

...I prepared the online exam using the `exams2openolat()` function. The R code I used along with a couple of comments is provided below.

```
## load package
library("exams")

## exercises for the exam
## (the actual exam had 16 exercises overall, not just 2)
exm <- c("grundwasser-1-068.Rnw", "num-setzung-1-steinbrenner.Rnw")

## date used as seed and file name
dat <- 20200528
set.seed(dat)

rxm <- exams2openolat(exm,
  edir = "/path/to/exercise/folder/",
  n = 200, ## number of random versions for each exercise
  name = paste("BmGbl-Onlinetest", dat, sep = "_"),
  points = 1, ## all exercises yield 1 point
  cutvalue = 8, ## threshold for passing the exam

  ## evaluation rule for multiple-choice exercises (standalone and within cloze):
  ## every wrong answer cancels a correct answer
  mchoice = list(eval = exams_eval(partial = TRUE, negative = FALSE, rule = "true")),
  cloze = list(eval = exams_eval(partial = TRUE, negative = FALSE, rule = "true")),

  solutionswitch = FALSE, ## do not show full solution explanation
  maxattempts = 1,
  shufflesections = TRUE, ## sequence of exercises is shuffled randomly
  navigation = "linear", ## disable switching back and forth between exercises
  duration = 120, ## 2 hours
  stitle = "Exercise", ## section title (for group of exercises)
  ititle = "Question" ## item title (for individual exercises)
)
```

Challenges and outlook

The main problem by producing randomized numeric examples was to find limits for the input so that the output is physically reasonable. Especially for newly created exercises, it is absolutely necessary that other colleagues act as test calculators, such that errors can be detected before students find them in their exams....