Package 'netmathtools'

October 31, 2016

Type Package

Title Automate NetMath Mentor Duties

Version 0.1.0

Description The package currently mimicks requests to the NetMath Mathable API in order to streamline mentor duties.

License file LICENSE

LazyData TRUE

RoxygenNote 5.0.1

Depends R (>= 3.1.1)

Imports curl,jsonlite,data.table,dplyr,magrittr

Suggests knitr,rmarkdown

VignetteBuilder knitr

R topics documented:

api *The URL for the Mathable API endpoint being useds*

Description

The URL for the Mathable API endpoint being useds

Usage

```
netmathtools:::api
```

Format

A character string

calc_progress *Calculate a student's status in their course*

Description

Calculate a student's status in their course

Usage

```
calc_progress(course_id, latest_lesson, latest_tryit, end_date)
```

Arguments

course_id	The course id for which the student is enrolled, used to select the correct schedule
latest_lesson	The latest lesson that the student has completed
latest_tryit	The latest Try It that the student has completed
end_date	The end date of the student, must be an R date object

Value

A data table with columns:

- ProgressStatus The status of the student determined by the criteria set by the NetMath office
- DaysLeft The number of days left in the course the student has
- DaysBehind The number of days behind the recommended schedule the student is
- TryItsBehind The number of Try Its behind the recommended schedule the student is
- LessonsBehind The number of Lessons behind the recommended schedule the student is
- CurrentPace The number of Try Its submitted per day the student is averaging
- CurrentInterp A plain-english (approximate) interpretation of what the student's current pace means about their submission behavior
- TryItsLeft The number of Try Its the student has left in the course

- NeededPace The number of Try Its per day the student must average in order to complete the course on time
- NeededInterp A plain-english (approximate) interpretation of what the NeededPace means in terms of needed submission behavior from the student. Intentionally rounded up to the half day

Examples

```
calc_progress("deployedcourses/uiuc_netmath_math461_r2012_mm",
              latest_lesson = 4,
              latest_tryit = 3,
              end_date = as.Date("12/25/2016", format = "%m/%d/%Y"))
```

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floor *A function to extend the functionaliy of the base::floor function*

Description

A function to extend the functionaliy of the base::floor function

Usage

```
floor(x, digits = 0)
```

Arguments

x	A numeric
digits	The number of digits to the left of the decimal place to round to

Details

Usually used for purchase data when you need to floor the cents

Value

A numeric

Examples

```
x <- 99.9999
floor(x, 2)
# is equivalent to:
base::floor(100 * x)
```

`get_all_grades` *Get the all grades your students for the courses you mentor*

Description

Get the all grades your students for the courses you mentor

Usage

```
get_all_grades(h = NULL, user = NULL, passwd = NULL, name = NULL,
  all_students = FALSE, active = FALSE)
```

Arguments

`h`	A valid handle to a Mathable session (logged in and cookies in jar)
`all_students`	Boolean, should all of the grades be pulled, or just the logged in Mentor's?
`active`	Boolean, should only the active students be pulled?

Value

A data frame with columns:

- `CourseId` The fully qualified course ID in Mathable
- `Mentor` The mentor name
- `Status` The status of the student, e.g. "Completed", "Active" or "Withdrawn"
- `Name` The full name of the student in Last Name, First Name form
- `LastName` The last name of the student
- `FirstName` The first name of the student
- `Value` The grade/status of the Try It
- `Lesson` The Lesson number
- `TryIt` The Try It number
- `CourseName` The "short name" for the course

Examples

```
## Not run:
session <- login("mkemp6@netmath.illinois.edu", "<passwd>")
get_all_grades(h = session$handle, name = session$name)

## End(Not run)
```

get_grades_csv *Get the grades your students for the courses you mentor*

Description

Get the grades your students for the courses you mentor

Usage

```
get_grades_csv(course_id, name, h = NULL, user = NULL, passwd = NULL,
  all_students = FALSE, active = FALSE)
```

Arguments

course_id	The fully qualified id for the course you'd like to pull grades for
h	A valid handle to a Mathable session (logged in and cookies in jar)
all_students	Boolean, should all of the grades be pulled, or just the logged in Mentor's?
active	Boolean, should only the active students be pulled?

Value

A data frame with columns:

- Mentor The mentor name
- Status The status of the student, e.g. "Completed", "Active" or "Withdrawn"
- Name The full name of the student in Last Name, First Name form
- LastName The last name of the student
- FirstName The first name of the student
- Value The grade/status of the Try It
- Lesson The Lesson number
- TryIt The Try It number

Examples

```
## Not run:
### login on the fly (does not preserve session for subsequent calls)
get_grades_csv(course_id = "deployedcourses/uiuc_netmath_math461_r2012_mm",
               name = "Mcclelland Kemp",
               user = "mkemp6@netmath.illinois.edu",
               passwd = "<passwd>")

### Use an existing session
session <- login("mkemp6@netmath.illinois.edu", "<passwd>")
get_grades_csv(course_id = "deployedcourses/uiuc_netmath_math461_r2012_mm",
               name = "Mcclelland Kemp",
               h = session$handle)

## End(Not run)
```

`get_mentor_courses` *Get the courses for which you mentor*

Description

Get the courses for which you mentor

Usage

```
get_mentor_courses(h = NULL, user = NULL, passwd = NULL)
```

Arguments

`h`	A valid handle to a Mathable session (logged in and cookies in jar)
`user`	Your username, e.g. <netid>@netmath.illinois.edu
`passwd`	Your password Mathable password

Value

A data frame with columns:

- `StudentCourseRecordId` The student course record id for the Mentor, who is always a student in the courses they have access to Mentor
- `CourseId` The fully-qualified Mathable course ID
- `CourseName` The "short name" of the course
- `CourseCode` The code for the course which usually includes the abbreviated course name (e.g. MATH220), the year it was created and the section (e.g. MM, HS or semester for EGR sections)

Examples

```
## Not run:
# Use an existing session
session <- login("mkemp6@netmath.illinois.edu", "<passwd>")
get_mentor_courses(h = session$handle)

# Or login on the fly (does not preserve session for subsequent calls)
get_mentor_courses(user = "mkemp6@netmath.illinois.edu", passwd = "<passwd>")

## End(Not run)
```

`get_student_progress` *Get the grades your students progress summary*

Description

Get the grades your students progress summary

Usage

```
get_student_progress(h = NULL, user = NULL, passwd = NULL, student_list,
  all_students = TRUE, active = FALSE, outfile = NULL, ...)
```

Arguments

`h`	A valid handle to a Mathable session (logged in and cookies in jar)
`student_list`	A data.table (data.frame) of students with the structure LastName, FirstName, EndDate (in header) with the EndDate in the mm/dd/yyyy format
`all_students`	Boolean, should all of the grades be pulled, or just the logged in Mentor's?
`active`	Boolean, should only the active students be pulled?
`outfile`	A filename to write results to.
`...`	Arguments to 'merge' when combining the student list and the progress results

Value

A data frame with columns:

- `FirstName` The first name of the student
- `LastName` The last name of the student
- `CourseId` The fully qualified course ID in Mathable
- `CourseName` The "short name" for the course
- `Mentor` The mentor name
- `Status` The status of the student, e.g. "Completed", "Active" or "Withdrawn"
- `Lesson` The Lesson number
- `TryIt` The Try It number
- `EndDate` The student's end date
- `ProgressStatus` The status of the student determined by the criteria set by the NetMath office
- `DaysLeft` The number of days left in the course the student has
- `DaysBehind` The number of days behind the recommended schedule the student is
- `TryItsBehind` The number of Try Its behind the recommended schedule the student is
- `LessonsBehind` The number of Lessons behind the recommended schedule the student is
- `CurrentPace` The number of Try Its submitted per day the student is averaging
- `CurrentInterp` A plain-english (approximate) interpretation of what the student's current pace means about their submission behavior
- `TryItsLeft` The number of Try Its the student has left in the course

- NeededPace The number of Try Its per day the student must average in order to complete the course on time
- NeededInterp A plain-english (approximate) interpretation of what the NeededPace means in terms of needed submission behavior from the student. Intentionally rounded up to the half day

Examples

```
## Not run:
# Read in a student list from a google sheet
netmath_students_rss <- googlesheets::gs_url("https://docs.google.com/spreadsheets/...")

# Format to data.table from data.frame and format the student's end date to
# the R datatype \code{Date}
netmath_students <- as.data.table(gs_read(netmath_students_rss))
netmath_students$EndDate <- as.Date(netmath_students$EndDate, format = "%m/%d/%Y")

# Get a progress update on the students in the student list.
# The 'all.y = TRUE' is telling the function to keep all students in the
# student list -- helps detect any possible mis-spellings of names
prog <- get_student_progress(user = "mkemp6@netmath.illinois.edu",
                             passwd = "<passwd>",
                         student_list = netmath_students[, .(LastName, FirstName, EndDate)],
                             all.y = TRUE,
                             active = TRUE)

## End(Not run)
```

`login` *Log into Mathable*

Description

Will log in the user, find the Mentor Name and return a curl handle

Usage

```
login(user, passwd)
```

Arguments

user	Your username, e.g. <netid>@netmath.illinois.edu
passwd	Your password Mathable password

Value

A list

- handle A curl handle that is our login session, allowing us to query the Mathable API
- name The Mentor's name as it appears in Mathable

Examples

```
## Not run:
session <- login("mkemp6@netmath.illinois.edu", "<passwd>")

## End(Not run)
```

`netmathtools` *netmathtools: Tools to query the Mathable API and extract student progress info*

Description

The package contains functions and data sets:

End User Functions

get_student_progress Produce the status report of all the students in the courses that the logged in Mentor has access to. Top level function that writes .csv output for the user.

get_all_grades Download all the grades for every student in the courses that the logged in Mentor has access to in long form. Can be useful for additional analytics.

Supporting Functions – curl calls to API

login Log into Mathable, establish curl handle. Not intended for end user.

get_mentor_courses Find the courses which the logged in mentor has access to. Not intended for end user.

get_grades_csv Download grades for which the mentor has access to. Not intended for end user.

Supporting Functions – R calculations

calc_progress Calculate progress based on the most recent submission, the student's end date and the course pacing schedule. Not intended for end user.

Internal Data

schedules Recommended schedules for each course

status How the ProgressStatus is determined

api The Mathable API endpoint being used

schedules *Recommended Schedules for all the NetMath courses*

Description

A R list structure with named elements of the courses containing schedules with the following layout:

Usage

```
netmathtools:::schedules
```

Format

A data.frame with N rows representing the expected length of the course

Days Day number, since the beginning of the course, ranges from 1-N

Lesson The Lesson expected to be completed on Days = k

Try It The Try It in Lesson expected to be completed on Days = k

status *Progress status table defining the Green - Red criteria*

Description

A R data.table structure containing the criteria for assiging the progress status

Usage

```
netmathtools:::status
```

Format

A data.frame

low The low value on the range

high The high value on the range

ProgressStatus The designation that should be assigned for that range

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