

The `vuwexam` class*

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October 9, 2023

Abstract

The `vuwexam` package provides a class file and corresponding example templates allowing academics at the Victoria University of Wellington (VUW), who regularly use \LaTeX , with a way to create examination papers that conform to whatever style guidelines are distributed within the current version of the University's, dot-DOC only, template.

The package also provides a set of macros that are useful when typesetting Computer Science test papers.

1 Introduction

The School of Computer Science, more recently of Engineering and Computer Science (ECS), at the Victoria University of Wellington has, along with the School of Mathematics and Statistics (SMS) been providing a \LaTeX macro package and example template, mimicing the VUW Exam “style”, since back when VUW’s central administration only distributed hard-copies as a guide to the required style, however, with the onset of word-processors, the ease with which changes could be made has seen a constant stream of slightly altered templates (only distributed in a dot-DOC format) appearing with each new trimester.

Whilst ECS continues to fold each set of changes into, and some cases, rescinds previously made changes out of, the style/class file, some of the documentation of the style guidelines for each iteration, and the \LaTeX macros and environments used to mimic them, has only been provided within comments in the template file, as opposed to via typical \LaTeX style/class documentation.

The ECS package also gives the author information as to the marks allocated to questions and within subquestions as part of the compilation

*This document corresponds to version *Revision* : 2.39 , dated 2023/10/07.

process, which has found to be a useful tool within the examination creation process, vis:

```
Starting Question 16: Text with subquestions [10 marks] on page 3
** Subquestion 16.a [12 marks] on page 3
** Subquestion 16.b on page 3
* Subquestions : [12 marks]
*****
* Total marks = 164
*****
```

As one might expect, of a user community well versed in the use of \LaTeX , there are often a number of additional macros in use, “out in the wild”, that aren’t contained within the class file, which can lead to confusion when templates which make use of those extras are passed around without any details as to the provenance of the then stand-alone template.

Furthermore, it has been seen to be the case that a class-file that was originally intended to mimic the style of a VUW examination paper has also been used for similar looking things, such as tests, which has led to a lot of undocumented tweaks being applied and used.

It is hoped that the attempt to pull together all of the information, pertaining to the `vuwexam` package, into this one source file will encourage those, who create additional functionality, to have it included and documented here, and moreover, to do so in the traditional \LaTeX way.

This particular revision tried to get as close as possible to the layout the CLS-file that was emulated, even though the initial creation of the DTX-file allowed for a cleaned-up version to be created immediately.

For that reason, documentation created from this DTX-file, which has been “back-ported” from the cleaned-up revision is unlikely to make much sense.

1.1 Observations on the dot-DOC templates

Looking at the dot-DOC template for Trimester 1, 2016¹, the exam style guidelines can be best described as follows -

There is a front page, containing some University branding and basic information about the examination itself: the year the examination is to be sat in; the trimester(s) covered by the examination; the course code and title; the time allowed; the Open/Closed Book nature of the examination; a list of permitted materials and instructions as to their use, and finally, a list of instructions relating to the examination itself.

¹As the location of the canonical version of the template has never been clear, ECS place an unmodified copy of the dot-DOC template, as received from the Faculty Office at: <http://ecs.victoria.ac.nz/Support/ExamTemplates>

Questions start on the second page and, whilst questions may be subdivided into sections with the examination, no mention is made with reference to the style for any subdivision within questions.

All pages, including the front-page, contain a footer which comprises the course code, current page number and total number of pages.

Where an examination has been written with the expectation that answers will be written within spaces provided on the examination paper itself, all pages, including the front-page, will contain a header which has a space into which the person taking the examination writes their student ID.

1.2 Observations from some \LaTeX templates

Whilst the `vuexam` package has traditionally provided macros for three levels of questions `\question`, `\subquestion` and `\subsubquestion`, which produce list-like formatting to their arguments and/or following text without making use of the traditional \LaTeX list environment `\begin{enumerate}`, it is clear that the structure of an examination's question are an enumerated list, and a number of authors do fall back to using the standard environment and `\item` commands.

The use of `\begin{enumerate}` and `\item` commands, alongside the `vuexam` package often sees the authors having to provide a second set of “formatting” commands so as to override the \LaTeX list environment defaults to match “formatting” already encapsulated within the `vuexam` package's code.

This duplication in formatting effort has been shown to be unnecessary, if the `vuexam` package is rewritten so as to make use of the standard \LaTeX list environments, and merely redefine their formatting once and it is this rewrite of the package that is documented here.

The redefinition of the standard \LaTeX list environments is performed using the `enumitem` package.

2 Usage

Having begun your document with a

```
\documentclass{vuwexam}
```

you now have access a set of preamble macros defining required inputs for the examination, most of which are used in the construction of the frontpage.

Following the preamble, so right after the `\begin{document}`, you should enter the `exam` environment

```
\begin{document}  
\begin{exam}
```

exam (*env.*) The `exam` environment is responsible for laying out the frontpage, by defining its own `\maketitle` command and for adding the row of asterisks after the last question.

2.1 The test and markboxes environments

In an attempt to bring the `exam` environment and its `\not-an-exam-but-a-test` usage together in a more coherent way, there is also a `test` environment, so if one wishes to create a Test, you should use

```
\begin{document}  
\begin{test}
```

test (*env.*) The `test` environment is responsible for laying out the frontpage of Tests, by defining its own `\maketitle` command and for adding the row of asterisks after the last question.

ECS Tests often have a set of `markboxes` as part of their frontpage. The `markboxes` environment allows for these to be constructed in a simpler way to that which had been in use across various source files

2.2 Title page macros

\examyyear The `\examyyear` macro's argument should contain four digits representing the year in which the exam will be sat. Attempting to automate this with other date macros may produce unexpected results when examinations are produced from the sources in future.

```
\examyyear{2017}
```

\examdate The `\examdate` macro's argument was added to facilitate the creation of Tests. Since 2023 also used in exams. It should contain the full date string representing the date on which the exam will be sat.

Attempting to automate this with other date macros may produce unexpected results when examinations are produced from the sources in future.

```
\examdate{6 April, 2017}
```

\examtype The **\examtype** macro's argument should contain one value from a standard set, describing the period covered by the examination

- TRIMESTER 1
- TRIMESTER 2
- TRIMESTER 3
- Full-Year

\paper The **\paper** macro's argument provides for examinations comprising of multiple papers to be denoted as such. The argument, which is capitalised, will consist of the word PAPER plus a letter

```
\paper{PAPER B}
```

The **\paper** macro's value is also used within ECS tests, where it usually describes which Test within a course the paper being sat is, so you might see

```
\paper{Terms Test 3}
```

It must be specified, even if left empty.

\coursecode The **\coursecode** macro's argument should contain the official code for the course to which the examination applies. Typically the course code will be FOUR capitalised letters plus a THREE digit number

```
\coursecode{ENGR 121}
```

\coursetitle The **\coursetitle** macro's argument should contain the official title for the course to which the examination applies. Long titles need to be broken.

```
\coursetitle{INTRODUCTION TO\\ COMPUTER PROGRAM\\ DESIGN}
```

\addedfrontpagetitle The **\addedfrontpagetitle** macro's argument is an additional title line optionally added to an Exam's front page above the title box. In 2023 VUW required the text FRONT PAGE to be added.

```
\addedfrontpagetitle{FRONT PAGE}
```

`\timeallowed` The `\timeallowed` macro's argument should contain the amount of time allotted for the examination, spelt out in words, which are capitalised.

```
\timeallowed{TWO HOURS}  
not  
\timeallowed{3 Hrs}
```

In the case of an ECS Test, the VUW exam requirements are relaxed, eg

```
\timeallowed{50 minutes}
```

`\openorclosed` The `\openorclosed` macro's argument should contain one value from a standard set, depending on the nature of the examination. The values are capitalised.

- OPEN BOOK
- CLOSED BOOK
- OPEN BOOK (SELECTED MATERIALS ONLY)
- CLOSED BOOK (SELECTED MATERIALS ONLY)

`\permitted` The `\permitted` macro's argument should clearly state the materials permissible in the examination. Multiple lines can be supplied. If you are unsure about the wording of this section, you should discuss it with your Examination Coordinator.

There are usually a set of conditions specified on the template received via the Faculty Office, which, in the past, has included the following paragraphs.

- Where specific items are allowed, e.g. calculators and textbooks, calculators should be specified as programmable or non-programmable, and titles and authors of textbooks must be given, and Acts and Statutes specified.
- In the case of books and other materials, specify whether they may be annotated.
- Special aids or materials such as Eton tables and graph paper must be supplied to the Faculty Student and Academic Services Office for distribution during the examination and must also be specified.
- If instructions regarding any of these are not given, they will not be permitted in the examination room.

Other examples of “Permitted materials” paragraphs are

```
\permitted{Silent non-programmable calculators or silent programmable
    calculators with their memories cleared are permitted.

    Printed foreign language dictionaries are permitted.
    they may be annotated.

    A two-sided formula sheet is provided separately.

    No other material is permitted.
}
```

`\instructions` The `\instructions` macro’s argument should contain instructions as to how the examination is to be taken. Multiple lines can be supplied. The instructions in this section would typically provide information such as

- How many questions are to be answered, and from how many parts of the paper may these be chosen.
- How many marks is the whole examination marked out of, or each section worth (assuming marks are not shown alongside the questions)

Any special directions to candidates should also be included here.

Examples of “Instructions” paragraphs are

```
\instructions{Attempt ALL EIGHT questions

    Answer in the appropriate boxes or close to the question if
    possible --- if you write your answer elsewhere, make it clear where
    your answer can be found.

}
```

Typically, in ECS tests, the Instructions are list items, e.g.,

```
\instructions{
\item Answer {\bf all} the questions. There are 45 marks in total.
\item If you think some question is unclear, ask for clarification.
\item Brief Java documentation is provided with the test
}
```

2.3 Question macros

The following text is duplicated within the class file (CLS) because that's often all that some people read.

Note that is presented in a verbatim font here so that the section can be simply cut and pasted within the document to ensure consistency

All questions are numbered automatically, with a separate counter for each level.

Three levels of question macro are defined:

```
\question  
\subquestion  
\subsubquestion
```

All three macros take an optional argument which is the number of marks associated with that individual question.

Two styles of laying out the content of a question are available

The default style tries to mimic the VUW style for any given term, ie, incorporating any changes that person or persons unknown may have made to a microsfot word document, or which person or persons unknown may have rescinded from previously distributed versions.

In the absence of a defintive style guide for the format of Examination papers at VUW, mimicing the word document is the best we can do, for. example, the word documents rarely, if ever, contain any sub or subsub questions, so there's nothing to go on, and we made something up that "looked right" to us, and which is close to the \LaTeX list formatting defaults.

The second style available can be obtained by passing the option 'pondy' to the document class.

The current word document uses a 12pt, sans-serif font, though this has been known to change

indentation-default

(*env.*)

The current mimic sees sub or subsub questions indented in the following fashion

1. The first sentence (or title) of the question, followed by the number of marks allocated to the question styled thus (N mark/s/), in bold, and right justified. (N mark/s/)

Any other text indented to the same level as the question "title"

(a) (N mark/s/) The text of the subquestion

Any other text indented to the subquestion "title"

i. (N mark/s/) The text of the subsubquestion

Any other text indented to the subsubquestion "title"

indentation-pondy (*env.*)

The "pondy" style has no indentation for any of the three levels but lays out the question content using square brackets around the marks as follows

Question 1. A short emboldened title for the question [N mark/s/]

Other text, not indented

(a) [N mark/s/] The title text of the subquestion

Other subquestion text

i. [N mark/s/] The title text of the subsubquestion

Other subsubquestion text

2.4 "Continued" macros

Where there is a requirement, or where it is felt to be beneficial, to indicate that a question continues across multiple pages, the `\continued` macro, itself defined in terms of `\continuedbot` and `\continuedtop`, which print the following text, respectively

Question 3 continued on next page

at the bottom right of the page

Question 3 continued

at the top left of the page, may be used.

2.5 Spare page

Whilst the `\sparepage` macro is nearly always used as follows

`\newpage\sparepage\newpage`

it is defined without the accompanying pagebreaks.

3 Implementation

The information in this section is only likely to be of interest to the maintainers of the package or to those who are looking to add functionality to it.

3.1 Options

3.1.1 The [*font, image*] option

Because the `vuwvid` font does not support the 2021 visual identity this option was removed in version 2.33. readded as a no-op in 2.34

```
1 \<class>
2 \DeclareOption{image}{\Ecs@imagetrue}
3 \DeclareOption{font}{\Ecs@imagefalse}
4 \newif\ifEcs@image
```

3.1.2 Option overrides

Although we really shouldn't, we do allow people to override some defaults. The `vuwexam` class file is used for some ECS test paper and the time of writing preference there is for 11pt.

```
5 \DeclareOption{10pt}{
6   \gdef\Ecs@fontoverride{defined}
7   \PassOptionsToClass{\CurrentOption}{article}
```

```

8 }
9 \DeclareOption{11pt}{
10   \gdef\Ecs@fontoverride{defined}
11   \PassOptionsToClass{\CurrentOption}{article}
12 }
13 \DeclareOption{12pt}{
14   \gdef\Ecs@fontoverride{defined}
15   \PassOptionsToClass{\CurrentOption}{article}
16 }
17

```

including the by-now widely used but out-of-sight

```

18 \DeclareOption{pondy}{\Ecs@pondystyletrue}
19 \newif\ifEcs@pondystyle
20

```

`fpstudentinfo` Even though the Student Info area is usually associated with a Test, there was a request to make such an area createable on the front page, so the `fpstudentinfo` option allows for that

```

21 \DeclareOption{fpstudentinfo}{\Ecs@fpstudinfottrue}
22 \newif\ifEcs@fpstudentinfo
23

```

3.1.3 Option unknowns

Finally, we warn about Unknown options, just in case anyone actually reads the output

```

24 \DeclareOption*{
25   \ClassWarning{vuwexam}{Unknown option '\CurrentOption'}
26   \PassOptionsToClass{\CurrentOption}{article}
27 }
28

```

3.1.4 Option processing

Having declared all options for the `vuwexam`, process them.

```

29 \ExecuteOptions{font}
30
31 \ProcessOptions
32

```

3.2 `vuwexam` is based on an `[a4paper]article`

On machines that didn't have the `[a4paper]` option to the `article` class, ECS provided a compatibility package.

Q: Is this still the case, or just legacy code ?

A: Leave it in for now

```
33 \if@compatibility
34   \LoadClass{article}
35   \RequirePackage{vwu-a4}
36 \else
37   \ifundefined{Ecs@fontoverride}{
38     \LoadClass[12pt,a4paper]{article}
39   }{
40     \LoadClass[a4paper]{article}
41   }
42 \fi
43
```

3.3 Packages used by **vwuexam**

The `mathpazo` font is used when sans-serif is required

```
44 \usepackage{mathpazo}
```

Need to document why `lastpage` is used

```
45 \usepackage{lastpage}
```

Using `sectsty` allow us to constrain the section font sizes when they underlying font size is changed, because in \LaTeX headings are defined proportional to the base font size, whereas with WYSIWYG editors, all bets are off.

```
46 \usepackage{sectsty}
47 \sectionfont{\fontsize{12}{15}\selectfont}
48
```

We redefine `\section` from the version in `sectsty` to add an `\@endquestion` to get correct nesting.

```
49 \renewcommand\section{\@endquestion\@startsection {section}{1}{\z@}%
50   {-3.5ex \@plus -1ex \@minus -.2ex}%
51   {2.3ex \@plus .2ex}%
52   {\normalfont\Large\bfseries\SS@sectfont}}
53
```

3.3.1 **vwuvid**

ECS have a \LaTeX package `vwuvid` that provides access to a scalable font, within which the glyphs are the three parts of the VUW crest, as well as providing definitions for the text that forms the University logo.

However, the package `vwuvid` does not provide for the new visual identity. So, in it's place is a vector graphic in the form of a pdf. This does mean that `pdf \LaTeX` is required.

```
54 \newcommand{\vwuvid}{
55   \parbox[b]{95mm}{
```

```

56     \includegraphics[width=95mm]{VUW_Standard_Landscape_BLACK}
57
58   }}
59

```

3.4 Page length defintitions

All length defintions should be defined here

```

\textwidth
60 \setlength{\textwidth}{165mm}

\textheight
61 \setlength{\textheight}{240mm}

\oddsidemargin
62 \setlength{\oddsidemargin}{-0.1cm}

\evensidemargin
63 \setlength{\evensidemargin}{-0.1cm}

\topmargin
64 \setlength{\topmargin}{-8.2mm}

\hoffset
65 \setlength{\hoffset}{-0.2cm}

\voffset
66 \setlength{\voffset}{-0.2cm}

\headheight
67 \setlength{\headheight}{12pt}

\headsep
68 \setlength{\headsep}{25pt}

\footskip
69 \setlength{\footskip}{30pt}

\marginparsep
70 \setlength{\marginparsep}{2.5mm}

\parskip
71 \setlength{\parskip}{.7em}

\parindent
72 \setlength{\parindent}{0pt}

```

`\columnsep`
73 `\setlength{\columnsep}{10pt}`

`\columnseprule`
74 `\setlength{\columnseprule}{0pt}`

`\fboxrule`
75 `\setlength{\fboxrule}{1pt}`

`\itemsep`
76 `\setlength{\itemsep}{0mm}`
77

3.5 Title page commands

`\examyyear` Set an internal variable to the value supplied to the macro.
78 `\newcommand*{\examyyear}[1]{\def\@examyyear{#1}}`

`\examdate` Set an internal variable to the value supplied to the macro.
79 `\newcommand*{\examdate}[1]{\def\@examdate{#1}}`
80 `\def\@examdate{}`

`\examtype` Set an internal variable to the value supplied to the macro.
81 `\newcommand*{\examtype}[1]{\def\@examtype{#1}}`

`\paper` Set an internal variable to the value supplied to the macro.
82 `\newcommand*{\paper}[1]{\def\@paper{#1}}`

`\coursecode` Set an internal variable to the value supplied to the macro.
83 `\newcommand*{\coursecode}[1]{\def\@coursecode{#1}}`

`\coursetitle` Set an internal variable to the value supplied to the macro.
84 `\newcommand*{\coursetitle}[1]{\def\@coursetitle{#1}}`

`\timeallowed` Set an internal variable to the value supplied to the macro.
85 `\newcommand*{\timeallowed}[1]{\def\@timeallowed{#1}}`

`\openorclosed` Set an internal variable to the value supplied to the macro.
86 `\newcommand*{\openorclosed}[1]{\def\@openorclosed{#1}}`

`\permitted` Set an internal variable to the value supplied to the macro.
87 `\newcommand{\permitted}[1]{\long\def\@permitted{#1}}`

`\instructions` Set an internal variable to the value supplied to the macro.
88 `\newcommand{\instructions}[1]{\long\def\@instructions{#1}}`

`\addedfrontpagetitle` Set an internal variable to the value supplied to the macro.

```
89 \newcommand*{\addedfrontpagetitle}[1]{\def\@addedfrontpagetitle{#1}}
90 \def\@addedfrontpagetitle{}
```

`\studentid`

```
91 \def\studentid{\mbox{}}
```

`\withstudentid`

```
92 \newcommand{\withstudentid}{\def\studentid{\hfill\makebox[6cm]{Student ID: \dotfill}}
```

`\subindent`

```
93 \newcommand*{\subindent}[1]{\def\@subindent{#1}}
```

`\subsubindent`

```
94 \newcommand*{\subsubindent}[1]{\def\@subsubindent{#1}}
95
```

3.6 Backward compatibility

Even though we provide the old classes, these backward compatibility macros are provided in any given current class file

`\midyear`

```
96 \newcommand*{\midyear}[1]{\def\@examtype{#1}}
97
```

`\fieldnamewidth`

```
98 \newlength{\fieldnamewidth}
99 \setlength{\fieldnamewidth}{2.9cm}
100
```

`\WideItem`

```
101 \long\def\WideItem[#1]{
102   \list{}{
103     \setlength{\labelwidth}{\fieldnamewidth} % Set width of item labels
104     \setlength{\leftmargin}{\labelwidth}
105     \addtolength{\leftmargin}{\labelsep}      % leftmargin = labelwidth + labelsep
106     \setlength{\listparindent}{0pt}
107     \setlength{\itemindent}{0pt}
108     \item[\enspace#1\hfill]                  % Use \hfill to left-justify label
109   }
110 }
111 \def\endWideItem{\endlist}
112
```

3.7 Page layout, headers and footers

3.8 Headers and Footers

Some of the definitions in here had commented out code in the most recent version: this has been removed.

```
113 \DeclareTextFontCommand{\ftfoot}{\normalfont\bfseries\fontsize{10.95}{13.14}\selectfont}
114
115 \def\@coursefoot{\bf \@coursecode\ifx\@empty\@paper\else\ (\@paper)\fi}
116
117 \def\ps@headings{
118   \renewcommand{\@oddhead}{
119     \if@examtitle
120       \vbox to\headheight{
121 \ifEcs@fpstudinfo
122   \hbox to \hsize{
123     \makebox[50mm]{\hskip-6ex{\footnotesize \bf Surname:}\dotfill}\hspace{3ex}
124     \makebox[55mm]{\hskip-6ex{\footnotesize \bf First Name:}\dotfill}\hspace{5ex}
125     \makebox[55mm]{\hskip-6ex{\footnotesize \bf Student ID:}\dotfill}\hspace{2em}}
126 \fi
127   \hbox to\hsize{\hss\vbox{\hss}\vskip 0.6cm
128     \setbox0=\hbox{\bf\large{EXAMINATIONS -- \@examyyear}}
129     \myskipa=\hsize\advance\myskipa by -\wd0
130     \divide\myskipa by 2
131     \myskipb=\myskipa\advance\myskipb by 1cm\advance\myskipb by -\wd1
132     \hbox to\hsize{\hskip\myskipa\box0\hskip\myskipb\box1\hss}
133     \vskip 0.2cm
134   }
135   \global\@examtitlefalse
136 \else
137   \vbox to\headheight{
138     \studentid
139     \vskip 0.1cm\vfil
140   }
141 \fi
142 }
143 \renewcommand{\@evenhead}{
144   \vbox to\headheight{
145     \studentid
146     \vskip 0.1cm\vfil
147   }
148 }
149 \renewcommand{\@oddfoot}{
150   \ftfoot{\@coursefoot}\hfil{Page \ftfoot{\thepage}\ of \ftfoot{\pageref{LastPage}}
151 }
152 \renewcommand{\@evenfoot}{\@oddfoot}
153 }
154
```



```

155 \def\ps@lastpage{
156   \renewcommand{\@oddhead}{
157     \vbox to\headheight{\studentid\vskip 0.1cm\vfil}
158   }
159   \renewcommand{\@evenhead}{
160     \vbox to\headheight{\studentid\vskip 0.1cm\vfil}
161   }
162   \renewcommand{\@oddfoot}{
163     \ftfoot{\@coursefoot}\hfil{Page \ftfoot{\thepage}\ of \ftfoot{\pageref{LastPage}}
164   }
165   \renewcommand{\@evenfoot}{\@oddfoot}
166 }
167

```

The location of `pagestyle{headings}` in the code appears to be important

```

168 \pagestyle{headings}
169

```

`\makeblankpage`

```

170 \newcommand{\makeblankpage}{\newpage
171                               \thispagestyle{empty}
172                               \addtocounter{page}{-1}}
173

```

`\frontmatter`

```

174 \newcommand{\frontmatter}{\pagenumbering{roman}}
175

```

`\mainmatter`

```

176 \newcommand{\mainmatter}{\cleardoublepage \pagenumbering{arabic}}
177

```

`\backmatter`

```

178 \newcommand{\backmatter}{\appendix \cleardoublepage}
179

```

We need to include the `graphicx` package because we are using an image for the logo.

```

180 \usepackage{graphicx} % for including images
181

```

3.9 The exam environment

`exam (env.)` The main environment, which defines `maketitle`

```

182 \newdimen\myskipa
183 \newdimen\myskipb
184 \newif\if@examtitle \@examtitlefalse

```

```

185
186 \newenvironment{exam}{
187   \def\maketitle{
188     \setbox0=\hbox{\large\bf\ifx\@empty\@examtype\else\@examtype\fi}
189     \setbox1=\hbox{\ifx\@empty\@paper\else\@paper\fi}
190     \myskipa=\hsize\advance\myskipa by -\wd0
191     \divide\myskipa by 2
192     \myskipb=\myskipa\advance\myskipb by 1cm\advance\myskipb by -\wd1
193 \ifEcs@fpstudinfo
194   \hbox to\hsize{\vbox to 3.8cm{} \hskip\myskipa\box0\hskip\myskipb\box1\hss}
195 \else
196   \hbox to\hsize{\vbox to 2.8cm{} \hskip\myskipa\box0\hskip\myskipb\box1\hss}
197 \fi
198   \ifx\@empty\@addedfrontpagetitle\else\vskip 0.3cm
199   \hbox to\hsize{\hfil \bf\large{\@addedfrontpagetitle}\hfil}\fi
200   \vskip 0.5cm
201   \hbox to\hsize{
202     \hfil
203     \fbox{\vbox to 2.4cm{
204       \vfil
205       \hbox to 7.3cm{\hfil \bf \@coursecode\hfil}
206       \vfil
207       \hbox to 7.3cm{\hss\vbox{\centering \bf \@coursetitle}\hss}
208       \ifx\@empty\@paper
209         \else\vfil\hbox to 7.3cm{\hfil\@paper\hfil}\fi
210       \ifx\@empty\@examdate\else\hbox to 7.3cm{\hss\vbox{\centering \bf \@examdate}
211         \vfil}}
212     \hfil}

```

We redefine the column widths inside the maketitle environment

```

213   \vskip 0.7cm
214   \setbox0=\hbox{Time Allowed:}
215   \myskipa=\wd0
216   \advance\myskipa by 0.7em
217   \myskipb=\textwidth
218   \advance\myskipb by -\myskipa
219   \advance\myskipb by -10mm

```

Not clear what the “original” referred to in the next comment is ?

% Following line different from original, to avoid conflict with exptex

```

220   \hbox{\begin{tabular}{@{}l@{\hspace{0.7em}}l@{}}
221     {\bf Time Allowed:} & \parbox[t]{\myskipb}{\@timeallowed}\\
222     & \\
223     \multicolumn{2}{@{}l}{\bf \@openorclosed} \\
224     & \\
225     {\bf Permitted materials:} & \parbox[t]{\myskipb}{\@permitted} \\
226     & \\

```

```

227     {\bf Instructions:} & \parbox[t]{\myskipb}{\@instructions} \\
228     \end{tabular}}\par\vskip 0.5cm
229     \global\@examtitletrue
230   }
231 }{
232   \par\vskip 0.5cm\@lastquestion
233   \hbox to \textwidth{\hfil * * * * * \hfil}
234   \thispagestyle{lastpage}\par
235 }
236

```

3.9.1 Mark formatting

The following three allow us to keep track of which question depth we are at. Note that the way that the original question macros are defined means that there is no formal “end of a question”, only the start of the next one.

```
237 \newif\ifinqlist
238 \inqlistfalse
239 \newif\ifinqqlist
240 \inqqlistfalse
241 \newif\ifinqqqlist
242 \inqqqlistfalse
243
```

Similarly, depending on how we are formatting the questions, the width of the widest label can vary, so we track it with these three lengths

```
244 \newlength{\qindent}
245 \newlength{\qqindent}
246 \newlength{\qqqindent}
247
248 \ifEcs@pondystyle
249
250 \def\qlabel{\bf{Question 00.}}}
251 \def\qqlabel{\bf{(x)}}
252 \def\qqqlabel{iii.}
253
254 \setlength{\qindent}{0pt}
255
256 \setlength{\qqindent}{0pt}
257
258 \setlength{\qqqindent}{0pt}
259
260 \else
261
262 \def\qlabel{00.}
263 \def\qqlabel{(x)}
264 \def\qqqlabel{iii.}
265
266 \setbox0=\hbox{(\qlabel}
267 \setlength{\qindent}{\wd0}
268
269 \setbox0=\hbox{(\qqlabel}
270 \setlength{\qqindent}{\wd0}
271
272 \setbox0=\hbox{(\qqqlabel}
273 \setlength{\qqqindent}{\wd0}
274
275 \fi
276
277 \newlength{\qbackmargin}
```

```

278 \setlength{\qbackmargin}{0pt}
279
280 \newlength{\saveparsep}
281 \newlength{\savetopsep}
282
283 \ifEcs@pondystyle
284 \def\lmchar{[]}
285 \def\rmchar{[] }
286 \else
287 \def\lmchar{()}
288 \def\rmchar{() }
289 \fi
290
291 \newcommand{\@printmarks}[1]{#1 \ifnum#1 =1{mark}\else{marks}\fi}
292 \newcommand{\marksright}[1]{\mbox{\hfill\mbox{\bf\lmchar\@printmarks{#1}\rmchar}\pa
293 % \iffalse
294 %%\newcommand{\marksinline}[1]{\hskip 1mm{\bf\lmchar\@printmarks{#1}\rmchar}\space}
295 % \fi
296 \newcommand{\marksinline}[1]{\bf\lmchar\@printmarks{#1}\rmchar}\space}
297 \newcommand{\nomarks}[1]{ }
298
299 \def\rmmarks{\@ifnextchar[{\@rmmarks}{\@@rmmarks}}
300 \def\@rmmarks[#1]{\@@rmmarks{#1}}
301 \def\@@rmmarks#1{\hspace*{5mm}\marksright{#1}}
302 \def\marks{\@ifnextchar[{\@marks}{\@@marks}}
303 \def\@marks[#1]{\@@marks{#1}}
304 \def\@@marks#1{\par\marksright{#1}}
305
306
307 \newcommand{\questionmarks}{\marksright}
308

```

3.10 The test environment

test (*env.*) An additional environment, which defines a different **maketitle** to that of the **exam** environment

```

309 \newenvironment{test}{
310   \def\maketitle{
311     \thispagestyle{empty}
312     \vspace*{-15mm}
313     \begin{flushright}
314       \makebox[70mm]{\hskip-3ex{\bf Family Name:}\dotfill}\hspace{4ex}
315       \makebox[75mm]{\bf Other Names:}\dotfill}\hspace{8mm}
316       \makebox[70mm]{\hskip-3ex{\bf Student ID:}\dotfill}\hspace{4ex}
317       \makebox[75mm]{\bf Signature}\dotfill}\hspace{8mm}
318     \end{flushright}
319
320     \vskip 0cm

```

```

321 \begin{center}
322 {\LARGE \bf \@coursecode: \@examtype}
323 \\[5mm]{\Large \@examdate}
324 \end{center}
325 \par\medskip
326 {\large\bf Instructions}
327 \begin{itemize}\setlength{\itemsep}{0mm}
328 \item Time allowed: {\bf \@timeallowed}
329 {\@instructions}
330 \end{itemize}
331 \par\bigskip
332 }
333 \addtolength{\topmargin}{-5mm}
334 \addtolength{\textheight}{10mm}
335 }{
336 \par\vskip 0.5cm\@lastquestion
337 \hbox to \textwidth{\hfil * * * * * \hfil}
338 \thispagestyle{lastpage}\par
339 }
340

```

3.11 The markboxes environment

markboxes (*env.*) An additional environment, which serves to simplify the layout of a set of markboxes that often appear on the frontpage of the **test** environment. At present, a utility macro **\markbox** and a macro, **\fpq** that turns the specification of the lines within the Markboxes into a \LaTeX command, are defined here.

\markbox The **\markbox** macro simply creates a framed box, of the specified width that is used within the **\fpq** macro

```

341 \def\markbox#1{\framebox[#1]{\rule[-2mm]{0mm}{7mm}\hfil}}
342

```

however, it has also been seen to be used at the bottom of pages of questions where a place to put the total marks for the page is required. This usage will typically set it as part of the following code

```
\vfill\hfill\markbox{20mm}
```

\fpq The **fpq** macro takes three arguments: the number of the question, the title of the question and the marks awarded for the question.

```

343 \def\fpq#1[#2][#3]{
344 #1. \> #2 \>\> [#3]\> \markbox{20mm}\\[1mm]
345 }
346

```

```

347 \newenvironment{markboxes}{
348   \begin{large}\begin{tabbing}
349   5.X \=XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX\=M\=XXXXX\=\kill
350   {\bf Questions}                                \>\>\bf Marks}\[3mm]
351 }
352 {
353   \>                                              \> TOTAL:\>\> \markbox{20mm}
354   \end{tabbing}
355   \end{large}
356 }
357

```

3.12 Sectioning

If we do use sections then we need to define this

```

358 \renewcommand \thesection {SECTION \Alph{section}}
359

```

3.12.1 Question counters and lengths

```

360 \newcounter{question}
361 \renewcommand{\thequestion}{\arabic{question}}
362
363 \ifEcs@pondystyle
364 \newcommand{\questionlabel}{\bf{Question \thequestion.}}
365 \newcommand{\@printqtitle}[1]{\bf#1}
366 \else
367 \newcommand{\questionlabel}{\thequestion.}
368 \newcommand{\@printqtitle}[1]{#1}
369 \fi
370
371 \newcounter{totalmarks}
372 \setcounter{totalmarks}{0}
373 \newcounter{totalsubmarks}[question]
374 \setcounter{totalsubmarks}{0}
375

```

3.12.2 The question macros

```

376 \def\question#1{
377   \ifnum\c@totalsubmarks >0
378     \typeout{* Subquestions : [\arabic{totalsubmarks} marks]}
379   \fi
380   \typeout{=====}
381   \setlength{\saveparsep}{\parsep}
382   \setlength{\savetopsep}{\topsep}
383   \setcounter{subquestion}{0}
384   \@ifnextchar [{\@questionm{#1}}{\@question{#1}}
385
386 % \iffalse

```

```

387 %% A Question without marks
388 %%
389 % \fi
390 \def\@question#1{
391   \stepcounter{question}
392   \par
393   \setbox1=\hbox{\questionlabel}
394   \myskipa=\qindent\advance\myskipa by -\wd1
395   \ifinqqqlist
396     \endlist \endlist \endlist \egroup
397   \else
398     \ifinqqqlist
399       \endlist \endlist \egroup
400     \else
401       \ifinqlist
402         \endlist \egroup
403       \fi
404     \fi
405   \fi
406   \setlength{\qbackmargin}{\qindent}
407 \ifEcs@pondystyle
408   \bgroup\list{\questionlabel}{\leftmargin\qbackmargin\labelwidth-1ex}
409 \else
410   \bgroup\list{\questionlabel}{\leftmargin\qbackmargin}
411 \fi
412   \item\relax\nointerlineskip\leavevmode
413   \@printqtitle{#1}
414   \inqlisttrue
415   \inqqlistfalse
416   \inqqqlistfalse
417   \typeout{Starting Question \thequestion: #1 on page \arabic{page}}
418 %%   \typeout{parsep \number\parsep \space topsep \number\topsep}
419 }
420
421 % \iffalse
422 %% A Question with marks
423 %%
424 % \fi
425 \def\@questionm#1[#2]{
426   \stepcounter{question}
427   \addtocounter{totalmarks}{#2}
428   \par
429   \setbox1=\hbox{\questionlabel}
430   \myskipa=\qindent\advance\myskipa by -\wd1
431   \ifinqqqlist
432     \endlist \endlist \endlist \egroup
433   \else
434     \ifinqqqlist
435       \endlist \endlist \egroup

```



```

436     \else
437         \ifinqlist
438         \endlist \egroup
439     \fi
440 \fi
441 \fi
442 \setlength{\qbackmargin}{\qindent}
443 \ifEcs@pondystyle
444     \bgroup\list{\questionlabel}{\leftmargin\qbackmargin\labelwidth-1ex}
445 \else
446     \bgroup\list{\questionlabel}{\leftmargin\qbackmargin}
447 \fi
448 \item\relax\nointerlineskip\leavevmode
449 \@printqtitle{#1}
450 \questionmarks{#2}
451 \inqlisttrue
452 \inqqlistfalse
453 \inqqqlistfalse
454 \typeout{Starting Question \thequestion: #1 [#2 marks] on page \arabic{page}}
455 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
456 }
457
458 \def\@endquestion{
459     \ifinqqqlist
460     \endlist \endlist \endlist \egroup
461 \else
462     \ifinqqqlist
463     \endlist \endlist \egroup
464 \else
465     \ifinqlist
466     \endlist \egroup
467 \fi
468 \fi
469 \fi
470 \inqlistfalse
471 \inqqlistfalse
472 \inqqqlistfalse
473 }

```

3.12.3 Sub-questions

```

474 \newcounter{subquestion}
475 \renewcommand{\thesubquestion}{(\alph{subquestion})}
476 \newcommand{\subquestionlabel}{\thesubquestion}
477
478 % \iffalse
479 %% This is actually simply Pondy's preferences that was hardcoded into
480 %% the default, because VUW didn't (maybe still doesn't) have a default
481 %% for sub and subsub
482 %%

```

```

483 % \fi
484 \ifEcs@pondystyle
485   \newcommand{\subquestionmarks}{\marksinline}
486 \else
487   \newcommand{\subquestionmarks}{\marksright}
488 \fi
489
490 % \iffalse
491 %% Traditionally in the ECS template, sub questions didn't require the
492 %% question title as an argument so we had to handle three cases
493 %%
494 %% If \subquestion has an [n] argument
495 %% then we use \@subquestionm
496 %% however if we also have a {subquestion title} argument
497 %% then we use \@subquestiont
498 %% else we use \@subquestion
499 %%
500 %% Although it turns out there are five cases
501 %% \subquestion some text but no marks
502 %% @subquestion
503 %% \subquestion[n] some text with marks
504 %% @subquestionm
505 %% \subquestion{explicit subquestion title but no marks}
506 %% @subquestiont
507 %% \subquestion[n]{explicit subquestion title with marks}
508 %% @subquestionm
509 %% \subquestion{alt explicit subquestion title with marks}[n]
510 %% @subquestionu
511 %%
512 % \fi
513 \def\subquestion{
514   \setcounter{subsubquestion}{0}
515   \@ifnextchar [{\@subquestionm}
516     {\@ifnextchar\bgroup{\@subquestiont}
517       {\@subquestion}
518     }
519 }
520
521 \def\@subquestion{
522   \stepcounter{subquestion}
523   \par
524   \setbox1=\hbox{\subquestionlabel}
525   \myskipa=\qqindent\advance\myskipa by -\wd1
526   \ifinqqlist
527     \endlist \endlist
528     \setlength{\qbackmargin}{-\qqqindent}
529   \else
530     \ifinqqlist
531       \endlist

```

```

532     \setlength{\qbackmargin}{0pt}
533   \else
534     \setlength{\qbackmargin}{\qqindent}
535   \fi
536 \fi
537 \ifEcs@pondystyle
538   \list{\subquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex
539   \setlength{\topsep}{\savetopsep}
540   \setlength{\parsep}{\saveparsep}}
541 \else
542   \list{\subquestionlabel}{\leftmargin\qbackmargin
543   \setlength{\topsep}{\savetopsep}
544   \setlength{\parsep}{\saveparsep}}
545 \fi
546 \item\relax\nointerlineskip\leavevmode
547 \inqqlisttrue
548 \inqqlistfalse
549 \typeout{Starting subQuestion \thesubquestion: on page \arabic{page}}
550 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
551 }
552
553 % \iffalse
554 %% A subquestion with a marks argument and possibly a title
555 %%
556 % \fi
557 \def\@subquestionm[#1]{
558   \stepcounter{subquestion}
559   \addtocounter{totalsubmarks}{#1}
560   \par
561   \setbox1=\hbox{\subquestionlabel}
562   \myskipa=\qqindent\advance\myskipa by -\wd1
563   \ifinqqlist
564     \endlist \endlist
565     \setlength{\qbackmargin}{-\qqqindent}
566   \else
567     \ifinqqlist
568       \endlist
569       \setlength{\qbackmargin}{0pt}
570     \else
571       \setlength{\qbackmargin}{\qqindent}
572     \fi
573   \fi
574 \ifEcs@pondystyle
575   \list{\subquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex
576   \setlength{\topsep}{\savetopsep}
577   \setlength{\parsep}{\saveparsep}}
578 \else
579   \list{\subquestionlabel}{\leftmargin\qbackmargin
580   \setlength{\topsep}{\savetopsep}

```

```

581 \setlength{\parsep}{\saveparsep}}
582 \fi
583 \item\relax\nointerlineskip\leavevmode
584 \setbox3=\hbox{\space}
585 \ifEcs@pondystyle
586 \subquestionmarks{#1}\hskip-\wd3
587 \else
588 \marksinline{#1}\hskip-\wd3
589 \fi
590 \inqqlisttrue
591 \inqqlistfalse
592 \typeout{Starting subQuestion \thesubquestion: [#1 marks] on page \arabic{page}}
593 %% \typeout{\parsep \number\parsep \space \topsep \number\topsep}
594 }
595
596 % \iffalse
597 %% A subquestion with a title argument, where we check whether it
598 %% also has a marks argument
599 %%
600 % \fi
601 \def\@subquestiont#1{
602 \ifnextchar [{\@subquestionu{#1}}
603 {
604 \stepcounter{subquestion}
605 \par
606 \setbox1=\hbox{\subquestionlabel}
607 \myskipa=\qqindent\advance\myskipa by -\wd1
608 \ifinqqlist
609 \endlist \endlist
610 \setlength{\qbackmargin}{-\qqqindent}
611 \else
612 \ifinqqlist
613 \endlist
614 \setlength{\qbackmargin}{0pt}
615 \else
616 \setlength{\qbackmargin}{\qqindent}
617 \fi
618 \fi
619 \ifEcs@pondystyle
620 \list{\subquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex
621 \setlength{\topsep}{\savetopsep}
622 \setlength{\parsep}{\saveparsep}}
623 \else
624 \list{\subquestionlabel}{\leftmargin\qbackmargin
625 \setlength{\topsep}{\savetopsep}
626 \setlength{\parsep}{\saveparsep}}
627 \fi
628 \item\relax\nointerlineskip\leavevmode
629 #1

```

```

630 \inqqlisttrue
631 \inqqqlistfalse
632 \typeout{Starting subQuestiot \thesubquestion: #1 on page \arabic{page}}
633 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
634 }
635 }
636
637 % \iffalse
638 %% A subquestion with BOTH title AND marks argument
639 %%
640 % \fi
641 \def\@subquestionu#1[#2]{
642 \stepcounter{subquestion}
643 \addtocounter{totalsubmarks}{#2}
644 \par
645 \setbox1=\hbox{\subquestionlabel}
646 \myskipa=\qqindent\advance\myskipa by -\wd1
647 \ifinqqqlist
648 \endlist \endlist
649 \setlength{\qbackmargin}{-\qqqindent}
650 \else
651 \ifinqqlist
652 \endlist
653 \setlength{\qbackmargin}{0pt}
654 \else
655 \setlength{\qbackmargin}{\qqindent}
656 \fi
657 \fi
658 \ifEcs@pondystyle
659 \list{\subquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex
660 \setlength{\topsep}{\savetopsep}
661 \setlength{\parsep}{\saveparsep}}
662 \else
663 \list{\subquestionlabel}{\leftmargin\qbackmargin
664 \setlength{\topsep}{\savetopsep}
665 \setlength{\parsep}{\saveparsep}}
666 \fi
667 \item\relax\nointerlineskip\leavevmode
668 \ifEcs@pondystyle
669 \subquestionmarks{#2} #1
670 \else
671 \@printqtitle{#1}
672 \subquestionmarks{#2}
673 \fi
674 \inqqlisttrue
675 \inqqqlistfalse
676 \typeout{Starting subQuestiou \thesubquestion: [#2 marks] on page \arabic{page}}
677 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
678 }

```

679

3.12.4 Sub-sub-questions

```
680 \newcounter{subsubquestion}
681 \renewcommand{\thesubsubquestion}{\roman{subsubquestion}.}
682 \newcommand{\subsubquestionlabel}{\thesubsubquestion}
683
684 % \iffalse
685 %% Again, this is actually simply Pondy's preferences that was hardcoded into
686 %% the default, because VUW didn't (maybe still doesn't) have a default
687 %% for sub and subsub
688 %%
689 %% See the explainatry text in the Sub-questions section for what is
690 %% going on here
691 % \fi
692 \ifEcs@pondystyle
693   \newcommand{\subsubquestionmarks}{\marksinline}
694 \else
695   \newcommand{\subsubquestionmarks}{\marksright}
696 \fi
697
698 \def\subsubquestion{
699   \@ifnextchar [{\@subsubquestionm}
700     {\@ifnextchar\bgroup{\@subsubquestiont}
701       {\@subquestion}
702     }
703 }
704
705 \def\@subsubquestion{
706   \stepcounter{subsubquestion}
707   \par
708   \setbox1=\hbox{\subsubquestionlabel}
709   \myskipa=\qqqindent\advance\myskipa by -\wd1
710   \ifinqqqlist
711     \endlist
712     \setlength{\qbackmargin}{0pt}
713   \else
714     \setlength{\qbackmargin}{\qqqindent}
715   \fi
716 \ifEcs@pondystyle
717   \list{\subsubquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex}
718   \setlength{\topsep}{\savetopsep}
719   \setlength{\parsep}{\saveparsep}}
720 \else
721   \list{\subsubquestionlabel}{\leftmargin\qbackmargin}
722   \setlength{\topsep}{\savetopsep}
723   \setlength{\parsep}{\saveparsep}}
724 \fi
725   \item\relax\nointerlineskip\leavevmode
```

```

726 \inqqllisttrue
727 \typeout{Starting subsubQuestion \thesubsubquestion: on page \arabic{page}}
728 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
729 }
730
731 % \iffalse
732 %% A subsubquestion with a marks argument and possibly a title
733 %%
734 % \fi
735 \def\@subsubquestionm[#1]{
736 \stepcounter{subsubquestion}
737 \par
738 \setbox1=\hbox{\subsubquestionlabel}
739 \myskipa=\qqqindent\advance\myskipa by -\wd1
740 \ifinqqllist
741 \endlist
742 \setlength{\qbackmargin}{0pt}
743 \else
744 \setlength{\qbackmargin}{\qqqindent}
745 \fi
746 \ifEcs@pondystyle
747 \list{\subsubquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex
748 \setlength{\topsep}{\savetopsep}
749 \setlength{\parsep}{\saveparsep}}
750 \else
751 \list{\subsubquestionlabel}{\leftmargin\qbackmargin
752 \setlength{\topsep}{\savetopsep}
753 \setlength{\parsep}{\saveparsep}}
754 \fi
755 \item\relax\nointerlineskip\leavevmode
756 \ifEcs@pondystyle
757 \subsubquestionmarks{#1}
758 \else
759 \marksinline{#1}
760 \fi
761 \inqqllisttrue
762 \typeout{Starting subsubQuestionm \thesubsubquestion: #1 on page \arabic{page}}
763 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
764 }
765
766 % \iffalse
767 %% A subsubquestion with a title argument where we check whether it
768 %% also has a marks argument
769 %%
770 % \fi
771 \def\@subsubquestionont#1{
772 \@ifnextchar [{\@subsubquestionu{#1}}
773 {
774 \stepcounter{subsubquestion}

```

```

775 \par
776 \setbox1=\hbox{\subsubquestionlabel}
777 \myskipa=\qqqindent\advance\myskipa by -\wd1
778 \ifinqqqlist
779 \endlist
780 \setlength{\qbackmargin}{0pt}
781 \else
782 \setlength{\qbackmargin}{\qqqindent}
783 \fi
784 \ifEcs@pondystyle
785 \list{\subsubquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex
786 \setlength{\topsep}{\savetopsep}
787 \setlength{\parsep}{\saveparsep}}
788 \else
789 \list{\subsubquestionlabel}{\leftmargin\qbackmargin
790 \setlength{\topsep}{\savetopsep}
791 \setlength{\parsep}{\saveparsep}}
792 \fi
793 \item\relax\nointerlineskip\leavevmode
794 #1
795 \inqqqlisttrue
796 \typeout{Starting subsubQuestiont \thesubsubquestion: #1 on page \arabic{page}}
797 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
798 }
799 }
800
801 % \iffalse
802 %% A subsubquestion with BOTH title AND marks argument
803 %%
804 % \fi
805 \def\@subsubquestionu#1[#2]{
806 \stepcounter{subsubquestion}
807 \par
808 \setbox1=\hbox{\subsubquestionlabel}
809 \myskipa=\qqqindent\advance\myskipa by -\wd1
810 \ifinqqqlist
811 \endlist
812 \setlength{\qbackmargin}{0pt}
813 \else
814 \setlength{\qbackmargin}{\qqqindent}
815 \fi
816 \ifEcs@pondystyle
817 \list{\subsubquestionlabel}{\leftmargin\qbackmargin\labelwidth-1ex
818 \setlength{\topsep}{\savetopsep}
819 \setlength{\parsep}{\saveparsep}}
820 \else
821 \list{\subsubquestionlabel}{\leftmargin\qbackmargin
822 \setlength{\topsep}{\savetopsep}
823 \setlength{\parsep}{\saveparsep}}

```



```

824 \fi
825 \item\relax\nointerlineskip\leavevmode
826 \ifEcs@pondystyle
827 \subsubquestionmarks{#2} #1
828 \else
829 \@printqtitle{#1}
830 \subsubquestionmarks{#2}
831 \fi
832 \inqqqlisttrue
833 \typeout{Starting subsubQuestionu \thesubsubquestion: #1 on page \arabic{page}}
834 %% \typeout{parsep \number\parsep \space topsep \number\topsep}
835 }
836
837 \def\@lastquestion{
838 \ifnum\c@totalsubmarks >0
839 \typeout{* Subquestions : [\arabic{totalsubmarks} marks]}
840 \fi
841 \typeout{*****}
842 \typeout{* Total marks = \arabic{totalmarks}}
843 \typeout{*****}
844 \ifinqqqlist
845 \endlist \endlist \endlist \egroup
846 \else
847 \ifinqqqlist
848 \endlist \endlist \egroup
849 \else
850 \ifinqlist
851 \endlist \egroup
852 \fi
853 \fi
854 \fi
855 }
856

```

3.13 "Continued" macros

\continuedbot

```

857 \newcommand{\continuedbot}{\par\nopagebreak\vfill\nopagebreak
858 \vbox to 3mm{\begin{flushright}
859 (Question \thequestion\ continued on next page)
860 \end{flushright}}\vss}}

```

\continuedtop

```

861 \newcommand{\continuedtop}{
862 \vbox to 0pt{\vss\bf(Question \thequestion\ continued)}\par\vskip 3mm}

```

\continued

```

863 \newcommand{\continued}{\continuedbot\newpage\continuedtop}
864

```

3.14 Spare page

`\sparepage` The text that gets printed is clearly visible in the definition

```
865 \newcommand{\sparepage}{\begin{center}\begin{bf}  
866 SPARE PAGE FOR EXTRA ANSWERS  
867 \end{bf}\end{center}  
868 Cross out rough working that you do not want marked.  
869 \Specify the question number for work that you do want marked.}  
870
```

4 Pondy's stuff

In the way that these kind of things happen, it turns out that some people creating examination scripts using the ECS vuwexam class were also using a lot of additional macros and commands, without knowing from where that functionality came.

It turns out that much of it came from Pondy.

Furthermore, not only did Pondy's extra files, which are usually found lying around in directories containing a previous trimester's scripts, contain additional macros and commands, they also completely modified the style of the examination scripts, but few people knew what did what, nor how. What follows was an attempt to document Pondy's additional stuff, so that those that come after get some idea of what was being provided.

First up, in order to use Pondy's extra stuff, you need to have some extra packages pulled in

```
871 \usepackage{color}
872 \usepackage{boxedminipage}
873 \usepackage{graphicx}
874
875 \definecolor{dgreen}{rgb}{0,.5,0}
876
```

5 Pondy's exam-macros.sty

```
877 \usepackage{boxedminipage}
878 \usepackage{relsize}
879 \usepackage{ifthen}
880
881 \let\subqn=\subquestion
882 \let\subqnm=\subquestion
883 \let\subsubqn=\subsubquestion
884 \let\subsubqnm=\subsubquestion
885
\ronemark
886 \newcommand{\ronemark}{\rmarks[1]}

\lmarks
887 \newcommand{\lmarks}[1]{\rmarks[#1]}

\lonemark
888 \newcommand{\lonemark}{\ronemark}
889

890 \setlength{\fboxrule}{1pt}
891 \newlength{\ansheight}
892 \newlength{\ansboxwidth}
```

```

893 \def\setboxwidth{\setlength{\ansboxwidth}{\linewidth}\addtolength{\ansboxwidth}{-\le
894
895 %\setlength{\ansboxwidth}{\linewidth}%
896 %\addtolength{\ansboxwidth}{-\leftskip}
897 %\addtolength{\ansboxwidth}{-56pt}}
898

\ansft

899 \def\ansft{\larger}
900

\ansspace

901 \newcommand{\ansspace}[1]{\ansline\raisebox{-1mm}[5mm][1.2mm]{\makebox[#1]{\dotfill}}

\dts

902 \def\dts{\raisebox{-1mm}[5mm][1.2mm]{\makebox[6mm]{\dotfill}}}
903

\fullspace

904 \newcommand{\fullspace}[2]{\hbox to 0pt{\raisebox{-1mm}[5mm][1.2mm]
905 {\makebox[#1]{\dotfill}}\hss}{\ansft#2}}
906

\ansline

907 \def\ansline{\rule{0mm}{2.5ex}}
908

\ansstrut

909 \newcommand{\ansstrut}{\rule[-3mm]{0mm}{10mm}}
910

\ans

911 \newcommand{\ans}[1]{% width
912 {\fboxrule=1pt\framebox[#1]{\ansstrut\hfill}}}
913

\fullans

914 \newcommand{\fullans}[2]{\fboxrule=1pt%
915 \framebox[#1]{\ansstrut\hskip 3mm#2\hfill}\par\medskip}}
916

\ansbox

917 \newcommand{\ansbox}[1]{\fboxrule=1pt\setboxwidth%
918 \setlength{\ansheight}{-#1}\addtolength{\ansheight}{7mm}%
919 \framebox[\ansboxwidth]{\rule[\ansheight]{0mm}{#1}\hfill}\par\bigskip}}
920

```

```

\fullansbox
921 \newcommand{\fullansbox}[2]{\setboxwidth% height stuff%
922 {\fboxrule=1pt\setlength{\ansheight}{-#1}\addtolength{\ansheight}{7mm}%
923 \framebox[\ansboxwidth][l]{\rule{\ansheight}{0mm}{#1}
924 \begin{minipage}{\ansboxwidth}#2\end{minipage}\hfill}\par\bigskip}}
925

\paransbox
926 \newcommand{\paransbox}[1]{\fboxrule=1pt\setboxwidth% stuff%
927 \fbox{\begin{minipage}{\ansboxwidth}#1\end{minipage}\hfill}\par\bigskip}}
928

\prokansbox
929 \newcommand{\prokansbox}[1]{\fboxrule=1pt\setboxwidth%
930 \fbox{\begin{minipage}{\ansboxwidth}#1\end{minipage}\hfill}\par\bigskip}}
931
932

\progdispbox
933 \newcommand{\progdispbox}[1]{\fboxrule=.2pt\setboxwidth%
934 \fbox{\begin{minipage}{\ansboxwidth}#1\end{minipage}\hfill}\par\bigskip}}
935

progbox (env.)
936 \newenvironment{progbox}{\fboxrule=1pt\setboxwidth%
937 \begin{boxedminipage}{\ansboxwidth}}{\end{boxedminipage}\hfill\par\bigskip}

dispbox (env.)
938 \newenvironment{dispbox}{\fboxrule=.2pt\setboxwidth%
939 \begin{boxedminipage}{\ansboxwidth}}{\end{boxedminipage}\hfill\par\bigskip}

\floatns
940 \newcommand{\floatans}[3]{\fboxrule=1pt%
941 \fbox{\begin{minipage}[#1]{#2}\rule{0mm}{#3}\mbox{}\hfill\mbox{}\end{minipage}\hfill}
942

\floatansbox
943 \newcommand{\floatansbox}[3]{\fboxrule=1pt%
944 \fbox{\begin{minipage}[#1]{#2}#3\mbox{}\hfill\mbox{}\end{minipage}\hfill}\par\bigskip}
945

\floatdispbox
946 \newcommand{\floatdispbox}[3]{\fboxrule=0.2pt%
947 \fbox{\begin{minipage}[#1]{#2}#3\mbox{}\hfill\mbox{}\end{minipage}\hfill}\par\bigskip}
948

\nfullans
949 \newcommand{\nfullans}[1]{\fullans{#1}}% stuff
950

```

`\nfullansbox`

```
951 \newcommand{\nfullansbox}[2]{\fullansbox{#1}{#2}}
952
```

`\nansbox`

```
953 \newcommand{\nansbox}[1]{\ansbox{#1}}% height
954
```

`\nparansbox`

```
955 \newcommand{\nparansbox}[1]{\paransbox{#1}}
956
```

`\nprogansbox`

```
957 \newcommand{\nprogansbox}[1]{\progansbox{#1}}
958
```

```
959 \def\epsfxbox#1#2{\epsfxsize=#1 \epsfbox{#2}}
```

```
960 \def\epsfysize#1#2{\epsfysize=#1 \epsfbox{#2}}
```

```
961 \def\epsfscbox#1#2{\def\epsfsz##1##2{#1##1}\epsfbox{#2}}
```

```
962 \def\epsffitbox#1{\def\epsfsz##1##2{\ifnum##1>\hsize\hsize\else##1\fi}\epsfbox{#1}}
```

```
963
```

Italicised versions of some abbreviations

`\eg`

```
964 \def\eg{\it e.g.}
```

`\ie`

```
965 \def\ie{\it i.e.}
```

`\Eg`

```
966 \def\Eg{\it E.g.}
```

`\Ie`

```
967 \def\Ie{\it I.e.}
```

`\etc`

```
968 \def\etc{\it etc.}
```

`\vs`

```
969 \def\vs{\it vs.}
```

```
970
```

`\deg`

```
971 \def\deg{(^{\circ})}
```

```
972
```

```

973 \newboolean{showanswers}
974 \setboolean{showanswers}{true}
975
976 \newsavebox{\savedAnsBox}
977 \newlength{\ansBoxHeight}
978
979 \newcommand{\anscolor}{%
980 \ifthenelse{\boolean{showanswers}}{\color{blue}}{\color{white}}}
981
982 \newcommand{\Ans}[1]{%
983 \ifthenelse{\boolean{showanswers}}
984 {\protect{\ansft\anscolor\, #1}}
985 {\mbox{\phantom{\ansft\, #1}}}}
986

```

answerCode (*env.*)

```

987 \newenvironment{answerCode}
988 {\renewcommand{\baselinestretch}{1.1}\addtolength{\baselineskip}{0.1\baselineskip}%
989 \begin{lrbox}{\savedAnsBox}\begin{minipage}{\hsize}\anscolor}%
990 {\end{minipage}\end{lrbox}%
991 \ifthenelse{\boolean{showanswers}}
992 {\vbox to 0pt{\vspace*{0.0em}\usebox{\savedAnsBox}\vss}}
993 {\vbox to 0pt{\vss}}}
994

```

givenCode (*env.*)

```
995 \newenvironment{givenCode}
996 {\par\renewcommand{\baselinestretch}{1.1}\addtolength{\baselineskip}{0.1\baselineskip}
997 {}
998
```

\figureAndAns

```
999 \newcommand{\figureAndAns}[3]{
1000 \ifthenelse{\boolean{showanswers}}
1001 {\includegraphics[#1]{#3}}
1002 {\includegraphics[#1]{#2}}
1003
```

\figureAns

```
1004 \newcommand{\figureAns}[2]{%
1005 \savebox{\savedAnsBox}{\includegraphics[#1]{#2}}%
1006 \ifthenelse{\boolean{showanswers}}
1007 {\usebox{\savedAnsBox}}
1008 {\ansBoxHeight=\ht\savedAnsBox \advance\ansBoxHeight by \dp\savedAnsBox
1009 \advance\ansBoxHeight by 0.5em
1010 \vbox to \ansBoxHeight{\vss}}
1011
```

6 Pandy's javalisting.sty

```
1012 \usepackage{listings}
1013 \usepackage{relsize}
1014
1015 \lstdefinlanguage{pjava}{
1016   morekeywords={abstract,break,case,catch,class,
1017     const,continue,default,do,else,extends,false,final,
1018     finally,for,goto,if,implements,import,instanceof,
1019     interface,label,native,new,null,package,private,protected,%
1020     public,return,static,super,switch,synchronized,this,throw,%
1021     throws,transient,true,try,void,volatile,while},
1022   morekeywords={ [2] boolean,byte,char,double,float,int,long,short,String,
1023     Scanner,Integer,Double,DrawingCanvas,JFrame,JButton,JTextField,JPanel,
1024     Color,File,PrintStream,List,Set,ArrayList,HashSet,E,Collection,Stack,Queue},
1025   sensitive,
1026   morecomment=[l]//,
1027   morecomment=[s]{/*}{*/},
1028   morestring=[b]",
1029   morestring=[b]',
1030 }
1031
1032 \lstdefinestyle{jjcode}{
1033   language=pjava,
1034   basicstyle=\sffamily,
```



```

1035  stringstyle=\ttfamily,
1036  commentstyle=\rmfamily\itshape,
1037  keywordstyle={\itshape},
1038  showstringspaces=false,
1039  columns=flexible
1040 }
1041

codefont (env.)
1042 \newenvironment{codefont}{\begin{sffamily}}{\end{sffamily}}

idfont (env.)
1043 \newenvironment{idfont}{\begin{codefont}\begin{upshape}\begin{mdseries}}
1044 {\end{mdseries}\end{upshape}\end{codefont}}

keywordfont (env.)
1045 \newenvironment{keywordfont}{\begin{codefont}\begin{upshape}\begin{bfseries}}
1046 {\end{bfseries}\end{upshape}\end{codefont}}

typefont (env.)
1047 \newenvironment{typefont}{\begin{codefont}\begin{slshape}\begin{mdseries}}
1048 {\end{mdseries}\end{slshape}\end{codefont}}

stringfont (env.)
1049 \newenvironment{stringfont}{\begin{larger}\begin{ttfamily}\begin{mdseries}}
1050 {\end{mdseries}\end{ttfamily}\end{larger}}
1051

\jstr
1052 \newcommand{\jstr}[1]{\begin{stringfont}\raisebox{.3ex}{\textit{#1}}\raisebox{.3ex}{\textit{#1}}\end{stringfont}}
1053

\cd
1054 %% For use within ordinary text (\id for compatibility only)
1055 \newcommand{\cd}[1]{\begin{idfont}\textit{#1}\end{idfont}}
1056 \newcommand{\cd}[1]{\begin{smaller}\begin{idfont}\textit{#1}\end{idfont}\end{smaller}}

\kw
1057 \newcommand{\kw}[1]{\begin{keywordfont}\textbf{#1}\end{keywordfont}}

\tp
1058 \newcommand{\tp}[1]{\begin{typefont}\texttt{#1}\end{typefont}}

```

6.1 Pondy's Java convenience code macros

Pondy defined a few convenience macros for use when writing java code snippets, however because he rarely wrote any mathematical content in his tests and exams, he failed to notice that many of his convenience macros overwrote existing L^AT_EX macros. John Haywood, a statistician, who rarely wrote Java code but wrote a lot of mathematical content didn't fail to notice this, and so these macros now all have a "j" prepended to avoid any clashes.

```
\jeq
1059 \def\jeq{\begin{codefont}=\end{codefont}}

\jgteq
1060 \def\jgteq{\(>\)\jeq}

\jlteq
1061 \def\jlteq{\(<\)\jeq}

\jneq
1062 \def\jneq{!\jeq}

\jeqeq
1063 \def\jeqeq{\jeq\,\jeq}

\jdec
1064 \def\jdec{{\tt -\,-}}

\jgt
1065 \def\jgt{\(>\)}

\jlt
1066 \def\jlt{\(<\)}

\jtwid
1067 \def\jtwid{\(\sim\)}

\jdamp
1068 \def\jdamp{{\&\&}}

\jdor
1069 \def\jdor{\(\mid\,\mid\)}

\jbksl/
1070 \def\jbksl/{\(\backslash\)}
```

```

\jbksln
1071 \def\jbksln{\(\backslash)n}

\jtms
1072 \def\jtms{\(\ast\)} % *

\jqt
1073 \def\jqt{\raisebox{.3ex}{\,\,\ttfamily '}}

\jdqt
1074 \def\jdqt{{\raisebox{.3ex}{\ttfamily "}}} %{\,\,\tt'\hskip -0.3em'}
1075

1076 \</class>

```