Package 'exams2learnr'

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Title Interface for 'exams' Exercises in 'learnr' Tutorials

Description Automatic generation of quizzes or individual questions for 'learnr' tutorials based on 'R/exams' exercises.

Depends R (>= 4.0.0), exams (>= 2.4-0)

Imports knitr, learnr (>= 0.11.0), rmarkdown

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URL https://www.R-exams.org/tutorials/exams2learnr/

BugReports https://codeberg.org/zeileis/exams2learnr/issues

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Author Achim Zeileis [aut, cre] (ORCID:
<https://orcid.org/0000-0003-0918-3766>)

Maintainer Achim Zeileis <Achim.Zeileis@R-project.org>

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exams2learnr *R/exams Interface for learnr Tutorials*

Description

The exams2learnr interface can be used within **learnr** tutorials (in R/Markdown format) to dynamically insert individual questions or entire quizzes based on R/exams exercise templates.

Usage

```
exams2learnr(file, output = NULL,
  show_solution = TRUE, allow_retry = FALSE, random_answer_order = FALSE,
 correct = "Correct!", incorrect = "Incorrect", try_again = incorrect, caption = "Quiz",
 n = 1L, nsamp = NULL, dir = ".", edir = NULL, tdir = NULL, sdir = NULL, verbose = FALSE,
  quiet = TRUE, resolution = 100, width = 4, height = 4, svg = FALSE,
  converter = "pandoc-mathjax", base64 = TRUE, label = NULL,
  ...)
```

Arguments

file	character. A specification of a (list of) exercise files.
output	character specifying the output. Can either be a single learnr "question", a learnr "quiz" containing one or more questions, or a standard "list" of lists of learnr questions. Details are provided below.
show_solution	logical. Should solution texts (if any) be shown after an attempt in a question (via post_message).
allow_retry	logical. Should users be allowed to retry a question after answering it incorrectly?
random_answer_order	logical. Should answer options be shuffled randomly by learnr when running the quiz?
correct	character. Text to print for a correct answer.
incorrect	character. Text to print for an incorrect answer (when allow_retry is FALSE.
try_again	character. Text to print for an incorrect answer (when allow_retry is TRUE.
caption	character. Text to display at the start of the quiz (provided output = "quiz" is used).
n	integer. The number of copies to be taken from file. Typically this is n = 1 because learnr questions and quizzes do not support question banks with multiple variations.
nsamp	integer. The number(s) of exercise files sampled from each list element of file. Sampling without replacement is used if possible. (Only if some element of nsamp is larger than the length of the corresponding element in file, sampling with replacement is used.)

dir	character. Standard argument for exams interfaces and hence included in the argument - but actually not used because exams2learnr does not write output files.
edir	character specifying the path of the directory (along with its sub-directories) in which the files in file are stored.
tdir	character specifying a temporary directory, by default this is chosen via tempfile. Note that this is cleaned up (i.e., existing files are deleted) and only certain temporary files are preserved.
sdir	character specifying a directory for storing supplements, by default this is chosen via tempfile.
verbose	logical. Should information on progress of exam generation be reported?
quiet	logical. Should output be suppressed when calling xweave?
resolution, width, height	numeric. Options for rendering PNG (or SVG) graphics passed to xweave.
svg	logical. Should graphics be rendered in SVG or PNG (default)?
converter, base64	arguments passed on to make_exercise_transform_html. Usually neither of the defaults should be modified.
label	character. Label to be used internally as the (prefix for the) question ID(s).
...	further arguments passed on to question.

Details

exams2learnr provides an interface for including exercises from R/exams (https://www.R-exams.org/) in **learnr** tutorials. This is done by rendering the exercises (either in .Rnw or .Rmd format) into HTML and embedding that into learnr question objects. These can then be rendered by learnr shiny apps.

Currently, num, schoice (single-choice), mchoice (multiple-choice), and string exercises from R/exams are supported. But cloze questions that combine several of these question types in a single exercise are not supported yet.

The output format of exams2learnr is chosen automatically, by default.

If it is applied just to a single file (and with just a single random replication) a single learnr question is produced. This is useful if the learnr tutorial should include other text elements or different questions with different control options.

If exams2learnr is applied to a vector or list of files (with just a single random replication), then an entire learnr quiz is produced. This is useful when multiple questions should be set up with the same control options in one go.

If more than n = 1 random replications are produced then a standard list is returned - because learnr currently does not provide a compound object that can capture a question bank with multiple replications. The list has one element per random replication, each of which is a list of learnr question objects.

The format of the return value can also be controlled by the output argument if the desired format is not selected automatically.

The function exams2learnr is intended to be used within the code of learnr .Rmd tutorials. Additionally, the function run_quiz can set up a suitable .Rmd file and directly run it. This is intended mostly for quick interactive testing when authoring R/exams exercises.

Value

Depending on its arguments, exams2learnr either returns a single learnr question, an entire learnr quiz, or a list of learnr question lists. See above for more details and some illustrations in the examples below.

See Also

question, quiz, xexams, xweave, run_quiz

Examples

```
## Default outputs:
## - a single exercise yields a learnr tutorial_question
## - several exercises yields a learnr tutorial_quiz

## Example R/exams exercise:
## - function: "string" question, represented as "learnr_text"
qn <- exams2learnr("function.Rmd")
class(qn)
print(qn)

## Example R/exams exercises:
## - swisscapital: "schoice" question, represented as "learnr_radio"
## - switzerland: "mchoice" question, represented as "learnr_checkbox"
qz <- exams2learnr(c("swisscapital.Rmd", "switzerland.Rmd"))
class(qz)
print(qz)

## Usually exams2learnr() is used within learnr .Rmd tutorials,
## two example files are shipped within the package.
## - learnr_questions.Rmd: all questions set up indvidually
## - learnr_quiz.Rmd: an entire quiz set up in one go
lr <- system.file("learnr", package = "exams2learnr")
dir(lr)

## The quiz .Rmd file is rather short and straightforward.
rmd <- file.path(lr, "learnr_quiz.Rmd")
writeLines(readLines(rmd))

## Not run:
## Either .Rmd file can be loaded in RStudio and run from there or
## using the command line, e.g.,
rmarkdown::run(rmd)

## End(Not run)
```

run_quiz *Setting Up and Running Simple learnr Quizzes with R/exams Exercises*

Description

The run_quiz function is a convenience tool that sets up a learnr tutorial embedding R/exams exercises in a temporary directory and directly running it in a shiny app.

Usage

```
run_quiz(file, name = "quiz", title = "R/exams quiz", dir = NULL, edir = NULL, ...,
  default_file = NULL, auto_reload = TRUE, shiny_args = NULL, render_args = NULL)
```

Arguments

file	character. A specification of a (list of) exercise files.
name	character. A name prefix for the resulting learnr tutorial .Rmd file.
title	character. Title of the learnr tutorial.
dir	character. A path in which the tutorial file is created, by default chosen as a tempfile.
edir	character. The path of the directory (along with its sub-directories) in which the files in file are stored. If both dir and edir are NULL (the default), the edir is set to the current working directory.
...	arguments passed to exams2learnr.
default_file, auto_reload, shiny_args, render_args	arguments passed to run.

Details

run_quiz is a convenience function that sets up a learnr .Rmd tutorial (in a temporary directory by default) with a quiz and then calls run from **rmarkdown** to quickly try out the quiz interactively.

For full customization it is recommended to set up a dedicated .Rmd file within which exams2learnr can be used to include R/exams exercises.

Value

Invisible NULL (from link[rmarkdown]{run}).

See Also

exams2learnr, run

Examples

```
## Not run:
## quickly run a quiz based on a set of R/exams exercises
run_quiz(c("capitals.Rmd", "fruit.Rmd", "function.Rmd"))

## End(Not run)
```

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