

# ximera — Simultaneously write print and online interactive materials.\*

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## Abstract

“Ximera begins where  $\text{\TeX}$  ends.” The `ximera` class aids in the creation of handouts, worksheets, exercises, and sections of textbooks to be used either individually or “glued” together via a `xourse` file. All `ximera` documents can be deployed in an online interactive form via `xake` See: [Ximera Project](#) and the source code on [GitHub](#).

## 1 Introduction

## 2 ximera.cls

### 2.1 Options for the class

We start by listing the options for the `ximera` document class. Note, since the `xourse` class is based on the `ximera` class, all listed options are available there too.

```
1 \*classXimera\
```

**handout** The default behavior of the class is to display **all** content. This means that if any questions are asked, all answers are shown. Moreover, some content will only have a meaningful presentation when displayed online. When compiled without any options, this content will be shown too. This option will suppress such content and generate a reasonable printable “handout.”

```
2 \newif\ifhandout
3 \handoutfalse
4 \DeclareOption{handout}{\handouttrue}
```

**noauthor** By default, authors are listed at the bottom of the first page of a document. This option will suppress the listing of the authors.

```
5 \newif\ifnoauthor
6 \noauthorfalse
7 \DeclareOption{noauthor}{\noauthortrue}
```

**nooutcomes** By default, learning outcomes are listed at the bottom of the first page of a document. This option will suppress the listing of the learning outcomes.

```
8 \newif\ifnooutcomes
9 \nooutcomesfalse
10 \DeclareOption{nooutcomes}{\nooutcomestruer}
```

**instructornotes** This option will turn on (and off) notes written for the instructor.

```
11 \newif\ifinstructornotes
12 \instructornotesfalse
13 \DeclareOption{instructornotes}{\instructornotestruer}
```

---

\*This file describes version v1.0, last revised 2018/10/28.

**noinstructornotes** This option will turn off (and on) notes written for the instructor.

```

14 \DeclareOption{noinstructornotes}{\instructornotesttrue}

```

**hints** When the `handout` options is used, hints are not shown. This option will make hints visible in handout mode.

```

15 \newif\ifhints
16 \hintsfalse
17 \DeclareOption{hints}{\hintstrue}

```

**newpage** This option will start each problem-like environment (`exercise`, `question`, `problem`, and `exploration`) start on a new page.

```

18 \newif\ifnewpage
19 \newpagefalse
20 \DeclareOption{newpage}{\newpagetrue}

```

**numbers** This option will number the titles of the activity. By default the activities are unnumbered.

```

21 \newif\ifnumbers
22 \numbersfalse
23 \DeclareOption{numbers}{\numberstrue}

```

**wordchoicegiven** This option will replace the choices shown by `wordChoice` with the correct choice. No indication of the `wordChoice` environment will be shown.

```

24 \newif\ifwordchoicegiven
25 \wordchoicegivenfalse
26 \DeclareOption{wordchoicegiven}{\wordchoicegiventrue}
27 \newif\iffirstinlinechoice% Support for other wordchoice command contents.
28 \firstinlinechoicetrue

29
30 \newif\ifxake
31 \xakefalse
32 \DeclareOption{xake}{\xaketrue}
33
34 \newif\iftikzexport
35 \tikzexportfalse
36 \DeclareOption{tikzexport}{%
37   \tikzexporttrue%
38   \handoutfalse%
39   \numbersfalse%
40   \newpagefalse%
41   \hintsfalse%
42   \nooutcomesfalse%
43 }
44
45 \DeclareOption*{%
46   \PassOptionsToClass{\CurrentOption}{article}%
47 }
48 \ProcessOptions\relax
49 \LoadClass{article}
50
51 \ifdefined\HCode
52   \xaketrue%
53   \tikzexporttrue%
54   \handoutfalse%
55   \numbersfalse%
56   \newpagefalse%
57   \hintsfalse%
58   \nooutcomesfalse%
59 \fi
60
61 \</classXimera>
62 \<classXimera>

```

## 2.2 Loading packages

Since we want `\cancel` to work, we load it here to avoid polluting the `.jax` output.

```
63 \RequirePackage[makeroom]{cancel}
```

Quite a few packages are required by the document class. This is a list of required packages. As packages are added to this list, we should include a comment as to where they are being utilized. This will help keep this list from being redundant and/or outdated.

```
64 \RequirePackage[inline]{enumitem}
65 \RequirePackage[pagestyles]{titlesec}
66 \RequirePackage{titletoc}
67 \RequirePackage{titling}
68 \RequirePackage{url}
69 \RequirePackage[table]{xcolor}
70 \RequirePackage{tikz}
71 \RequirePackage{pgfplots}
72 \usepgfplotslibrary{groupplots}
73 \usetikzlibrary{calc}
74 \RequirePackage{fancyvrb}
```

Load `forloop` for the problem environment dynamic naming and building.

```
75 \RequirePackage{forloop}
```

Now we load even more packages.

```
76 \RequirePackage{environ}% Included to allow saving of environment contents. This does *not* p
77 \RequirePackage{amssymb}% Included to have access to math typeset.
78 \RequirePackage{amsmath}% Included to have access to math typeset.
79 \RequirePackage{amsthm}% Included to have access to math typeset.
80 \RequirePackage{xifthen}% http://ctan.org/pkg/xifthen
81 \RequirePackage{multido}% http://ctan.org/pkg/multido
82 \RequirePackage{listings} %% is this required???
83
84 \RequirePackage{xkeyval}
85
86 \RequirePackage{comment}
87 \</classXimera>
```

Various packages must be loaded early to avoid polluting the `.jax` file.

```
88 \<classXimera>
89 \RequirePackage{getttitlestring}
90 \RequirePackage{nameref}
91 \RequirePackage{epstopdf}
92 \</classXimera>
```

## 2.3 Page setup

We want non-indented spaced-out paragraphs.

```
93 \<classXimera>
94 \setlength{\parindent}{0pt}
95 \setlength{\parskip}{5pt}
96 \</classXimera>
```

To avoid weird margins in 2-sided mode, change the margins.

```
97 \<classXimera>
98 \oddsidemargin 62pt
99 \evensidemargin 62pt
100 \textwidth 345pt
101 \headheight 14pt
102 \</classXimera>
```

On the HTML side, there is more complicated page setup to perform.

```
103 \<cfgXimera>
104 \Preamble{xhtml}
105
106 % We don't want to translate font suggestions with ugly wrappers like
```

```

107 % <span class="cmti-10"> for italic text
108 \NoFonts
109
110 % Don't output xml version tag
111 \Configure{VERSION}{}
112
113 % Output HTML5 doctype instead of the default for HTML4
114 \Configure{DOCTYPE}{\HCode{<!doctype html>\Hnewline}}
115
116 % Custom page opening
117 \Configure{HTML}{\HCode{<html lang="en">\Hnewline}}{\HCode{\Hnewline</html>}}
118
119 % Reset <head>, aka delete all default boilerplate; alternatively set up new content
120 \Configure{OHEAD}{\HCode{<meta name="generator" content="TeX4ht (http://www.cse.ohio-state.edu/~dpc/TeX4ht/)>\Hnewline}}
121 \Configure{OHEAD}{\HCode{<meta name="ximera" content="version 0.0.1" />\Hnewline}}
122 \Configure{OHEAD}{\HCode{<link href="https://ximera.osu.edu/public/stylesheets/standalone.css" />\Hnewline}}
123 \Configure{OHEAD}{\HCode{<script type="text/javascript" async src="https://ximera.osu.edu/public/js/ximera.js" />\Hnewline}}
124 \</cfgXimera>

```

Disable certain ligatures in HTML.

```

125 <*htXimera>
126 \usepackage{microtype}
127 \DisableLigatures[f]{encoding=*}
128 </htXimera>

```

I am not sure what this does.

```

129 <*htXimera>
130 \NewEnviron{html}{\HCode{\BODY}}
131 </htXimera>

```

## 2.4 Structure

### 2.4.1 Macros

Makes everymath display style even when inline, could be optional.

```

132 <*classXimera>
133 \everymath{\displaystyle}
134 </classXimera>

```

Ok not everything, we also need to configure “display style” limits.

```

135 <*classXimera>
136 \let\prelim\lim
137 \renewcommand{\lim}{\displaystyle\prelim}
138 </classXimera>

```

### 2.4.2 Theorem and theorem-like environments

On the web, a theorem is emitted as a special <div>.

```

139 <*htXimera>
140 \newcommand{\ConfigureTheoremEnv}[1]{%
141 \renewenvironment{#1}[1][\refstepcounter{problem}%
142 \ifthenelse{\equal{##1}{}}{\}{\}%
143 \HCode{<span class="theorem-like-title">##1\HCode{</span>}}%
144 }{}%
145 \ConfigureEnv{#1}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<div class="theorem">}}
146 }
147 </htXimera>
148 <classXimera>\theoremstyle{definition} % No italic (because this makes also text in TikZ italic)

```

The key is to make sure that the theorem environments are defined in a corresponding fashion on the web and on paper.

```

theorem Theorem
149 <classXimera> \newtheorem{theorem}{Theorem}
150 </htXimera> \ConfigureTheoremEnv{theorem}

```

algorithm	Algorithm	
	151 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{algorithm}{Algorithm}
	152 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{algorithm}
axiom	Axiom	
	153 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{axiom}{Axiom}
	154 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{axiom}
claim	Claim	
	155 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{claim}{Claim}
	156 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{claim}
conclusion	Conclusion	
	157 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{conclusion}{Conclusion}
	158 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{conclusion}
condition	Condition	
	159 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{condition}{Condition}
	160 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{condition}
conjecture	Conjecture	
	161 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{conjecture}{Conjecture}
	162 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{conjecture}
corollary	Corollary	
	163 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{corollary}{Corollary}
	164 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{corollary}
criterion	Criterion	
	165 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{criterion}{Criterion}
	166 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{criterion}
definition	Definition	
	167 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{definition}{Definition}
	168 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{definition}
example	Example	
	169 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{example}{Example}
	170 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{example}
explanation	Explanation	
	171 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem*{explanation}{Explanation}
	172 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{explanation}
fact	Fact	
	173 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{fact}{Fact}
	174 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{fact}
lemma	Lemma	
	175 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{lemma}{Lemma}
	176 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{lemma}
formula	Formula	
	177 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{formula}{Formula}
	178 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{formula}
idea	Idea	
	179 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{idea}{Idea}
	180 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{idea}
notation	Notation	
	181 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{notation}{Notation}
	182 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{notation}
model	Model	
	183 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{model}{Model}
	184 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{model}
observation	Observation	
	185 $\langle$ classXimera $\rangle$	$\backslash$ newtheorem{observation}{Observation}
	186 $\langle$ htXimera $\rangle$	$\backslash$ ConfigureTheoremEnv{observation}

proposition	Proposition
	187 <code>\classXimera</code> <code>\newtheorem{proposition}{Proposition}</code>
	188 <code>\htXimera</code> <code>\ConfigureTheoremEnv{proposition}</code>
paradox	Paradox
	189 <code>\classXimera</code> <code>\newtheorem{paradox}{Paradox}</code>
	190 <code>\htXimera</code> <code>\ConfigureTheoremEnv{paradox}</code>
procedure	Procedure
	191 <code>\classXimera</code> <code>\newtheorem{procedure}{Procedure}</code>
	192 <code>\htXimera</code> <code>\ConfigureTheoremEnv{procedure}</code>
remark	Remark
	193 <code>\classXimera</code> <code>\newtheorem{remark}{Remark}</code>
	194 <code>\htXimera</code> <code>\ConfigureTheoremEnv{remark}</code>
summary	Summary
	195 <code>\classXimera</code> <code>\newtheorem{summary}{Summary}</code>
	196 <code>\htXimera</code> <code>\ConfigureTheoremEnv{summary}</code>
template	Template
	197 <code>\classXimera</code> <code>\newtheorem{template}{Template}</code>
	198 <code>\htXimera</code> <code>\ConfigureTheoremEnv{template}</code>
warning	Warning
	199 <code>\classXimera</code> <code>\newtheorem{warning}{Warning}</code>
	200 <code>\htXimera</code> <code>\ConfigureTheoremEnv{warning}</code>

### 2.4.3 Enumerate fixes

Make enumerate use a letter

```
201 \*classXimera
202 \renewcommand{\theenumi}{\textup{(\alph{enumi})}}
203 \renewcommand{\labelenumi}{\theenumi}
204 \renewcommand{\theenumii}{\textup{(\roman{enumii})}}
205 \renewcommand{\labelenumii}{\theenumii}
206 \endclassXimera
```

### 2.4.4 Proofs

proof A mathematical proof environment.

```
207 \*classXimera
208 \renewcommand{\qedsymbol}{\blacksquare}
209 \renewenvironment{proof}[1][\proofname]
210 {\begin{trivlist}\item[\hskip \labelsep \itshape \bfseries #1]{\hspace{2ex}}}
211 {\qed\end{trivlist}}
212 \endclassXimera
```

### 2.4.5 Problem environments

These are problem environment decorations (these should be user invoked, not default). The decoration for these environments were inspired by <http://tex.stackexchange.com/questions/11098/nice-formatting-for-theorems>

```
213 \*classXimera
```

latexProblemContent Added for those that want to use UF problems without using the problem filter code. This command is renewed into something meaningful in the 'ProblemSelector.sty'.

```
214 \providecommand{\latexProblemContent}[1]{#1}
215 % Iterate count for problem counts.
216 \Make@Counter{Iteration@probCnt}
```

```

217 \newcommand{\hang}{% top theorem decoration
218   \begin{group}%
219   \setlength{\unitlength}{.005\linewidth}% \linewidth/200
220   \begin{picture}(0,0)(1.5,0)%
221     \linethickness{1pt} \color{black!50}%
222     \put(-3,2){\line(1,0){206}}% Top line
223     \multido{\iA=2+-1,\iB=50+-10}{5}{% Top hangs
224       \color{black!\iB}%
225       \put(-3,\iA){\line(0,-1){1}}% Top left hang
226       %\put(203,\iA){\line(0,-1){1}}% Top right hang
227     }%
228   \end{picture}%
229   \end{group}%
230 }%
231 \newcommand{\hung}{% bottom theorem decoration
232   \nobreak
233   \begin{group}%
234   \setlength{\unitlength}{.005\linewidth}% \linewidth/200
235   \begin{picture}(0,0)(1.5,0)%
236     \linethickness{1pt} \color{black!50}%
237     \put(60,0){\line(1,0){143}}% Bottom line
238     \multido{\iA=0+1,\iB=50+-10}{5}{% Bottom hangs
239       \color{black!\iB}%
240       %\put(-3,\iA){\line(0,1){1}}% Bottom left hang
241       \put(203,\iA){\line(0,1){1}}% Bottom right hang
242       \put(\iB,0){\line(60,0){10}}% Left fade out
243     }%
244   \end{picture}%
245   \end{group}%
246 }%

```

Configure environment configuration commands

The command `\problemNumber` contains all the format code to determine the number (and the format of the number) for any of the problem environments.

```

247 \MakeCounter{problem}
248 \newcommand{\problemNumber}{%
249 % First we determine if we have a counter for this question depth level.
250 \ifcsname c@depth\Roman{problem@Depth}Count\endcsname% Check to see if counter exists
251 %If so, do nothing.
252 \else
253 %If not, create it.
254 \expandafter\newcounter{depth\Roman{problem@Depth}Count}
255 \expandafter\setcounter{depth\Roman{problem@Depth}Count}{0}
256 \fi
257
258 \expandafter\stepcounter{depth\Roman{problem@Depth}Count}
259 \arabic{depthICount}% The first problem depth, what use to be |\theproblem|.
260
261 \forloop{Iteration@probCnt}{2}{\arabic{Iteration@probCnt} < \numexpr \value{problem@Depth} +
262   \expandafter\arabic{depth\Roman{Iteration@probCnt}Count}}% Get the problem number of the
263 }
264 %\@ifpackageloaded{shuffle}{<true>}{<false>}% Check if Shuffle has been added. If so, add sp
265 %\ifhandout % Currently handout mode doesn't allow hints. Putting this code in place in case
266 % \theproblem
267 %\else
268 % \theproblem
269 %\fi
270 }
271
272
273 %%%% Configure various problem environment commands
274 \Make@Counter{problem@Depth}
275
276

```

```

277
278 %%%% Configure environments start content
279
280 \newcommand{\problemEnvironmentStart}[2]{%
281 % This takes in 2 arguments.
282 % The first is optional and is the old optional argument from existing environments.
283 % This is passed down to the associated problem environment name in case you want a global variable.
284 % The second argument is mandatory and is the name of the 'problem' environment,
285 % such as problem, question, exercise, etc.
286 % It then configures everything needed at the start of that environment.
287
288 \stepcounter{problem@Depth}% Started a problem, so we've sunk another problem layer.
289 \def\spaceatend{#1}%
290 \begin{trivlist}%
291 \item%
292 [%
293 \hskip\labelsep\sffamily\bfseries
294 #2 \problemNumber% Determine the correct number of the problem, and the format of that number.
295 ]%
296 \slshape
297 }
298
299
300
301 %%%% Configure environments end content
302
303 \newcommand{\problemEnvironmentEnd}{%This configures all the end content for a problem.
304 %
305 % First we need to see if we've dropped fully out of a depth level,
306 % so we can reset that counter back to zero for the next time we enter that depth level.
307 \stepcounter{problem@Depth}
308 \ifcsname c@depth\Roman{problem@Depth}Count\endcsname
309 \expandafter\ifnum\expandafter\value{depth\Roman{problem@Depth}Count}>0
310 \expandafter\setcounter{depth\Roman{problem@Depth}Count}{0}
311 \fi
312 \fi
313
314 \addtocounter{problem@Depth}{-2}% Exited a problem so we've exited a problem layer. Need -2 because we've sunk two layers.
315
316 \par\addvspace{.5ex}\nobreak\noindent\hung %% line at the bottom
317
318 \ifhandout
319 \ifnewpage
320 \newpage
321 \fi
322 \fi
323 \end{trivlist}
324 }
325
326
327
328 %%%% Now populate the old environment names
329 %
330 % Old environments were "problem", "exercise", "exploration", and "question".
331 % Note that you can add content to the start/end code on top of these base code pieces if you want.
332
333
334 \newenvironment{problem}[1][2in]%
335 {%Env start code
336 \problemEnvironmentStart{#1}{Problem}
337 }
338 {%Env end code
339 \problemEnvironmentEnd

```



```

340 }
341
342 \newenvironment{exercise}[1][2in]%
343 {%Env start code
344 \problemEnvironmentStart{#1}{Exercise}
345 }
346 {%Env end code
347 \problemEnvironmentEnd
348 }
349
350 \newenvironment{exploration}[1][2in]%
351 {%Env start code
352 \problemEnvironmentStart{#1}{Exploration}
353 }
354 {%Env end code
355 \problemEnvironmentEnd
356 }
357
358 \newenvironment{question}[1][2in]%
359 {%Env start code
360 \problemEnvironmentStart{#1}{Question}
361 }
362 {%Env end code
363 \problemEnvironmentEnd
364 }
365 \end{classXimera}

```

Use an “identification” counter to assign IDs to the various problem-related DOM elements

```

366 \begin{classXimera}
367 \newcounter{identification}
368 \setcounter{identification}{0}
369
370 \newcommand{\ConfigureQuestionEnv}[2]{%
371 % refstepcounter ensures that labels get updated within these environments
372 \renewenvironment{#1}{\refstepcounter{problem}}{}%
373 \ConfigureEnv{#1}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<div role="
374 }
375
376 \ConfigureQuestionEnv{problem}{problem}
377 \ConfigureQuestionEnv{exercise}{exercise}
378 \ConfigureQuestionEnv{question}{question}
379 \ConfigureQuestionEnv{exploration}{exploration}
380 \ConfigureQuestionEnv{hint}{hint}
381 \ConfigureQuestionEnv{shuffle}{shuffle}
382 \end{classXimera}

```

## 2.4.6 Hints

**hint** Hint environments can be embedded inside problems.

```

383 \begin{classXimera}

```

Create a counter that will track how deeply nested the current hint is

```

384 \newcounter{hintLevel}
385 \setcounter{hintLevel}{0}

```

Create an empty shell to renew

```

386 \newenvironment{hint}{}{}

```

Now we renew the environment as needed, this should allow support for any transition code that treats some parts as a “handout” and some parts as non-handout. renewing the environment on the fly is a bit hacky.

```

387 \renewenvironment{hint}
388 {

```

```

389 \ifhandout
390 \setbox0\vbox\bgroup
391 \else
392 \begin{trivlist}\item[\hskip \labelsep\small\slshape\bfseries Hint:\hspace{2ex}]
393 \small\slshape
394 \fi

```

Step up hint level to track the nested level of the hint. This will be used for problem numbering.

```

395 \stepcounter{hintLevel}
396 }
397 {
398 \ifhandout
399 \egroup\ignorespacesafterend
400 \else
401 \end{trivlist}
402 \fi

```

Detract from hint level counter to track hint nested level

```

403 \addtocounter{hintLevel}{-1}
404 }
405
406 \ifhints
407 \renewenvironment{hint}{
408 \begin{trivlist}\item[\hskip \labelsep\small\slshape\bfseries Hint:\hspace{2ex}]
409 \small\slshape}
410 {\end{trivlist}}
411 \fi
412
413 \end{classXimera}

```

### 2.4.7 Solution

**solution** The solution to a problem.

```

414 \begin{classXimera}
415 %% solution environment
416 \ifhandout % what follows is handout behavior
417 \newenvironment{solution}%
418     {%
419     \setbox0\vbox\bgroup
420     }
421     {%
422     \egroup
423     }
424 \else
425 \newenvironment{solution}%
426     {%
427     \begin{trivlist}
428     \item[\hskip \labelsep\bfseries Solution:\hspace{2ex}]
429     }
430     % %% line at the bottom}
431     {
432     \end{trivlist}
433     \par\addvspace{.5ex}\nobreak\noindent\hung
434     }
435 \fi
436
437
438
439 \end{classXimera}

```

### 2.4.8 Code listing environments

**code** A code answer environment You cannot use Environ with the fancyvrb/listings package

if you want nested environments.

```
440 \classXimera
441 \DefineVerbatimEnvironment{code}{Verbatim}{numbers=left,frame=lines,label=Code,labelposition=left}
442 \endclassXimera
```

python A python answer environment You cannot use Environ with the fancyvrb/listings package if you want nested environments

```
443 \classXimera
444 \DefineVerbatimEnvironment{python}{Verbatim}{numbers=left,frame=lines,label=Python,labelposition=left}
445 \endclassXimera
```

javascriptCode A JavaScript answer environment Unfortunately the name javascript is already used for the actual, executed (!) JavaScript interactive. environments

```
446 \classXimera
447 \DefineVerbatimEnvironment{javascriptCode}{Verbatim}{numbers=left,frame=lines,label=JavaScript,labelposition=left}
448 \endclassXimera
449 \classXimera
450 \renewenvironment{javascriptCode}{\NoFonts}{\EndNoFonts}
451 \ScriptEnv{javascriptCode}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<div>
452 \endclassXimera
```

On the web, translate verbatim and lstlisting blocks into <pre> elements.

```
453 \classXimera
454 \ConfigureEnv{verbatim}{\HCode{<pre>}}{\HCode{</pre>}}{}{}
455 \ConfigureEnv{lstlisting}{\HCode{<pre>}}{\HCode{</pre>}}{}{}
456 \endclassXimera
```

## 2.4.9 Dialogues

dialogue A dialogue between people.

```
457 \classXimera
458 \newenvironment{dialogue}{%
459 \renewcommand\descriptionlabel[1]{\hspace{\labelsep}\textbf{##1:}}
460 \begin{description}%
461 }{%
462 \end{description}%
463 }
464 \endclassXimera
```

On the web, the resulting <dl> should have an appropriate class set.

```
465 \classXimera
466 \renewenvironment{dialogue}{\begin{description}}{\end{description}}
467
468 \ConfigureList{dialogue}%
469 {\EndP\HCode{<dl \a:LRdir class="dialogue">}}%
470 \PushMacro\end:itm
471 \global\let\end:itm=\empty
472 {\PopMacro\end:itm \global\let\end:itm \end:itm
473 \EndP\HCode{</dd></dl>}\ShowPar}
474 {\end:itm \global\def\end:itm{\EndP\Tg</dd>}\HCode{<dt
475 class="actor">}\bgroup \bf}
476 {\egroup\EndP\HCode{</dt><dd\Hnewline class="speech">}}
477 \endclassXimera
```

### 2.4.10 Instructor notes

```
478 \classXimera
479
480 %% instructor intro/instructor notes
481 %%
482 \ifhandout % what follows is handout behavior
483 \ifinstructornotes
484 \newenvironment{instructorIntro}%
485 {\%
```

```

486 \begin{trivlist}
487 \item[\hskip \labelsep\bfseries Instructor Introduction:\hspace{2ex}]
488 }
489 % %% line at the bottom}
490 {
491 \end{trivlist}
492 \par\addvspace{.5ex}\nobreak\noindent\hung
493 }
494 \else
495 \newenvironment{instructorIntro}%
496 {%
497 \setbox0\vbox\bgroup
498 }
499 {%If this mysteriously starts breaking
500 % remove \ignorespacesafterend
501 \egroup\ignorespacesafterend
502 }
503 \fi
504 \else% for handout, so what follows is default
505 \ifinstructornotes
506 \newenvironment{instructorIntro}%
507 {%
508 \setbox0\vbox\bgroup
509 }
510 {%
511 \egroup
512 }
513 \else
514 \newenvironment{instructorIntro}%
515 {%
516 \begin{trivlist}
517 \item[\hskip \labelsep\bfseries Instructor Introduction:\hspace{2ex}]
518 }
519 % %% line at the bottom}
520 {
521 \end{trivlist}
522 \par\addvspace{.5ex}\nobreak\noindent\hung
523 }
524 \fi
525 \fi
526
527
528
529
530 %% instructorNotes environment
531 \ifhandout % what follows is handout behavior
532 \ifinstructornotes
533 \newenvironment{instructorNotes}%
534 {%
535 \begin{trivlist}
536 \item[\hskip \labelsep\bfseries Instructor Notes:\hspace{2ex}]
537 }
538 % %% line at the bottom}
539 {
540 \end{trivlist}
541 \par\addvspace{.5ex}\nobreak\noindent\hung
542 }
543 \else
544 \newenvironment{instructorNotes}%
545 {%
546 \setbox0\vbox\bgroup
547 }
548 {%

```

```

549 \egroup
550 }
551 \fi
552 \else% for handout, so what follows is default
553 \ifinstructornotes
554 \newenvironment{instructorNotes}%
555 {%
556 \setbox0\vbox\bgroup
557 }
558 {%
559 \egroup
560 }
561 \else
562 \newenvironment{instructorNotes}%
563 {%
564 \begin{trivlist}
565 \item[\hskip \labelsep\bfseries Instructor Notes:\hspace{2ex}]
566 }
567 % %% line at the bottom}
568 {
569 \end{trivlist}
570 \par\addvspace{.5ex}\nobreak\noindent\hung
571 }
572 \fi
573 \fi
574
575 \end{classXimera}

```

#### 2.4.11 Only

prompt The prompt part for mathmode

```

576 \end{classXimera}
577 \ifxake
578 \newenvironment{prompt}{}{}
579 \else
580 \ifhandout
581 \NewEnviron{prompt}{}
582 % Currently breaks when put in mathmode!
583 % \newenvironment{prompt}{\suppress}{\endsuppress}
584 \else
585 \newenvironment{prompt}
586 {\bgroup\color{gray!50!black}}
587 {\egroup}
588 \fi
589 \fi

```

onlineOnly Only display it online

```

590 \ifhandout
591 \NewEnviron{onlineOnly}{
592 \iftikzexport
593 \BODY
594 \else
595 \fi
596 }
597 \else
598 \newenvironment{onlineOnly}
599 {\bgroup\color{red!50!black}}
600 {\egroup}
601 \fi
602
603 \newcommand{\pdfOnly}[1]{\iftikzexport\else #1\fi}
604 \end{classXimera}

```

### 2.4.12 Foldable

The package `mdframed` is used to make pretty foldable, but the `amsthm/mdframed` conflict also messes up the `.jax` file so we don't load `mdframed` when performing the `xake` step. But even the below isn't enough to fix this.

```

605 %\iftikzexport\else\RequirePackage[framemethod=TikZ]{mdframed}\fi
foldable Does it fold?
606 \classXimera>
607
608 \colorlet{textColor}{black} % since textColor is referenced below
609 \colorlet{background}{white} % since background is referenced below
610
611 % The core environments. Find results in 4ht file.
612 %% pretty-foldable
613 %\iftikzexport
614 \newenvironment{foldable}{%
615 }{%
616 }
617 %\else
618 %\renewmdenv[
619 %   font=\upshape,
620 %   outerlinewidth=3,
621 %   topline=false,
622 %   bottomline=false,
623 %   leftline=true,
624 %   rightline=false,
625 %   leftmargin=0,
626 %   innertopmargin=0pt,
627 %   innerbottommargin=0pt,
628 %   skipbelow=\baselineskip,
629 %   linecolor=textColor!20!white,
630 %   fontcolor=textColor,
631 %   backgroundcolor=background
632 %]{foldable}%
633 %\fi
634
635 %% pretty-expandable
636 %\iftikzexport
637 \newenvironment{expandable}{%
638 }{%
639 }
640 %\else
641 %\newmdenv[
642 %   font=\upshape,
643 %   outerlinewidth=3,
644 %   topline=false,
645 %   bottomline=false,
646 %   leftline=true,
647 %   rightline=false,
648 %   leftmargin=0,
649 %   innertopmargin=0pt,
650 %   innerbottommargin=0pt,
651 %   skipbelow=\baselineskip,
652 %   linecolor=black,
653 %]{expandable}%
654 %\fi
655
656 \newcommand{\unfoldable}[1]{#1}
657
658 \endclassXimera>

```

On the web, these foldable elements could be HTML5 details and summary.

```

659 \classXimera>

```

```

660 \renewenvironment{foldable}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<
661
662 \renewenvironment{expandable}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{
663
664 }{\HCode{</div>}\IgnoreIndent}
665
666 \renewcommand{\unfoldable}[1]{\HCode{<span class="unfoldable">}#1\HCode{</span>}}
667 </htXimera>

```

### 2.4.13 Leashes

**leash** Put content inside a scrollable box.

```

668 <*classXimera>
669
670 \newenvironment{leash}[1]{%
671 }{%
672 }
673
674
675 </classXimera>
676 <*htXimera>
677 \renewenvironment{leash}[1]{\ifvmode \IgnorePar\fi \EndP\HCode{<div style="overflow: auto; h
678 </htXimera>

```

## 2.5 Document metadata

### 2.5.1 Metadata

To encourage authors to include relevant parseable metadata in the preamble, we define some currently ignored commands.

**\license** In the preamble, use **\license** with an SPDX license expression.

```

679 <*classXimera>
680 \newcommand{\license}{\excludecomment}
681 </classXimera>

```

**\acknowledgement** In the preamble, use **\acknowledgement** to credit others who contributed to the intellectual content beside the author.

```

682 <*classXimera>
683 \newcommand{\acknowledgement}{\excludecomment}
684 </classXimera>

```

**\tag** In the preamble, a **\tag** provides a free-form taxonomy.

```

685 <*classXimera>
686 \renewcommand{\tag}{\excludecomment}
687 </classXimera>

```

On the HTML side, we mark the file as the appropriate kind of object—either activity or xourse.

```

688 <*htXourse>
689 % Mark this as a xourse file
690 \Configure{@HEAD}{\HCode{<meta name="description" content="xourse" />\Hnewline}}
691 </htXourse>

```

### 2.5.2 Abstract

**abstract** Every activity should include a short abstract.

```

692 <*classXimera>
693 \let\abstract\relax
694 \let\endabstract\relax
695 % Use of environ package, may want to find a better way.
696 \NewEnviron{abstract}{\protected@xdef\theabstract{\BODY}}
697 </classXimera>

```

The abstract has been stored in `\theabstract` and should be emitted as a div, but confusingly I guess `<div class="abstract">` is defined somewhere deeper inside `tex4ht`, so the code below is probably unnecessary.

```
698 <*cfgXimera>
699 \let\abstract\relax
700 \let\endabstract\relax
701 </cfgXimera>
```

### 2.5.3 Titles and authors

#### 2.5.4 Authors

`\author` Activities have authors. Warn the user if no author is provided.

```
702 <*classXimera>
703 \let\@emptyauthor\@author
704 \def\author#1{\gdef\@author{#1}}
705 \def\@author{\@latex@warning@no@line{No \noexpand\author given}}
706 </classXimera>
```

Include author name in meta tags

```
707 <*htXimera>
708 \Configure{@HEAD}{\HCode{<meta name="author" content="\@author\HCode{" />\Hnewline}}
709 </htXimera>
```

The `\and` command would emit tabular environments which really should not appear in a meta tag.

```
710 <htXimera | classXimera>\def\and{and }
```

#### 2.5.5 Title

`\title` Activities have titles.

```
711 <*classXimera>
712 \let\title\relax
713 \newcommand{\title}[1][]{\protected@xdef\@prettitle{#1}\protected@xdef\@title}
714
715 \title{}
716
717 \newcounter{titlenumber}
718 \renewcommand{\thetitlenumber}{\arabic{titlenumber}}
719 %\renewcommand{\thesection}{\arabic{titlenumber}} %% Makes section numbers work
720 \setcounter{titlenumber}{0}
721
722 \newpagestyle{main}{
723 \sethead[\textsl{\ifnumbers\thetitlenumber\hspace{1em}\fi\@title}][]{} % even
724 {}{}{\textsl{\ifnumbers\thetitlenumber\hspace{1em}\fi\@title}} % odd
725 \setfoot[\thepage]{}{} % even
726 {}{}{\thepage} % odd
727 }
728 \pagestyle{main}
```

`\maketitle` In a ximera document, redefine `\maketitle` and put them in a table of contents. The `\phantomsection` is to fix the hrefs.

```
729 \renewcommand\maketitle{%
730 \addtocounter{titlenumber}{1}%
731 {\flushleft\large\bfseries \@prettitle\par\vspace{-1em}}
732 {\flushleft\LARGE\bfseries {\ifnumbers\thetitlenumber\fi}{\ifnumbers\hspace{1em}\else\hspace{1em}}
733 \phantomsection%
734 \ifnumbers\addcontentsline{toc}{section}{\thetitlenumber~\@title}\else\addcontentsline{toc}{section}{\@title}
735 \vskip .6em\noindent\textit{theabstract}\setcounter{problem}{0}\setcounter{section}{0}\setcounter{outcomes}{0}
736 \ifnooutcomes\else\let\thefootnote\relax\footnote{Learning outcomes: \theoutcomes}\fi
737 \ifnoauthor\else\let\thefootnote\relax\footnote{Author(s):~\@author}\fi
738 \aftergroup\@afterindentfalse
739 \aftergroup\@afterheading}
740
```



```

741 \ifnumbers
742 \setcounter{secnumdepth}{2}
743 \renewcommand{\thesection}{\arabic{titlenumber}.\arabic{section}~}
744 \else
745 \setcounter{secnumdepth}{-2}
746 \fi
747
748 \def\activitystyle{}
749 \newcounter{sectiontitlenumber}
750 \setcounter{secnumdepth}{0}
751 \newcommand\chapterstyle{%
752   \def\activitystyle{activity-chapter}
753   \def\maketitle{%
754     \addtocounter{titlenumber}{1}%
755     {\flushleft\small\sffamily\bfseries\@pretitle\par\vspace{-1.5em}}%
756     {\flushleft\LARGE\sffamily\bfseries\thetitle\hskip{1em}\@title \par}
757     {\vskip .6em\noindent\textit\theabstract\setcounter{problem}{0}\setcounter{problem}{0}}
758     \par\vspace{2em}
759     \phantomsection\addcontentsline{toc}{section}{\textbf{\thetitle\hskip{1em}\@title}}
760   }}
761
762 \newcommand\sectionstyle{%
763   \def\activitystyle{activity-section}
764   \def\maketitle{%
765     \addtocounter{sectiontitlenumber}{1}
766     {\flushleft\small\sffamily\bfseries\@pretitle\par\vspace{-1.5em}}%
767     {\flushleft\Large\sffamily\bfseries\thetitle\hskip{1em}\@title \par}
768     {\vskip .6em\noindent\textit\theabstract}%
769     \par\vspace{2em}
770     \phantomsection\addcontentsline{toc}{subsection}{\thetitle\hskip{1em}\@title}
771   }}
772
773
774 \iftikzexport%% allows xake to handle \chapterstyle and \sectionstyle
775 \renewcommand\chapterstyle{\def\activitystyle{chapter}}
776 \renewcommand\sectionstyle{\def\activitystyle{section}}
777 \else
778 \fi
779
780 \end{classXimera}

```

Eliminate some formatting that we'll handle later with CSS

```

781 \end{htXimera}
782 \renewcommand{\maketitle}{}
783 \end{htXimera}

```

## 2.5.6 Learning Outcomes

`\outcome` Specify a learning outcome, either at the level of a problem or an entire document in the preamble.

```

784 \begin{classXimera}
785 \def\theoutcomes{}
786
787 \ifdefined\HCode%
788   \newcommand{\outcome}[1]{}
789 \else%
790   \newwrite\outcomefile
791   \immediate\openout\outcomefile=\jobname.oc
792
793   \newcommand{\outcome}[1]{\edef\theoutcomes{\theoutcomes #1~}%
794     \immediate\write\outcomefile{\unexpanded{\outcome}{#1}}}
795   \fi%
796 \end{classXimera}

```

These can appear in either the preamble or in problem environments. with pdf<sub>l</sub>atex, we produce the .oc file which includes ALL the outcomes; in the tex4ht world, we just produce spans for the specific outcomes.

```

797 <*cfgXimera>
798 \renewcommand{\outcome}[1]{
799   \Configure{@HEAD}{\HCode{<meta name="learning-outcome" content="#1"/>\Hnewline}}
800 }
801 % Sometimes there are no outcomes at all
802 \IfFileExists{\jobname.oc}{\input{\jobname.oc}}{}
803
804 \renewcommand{\outcome}[1]{%
805   \HCode{<span class="learning-outcome">#1</span>}}
806 }
807 </cfgXimera>

```

### 2.5.7 Labels and references

**\label** Labels and refs both generate anchors. A **\label** can be referenced from any file in the xourse.

```

808 <*htXimera>
809 \let\oldlabel\label
810 \renewcommand{\label}[1]{\oldlabel{#1}\HCode{<a class="ximera-label" id="#1"></a>}}
811 </htXimera>

```

**\ref** A **\ref** can connect one T<sub>E</sub>X file to another if they are in the same xourse.

```

812 <*htXimera>
813 \renewcommand{\ref}[1]{\HCode{<a class="reference" href="#1">#1</a>}}
814 </htXimera>

```

## 2.6 Images

### 2.6.1 Images

**image** Place images inside an **image** environment. On paper, this centers the image. On the web, this provides additional benefits.

```

815 <*classXimera>
816 %\newenvironment{image}[1][]{\begin{center}}{\end{center}}
817 \NewEnviron{image}[1][3in]{%
818   \begin{center}\resizebox{#1}{!}{\BODY}\end{center}% resize and center
819 }
820 </classXimera>

```

**\alt** Inside an **image** environment, **\alt** provides alt-text for assistive technology like screen-readers.

```

821 <*classXimera>
822 \newcommand{\alt}[1]{}
823 </classXimera>

```

The **image** environment doesn't actually work in tex4ht as defined with NewEnviron; so this renewenvironment is needed. **image-environment** also gets formatted in a well, and when the user clicks on the image, it zooms in.

```

824 <*htXimera>
825 \newcounter{imagealt}
826 \setcounter{imagealt}{0}
827 \renewenvironment{image}[1][]{\stepcounter{imagealt}%
828   \ifvmode \IgnorePar\fi \EndP%
829   \HCode{<div class="image-environment" role="img" aria-labelledby="image-alt-\arabic{imagealt}>}}
830 }{\HCode{</div>}}
831 \renewcommand{\alt}[1]{\HCode{<div style="display: none;" id="image-alt-\arabic{imagealt}">}}
832 </htXimera>

```

Although we accept many formats, SVG is preferred on the web. Since we have a different mechanism for producing alt text, we want to ignore tex4ht's own method for producing alt text.

```

833 <*cfgXimera>
834 \DeclareGraphicsExtensions{.jpg,.png,.gif,.svg}
835 \Configure{graphics*}
836 {svg}{
837   {\Configure{Needs}{File: \Gin@base.svg}\Needs{}}
838   \Picture[]{\csname Gin@base\endcsname.svg \csname a:Gin-dim\endcsname}%
839 }
840 </cfgXimera>

```

This is a hack to kill `includegraphics` commands in `\documentclass{standalone}` files

```

841 <*cfgXimera>
842 \ifcsname ifstandalone\endcsname
843   \ifstandalone
844     \renewcommand\includegraphics[2][]{ }
845   \fi
846 \fi
847 </cfgXimera>

```

PGF sometimes causes trouble, but we simply don't care in `tex4ht` mode.

```

848 <*htXimera>
849 \newcommand{\pgfsyspdfmark}[3]{ }
850 </htXimera>

```

## 2.6.2 TikZ export

We generate SVGs and PNGs for any TikZ images, via the “externalize” feature of TikZ.

Currently TikZ doesn't compile natively into the website because of how the `xake` bake compilation works. In order to make Tikz work, you need to get the tool `mutool` on the machine that is performing `xake bake`.

```

851 <*classXimera>
852 \ifdefined\HCode
853   \tikzexporttrue
854 \fi
855
856 \iftikzexport
857   \usetikzlibrary{external}
858
859   \ifdefined\HCode
860     % in htlatex, just include the svg files
861     \def\pgfsys@imagesuffixlist{.svg}
862
863     \tikzexternalize[prefix=./,mode=graphics if exists]
864   \else
865     % in pdflatex, actually generate the svg files
866     \tikzset{
867       /tikz/external/system call={
868         pdflatex \tikzexternalcheckshellescape
869         -halt-on-error -interaction=batchmode
870         -jobname "\image" "\PassOptionsToClass{tikzexport}{ximera}\texsource";
871         mutool draw -F svg \image.pdf > \image.svg ;      % mutool adds "1" to filename ???
872         mutool draw -o \image.svg \image.pdf ;
873         mutool draw -r 150 -c rgbalpha -o \image.png \image.pdf ;
874         ebb -x \image.png
875       }
876     }
877     \tikzexternalize[optimize=false,prefix=./]
878   \fi
879
880 \fi
881
882 </classXimera>

```

### 2.6.3 XKCD

`\xkcd` Reference an XKCD cartoon.

```
883 \classXimera
884 \newcommand{\xkcd}[1]{#1}
885 \endclassXimera
```

On the web, this should be an image linked to the actual XKCD website.

```
886 \htXimera
887 \renewcommand{\xkcd}[1]{\ifvmode \IgnorePar\fi \EndP\HCode{

```

### 2.8.3 Geogebra

`\geogebra` Geogebra command. Requires id, width, and height as arguments.

```

926 (*classXimera)
927 %Geogebra link
928 \newcommand{\geogebra}[3]{Geogebra link: \url{https://www.geogebra.org/m/#1}}
929 </classXimera>

```

Define keys for answer geogebra key=value pairs.

```

930 (*htXimera)
931 \define@key{geogebra}{rc}[true]{\def\geo@rc{#1}}
932 \define@key{geogebra}{sdz}[true]{\def\geo@sdz{#1}}
933 \define@key{geogebra}{smb}[true]{\def\geo@smb{#1}}
934 \define@key{geogebra}{stb}[true]{\def\geo@stb{#1}}
935 \define@key{geogebra}{stbh}[true]{\def\geo@stbh{#1}}
936 \define@key{geogebra}{ld}[true]{\def\geo@ld{#1}}
937 \define@key{geogebra}{sri}[true]{\def\geo@sri{#1}}
938 %set default key values
939 \setkeys{geogebra}{rc=false,sdz=false,smb=false,stb=false,stbh=false,ld=false,sri=false}
940 %command definition
941 \renewcommand{\geogebra}[4][{}]{%
942   \setkeys{geogebra}{#1}% Set new keys
943   \HCode{<iframe scrolling="no" src="https://tube.geogebra.org/material/iframe/id/#2/width/#1
944 </htXimera>

```

### 2.8.4 Desmos

`\desmos` Desmos command. Requires id, width, and height as arguments.

```

945 (*classXimera)
946 \newcommand{\desmos}[3]{Desmos link: \url{https://www.desmos.com/calculator/#1}}
947 </classXimera>

948 (*htXimera)
949 \renewcommand{\desmos}[3]{\HCode{<iframe src="https://www.desmos.com/calculator/#1" width="100%
950 </htXimera>

```

### 2.8.5 Graphs

`\graph` An embedded graph (in math mode).

```

951 (*classXimera)
952 \newcommand{\graph}[2][{}]{\text{Graph of $#2$}}
953 </classXimera>

954 (*htXimera)
955 \renewcommand{\graph}[2][{}]{\HCode{<div class="graph" data-options="#1">#2\HCode{</div>}}
956 </htXimera>

```

### 2.8.6 Video

`\youtube` Youtube command. Requires id.

```

957 (*classXimera)
958 \newcommand{\youtube}[1]{YouTube link: \url{https://www.youtube.com/watch?v=#1}}
959 </classXimera>

960 (*htXimera)
961 \renewcommand{\youtube}[1]{\ifvmode \IgnorePar\fi \EndP\HCode{<div class="video youtube-play
962 </htXimera>

```

Video commands are also emitted, slightly differently, when placed at top-level in a xourse file.

```

963 (*htXourse)
964 \renewcommand\youtube[1]{%

```

```

965 \ifvmode \IgnorePar\fi \EndP\HCode{<a class="youtube" href="https://www.youtube.com/watch?v=
966 }
967 \</htXourse>

```

## 2.8.7 JavaScript

**javascript** Code inside a javascript environment is printed on paper, but executed on the web.

```

968 \*classXimera>
969 \DefineVerbatimEnvironment{javascript}{Verbatim}{numbers=left,frame=lines,label=JavaScript,1
970 \</classXimera>

971 \*htXimera>
972 % for programming javascript
973 \renewenvironment{javascript}{\NoFonts}{\EndNoFonts}
974 \ScriptEnv{javascript}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<div c
975 \</htXimera>

```

**\js** Code inside a \js macro is evaluated and replaced with its value.

```

976 \*classXimera>
977 \def\js#1{\mbox{\texttt{\detokenize{#1}}}}
978 \</classXimera>

979 \*htXimera>
980 \def\js#1{\stepcounter{identification}\HCode{<span class="inline-javascript" id="javascript\
981 \</htXimera>

```

## 2.9 SageMath support

Load SageTeX if it exists.

```

982 \*classXimera>
983 \IfFileExists{sagetex.sty}{\RequirePackage{sagetex}}{}
984 \</classXimera>

```

**sageCell** Create an interactive SageMath widget.

```

985 \*classXimera>
986 \DefineVerbatimEnvironment{sageCell}{Verbatim}{numbers=left,frame=lines,label=SAGE,labelposi
987 \</classXimera>

988 \*htXimera>
989 \renewenvironment{sageCell}{\NoFonts}{\EndNoFonts}
990 \ScriptEnv{sageCell}{\ifvmode \IgnorePar\fi \EndP\HCode{<div class="sage"><script type="text
991 \</htXimera>

```

**sageOutput** Execute SageMath code and output the result.

```

992 \*classXimera>
993 \DefineVerbatimEnvironment{sageOutput}{Verbatim}{numbers=left,frame=lines,label=SAGE-Output,
994 \</classXimera>

995 \*htXimera>
996 \renewenvironment{sageOutput}{\NoFonts}{\EndNoFonts}
997 \ScriptEnv{sageOutput}{\ifvmode \IgnorePar\fi \EndP\HCode{<div class="sageOutput"><script ty
998 \</htXimera>

```

**sageSilent** Execute SageMath code without outputting the result.

```

999 \*htXimera>
1000 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1001 \renewenvironment{sagesilent}{\NoFonts}{\EndNoFonts}
1002 \ScriptEnv{sagesilent}{\ifvmode \IgnorePar\fi \EndP\HCode{<script type="text/sagemath">}\Htm
1003 \</htXimera>

```

## 2.10 Answerables

### 2.10.1 Answers

**\answer** A math answer

```

1004 \*classXimera>

```

```

1005
1006 \ifdefined\HCode
1007 \newcommand{\recordvariable}[1]{
1008 \else
1009 \newwrite\idfile
1010 \immediate\openout\idfile=\jobname.ids
1011 \newcommand{\recordvariable}[1]{\ifthenelse{\equal{#1}{}}{\immediate\write\idfile{var #1;}}
1012 \fi

```

Determines if answer is shown in handout mode. when `given=true`, show answer in handout mode, show answer in “given box” outside handout mode. When `given=false`, do not show answer in handout mode, show answer outside handout mode

```

1013 \define@key{answer}{given}[true]{\def\ans@given{#1}}

```

Used for setting numeric answer tolerance for online student input.

```

1014 \define@key{answer}{tolerance}{\def\ans@tol{#1}}

```

Used to run dynamic js code on student provided answers. Note: currently pdf outputs the validator code itself.

```

1015 \define@key{answer}{validator}{}

```

Used for assigning a js ID to answer for dynamic code (eg validators).

```

1016 \define@key{answer}{id}{\def\ans@id{#1}}

```

Used to set anticipated input format; eg “string”.

```

1017 \define@key{answer}{format}{}

```

Used to hide the answer input box on the web.

```

1018 \define@key{answer}{onlinenoinput}[false]{}

```

Used to add a ‘show answer’ button to the answer blank.

```

1019 \define@key{answer}{onlineshowanswerbutton}[false]{}

```

Set default values for `\answer` command key=value pairs. Default values are `given = false`.

```

1020 \setkeys{answer}{id=,given=false,onlinenoinput=false,onlineshowanswerbutton=false}

```

Basic code for `\answer`.

```

1021 \newcommand{\handoutAnswer}[1]{\ldots\ldots} %% Can be redefined by the user
1022 \newcommand{\answer}[2][]{%
1023 \ifmode%
1024 \setkeys{answer}{#1}%
1025 \recordvariable{\ans@id}
1026 \ifthenelse{\boolean{\ans@given}}
1027 {% Start then statement
1028 \ifhandout
1029 #2
1030 \else
1031 \underset{\scriptstyle\mathrm{given}}{\fbox{\ensuremath{#2}}}
1032 \fi
1033 }% End then statement
1034 {% Start else statement
1035 \ifhandout
1036 \handoutAnswer{#2} %% in case the argument helps formatting
1037 \else% show answer in box outside handout mode
1038 {\color{blue}\ensuremath{#2}}
1039 \fi
1040 }% End else statement
1041 \else%
1042 \GenericError{\space\space\space\space}% Throw an error based on... something? -- Jason
1043 {Attempt to use \@backslashchar answer outside of math mode}
1044 {See https://github.com/ximeraProject/ximeraLatex for explanation.}
1045 {Need to use either inline or display math.}%
1046 \fi
1047 }
1048 \endclassXimera

```

On the HTML side, `\answer` emits spans—but it is usually just handled directly by MathJax.

```

1049 <htXimera>
1050 \renewcommand{\answer}[2][false]{\HCode{<span class="answer_respondable">}#2\HCode{</span>}}
1051
1052 \def\validator[#1]{\stepcounter{identification}\HCode{<div class="validator" id="validator\an
1053 \def\endvalidator{\HCode{</div>}}
1054
1055 </htXimera>

```

## 2.10.2 Multiple choice and the like

`multipleChoice` Multiple choice

```

1056 (*classXimera)
1057 % Jim: Originally this was \renewcommand{\theenumi}{$(\mathrm{\alph{enumi}})$}
1058 % but that breaks tex4ht because mathmode can only be processed by mathjax.
1059 % so now I made this just italicized.

```

## 2.10.3 Options

```

1060 \define@key{choice}{value}[]{\def\choice@value{#1}}

```

This flags the answer as the correct answer

```

1061 \define@boolkey{choice}{correct}[true]{\def\choice@correct{#1}}

```

Use an ID to refer to the choice.

```

1062 \define@key{multipleChoice}{id}{\def\mc{id}{#1}}

```

`\otherchoice` outputs the item if correct and nothing if incorrect.

```

1063 \define@key{otherchoice}{value}[]{\def\otherchoice@value{#1}}

```

```

1064 \define@boolkey{otherchoice}{correct}[true]{\def\otherchoice@correct{#1}}

```

Default key choices for multiple choice options. Default for choice pairs. Default: answers without the option "correct=true" is "incorrect".

```

1065 \setkeys{choice}{correct=false,value=}

```

Defaults for `multipleChoice` pairs. Default to no id? – Jason

```

1066 \setkeys{multipleChoice}{id=}

```

Defaults for `otherchoice` pairs. Default "otherchoice" to behave like "choice" for error checking.

```

1067 \setkeys{otherchoice}{correct=false,value=}

```

```

1068 </classXimera>

```

## 2.10.4 Choices

`\choice` Like `\item` but for choice environments. `choice` command denotes a possible answer choice for the multiple choice question.

```

1069 (*classXimera)
1070 \newcommand{\choice}[2][]{%
1071 \setkeys{choice}{#1}%
1072 \item{#2}
1073 \ifthenelse{\boolean{\choice@correct}}{
1074     {% Begin then result
1075     \ifhandout% if it's a handout do nothing.
1076     \else% otherwise place a checkmark when you select the "correct choice"... maybe? -- Jason
1077         \,\checkmark\,\setkeys{choice}{correct=false}
1078     \fi
1079     }% End then result
1080     }{% Begin/End else result.
1081 }
1082
1083 %Define an expandable version of choice Not really meant to be used outside this package (use
1084 % Is there a reason we can't just always use this as default? -- Jason
1085 \newcommand{\choiceEXP}[2][]{%
1086 \expandafter\setkeys\expandafter{choice}{#1}%
1087 \item{#2}

```



```

1088 \ifthenelse{\boolean{\choice@correct}}
1089 {% Begin then result
1090 \ifhandout
1091 \else
1092 \,\checkmark\,\setkeys{choice}{correct=false}
1093 \fi
1094 }% End then result
1095 {}% Begin/End else result.
1096 } %% note all the {} are needed in case the choice has [] in it.
1097
1098 % \otherchoice is the \choice used in wordChoice command.
1099 \newcommand{\otherchoice}[2] [] {%
1100 \ignorespaces%
1101 \setkeys{otherchoice}{#1}%
1102 \ifthenelse{\boolean{\otherchoice@correct}}%
1103 {% Start then result
1104 #2\ignorespaces\setkeys{otherchoice}{correct=false}\ignorespaces%
1105 }% End then result
1106 {}% Start/End else result
1107 \ignorespaces%
1108 }%
1109 \newcommand{\inlinechoice}[2] [] {%
1110 \setkeys{choice}{#1}%
1111 \iffirstinlinechoice
1112 (\hspace{-.25em}
1113 \firstinlinechoicefalse
1114 \else
1115 /
1116 \fi
1117 #2
1118 \ifthenelse{\boolean{\choice@correct}}%
1119 {% Start then result
1120 \ifhandout\else\checkmark\ignorespaces\setkeys{choice}{correct=false}\ignorespaces\fi%
1121 }% End then result
1122 {}% Start/End else result
1123 \hspace{-.25em}\ignorespaces%
1124 }
1125
1126 </classXimera>

```

On the HTML side, \choice emits <span>s.

```

1127 (*htXimera)
1128 \newcounter{choiceId}
1129 \renewcommand{\choice}[2] [] {%
1130 \setkeys{choice}{correct=false}%
1131 \setkeys{choice}{#1}%
1132 \stepcounter{choiceId}\IgnorePar%
1133 \HCode{<span class="choice }%
1134 \ifthenelse{\boolean{\choice@correct}}{\HCode{correct}}{}
1135 \HCode{" }
1136 \ifthenelse{\equal{\choice@value}{}}{\HCode{data-value="\choice@value" }}
1137 \HCode{id="choice\arabic{choiceId}">}%
1138 #2\HCode{</span>}}
1139 \let\inlinechoice\choice
1140 </htXimera>

```

## 2.10.5 Environment(s)

**multipleChoice** The environment `multipleChoice@` is for internal use only. Wrap \choices in a `multipleChoice` environment to make a multiple choice question.

```

1141 (*classXimera)
1142 \newenvironment{multipleChoice}[1] []
1143 {% Environment Start Code
1144 \setkeys{multipleChoice}{#1}%

```

```

1145 \recordvariable{\mc@id}%
1146 \begin{trivlist}
1147 \item[\hskip \labelsep\small\bfseries Multiple Choice:]\hfil
1148 \begin{enumerate}
1149 }% Note this means that \item has to be the first line after \begin{multipleChoice}.
1150 {% Environment End Code
1151 \end{enumerate}
1152 \end{trivlist}
1153 }
1154
1155 %multipleChoice@ is for internal use only! (used in wordChoice)
1156 %this is simply a wrapper for the sole showing (other)choice.
1157 \newenvironment{multipleChoice@[1] [] {} {} }
1158 </classXimera>

```

On the web, you might also expect these to be "problem environments" but they aren't – they're respondables. You might expect a `\setcounter{choiceId}{0}` here — that would be wrong, because then the generated IDs would no longer be unique.

```

1159 <*htXimera>
1160 \renewenvironment{multipleChoice@[1] []
1161 {\setkeys{multipleChoice}{#1}%
1162 \stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<div class="multiple-choice"
1163 \ifthenelse{\equal{\mc@id}{}}{}{\HCode{data-id="\mc@id" }}}%
1164 \HCode{id="problem\arabic{identification}">}}%
1165 {\HCode{</div>}\IgnoreIndent}
1166 \ConfigureEnv{multipleChoice}{}{}{}{}
1167 </htXimera>

```

## 2.11 Word choice

`\wordChoice` An in-line version of `multipleChoice`: uses `enumitem` package note, it is coded as a single line to avoid unwanted spaces in "given" mode.

```

1168 <*classXimera>
1169 \newcommand{\wordChoice}[1]{%
1170 \let\choicetemp\choice% Assign a "choicetemp" command to duplicate choice.
1171 \ifwordchoicegiven% If wordchoice option is on, we need to juggle around some definitions.
1172 \let\choice\otherchoice%
1173 %\begin{multipleChoice@}% -unnecessary (REMOVE THIS LINE IF THE YEAR IS 2019 or Beyond)
1174 #1
1175 %\end{multipleChoice@}% -unnecessary (REMOVE THIS LINE IF THE YEAR IS 2019 or Beyond)
1176 \else% If it isn't the regular "choice" command should work.
1177 \let\choice\inlinechoice%
1178 \begin{multipleChoice@}%
1179 #1%
1180 \end{multipleChoice@}%
1181 \fi%
1182 \let\choice\choicetemp% Now that choicetmp has been manipulated to what we want, replace choi
1183 }%
1184
1185
1186 </classXimera>

```

This is actually just word choice

```

1187 <*htXimera>
1188 \renewenvironment{multipleChoice@}{\refstepcounter{problem}}{}%
1189 \ConfigureEnv{multipleChoice@}{\stepcounter{identification}\IgnorePar\HCode{<span class="wor
1190 </htXimera>

```

## 2.12 Select all

`selectAll` A multiple-multiple choice question

```

1191 <*classXimera>
1192 \newenvironment{selectAll}[1] []

```

```

1193 {\begin{trivlist}\item[\hskip \labelsep\small\bfseries Select All Correct Answers:]\hfil\begin{trivlist}
1194     {\end{enumerate}\end{trivlist}}
1195 \end{classXimera}

```

In the future we need this to (optionally) be displayed in the problem, while the actual code lives in the solution. Here is how this could be implemented: Like the title/maketitle commands, the multiple-choice could be stored in `\themultiplechoice`, flip a boolean, and execute `\makemultiplechoice` at the `\end` of the problem. We should also make a command called `\showchoices` that will show choices in the handout.

On the web, `selectAll` is handled just like `multipleChoice`.

```

1196 \begin{Ximera}
1197 \renewenvironment{selectAll}{\refstepcounter{problem}}{}%
1198 \ConfigureEnv{selectAll}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<div
1199 \end{Ximera}

```

### 2.12.1 Free response

**freeResponse** A freeform input box.

```

1200 \begin{Ximera}
1201 \newboolean{given} %% required for freeResponse
1202 \setboolean{given}{true} %% could be replaced by a key=value pair later if needed
1203
1204 \ifhandout
1205 \newenvironment{freeResponse}[1][false]%
1206 {%
1207 \def\givenatend{\boolean{#1}}
1208 \ifthenelse{\boolean{#1}}
1209 {% Begin then result
1210 \begin{trivlist}
1211 \item
1212 }% End then result
1213 {% Begin else result
1214 \setbox0\vbox\bgroup
1215 }% End else result
1216 % {}% Don't think this is doing anything? -- Jason
1217 }
1218 {%
1219 \ifthenelse{\givenatend}
1220 {% Begin then result
1221 \end{trivlist}
1222 }% End then result
1223 {% Begin else result
1224 \egroup
1225 }% End else result
1226 % {}% Don't think this is doing anything? -- Jason
1227 }
1228 \else
1229 \newenvironment{freeResponse}[1][false]%
1230 {% Environment Beginning Code
1231 \ifthenelse{\boolean{#1}}%% Could probably change this with just putting the (given) in the
1232 {% Begin then result
1233 \begin{trivlist}
1234 \item[\hskip \labelsep\bfseries Free Response (Given):\hspace{2ex}]
1235 }% End then result
1236 {% Begin else result
1237 \begin{trivlist}
1238 \item[\hskip \labelsep\bfseries Free Response:\hspace{2ex}]
1239 }% End else result
1240 }
1241 {% Environment Ending Code
1242 \end{trivlist}
1243 }
1244 \fi

```

```

1245
1246 </classXimera>
1247 <*htXimera>
1248
1249 \renewenvironment{freeResponse}{\refstepcounter{problem}}{}%
1250 \ConfigureEnv{freeResponse}{\stepcounter{identification}\ifvmode \IgnorePar\fi \EndP\HCode{<
1251
1252 </htXimera>

```

### 2.12.2 Feedback

**feedback** An initially hidden environment that uncovers itself at an appropriate time. New Validator rewrite code added by Jason Nowell. Original code provided by Jim Fowler. Validator is an environment designed to run a custom check on answers (usually) using javascript code.

Define a placeholder command for validator and feedback.

```

1253 <*classXimera>
1254 \newcommand{\PH@Command}{}

Validator should take an argument and detokenize it and display it at the start of the
environment. The original Validator environment had everything framed in an mbox;
presumably to make the text look a bit nicer, although this seems redundant with \texttt.
It shouldn't cause any harm so I have left it in for now.

1255 \newenvironment{validator}[1][]{
1256 \def\PH@Command{#1}% Use PH@Command to hold the content and be a target for "\expandafter" to
1257 \mbox{\texttt{\detokenize\expandafter{\PH@Command}}}% Now expand PH@Command once and then det
1258 }{}

```

First, if it's a handout, we want feedback to eat everything and then disappear entirely. So we do this:

```

1259 \ifhandout%
1260 \newenvironment{feedback}
1261     {%
1262     \setbox0\vbox\bgroup
1263     }
1264     {%
1265     \egroup
1266     }

```

If this isn't a handout, then we want to display the Feedback by using a label, positioned and formatted as a \item in a trivlist. It is important that we also detokenize the content of the optional argument, as it is likely to contain javascript or other code that latex won't be able to make sense of.

```

1267 \else

1268 \newenvironment{feedback}[1][attempt]{
1269
1270 \def\PH@Command{#1}% Use PH@Command to hold the content and be a target for "\expandafter" to
1271
1272 \begin{trivlist}% Begin the trivlist to use formatting of the "Feedback" label.
1273 \item[\hspace{1em}\labelsep\small\slshape\bfseries Feedback% Format the "Feedback" label. Don't f
1274 (\texttt{\detokenize\expandafter{\PH@Command}})% Format (and detokenize) the condition for f
1275 \hspace{2ex}]\small\slshape% Insert some space before the actual feedback given.
1276 }{
1277 \end{trivlist}
1278 }
1279
1280 \fi
1281 </classXimera>

```

Feedback environments take an optional parameter (which describes when the feedback is to be provided)

```

1282 <*htXimera>
1283 \def\feedback{\ifnextchar[{\@feedbackcode}{\@feedbackattempt}}

```

```

1284 \def\@feedbackattempt{\@feedbackcode[attempt]}
1285 \def\@feedbackcode[#1]{\stepcounter{identification}%
1286 \ifvmode \IgnorePar\fi \EndP%
1287 \ifthenelse{\equal{#1}{attempt}}{\HCode{<div class="feedback" data-feedback="attempt" id="fe
1288 {\ifthenelse{\equal{#1}{correct}}{\HCode{<div class="feedback" data-feedback="correct" id="f
1289 {\HCode{<div class="feedback" data-feedback="script" id="feedback\arabic{identification}"><s
1290 \def\endfeedback{\HCode{</div>}}\IgnoreIndent}
1291 </htXimera>

```

### 2.12.3 Ungraded activities

**ungraded** The **ungraded** environment is used to record that certain parts of activities should not be worth points. For example, if you want to use a `multipleChoice` as a survey question, you can place it inside an **ungraded** environment. On the  $\text{\LaTeX}$  side, the **ungraded** environment does nothing.

```

1292 <*classXimera>
1293 \newenvironment{ungraded}{}{}
1294 </classXimera>

```

But on the html side, **ungraded** wraps the activities in a `div` in order to assign some weight to them for grading.

```

1295 <*htXimera>
1296 \renewenvironment{ungraded}{%
1297 \ifvmode \IgnorePar\fi \EndP\HCode{<div class="ungraded">}}\IgnoreIndent%
1298 }{
1299 \ifvmode \IgnorePar\fi \EndP\HCode{</div>}}\IgnoreIndent%
1300 }
1301 </htXimera>

```

## 2.13 Support for the web

### 2.13.1 MathJax support

When using `mathjax`, dump all the `\newcommands` to a `.jax` file.

First, create the `.jax` file.

```

1302 <*classXimera>
1303 \ifdefined\HCode
1304 \else
1305 \newwrite\myfile
1306 \immediate\openout\myfile=\jobname.jax
1307 \fi
1308 </classXimera>

```

From `only.dtx` we must also create `prompt` on the MathJax side.

```

1309 <*classXimera>
1310 \ifdefined\HCode
1311 \else
1312 \immediate\write\myfile{\unexpanded{\newenvironment}{prompt}}{}{}
1313 \fi
1314 </classXimera>

```

Redefine newcommand appropriately.

```

1315 <*classXimera>
1316 \ifdefined\HCode
1317 \else
1318 \let\@oldargdef\@argdef
1319 \long\def\@argdef#1[#2]#3{%
1320 \immediate\write\myfile{\unexpanded{\newcommand}{\unexpanded{#1}}[\unexpanded{#2}]{\unexpanded{#3}}%
1321 \@oldargdef#1[#2]#3}%
1322 }
1323
1324 \let\@OldDeclareMathOperator\DeclareMathOperator
1325 \renewcommand{\DeclareMathOperator}[2]{\@OldDeclareMathOperator{#1}{#2}\immediate\write\myfile{
1326

```

```

1327 \fi
1328 \end{classXimera}

Include the jax'ed newcommands

1329 \begin{cfgXimera}
1330 % Remove commands that use @
1331 \immediate\write18{sed -i "/@/d" \jobname.jax}
1332 % Replace ##1 with #1 and so forth
1333 \immediate\write18{sed -i "s/\string#\string#\string\\\([0-9]\string\\)/\string#\string\\1/g"}
1334
1335 \Configure{BVerbatimInput}{-}{-}{-}
1336
1337 \Configure{verbatiminput}{-}{-}{-}
1338
1339 % Instead of a nonbreaking space, use a standard space
1340 \makeatletter
1341 \def\FV@Space{\space}
1342 \makeatother
1343
1344 % Include the mathjax newcommands in a math/tex script right at the beginning of the body
1345 \Configure{BODY}{%
1346 \HCode{<body>\Hnewline}%
1347 \Tg<div class="preamble">%
1348 \Tg<script type="math/tex">%
1349 \BVerbatimInput{\jobname.jax}%
1350 \Tg</script>%
1351 \IfFileExists{\jobname.ids}{\HCode{<script type="text/javascript">\Hnewline}%
1352 \BVerbatimInput{\jobname.ids}%
1353 \HCode{</script>\Hnewline}%
1354 \Tg</div>%
1355 }{}
1356 }{
1357 \HCode{</body>\Hnewline}%
1358 }

```

Now I just need to add a newcommand command which outputs the appropriate new-commands to MathJax; then this should be "good enough" for our purposes.

```

1359 \newtoks\eqtoks
1360 \def\AltMath#1${\eqtoks{#1}%
1361 \HCode{<script type="math/tex">\the\eqtoks</script>}}
1362 \Configure{$}{-}{-}{\expandafter\AltMath}
1363
1364 \def\Alt1MathI#1\){\eqtoks{#1}%
1365 \HCode{<script type="math/tex">\the\eqtoks</script>}}
1366 \Configure{()}{\Alt1MathI}{-}
1367
1368 \def\Alt1Display#1\){\eqtoks{#1}%
1369 \HCode{<script type="math/tex; mode=display">\the\eqtoks</script>}}
1370 \Configure{[]}{\Alt1Display}{-}
1371
1372 \def\Alt1DisplayI#1$$\){\eqtoks{#1}%
1373 \HCode{<script type="math/tex; mode=display">\the\eqtoks</script>}}
1374 \Configure{$$$}{-}{-}{\expandafter\Alt1DisplayI}

```

Need to turn off htmlpar too, as explained in <http://tex.stackexchange.com/questions/204930/vertical-spaces-in-htlatex-scriptenv>

```

1375 \newcommand\VerbMath[1]{%
1376 \renewenvironment{#1}{\NoFonts}{\EndNoFonts}
1377 \ScriptEnv{#1}{\ifvmode \IgnorePar\fi \EndP\HCode{<script type="math/tex; mode=display"> \str
1378 }

```

This is a fix for the LAODE book, which uses matlabEquation as if it were an equation

```

1379 \ScriptEnv{matlabEquation}{\ifvmode \IgnorePar\fi \EndP\HCode{<script type="math/tex; mode=d
1380
1381 \VerbMath{equation}

```

```

1382 \VerbMath{equation*}
1383 \VerbMath{align}
1384 \VerbMath{align*}
1385 \VerbMath{alignat}
1386 \VerbMath{alignat*}
1387 \VerbMath{eqnarray}
1388 \VerbMath{eqnarray*}
1389
1390 \</cfgXimera>

```

## 2.13.2 Semantic HTML

**\textbf** Using **\textbf** emits a **<strong>** tag.

```

1391 \<cfgXimera>
1392 \Configure{textbf}{\ifvmode\ShowPar\fi\HCode{<strong>}}{\HCode{</strong>}}
1393 \</cfgXimera>

```

**\textit** Using **\textit** or similar emits an **<em>** tag.

```

1394 \<cfgXimera>
1395 \Configure{textit}{\ifvmode\ShowPar\fi\HCode{<em>}}{\HCode{</em>}}
1396 \Configure{emph}{\ifvmode\ShowPar\fi\HCode{<em>}}{\HCode{</em>}}
1397 \</cfgXimera>

```

**\texttt** Using **\texttt** emits a **<code>** tag.

```

1398 \<cfgXimera>
1399 \Configure{texttt}{\ifvmode\ShowPar\fi\HCode{<code>}}{\HCode{</code>}}
1400 \</cfgXimera>

```

## 2.14 Tools

### 2.14.1 Suppress

**suppress** The suppress environment is a good way to suppress output without commenting it. This way we can avoid many of the places we use environ package and this should also avoid most of the verbatim conflicts. This is code adapted from **syntonly.sty**.

```

1401 \<classXimera>
1402 \font\dummyft@=dummy \relax
1403 \def\suppress{%
1404   \begingroup\par
1405   \parskip\z@
1406   \offinterlineskip
1407   \baselineskip=\z@skip
1408   \lineskip=\z@skip
1409   \lineskiplimit=\maxdimen
1410   \dummyft@
1411   \count@\sixt@@n
1412   \loop\ifnum\count@ >\z@
1413     \advance\count@\m@ne
1414     \textfont\count@\dummyft@
1415     \scriptfont\count@\dummyft@
1416     \scriptscriptfont\count@\dummyft@
1417   \repeat
1418   \let\selectfont\relax
1419   \let\mathversion\@gobble
1420   \let\getanddefine@fonts\@gobbletwo
1421   \tracinglostchars\z@
1422   \frenchspacing
1423   \hbadness\@M}
1424 \def\endsuppress{\par\endgroup}
1425 \</classXimera>

```

### 2.14.2 The End

It seems that some of the files need to conclude with something or another.

```

1426 <*htXimera>
1427 \Hinput{ximera}
1428 </htXimera>

1429 <*htXourse>
1430 \Hinput{xourse}
1431 </htXourse>

1432 <*cfgXimera>
1433 \begin{document}
1434 \EndPreamble
1435 </cfgXimera>

```

### 3 xourse.cls

```

1436 <*classXourse>

notoc The default behavior of the class is to provide a table of contents listing all activities in
the course. This option will suppress this table of contents.

1437 \newif\ifnotoc
1438 \notocfalse
1439 \DeclareOption{notoc}{\notoctrue}

nonewpage The default behavior of the class is to start each activity on a new page. This option
will start activities without making a new page.

1440 \newif\ifnonewpage
1441 \nonewpagefalse
1442 \DeclareOption{nonewpage}{\nonewpagetrue}

1443 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{ximera}}
1444 \ProcessOptions\relax
1445 \LoadClass{ximera}
1446 % \begin{macrocode}
1447 </classXourse>

```

#### 3.1 Activities

The core of the xourse system. It works by redefining the `document` environment, thus making the `\begin` and `\end{document}` of the subfile ‘transparent’ to the inclusion. The redefinition of `\documentclass` is analogous, just having a required and an optional arguments which mean nothing to `\subfile`.

```

1448 <*classXourse>
1449 \newcommand{\skip@preamble}{%
1450   \let\document\relax\let\enddocument\relax%
1451   \newenvironment{document}{\let\input\otherinput}{}%
1452   \renewcommand{\documentclass}[2][subfiles]{}}

```

Note that the new command `\subfile` calls for `\skip@preamble` *within a group*. The changes to `document` and `\documentclass` are undone after the inclusion of the subfile.

Numbering starts a page too soon without this:

```

1453 \let\otherinput\input
Store usual \maketitle as \othermaketitle
1454 \let\othermaketitle\maketitle

\maketitle In a xourse file, \maketitle is redefined to give course packet title page and toc.

1455 \renewcommand{\maketitle}{ %
1456 \pagestyle{empty}
1457 \begin{center}
1458 ~\ %puts space at top of page to move title down.
1459 \vskip .25\textheight
1460 \hrulefill\
1461 \vskip 1em
1462 \bfseries{\Huge \@title} \

```



```

1463 \hrulefill\\
1464 \vskip 3em
1465 {\Large \@author}
1466 \vskip 2em
1467 {\large \@date}
1468 \end{center}
1469 \clearpage

```

When `notoc` option is used, we do not include a table of contents. Otherwise we include a table of contents in every course packet.

```

1470 \ifnotoc
1471 \else
1472   \tableofcontents\clearpage
1473   \clearpage
1474 \fi

```

Switch to main pagestyle, just like a document with documentclass `ximera`.

```
1475 \pagestyle{main}
```

Renew `maketitle` to usual definition.

```
1476 \let\maketitle\othermaketitle
```

And we finish with our redefinition of `\maketitle`.

```

1477 }
1478 \relax
1479 \end{classXourse}

```

### 3.1.1 Regular activities

`\activity` Documents included with `\activity` will be included in the body of the `xourse` document. Any `\input` commands within included `ximera` documents will be ignored. Any `\usepackage` commands within included `ximera` documents will cause an error. Overlapping `\newcommand` definitions within multiple `ximera` documents included simultaneously will cause an error. The `\activity` command inputs the file name provided without `\documentclass`, without `\begin{document}`/`\end{document}` and without any inputs in the preamble of the included file.

```

1480 \begin{classXourse}
1481 \ifnonewpage
1482 \newcommand{\activity}[2][]{\%
1483 \setkeys{activity}{#1}
1484 \renewcommand{\input}[1]{\%
1485 \begin{group}\skip@preamble\otherinput{#2}\end{group}\par\vspace{\topsep}
1486 \let\input\otherinput}
1487 \else
1488 \newcommand{\activity}[2][]{\%
1489 \setkeys{activity}{#1}
1490 \renewcommand{\input}[1]{\%
1491 \begin{group}\skip@preamble\otherinput{#2}\end{group}\clearpage
1492 \let\input\otherinput}
1493 \fi
1494 \relax
1495 \end{classXourse}

1496 \begin{htXourse}
1497 \renewcommand{\activity}[2][]{\%
1498 \ifvmode \IgnorePar\fi \EndP\HCode{<a class="activity card \activitystyle" href="#2" data-opt
1499 }
1500 \end{htXourse}

```

When running `xake`, we can just ignore activities

```

1501 \begin{classXourse}
1502 \ifxake
1503 \renewcommand{\activity}[2][]{\%
1504 \fi
1505 \end{classXourse}

```

### 3.1.2 Practice activities

`\practice` Like `\activity` but not expecting a title.

```

1506 <*classXourse>
1507 \ifhandout
1508 \newcommand{\practice}[2][]{
1509 \setkeys{practice}{#1}%!!!!
1510 \renewcommand{\input}[1]{
1511 \begingroup\skip@preamble\otherinput{#2}\endgroup
1512 \let\input\otherinput}
1513 \else
1514 \newcommand{\practice}[2][]{\texttt{\detokenize{#2}}}% gives file name for practice
1515 \setkeys{practice}{#1}%!!!!
1516 \renewcommand{\input}[1]{
1517 \begingroup\skip@preamble\otherinput{#2}\endgroup
1518 \let\input\otherinput}
1519 \fi
1520 \relax
1521 </classXourse>

```

The practice environment does nothing, but will eventually produce exercises at the end of an activity

```

1522 <*classXourse>
1523 \ifxake
1524 \renewcommand\practice[2][]{
1525 \fi
1526 </classXourse>

```

I suppose it is reasonable for practice cards to NOT have an `activitystyle`, since the `activitystyle` is basically PRACTICE.

```

1527 <*htXourse>
1528 \renewcommand\practice[2][]{
1529 \ifvmode\IgnorePar\fi\EndP%
1530 \HCode{<a class="activity card practice" href="#2" data-options="#1">#2</a>}%
1531 \IgnoreIndent%
1532 }
1533 </htXourse>

```

## 3.2 Sectioning

Makes the table of contents look a bit better. This can be redefined in the preamble if you do not like the appearance. The name of a section inside an activity.

`\section`

```

1534 <*classXourse>
1535 \renewcommand*\l@section{\@dottedtocline{1}{1.5em}{4.2em}}
1536 </classXourse>

```

The name of a subsection inside an activity.

`\subsection`

```

1537 <*classXourse>
1538 \renewcommand*\l@subsection{\@dottedtocline{2}{3.8em}{4.2em}}
1539 </classXourse>

```

Xourse files can have parts. The name of a large part of a xourse.

`\part`

```

1540 <*htXourse>
1541 \newcounter{ximera@part}
1542 \setcounter{ximera@part}{0}
1543 \renewcommand\part[1]{
1544 \stepcounter{ximera@part}%
1545 \ifvmode \IgnorePar\fi \EndP%
1546 \HCode{<h1 id="part\arabic{ximera@part}" class="card part">}#1\HCode{</h1>}%
1547 \IgnoreIndent%
1548 }
1549 </htXourse>

```

Paragraph commands emit spans. A small heading.

`\paragraph`

```

1550 <*cfgXimera>

```

```

1551 \renewcommand{\paragraph}[1]{%
1552   \HCode{<span class="paragraphHead">}%
1553   #1%
1554   \HCode{</span>}\par\IgnorePar}
1555 \</cfgXimera>

\subparagraph An even smaller heading.

1556 \<cfgXimera>
1557 \renewcommand{\subparagraph}[1]{%
1558   \HCode{<span class="subparagraphHead">}%
1559   #1%
1560   \HCode{</span>}\par\IgnorePar}
1561 \</cfgXimera>

```

### 3.3 Grading by points

**graded** The **graded** environment does nothing in latex, but in html, it wraps the activities in a div in order to assign some weight to them for grading.

```

1562 \<classXourse>
1563 \newenvironment{graded}[1]{\{}
1564 \</classXourse>

So indeed this environment in html wraps the activities in a div in order to assign some
number of points to them.

1565 \<htXourse>
1566 \renewenvironment{graded}[1]{%
1567   \ifvmode \IgnorePar\fi \EndP\HCode{<div class="graded" data-weight="#1">}\IgnoreIndent%
1568 }{
1569   \ifvmode \IgnorePar\fi \EndP\HCode{</div>}}\IgnoreIndent%
1570 }
1571 \</htXourse>

```

### 3.4 Logos

**\logo** A logo for the xourse.

```

1572 \<classXourse>
1573 \newcommand*\logo[1]{%
1574   \ifx\@onlypreamble\@notprerr
1575     \ClassError{xourse}{logo can only be used in the preamble}
1576     {Move your logo command to the preamble}
1577   \else %
1578     \IfFileExists{#1}%
1579     {\gdef\xourse@logo{#1}}%
1580     {\ClassError{xourse}{logo file does not exist}
1581      {To use logo, make sure that the referenced image file exists}}%
1582   \fi%
1583 }
1584
1585 \</classXourse>

```

The xourse logo is an `og:image` in the `opengraph` taxonomy.

```

1586 \<htXourse>
1587 \Configure{@HEAD}{%
1588   \HCode{<meta name="og:image" content="}%
1589   \ifdefined\xourse@logo%
1590     \xourse@logo%
1591   \HCode{" />\Hnewline}%
1592 }
1593 \</htXourse>

```