QuestionTeX

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Contents

1 Introduction

QuestionTEX is a collection of LATEX macros that enables authors to write multiple-choice tests. The LATEX sources can be processed in order to

- create a high quality printer's copy with standardized layout
- create a standard solution, including additional feedback
- create an interactive classroom assessment test (CAT)
- import the questions into the Moodle Learming Management System
- ... your idea here!

A basic question is entered as

```
\question{The square root of two is \ldots}
  \false{a rational number.}
    \feedback{Try to represent it as a quotient of integers!}
  \true{a real number.}
  \false{an imaginary number.}
```

and is typeset by LATEX to produce

1. The square root of two is ...

(a) a rational number.

Try to represent it as a quotient of integers!

√ (b) a real number.

(c) an imaginary number.

If you want to get an overview about the available commands and what they do, the fastest way is having a look at the template file that comes with this package. A more detailed command specification can be found in section 3 of this document.

2 Deployment mechanisms

2.1 Creation of a printer's copy

Simply use the LATEX source to create a document of whatever type you like, respectively what your LATEX distribution allows you to. Typically, this will be a `.pdf` file or a `.dvi` file.

2.2 Creation of a solution

By default the solution, including your feedback will appear in the printer's copy. If you do not want this you can add `\hidesolution` (detailed information in section 3).

2.3 Creation of an interactive online-test

This feature is not fully automated yet, but a user friendly upload mechanism with graphical user interface is coming up soon.
At the moment, you can send us an email with your source and preferred grading rules and we will set up the test on our system.

2.4 Import of questions into Moodle

This package contains a Moodle plug-in (with installation instructions), which adds the *QuestionTeX* format as an import/export format for multiple choice questions. After the installation you will be able to upload the *QuestionTeX* sources directly to Moodle. In case your sources include image files, you may just create a zip archive with all the relevant files and upload the zip instead.
However, since Moodle does not have a built-in LaTeX distribution, certain restrictions must be obeyed in order to ensure proper display of your questions in Moodle (detailed information in section 4.1).

3 Command reference

All commands are sorted alphabetically.

3.1 Writing questions

This is a selection of the available commands for writing questions. In order to see some examples for questions, have a look at the template file that comes with this package.

`\explanation` May be used to outline an approach to the solution. If present, this command will normally be placed at the very end of a question. When the questions are deployed in a static context, the visibility of the explanation may be controlled by `\hidesolution`.

`\false` Contains a wrong answer.
`\false{Some wrong answer.}`

`\feedback` If you want to give a feedback to a specific answer, you may do so by using the feedback-command *after the answer*.
This is especially useful, when the questions are deployed in an interactive context, since the feedback to a student will then depend on his or her answers. In a static context the display of feedbacks can be controlled by `\hidesolution`.

`\intro` Inserts arbitrary text that is not an argument to another command into the quiz.

`\keepme` Same as `\intro`.

`\question` Holds the question text for a question with possibly multiple correct answers. An identifier of the question may be supplied via the optional parameter. The identifier must consist only of letters of the English alphabet and the underscore

_ :
```
\question[Identifier_1]{Now, ain't that easy?}
```

`\questionSc` Holds the question text for a question with a single correct answer. An identifier of the question may be supplied via the optional parameter. The identifier must consist only of letters of the English alphabet and the underscore _ :
```
\questionSc[Identifier_1]{Now, ain't that easy?}
```

`\true` Contains a true answer. A question may have multiple true answers.
```
\true{My true answer}
```

3.2 Setting global properties

The following commands define global properties of the quiz. They should appear *before* the first question.

`\hidesolution` This can be used to hide all the solution meta data of the questions, i. e., only the question and the answers are shown.

4 Appendix

4.1 Restrictions for Moodle import

As of today (2014), there are two main display mechanisms in Moodle

1. The browser processes HTML. It does not understand LaTeX at all.
2. Plug-ins like mimeTeX, MathJax or JsMath process formulae that are enclosed by certain delimiters and convert them into graphics. They do understand appreciable parts of LaTeX but not everything.

Since plain text and images are processed directly by the browser, while formulae are processed by the plug-in, different rules apply.

4.1.1 Plain text

Everything that is not part of any type of equation environment (like `$\ldots$`, 'eqnarray', etc.), is treated as plain text. *Only* the LaTeX commands that are present in the following list, may be used here. The ones in the list are either translated into their respective HTML entities or simply discarded (i.e. deleted).

- *Translated* are:
  - `\\`, `~`
  - `\emph{...}`, `\textit{...}`, `\textbf{...}`, `\underline{...}`, `\(...\)`
  - `\begin{center}...\end{center}`
  - `\{`, `\}`, `\textbackslash`
  - umlaute

- *Discarded* are:
  - `\vskip`, `\,`

These lists may be extended on demand. Just send us an email with your request for modification.

4.1.2 Images

Moodle allows for the types `png`, `jpg`, `gif`, i.e. `eps` and `pdf` may not be used.

4.1.3 Formulae

This refers to symbols that are enclosed by an equation environment (like `$\ldots$`, 'eqnarray', etc.). The restrictions depend on the plug-in that is being used to display formulae. Below, you find the result from our experience with mimeTeX.

- The definition of new macros is only allowed, if they do not take parameters (we do not replace #1 and the like). Also, this feature is still in beta stage.
- Don't use references.
- Don't use `\makebox`

4.1.4 Grading

Since there is no possibility to specify grading rules during import into Moodle, we had to define a standard here:
For each question, the full 100% are distributed equally among its true answers. False answers have fraction 0.