%
446     \end{sketch}%
447   }
448 \fi

```

\includevideo Custom float for videos

```

449 \newcommand{\includevideo}[2][1]{\url{#2}}
450 \floatstyle{boxed}
451 \newfloat{video}{!ht}{lov}[section]
452 \floatname{video}{Video}
453 \captionsetup{video}{labelfont=normalfont}

```

Make \includegraphics respond to blankmode

```

454 \let\oldincludegraphics=\includegraphics
455 \renewcommand\includegraphics[2][{}]{
456   \ifmultinotes@blankmode
457     \scalebox{\multinotes@ImageStretchFactor}{
458       \phantom{\oldincludegraphics[#1]{#2}}
459     }
460   \else
461     \oldincludegraphics[#1]{#2}
462   \fi
463 }

```

Display alternative image under under blankmode

```

464 \newlength\imageheight
465 \newlength\imagewidth
466 \newcommand{\includetwographics}[3][scale=1]{
467   \ifmultinotes@blankmode
468     \settoheight{\imageheight}{\oldincludegraphics[#1]{#2}}
469     \settowidth{\imagewidth}{\oldincludegraphics[#1]{#2}}
470     \scalebox{\multinotes@ImageStretchFactor}{
471       \oldincludegraphics[height=\imageheight,width=\imagewidth,keepaspectratio]{#3}
472     }
473   \else
474     \oldincludegraphics[#1]{#2}
475   \fi
476 }

```

Replace tikz picture by blank box (moody)

```

477 \newcommand{\blanktikz}{%
478   \ifmultinotes@blankmode
479     \tikzset{every picture/.append style={

```

```

480         scale=\multinotes@ImageStretchFactor,
481         execute at end picture={
482             \draw[fill=\multinotes@BackgroundColour]
483                 (current bounding box.south west)
484                 rectangle
485                 (current bounding box.north east);
486         }}}
487     \fi
488 }

```

6.7 Exercise sheets (inspired by exam.cls)

Check that exam.cls is not already loaded.

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

Counters and labels

```

490     \newcounter{question}
491     \newcounter{partno}
492     \newcounter{subpart}
493     \newcounter{choice}
494     \newcommand\questionlabel{\arabic{question}.}
495     \newcommand\partlabel{(\alph{partno})}
496     \newcommand\subpartlabel{(\roman{subpart})}

```

Default symbols (circle for MC, square for MA)

```

497     \newcommand\choicechar[1]{\def\choice@char{#1}}
498     \newcommand\chosenchar[1]{\def\chosen@char{#1}}
499     \newcommand\checkboxchar[1]{\def\checkbox@char{#1}}
500     \newcommand\checkedchar[1]{\def\checked@char{#1}}
501     \newcommand\bigsquare{\raisebox{0.5ex}{\fbox{\phantom{\rule{0.5ex}{0.5ex}}}}}
502     \choicechar{$\bigcirc$}
503     \chosenchar{$\text{\rlap{\,$\checkmark$}}\bigcirc$}
504     \checkboxchar{$\bigsquare$}
505     \checkedchar{$\rlap{\hskip 0.2ex\raisebox{0.2ex}{\checkmark}}\bigsquare$}

```

Hooks for customisation

```

506     \newcommand\questionshook{}
507     \newcommand\partshook{}
508     \newcommand\subpartshook{}
509     \newcommand\choiceshook{}
510     \newcommand\checkboxeshook{}

```

Questions, parts and subparts.

```

511     \newenvironment{questions}{
512         \def\@queslevel{question}
513         \def\question{\@checkqueslevel{question}\item}
514         \def\subpart{\@checkqueslevel{subpart}\item}
515         \list{\questionlabel}{
516             \usecounter{question}
517             \settowidth{\leftmargin}{10.\hskip\labelsep}
518             \labelwidth\leftmargin\advance\labelwidth-\labelsep

```

```

519         \partopsep=0pt\questionshook
520     }}{\endlist}
521 \newenvironment{parts}{
522     \def\@queslevel{part}
523     \def\part{\@checkqueslevel{part}\item}
524     \list{\partlabel}{
525         \usecounter{partno}\def\makelabel##1{\hss\llap{##1}}
526         \settowidth{\leftmargin}{(m)\hskip\labelsep}
527         \labelwidth\leftmargin\advance\labelwidth-\labelsep
528         \topsep=0pt\partopsep=0pt\partshook
529     }}{\endlist}
530 \newenvironment{subparts}{
531     \def\@queslevel{subpart}
532     \list{\subpartlabel}{
533         \usecounter{subpart}\def\makelabel##1{\hss\llap{##1}}
534         \settowidth{\leftmargin}{vii.\hskip\labelsep}
535         \labelwidth\leftmargin\advance\labelwidth-\labelsep
536         \topsep=0pt\partopsep=0pt\subpartshook
537     }}{\endlist}

```

Choices and checkboxes (MC and MA)

```

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

```



```

571             \beginngroup
572             \@correctchoicetrue
573             \CorrectChoice@Emphasis
574             \item[\checked@char]
575             \fi\fi
576         }
577         \let\correctchoice\CorrectChoice
578         \topsep=2pt\partopsep=0pt\choiceshook
579     }
580 }{\if@correctchoice\endgroup\fi\endlist}

```

Nesting check and indentation trick.

```

581 \def\@checkqueslevel#1{
582     \beginngroup
583     \def\@temp{#1}
584     \ifx\@temp\@queslevel\null
585     \else\ClassError{multinotes}{
586         I found a #1 where I expected to find a \@queslevel
587         \MessageBreak
588     }{}
589     \fi\endgroup
590 }
591 \long\def\uplevel#1{
592     \par\bigskip\vbox{
593         \leftskip=\@totalleftmargin
594         \advance\leftskip-\leftmargin
595         \advance\@totalleftmargin-\leftmargin
596         \advance\linewidth\leftmargin
597         #1
598     }
599     \nobreak
600 }

```

End \@ifclassloaded{exam} check.

```

601 }

```