xquiz
An XML based system for generating quizzes

Brian W. Mulligan
University of Texas at Austin

http://www.as.utexas.edu/~bwmulligan/GSPS_20_April_2018_xquiz.pdf

Grad Student – Post-Doc Seminar
University of Texas at Austin
20 April 2018

Plan for this talk

Overview

Installing

The Question Bank

Quizzes

Running the Software

Coming Soon

Plan for this talk

Overview

Installing

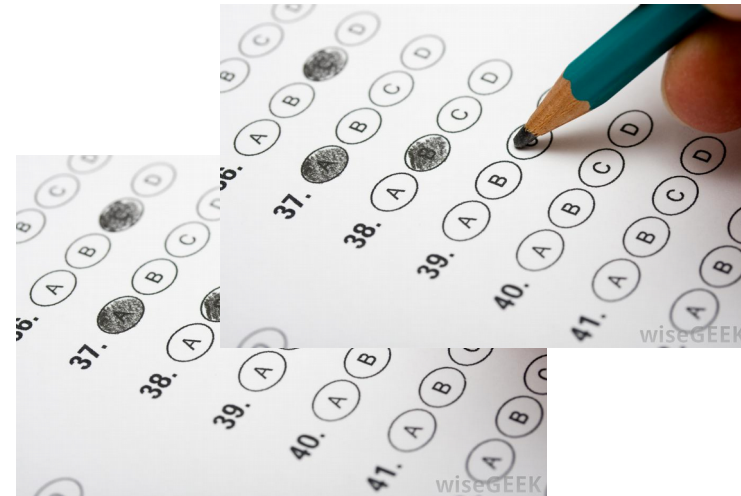The Question Bank

Quizzes

Running the Software

Coming Soon

Overview

Plan for this talk

Overview

Installing

The Question Bank

Quizzes

Running the Software

Coming Soon

Prerequisites

Packages, etc.:

`libxml2` development package

C++ compiler (Windows: Cygwin / g++ or MS Visual c++ 2018)

Some variant of LaTeX

`exam` package for LaTeX

Autotools

Recommended: git

Windows: (executables only)

Install Visual Studio Redistributable

https://www.visualstudio.com/downloads/

Install win-iconv

https://www.astronaos.com/win-iconv-0.0.8-installer-x64.msi

Install libxml2 for windows

https://www.astronaos.com/libxml2-installer-64.msi

Install xquiz

https://www.astronaos.com/xquiz-installer-1.0.3-x64.msi

Special instructions: Windows (development)

Prerequisites:

Win-iconv: https://github.com/astrobit/win-iconv

Libxml2 for windows : https://github.com/astrobit/libxml2

Microsoft Visual c++ (2017)

Special instruction (mac)

Prerequisites:

Autotools:

    Easy installation script:

    https://gist.github.com/justinbellamy/2672db1c78f024f2d4fe#file-cltools-sh

    Alternative?:

    https://paolozaino.wordpress.com/2015/05/05/how-to-install-and-use-autotools-on-mac-os-x/

Libxml2 (dev version, with c++ header, pkg-config)

Probably need homebrew

    See https://github.com/Homebrew/legacy-homebrew/issues/19030

    Install libxml2 through homebrew

    Add to environment variable: PKG_CONFIG_PATH

        /usr/local/opt/libxml2/lib/pkgconfig

Source Code Installation

Without git:

https://github.com/astrobit/xquiz/archive/v1.0.1.tar.gz

With git:

```
git clone git@github.com:astrobit/xquiz.git
```

Installation (autotools)

cd xquiz

Libtoolize

aclocal

automake --add-missing

autoreconf

./configure

   Alternative instllation path:

      ./configure --prefix=/your/desired/path

make

make install

Plan for this talk

Overview

Installing

The Question Bank

Quizzes

Running the Software

Coming Soon

A Quick XML Introduction (1/2)

XML Tutorial

https://www.w3schools.com/xml/default.asp

XML tag

<?xml version="1.0"?>

Document type specifier (optional)

<!DOCTYPE bank PUBLIC "-//B.W.Mulligan//DTD xquiz v1.0//EN" "
https://www.astronaos.com/xquiz-bank-1.1.0.dtd">

libxml will read remote file and validate the XML in the file.

A Quick XML Introduction (2/2)

Elements

<tag>...</tag>

Nested Elements

<tag>

   <othertag>..</othertag>

</tag>

String Data

<tag>A quick brown fox jumped over the lazy dog</tag>

Attributes

<tag attribute1="xyz" attribute2="abc">...</tag>

<tag attribute1="xyz" attribute2="abc"/>

Example Bank

xquiz/examples/bank.xml

Question Bank top level

Root element: <bank>...</bank>

Questions: <question>...</question>

Attributes:

id

Unique identifier

Must start with a letter and contain only letters, numbers, or "certain punctuation"

format

Currently only multiple choice ("mc") supported

Keys [optional]

Comma separated list of keywords

May get replaced by nested elements someday?

Question Details

Question Prompt: <prompt>Prompt Text</prompt>

Answer choices: <choices>...</choices>

Attributes:

Scramble

"true" or "false" to indicate that answers can be scrambled

Specific answer choice: <choice>Text<choice>

Attributes:

Id

Unique identifier

LaTeX label will be generated with same id

Correct [optional]

"true" or "false" to indicate if it is the right answer

Assumes "false" if not specified

Multiple correct answers allowed**

Multiple choices won't show up in key, but will in solution

Scramble [optional]

"true" or "false" to indicate if answer may be scrambled.

Assumes "true" if not specified

Notes for solution: <note>Text</note>

Try it!

Prompt:

Which of the following does not affect the Newtonian gravitational force experienced by two objects?

Answers:

The mass of each object.

The distance between the objects.

The fundamental strength of gravity.

The density of the objects.

Try it!

Prompt:

What time does the moon rise during full moon?

Answers (make sure they are always in this order):

6 am

Noon

6 pm

Midnight

Note:

The moon rises as the sun is setting when it is full.

Special Answer Choices

"All of the Above."

<choiceall id="a1.e" correct="true"/>

Attributes:

Id

Same as that for other answers

Correct [optional]

Same as that for other answers

Must occur after all other choices (except special choices) [limitation due to XML]

"Some" of the above

<choicesome id="a1.e" correct="true" refs="a1.a,a1.b"/>

Attributes:

Id

Same as that for other answers

Correct [optional]

Same as that for other answers

Refs

References to id's of other answers

Renders as e.g. "A and B"

Current quirk: order may be weird due to scrambling, e.g. "C, A, and B"

Must occur after "All of the Above" [limitation due to XML]

"None of the Above."

<choicenone id="a1.e" correct="true"/>

Atrributes: same as "All of the above"

Must be after any "All of the above" and "Some of the above" [limitation due to XML]

Try it!

Prompt:

Which of the following properties are used to describe a wave?

Answers:

Wavelength

Frequency

Speed

All of the Above

Wavelength and Frequency [e.g. A and B]

LaTeX features

Fill in the blank

\fillin

Equations in question or answers

Use math mode ($E=mc^2$)

Referencing questions* and answers

\ref{a1.a}

Question labels not implemented as of v1.0.1. Coming soon!

Plan for this talk

Overview

Installing

The Question Bank

Quizzes

Running the Software

Coming Soon

Example

xquiz/examples/quiz.xml

Basics

DTD

https://www.astronaos.com/xquiz-1.1.0.dtd

Root element: <quiz>

Question Bank: <bankref file="/path/to/bank"/>

Specify full or relative path to the question bank

Multiple banks allowed (hasn't been tested with more than one)

Title: <title>Text Form %c</title>

VERY IMPORTANT: The form code needs to be printed in the title. Typically include "Form %c" (not in quotes) in the title.

The %c is REALLY REALLY IMPORTANT – this is the code that gets filled in with the test form code for each form.

Someday I may manage to find a way to do this more flexibly.

Date: <date>Text</date>

Optional?

The date on which the quiz will be taken (or whatever else you want to do with that field).

Instructions: <instructions>Text</instructions>

Will be printed below the title and date on the form

Question set

Question list: <questions>...</questions>

Reference to question in bank: <qref id="q1"/>

Atributes:

Id

Question ID in the bank(s)

Try it!

Create a quiz with the three questions you put into your bank in the previous section.

Plan for this talk

Overview

Installing

The Question Bank

Quizzes

Running the Software

Coming Soon

Generating a quiz

`xquiz-gen Quiz.xml`

Will prompt for how many forms you wish to generate.

If there is a makefile in the directory, will prompt if you wish to overwrite it.

Generates:

Quiz_A.tex

Quiz_A_key.tex

Quiz_A_Solutions.tex

Makefile

On mac & linux, it will attempt to run LaTeX and generate pdfs.

Command line options for xquiz-gen

# of forms:

-n #

e.g. Xquiz-gen -n 2 Quiz.xml generates form A and B

Inhibit scrambling the questions

--nsq

Questions will show up in same order as in quiz XML

Useful for draft versions

Inhibit scrambling the answers

--nsa

Answers will show up in same order as in the bank

Useful for draft versions

Show notes in solutions

--shownotes

Automatically overwrite the makefile

-f or --overwrite-makefile

Prevents the interactive prompt

Automatically inhbit overwriting the makefile

--dont-overwrite-makefile

Prevents the interactive prompt

Inhibit trying to run pdflatex

-g, --no-gen,or --dont-run-makefile

Getting help (briefly)

`xquiz-gen`

The list of command line options will be printed if no file is specified, or if you do `xquiz-gen --help`

Printing the entire bank

xquiz-bank

Generates a quiz consisting of all questions from the question bank, unscrambed

Lists question and answer IDs in the quiz

Lists keywords for each question

Lists complete list of keywords to console

Quirk: outputs the .tex file to the same location as the bank

Will probably get fixed soon.

Plan for this talk

Overview

Installing

The Question Bank

Quizzes

Running the Software

Coming Soon

Planned future features

Graphical User Interface

Cross-platform

Will automatically fill in question and answer IDs

Fix some of the quirks

e.g. save location of .tex from xquiz-bank

Find questions by keyword

Add some elements to each question in the bank

Author(s)?

Record how well students did by year/section/???

Record when question was written?

Package Installers for linux (& mac?)

Summary

Free & Open Source, Multi-platform

Question Bank with easy way to pick questions

Easy to scramble questions & answers for multiple forms

Generate key and solutions for students