Package ‘sdam’
October 14, 2022

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sdam-package

social dynamics and complexity in the ancient mediterranean

description

provides digital tools for performing analyses within social dynamics and complexity in the ancient mediterranean (sdam), which is a research group based at the department of history and classical studies at aarhus university.

details

package: sdam
type: package
version: 1.1.4
date: 2 september 2022
license: cc by-sa 4.0

the "sdam" package is a suite of tools for performing analyses in the history of the mediterranean world and its neighbouring regions in the antiquity period before the middle ages. currently, it is possible to access data of writing material from the epigraphic database heidelberg api with function get.edh and the wrapper function get.edhw. most of the epigraphic data, at least until 10-11-2020, is available in the edh dataset, which can be transformed in diverse ways by using function edhw and function cln for re-encoding and cleaning portions of text in inscriptions in the edh dataset.

with function prex, there is also the possibility to compute probabilities of existence of inscriptions and other artefacts with either the aoristic sum or count matching for observations for different periodization options. function plot.dates allow visualizing interval time events that can be adjusted by the internal function dts as illustrated in a vignette.
request function allows, with user authentication, performing different types of HTTP requests aimed to DEiC’s servers in https://sciencedata.dk or another cloud repository with a customized URL address.

A plotting function is found in plot.map that allows visualizing cartographical maps of ancient Roman provinces that are part of the EDH dataset. It relies on other datasets from the package that are related to the Roman world in rp, rpd, rpm, rpmcd, rpcp, and rtn for a transport network with terrestrial and maritime main routes.

Similarity by simple matching among column vectors in a table or data frame is achieved by function simil for making analyses of relations between e.g. assemblages and artefacts. Function edhwpd is to organize the EDH dataset per province and dates based on a similarity measure, and it is the basis for function rmids to compute values of missing dates with a restricted imputation on data subsets of artefacts.

Author(s)

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References


See Also

Datasets in "sdam" package
Re-encoding people in the EDH dataset
Dates and missing dating data
Cartographical maps and networks
Articles using "sdam"
Release candidate version

Examples

data(package="sdam")

cln

Clean and re-encode a vector, list or dataframe

Description

A function to re-encode Greek (and other) characters and to remove symbols.
Usage

\texttt{cln(x, level, what, na.rm, case, repl, unlist)}

Arguments

\begin{itemize}
\item \texttt{x} \hfill a vector, list or dataframe
\item \texttt{level} \hfill optional clean level, either 0 for no-clean, default 1 to most strict 9 (see details)
\item \texttt{what} \hfill additional characters to clean (optional)
\item \texttt{na.rm} \hfill remove entries with NA data? (optional and logical)
\item \texttt{case} \hfill case for text 1 for 1st uppercase, code2 for lowercase, code3 for uppercase (optional)
\item \texttt{repl} \hfill data frame with text to replace (optional)
\item \texttt{unlist} \hfill return a vector? (optional and logical, for vector input)
\end{itemize}

Details

This function is meant to re-encode Greek (and other) characters in the EDH set given either as list format, vector, or a dataframe produced with function \texttt{edhw} for example.

By default, the symbols "?" "*" "+" placed at the end of each record are removed after the re-encoding. However, when level is 0 only re-encoding is performed, and level 2 is either to force an extra iteration in the re-encoding, to remove extra spaces, or what is in \texttt{what} at the end of a record when clean \texttt{what} is invoked. With level 9 all content after an opening parenthesis is removed with all the consequences for the input text.

With \texttt{repl}, is possible to replace a list of text in two columns, for 'text to replace' and for 'text that replaces'.

Disabling option \texttt{unlist} returns a vector in case that \texttt{x} is also a vector; otherwise, it returns a list with the two versions of the input.

Value

Depending on the input, a vector, list or dataframe.

Warning

Encoding more than once the same input requires re-starting the console; otherwise, the re-encoding is not complete.

Author(s)

Antonio Rivero Ostoic

See Also

\texttt{edhw, get.edh, edhwpd, cs}
Examples

# clean Greek characters
cln("Caesar?++")

cs  

Description

A function to change letters to uppercase and lowercase in a given text.

Usage

cs(xz, level = 1, case = 1, flgdf = FALSE, na.rm = FALSE)

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xz</td>
<td>input text</td>
</tr>
<tr>
<td>level</td>
<td>optional clean level, either 0 for no-clean, default 1 to most strict 9 (see cln)</td>
</tr>
<tr>
<td>case</td>
<td>change case: 1 first letter uppercase and rest lowercase, 2 all letters lowercase, 3 all letters uppercase</td>
</tr>
<tr>
<td>flgdf</td>
<td>is xz a data frame?</td>
</tr>
<tr>
<td>na.rm</td>
<td>remove entries with NA data? (optional and logical)</td>
</tr>
</tbody>
</table>

Details

This is a convenient function to change letters to uppercase and lowercase in a text for argument 'case' in function cln, and it inherits values from this function for 'level', 'flgdf', and 'na.rm'.

Value

Input text with defined case.

Author(s)

Antonio Rivero Ostoic

See Also

cln

Examples

cs("Caesar?++", level=2, case=3)
Converting dates into a numerical format

Description

A function for converting different types of dates into a numerical format.

Usage

dts(x, cent, sep, last)

Arguments

- **x**: scalar, vector or list with dates to format
- **cent**: use centuries? (optional and logical)
- **sep**: separator, default " to " (only for cent)
- **last**: take last input value in x? (optional and logical)

Details

When dating data has a character format like when involving AD, BC, BCE, C.E., etc., or even centuries like Cent., it is many times convenient to convert these type of dating data into a numerical format for a further computation.

In case that the input data has two or more plausible dates, then the outcome by default takes the first value of the input; otherwise the last date with option last.

*dts* also accepts dates involving centuries with the cent option, and in this case, it is possible to specify a separator of the century endpoints in sep or use " to " as the default separator.

For dates having character format, then hyphens are regarded as separators of the plausible dates in x.

Value

Dating data with a numerical format.

Note

Dating data with unknown year notations produce NA as output value.

Author(s)

Antonio Rivero Ostoic

See Also

plot.dates, prex.
edhw

Examples

# negative first value
dts("58 BC - 30 AD")

# positive second value
dts("58 BC - 30 AD", last=TRUE)

# use century notation
dts("15th Cent. AD", cent=TRUE)

edhw

Wrapper function for manipulation of the EDH dataset

Description

A function to obtain variable data and perform transformations on the EDH dataset.

Usage

edhw(x = "EDH", vars, as = c("df", "list"), type = c("long", "wide", "narrow"),
split, select, addID, limit, id, na.rm, ldf, province, gender, rp, ...)

Arguments

x a list object name with fragments of the EDH dataset (optional)
vars vector of variables of interest from x; if x=NULL, the entire EDH dataset is taken (optional)
as format to return the output; either as a "list" or a data frame "df" object.
type type format of data frame; either "long" or "wide" ("narrow" not yet implemented)
split divide the data into groups by id? (optional and logical)
select vector with "people" variables (optional)
addID add identification to the output? (optional and logical)
limit integer or vector to limit the returned output. Ignored if id is specified (optional)
id select only hd_nr records (optional, integer or character)
na.rm remove entries with NA data? (optional and logical)
ldf is x list of data frames? (optional and logical)
province name or abbreviation of Roman province in EDH as in rp dataset
gender gender of people in EDH: male or female
rp customized list of Roman provinces as in rp dataset
... optional arguments if needed.
Details

This is an interface to extract attribute variables from the EDH dataset attached to this package either as a built-in dataset or as external data. EDH dataset is a built-in data set of Latin epigraphy retrieved from the Epigraphic Database Heidelberg API repository where epigraphs or inscriptions in this dataset are recorded in a list object of 84701 items (until 10-11-2020) with at least one of the following 47 (or more) attribute names in the list:


The input in x, however, can be fragments of the EDH dataset or from the Epigraphic Database Heidelberg API obtained by functions get.edh or get.edhw with the "rjson" format, or transformed data organized, for example, by provinces. When x is explicit, it must be at least a list object with a comparable structure to the EDH dataset. Argument ldf is a flag when the input in x is a created list of data frames that are organised by variables rather than by records as in the EDH dataset. The return of the output is either as a list with list or by default as a data frame with option df.

The extraction from EDH is typically through argument vars in the function, and in case that vars is missing, then it takes all entries in x. Ad hoc arguments are the EDH entries province and gender for entering a Roman province and people’s gender in x as a data frame; otherwise, these arguments are ignored. When province is used, it is possible to refer to a customized list of provinces with argument "rp"; otherwise, dataset rp is the default where names and abbreviations are accepted.

By default, this wrapper returns a list object with or without a numerical ‘ID’ identification provided by the addID argument. When the output is a data frame, the ordering of the variables is alphabetically and, if desired, it is possible to remove missing data from the output by activating na.rm and work with complete cases.

Arguments id and limit serve to reduce the returned output either to some Epigraphic Database number or to numbers, which are specified by hd_nr, or else by limiting the amount of the returned output. limit here is like the limit argument of function get.edh, but in this case the offset can be specified as a sequence. While limit is a faster way to get to entries in the EDH dataset, argument id is for referring to precisely one or more hd_nr in the Epigraphic Database Heidelberg API.

Component "people" is a separated list in the EDH dataset, and it should be considered as a separate case from the rest of the variables. In the case that the output is a data frame, the default output is a ‘long’ type table; that is records can appear in different rows and each variable is assigned into a single column, and with this option is possible to select "people" variables like gender and origin. When choosing people variables with select and a data frame output, then "people" attribute must be in vars.

By setting "wide" in type, it is possible to place the different people from a single entry column by column in the data frame and each record has a single row. Finally, argument split allows for dividing the data in the data frame into groups by ‘id’, which corresponds to the HD number of inscription in the EDH dataset.
Value

A list or a data frame with a long or wide format, depending on the input arguments.

Argument province with no vars returns a list of lists.

Warning

EDH is a built-in dataset in the development and legacy version of the package but, because of its size, re not part of the CRAN distribution. Functions edhw and edhwpd download EDH from another repository in References.

Note

Warning messages are given for the EDH dataset as the input, and when choosing the province argument alone.

Author(s)

Antonio Rivero Ostoic

References


https://edh-www.adw.uni-heidelberg.de/data/api (database retrieved on November 2020)

https://github.com/sdam-au/sdam/tree/master/data

https://github.com/mplex/cedhar/tree/master/pkg/sdam/data

See Also

get.edh, get.edhw, rp, edhwpd, prex, plot.dates, cln, rjson

Examples

```r
## Not run:
# load dataset
data(EDH)

# make a list for three variables in 'EDH' for first 4 entries
edhw(vars=c("type_of_inscription", "not_after", "not_before"), limit=4 )

# as before, but also select 'gender' from 'people'
edhw(vars=c("people", "not_after", "not_before"), select="gender", limit=4 )

## End(Not run)
```
Description

Wrapper function to organize EDH dataset province and dates by simple match similarity.

Usage

edhwpd(x = "EDH", vars, province, dates, clean, ...)

Arguments

- **x**: EDH dataset, or fragments of, or database via API (optional, list)
- **vars**: vector with variables or attributes chosen from x
- **province**: Roman province abbreviation as in rp
- **dates**: vector with TAQ and TPQ (optional)
- **clean**: whether to remove special characters in text (optional and logical)
- **...**: additional arguments if needed

Details

This wrapper function aims to organize data per Roman province and date by simple match similarities among inscriptions in the EDH dataset. As with function edhw, it is an interface to extract attribute variables in vars from the EDH or similar dataset if x is not specified.

The Roman Empire province is the abbreviation used in the value given by function get.edh and which is in rp dataset.

Argument dates is optional to specify the variables for time intervals (TAQ and TPQ) that in EDH are not_after and not_before, but other datasets may have different names for the endpoints of the timespan. Another dependence with this function is from package "multiplex" to find clusters of items having similar characteristics as co-occurrence relations and for removing isolated items from the system of relations.

Argument clean applies function cln to the province data frame with the chosen variables to remove special characters such as ?*+ and, if needed, re-encode the text.

The output is a list of data frames with similar arguments by descending matches. The records with one or less similarity matches (or having NA attribute values) are placed in the last data frame of the list.

Value

A EDH class object with the province and the number of records with a list of data frames organised by components where the first one has records having most common attribute variables, whereas the last component is a data frame with records having least common attribute variables.
get.edh

Note

This function depends on EDH that is a built-in dataset in the development and legacy version of the package but, because of its size, for the CRAN distribution it downloads from another repository in References.

Author(s)

Antonio Rivero Ostoic

References

https://edh-www.adw.uni-heidelberg.de/data/api (database retrieved on November 2020)
https://github.com/sdam-au/sdam/tree/master/data
https://github.com/mplex/cedhar/tree/master/pkg/sdam/data

See Also

edhw, rmids, rp, get.edh, cln

Examples

## Not run:
# load dataset
data(EDH)

# extract province & dates with a single variable attribute from EDH
edhwpd(vars="type_of_inscription", province="Rom", dates=c("not_after", "not_before"))
## End(Not run)

---

get.edh

Get data from the Epigraphic Database Heidelberg API

Description

A function to obtain data from the Epigraphic Database Heidelberg REST like API repository.

Usage

get.edh(search = c("inscriptions", "geography"), url =
  "https://edh.ub.uni-heidelberg.de/data/api", hd_nr,
  province, country, findspot_modern, findspot_ancient,
  year_not_before, year_not_after, tm_nr, transcription,
  type, bbox, findspot, pleiades_id, geonames_id,
  offset, limit, maxlimit = 4000, addID, printQ)
Arguments

- search: whether the search is on inscriptions or on geography.
- url: open data repository API
- hd_nr: HD number of inscription
- province: ancient Roman province name
- country: actual country name
- findspot_modern: actual location name findspot
- findspot_ancient: ancient location name findspot
- year_not_before: year, not before (integer, BC years are negative)
- year_not_after: year, not after (integer, BC years are negative)
- tm_nr: trismegistos ID (integer)
- transcription: automatic leading and trailing truncation (brackets are ignored)
- type: type of inscription (case insensitive)
- bbox: bounding box with character format bbox = "minLong, minLat, maxLong, maxLat"
- findspot: level of village, street etc. (add leading and/or trailing)
- pleiades_id: Pleiades identifier of a place (integer)
- geonames_id: Geonames identifier of a place (integer)
- offset: clause to specify which row to start from retrieving data (optional and integer)
- limit: clause to limit the number of results (optional and integer)
- maxlimit: maximum limit of the query (integer, default 4000)
- addID: add identification to the output? (optional and logical)
- printQ: print also query? (optional and logical)

Details

Since with the inscriptions option the id "component" of the output list is not with a numeric format, then the function adds an ID at the beginning of the list with the identifier with a numerical format. hd_nr has not the same value as ID nor id. In case you want to grab several items from the Epigraphic Database Heidelberg API use function get.edhw.

A list with the of valid values from the EDH API for the ancient Roman provinces that are also available in dataset rp are

- "Ach" Achaia
- "Aeg" Aegyptus
- "Aem" Aemilia (Regio VIII)
- "Afr" Africa Proconsularis
- "AlC" Alpes Cottiae
- "AlG" Alpes Graiae
- "AlM" Alpes Maritmae
- "Cor" Corsica
- "Cre" Creta
- "Cyp" Cyprus
- "Cyr" Cyrene
- "Dac" Dacia
- "Dal" Dalmatia
- "Epi" Epirus
- "Mes" Mesopotamia
- "MoI" Moesia inferior
- "MoS" Moesia superior
- "Nar" Narbonensis
- "Nor" Noricum
- "Num" Numidia
- "PaI" Pannonia inferior
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Entry Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1P</td>
<td>Alpes Poeninae</td>
<td>Etruria (Regio VII)</td>
</tr>
<tr>
<td>Apc</td>
<td>Apulia et Calabria (Regio II)</td>
<td>Galatia</td>
</tr>
<tr>
<td>Aqu</td>
<td>Aquitania</td>
<td>Germania inferior</td>
</tr>
<tr>
<td>Ara</td>
<td>Arabia</td>
<td>&quot;GeS&quot; Germania superior</td>
</tr>
<tr>
<td>Arm</td>
<td>Armenia</td>
<td>Hispania citerior</td>
</tr>
<tr>
<td>Asi</td>
<td>Asia</td>
<td>&quot;Inc&quot; Provincia incerta</td>
</tr>
<tr>
<td>Ass</td>
<td>Assyria</td>
<td>Iudaea</td>
</tr>
<tr>
<td>Bae</td>
<td>Baetica</td>
<td>&quot;LaC&quot; Latium et Campania (Regio I)</td>
</tr>
<tr>
<td>Bar</td>
<td>Barbaricum</td>
<td>&quot;Lig&quot; Liguria (Regio IX)</td>
</tr>
<tr>
<td>Bel</td>
<td>Belgica</td>
<td>&quot;Lug&quot; Lugdunensis</td>
</tr>
<tr>
<td>Bip</td>
<td>Bithynia et Pontus</td>
<td>&quot;Lus&quot; Lusitania</td>
</tr>
<tr>
<td>BrL</td>
<td>Bruttium et Lucania (Regio III)</td>
<td>&quot;LyP&quot; Lycia et Pamphylia</td>
</tr>
<tr>
<td>Bri</td>
<td>Britannia</td>
<td>&quot;MaC&quot; Mauretania Caesariensis</td>
</tr>
<tr>
<td>Cap</td>
<td>Cappadocia</td>
<td>&quot;MaT&quot; Mauretania Tingitana</td>
</tr>
<tr>
<td>Cil</td>
<td>Cilicia</td>
<td>&quot;Mak&quot; Macedonia</td>
</tr>
<tr>
<td>Cilc</td>
<td>Cilicia</td>
<td>&quot;Mak&quot; Macedonia</td>
</tr>
</tbody>
</table>

And the valid values for country entries are abbreviated country names where the inscription was located.

<table>
<thead>
<tr>
<th>Code</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ad&quot;</td>
<td>Andorra</td>
</tr>
<tr>
<td>&quot;al&quot;</td>
<td>Albania</td>
</tr>
<tr>
<td>&quot;am&quot;</td>
<td>Armenia</td>
</tr>
<tr>
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<td>Austria</td>
</tr>
<tr>
<td>&quot;az&quot;</td>
<td>Azerbaijan</td>
</tr>
<tr>
<td>&quot;ba&quot;</td>
<td>Bosnia and Herzegovina</td>
</tr>
<tr>
<td>&quot;be&quot;</td>
<td>Belgium</td>
</tr>
<tr>
<td>&quot;bg&quot;</td>
<td>Bulgaria</td>
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<td>&quot;tn&quot;</td>
<td>Tunisia</td>
</tr>
<tr>
<td>&quot;tr&quot;</td>
<td>Turkey</td>
</tr>
<tr>
<td>&quot;ua&quot;</td>
<td>Ukraine</td>
</tr>
<tr>
<td>&quot;uz&quot;</td>
<td>Uzbekistan</td>
</tr>
<tr>
<td>&quot;va&quot;</td>
<td>Vatican City State</td>
</tr>
<tr>
<td>&quot;ye&quot;</td>
<td>Yemen</td>
</tr>
</tbody>
</table>

Value

A list object with at least one the following items:

- "commentary"
- "fotos"
"country"
"depth"
"diplomatic_text"

"edh_geography_uri"

"findspot"
"findspot_ancient"

"findspot_modern"

"geography"
"height"
"id"
"language"
"last_update"
"letter_size"
"literature"
"material"
"military"
"modern_region"

"not_after"
"not_before"

"people" This item is another list with at least one the following items:

"person_id"
"nomen"
"cognomen"
"praenomen"
"name"
"gender"
"status"
"tribus"
"origo"
"occupation"
"age: years"
"age: months"
"age: days"

"present_location"

"religion"
get.edh

"province_label"

"responsible_individual"

"social_economic_legal_history"

"transcription"

"trismegistos_uri"

"type_of_inscription"

"type_of_monument"

"uri"

"width"

"work_status"

"year_of_find"

"ID" (Optional), only if addID is set to TRUE.

The query is also printed if specified by printQ.

Warning

For queries having more than 4000 records, the server can produce a timeout break to be handled by offset.

Note

This function requires "rjson", and is for the [EDH] database [API] at the URL in references starting in year January 2022, and changes in the URL should be updated with the url option.

Search options "photos" and "bibliography" are not supported.

Author(s)

Antonio Rivero Ostoic

References

https://edh.ub.uni-heidelberg.de/data/api

See Also

gget.edhw, edhw, edhwpd, rp, plot.map, simil, rjson
## get.edhw

### Examples

```r
## Not run:
# get inscriptions from EDH database API
get.edh(findspot_modern="madrid")
## End(Not run)
```

---

### Description

A wrapper function to obtain data from the Epigraphic Database Heidelberg REST like API repository.

### Usage

```r
get.edhw(file = NULL, hd_nr, ...)
```

### Arguments

- `file`: JSON file with EDH data (optional)
- `hd_nr`: HD number of inscriptions
- `...`: additional arguments

### Details

This wrapper function aims to obtain sample data from the Epigraphic Database Heidelberg API repository by their HD numbers or a file with a valid format JSON can be specified in `file`. In any case, the JSON output becomes a list object with the `rjson` package.

### Value

A list of lists object with the items described in `get.edh`.

### Note

Large samples can take a lot of time.

### Author(s)

Antonio Rivero Ostoic

### References

[https://edh.ub.uni-heidelberg.de/data/api](https://edh.ub.uni-heidelberg.de/data/api)
plot.dates

See Also
gedh, simil, rjson

Examples

## Not run:
# get 10 records from EDH API data
gedh(hid_nr=1:10)
## End(Not run)

plot.dates  
Plot interval dates

Description

A function to plot interval dates with different forms.

Usage

## S3 method for class 'dates'
plot(x, y, type = c("ts", "mp", "rg"), taq, tpq, id, out,
col, cex, lwd, lty, pch, main = NULL, xlab = NULL, ylab = NULL,
xlim = NULL, axes = TRUE, alpha, file = NULL, ...)

Arguments

x  
dataset as a data frame object of variables and observations.
y  
vector of identifiers (optional)
type  
Type of date format to plot:
ts timespans with endpoints
mp mid points and range
rg range only
taq  
timespan endpoint terminus ante quem (TAQ)
tpq  
timespan endpoint terminus post quem (TPQ)
id  
IDs as variable or rownames in dataset x
out  
integer or vector with number of outliers to omit (first entry id for latest date)
col  
color of pch
cex  
size of pch
lwd  
width of time interval segments
lty  
shape of time interval segments
plot.dates

pch  symbol for taq and tpq
main plot's main title
xlab  plot's x label
ylab  plot's y label
xlim  plot's x limits
axes  plot's axes (logical)
alpha  alpha transparency for time interval segments
file  path to produce a file with a PDF format (optional)
...  additional optional parameters

Details

This plot function is for time interval segments given in the dataset x, which is given as a dataframe or as a “tibble” class object.

Value

A graphical plot.

Note

If x is NULL, then EDH dataset is taken by default.

Author(s)

Antonio Rivero Ostoic

See Also

dts, get.edh, edhw, prex, tibble

Examples

## Not run:
# first 100 entries in the EDH dataset (default)
EDHdates <- edhw(vars=c("not_after", "not_before"), as="df", limit=100)

# timespans
plot.dates(EDHdates, taq="not_before", tpq="not_after")
## End(Not run)
plot.map

Plot cartographical maps

Description

A function to plot cartographical maps of the Roman world and Mediterranean region.

Usage

## S3 method for class 'map'
plot(x = NULL, type = c("plain", "rp", "si", "tetra", "med"), settl, roads, shipr,
     main, cap, date, name, fsize, fcol, fsize2, fcol2, xd, yd, new, ...)

Arguments

x            acronym of ancient Roman province or Italian region (see "rp")

```
type          Type of cartographical map:
plain         most of Europe and land around the Mediterranean
rp            ancient Roman provinces
si            Senatorial-Imperial provinces
tetra         First Tetrarchy
med           Mediterranean region
```

settl         display settlements? (optional and logical, for cartographical map)

roads         display terrestrial routes? (optional and logical, for cartographical map)

shipr         display shipping routes? (optional and logical, for cartographical map)

main          plot's main title (optional)

cap           display caption? (optional and logical, for provinces)

date          display date? (optional and logical, for provinces)

name          display map title name? (optional and logical, for provinces)

fsize         font size in main title (optional)

fcol          font color in main title (optional)

fsize2        font size in date (optional)

fcol2         font color in date (optional)

xd            x positioning for the date (optional)

yd            y positioning for the date (optional)

new           whether the plotted map has superimposed graphics (optional)

...           additional optional parameters
Details
This plot function is for creating cartographical maps of ancient provinces and Italian regions of
the Roman Empire around the year AD 117. The input data x can be a character vector, but this is
intended for a recording output. By default, the argument’s name and cap are set to TRUE while the
date is set to FALSE; however, the argument main prevails over name.

The type argument allows plotting cartographical maps related to the Roman Empire and the
Mediterranean basin as specified in rpmp and rpmcd datasets. In the cartographical maps, settle-
ments are displayed as circles while squares are for military forts, while terrestrial and maritime
routes are given as solid paths with different colours. Shapes of places and routes are specified in
the retn dataset.

Dataset retn is a list of lists with specifications to plot different cartographical maps of the Roman
Empire and the Mediterranean with transport network including settlements, roads, and shipping
routes. This list of lists object has the shape data in different slots for 4 cartographical maps of the
Roman Empire with names rcoast for a plain map, rpcoast for a map with provinces, rpsi for
a map with senatorial and imperial provinces, and rp tetra for a tetrarchy map. These options for
cartographical maps in the Mediterranean are for both the classical and the late antiquity periods.
Three components in retn dataset have coordinates for settlements nds, roads rds, and shipping
routes srs for these maps. In addition, the dataset has a cartographical map of the Mediterranean
in med where settlements and transport network is yet to complete.

Dataset rpmp is a list with specifications to plot cartographical maps of ancient Roman provinces and
Italian regions. This list of lists object has 59 Roman provinces and Italian regions in year 117AD,
and where names(rpmp) gives the province acronyms according to rp dataset. Each province in
rpmp has a two-length list with the province name and the shape data for a cartographical map in
different slots.

Value
A plot of a cartographical map for the Roman world with a title name, and a caption with an
approximate province establishment date.

Warning
rpmp and retn are built-in datasets in the development and legacy version of the package but,
because of its size, are not part of the CRAN distribution, which means that they are downloaded
from another repository.

Note
Positions for caption and date are for a PDF output and the rendering may vary for browser displays.

Author(s)
Antonio Rivero Ostoic

References
https://github.com/sdam-au/sdam/tree/master/data
https://github.com/mplex/cedhar/tree/master/pkg/sdam/data
See Also

rpmp, rpmd, retn, get.edh

Examples

# Roman Empire transport network
plot.map(roads=TRUE, shipr=TRUE)

# Roman province of Aegyptus
plot.map(x="Aeg")

---

**prex**  
*Compute probabilities of existence*

**Description**

A function to compute probabilities of existence of artefacts related events.

**Usage**

prex(x, type = c("aoristic", "mp", "other"), taq, tpq, vars,  
bins = NULL, cp, weight = 1, DF, out, plot = FALSE, main = NULL,  
ylim, keep, ...)

**Arguments**

- **x** list or data frame object of variables and observations.
- **type** Type of date format to compute or plot:
  - aoristic aoristic sum
  - mp mid points and range
  - other
- **taq** timespan endpoint terminus ante quem (TAQ)
- **tpq** timespan endpoint terminus post quem (TPQ)
- **vars** boundaries of existence of x (vector for timespan endpoints)
- **bins** length of the break (integer and optional)
- **cp** Chronological phase:
  - "bin5" five-bins from the antiquity period
  - "bin8" eight-bins from the antiquity period
  - list with a customized chronological phase
- **weight** value to observations (optional)
- **DF** return also data frame with observations? (optional and logical)
- **out** number of outliers to omit (integer or vector where first entry id for latest date)
plot  plot the results?
main  plot’s main title (optional)
ylim  limit in $y$-axis (optional, for plot)
keep  for mp, keep variables in output? (optional and logical)
...  additional optional parameters

Details

Currently, the probability of existence of the observations is the *aoristic sum* computed across events for portions of time delimited by a TAQ in `taq` and TPQ in `tpq`, which are endpoints from the stance of the timespan. Alternatively, these two boundaries of existence of x are specified in `vars`.

In case the `bins` are set to `NULL`, then the time breaks take the chronological periods in `cp`, which by default is "bin5" or five-periods for the EDH dataset, which are *ArCh* (Archaic), *ClAss* (Classical), *HeLL* (Hellenistic), *Rom* (Roman), and *Byz* (Byzantine). Another built-in option is "bin8" for eight chronological periods where the Roman period is divided into *ERom* (Early Roman), *MRom* (Middle Roman), and *LRom* (Late Roman) while the Byzantine period is divided into *EByz* (Early Byzantine) and *MByz* (Middle Byzantine). However, option `cp` is open for other periodization models as long as the categories of time blocks are components of a list object.

Value

A data frame with values according to the chosen either `bins` or `cp`. If `plot` is specified, a bar plot with bars of outcomes.

Note

When `aoristic` is set to `FALSE`, then a simple matching of only TAQ and TPQ is computed from x.

Author(s)

Antonio Rivero Ostoic

References


See Also

`edhw`, `plot.dates`, `dts`. 

Examples

```r
## Not run:
# first 100 entries in the EDH dataset (default)
EDHdates <- edh(vars=c("not_after", "not_before"), as="df", limit=100)

# compute aoristic sum with five-periods
prex(x=EDHdates, taq="not_before", tpq="not_after", cp="bin5")

# compute aoristic sum with 75 year span
prex(x=EDHdates, taq="not_before", tpq="not_after", bins=75, plot=TRUE)
## End(Not run)
```

---

**Description**

A function to perform an HTTP request to [https://sciencedata.dk](https://sciencedata.dk) or other server.

**Usage**

```r
request(file, URL = "https://sciencedata.dk", method = c("GET", "POST", "PUT", "DELETE"), anonymous = FALSE, cred = NULL, path = "/files", subdomain = NULL, force = FALSE, rm.file, ...)```

**Arguments**

- **file**: the requested file
- **URL**: protocol and domain of the url
- **method**: the http verb for the object
- **anonymous**: unauthenticated user?
- **cred**: vector with username and password as authentication credentials
- **path**: path to add to the url (optional)
- **subdomain**: subdomain to add to the url (optional)
- **force**: force remote file overwriting? (optional and logical)
- **rm.file**: remove file in local machine? (optional and logical)
- **...**: further parameters if required

**Details**

*request* is an HTTP request, first aimed to interact with DEiC’s (Danish e-Infrastructure Coopera-
tion) RESTful APIs at [https://sciencedata.dk](https://sciencedata.dk); however, it is possible to specify the URL path and subdomain if necessary.

DEiC’s [https://sciencedata.dk](https://sciencedata.dk) servers have different types of folders and both *personal* and *shared* folders require authentication with credentials.
The path to the shared folders where the files are located must be specified with the path argument. However, for personal folders the file argument that includes the path information. Many times, DEiC's https://sciencedata.dk places the data on a subdomain, and for some methods like PUT it is required to specify the subdomain as well.

When a file already exists on the remote server, there is a prompt question for overwriting the file when the PUT method is invoked, and by activating argument force we can prevent confirmation and replace the file. Method POST is not yet supported.

In case that accessing the server requires basic authentication, then package "tcltk" is required to input the credentials with a widget prompt. However, there is a cred argument for performing a basic authentication without a prompt, and public folders can be accessed without credentials with the option of anonymous user.

Value

Depends on the method, an action on the server site.

A Response message is returned when the method is PUT with the URL and items Date, Status, Content-Type.

Note

This function requires "httr", and aliases for request are sddk() and SDDK().

Author(s)

Antonio Rivero Ostoic

References

https://sciencedata.dk/sites/developer/ (retrieved on January 2020)
https://sciencedata.dk
https://www.deic.dk/

See Also

httr, tcltk

Examples

```r
## get a public file from remote server as anonymous user
## Not run:
request("filename.extension", method="GET", anonymous=TRUE)
## End(Not run)

## put a file in remote server
## Not run:
request("filename.extension", method="PUT")
## End(Not run)

## put an existing file in remote server and force overwriting
```
## Not run:
request("filename.extension", method="PUT", force=TRUE)
## End(Not run)

## put an existing file in remote server and remove file from local machine
## Not run:
request("filename.extension", method="PUT", rm.file=TRUE)
## End(Not run)

## remove a file in remote server
## Not run:
request("filename.extension", method="DELETE")
## End(Not run)

---

**retn**  
*Roman Empire transport network and Mediterranean region*

**Description**

This is a list of lists with specifications to plot different cartographical maps of the Roman Empire and the Mediterranean with transport network including settlements, roads, and shipping routes.

**Usage**

```r
data("retn")
```

**Format**

A list of lists object with the shape data in different slots for 4 cartographical maps of the Roman Empire with names `rcoast` for a plain map, `rpcoast` for a map with provinces, `rpsi` for a map with senatorial and imperial provinces, and `rptetra` for a tetrarchy map. These options for cartographical maps in the Mediterranean are for both the classical and the late antiquity periods.

Three components in `retn` dataset have coordinates for settlements `nds`, roads `rds`, and shipping routes `srs` for these maps. In addition, the dataset has a cartographical map of the Mediterranean in `med` where settlements and transport network is yet to complete.

**Source**

DARMC, Center for Geographic Analysis, Harvard University  
https://commons.wikimedia.org/wiki/File:RomanEmpire_117.svg  
https://commons.wikimedia.org/wiki/File:Roman_provinces_trajan.svg  
https://commons.wikimedia.org/wiki/File:Regioni_dell’Italia_Augustea.svg
rmids

Restricted multiply-imputed data subsets

Description
A function to perform multiple imputation of missing dating data in the EDH dataset.

Usage
rmids(x, vars, collapse, pool, type = c("1", "2"))

Arguments
- x: dataframe or list of dataframes with a data set to impute
- vars: vector of attribute variables in x, typically dating data (optional)
- collapse: collapse list of dataframes? (optional and logical, default FALSE)
- pool: pool the results? (optional and logical)
- type: type of pooling: "1" for min TAQ and max TPQ. "2" for conditional pooling

Details
Imputation refers to the replacement process of missing data, and this is the case of entries in the Epigraphic Database Heidelberg and related datasets. In this context, the missing data for imputation are the endpoints of the timespan of existence of epigraphs or inscriptions represented by variables TAQ and TPQ (cf. prex) as "not_before" and "not_after" in the EDH dataset with cases of censoring with one limit of the timespan known.

To perform imputation on subsets of missing dating data in the EDH dataset, function edhwpd serves to organize records per Roman province and dates by simple match similarity of different attribute variables specified in vars. Such organisation is in the form of a dataframe or a list of dataframes depending on the province characteristics, and a restricted multiply-imputed data subsets takes place on this outcome, and where collapse is for collapsing lists of dataframes.

When dating data is complete missing, rpd provides the average date, min TAQ, max TPQ, and the average length timespan for each Roman province that applies for a multiple imputation.

Value
A list of dataframes with imputed data where imputed dating data is not preceded by a zero as with the recorded values. Component cases and names are:

- NA-NA: all missing
- taq-NA: censored
- NA-tpq: censored
- complete: complete data
Note

Rownames of complete dating data belonging to a component having imputed data gets replaced in the collapsed dataframe produced from a list of dataframes.

Author(s)

Antonio Rivero Ostoic

References


See Also

edhwpd, rpd, edhw, get.edh, cln

Examples

```r
## Not run:
# extract from EDH dataset province, dates, and single variable attribute
arm <- edhwpd(vars="type_of_inscription", province="Arm", dates=c("not_after", "not_before"))

# perform restricted imputation
rmids(arm, vars=c("not_after", "not_before"))
## End(Not run)
```

### Description

This is a list with Roman province names and acronyms as in the Epigraphic Database Heidelberg recorded in EDH dataset.

#### Usage

data("rp")

#### Format

A list object of 66 Roman provinces names and acronyms as in "province_label" in EDH dataset.

#### Source

https://edh-www.adw.uni-heidelberg.de/data/api/terms/province

#### See Also

get.edh, EDH, edhw, retn, rpmp.
**rpcp**

*Roman provinces and chronological periods*

**Description**

This dataset is a list of two data frames with 45 Roman provinces and regions with chronological periods of early and late Roman influence dates as time intervals.

**Usage**

```r
data("rpcp")
```

**Format**

A list with two data frames named `Early` and `Late` of size $45 \times 3$ with ancient Roman provinces as `Province` where each data frame represent an historical period. The row names in each data frame records the acronyms of the Roman province.

Time intervals in the first data frame that corresponds to the `Early` period of influence in provinces and regions are `EarInf` and `OffPrv`, while time intervals in the second data frame for the `Late` period of influence are `LateInf` and `Fall` with the year of fall from the Roman Empire.

**Source**


**See Also**

`rp`, `plot.dates`

---

**rpd**

*Roman provinces dates from EDH dataset*

**Description**

Dataset with a list with Roman province dates from the Epigraphic Database Heidelberg as in EDH dataset.

**Usage**

```r
data("rpd")
```
Format

A list object of 66 Roman provinces with dates for inscriptions. Each list component has a vector for the province containing following dating data: average date, min TAQ, max TPQ, and the average length timespan. Components in the list have also an attribute class with the HD_nr entries of the province in EDH dataset where timespans, TAQ and TPQ are from entries not_before and not_after, respectively.

Source

https://edh-www.adw.uni-heidelberg.de/data/api/

See Also

rmids, edhwpd, EDH, get.edh, rp

Description

This is a list with specifications to plot caption maps of 59 Roman provinces (year 117 AD) and Italian regions under Emperor Augustus (year 27 BC).

Usage

data("rpmcd")

Format

rpmcd is a list of lists for each province or region with two main components. One component is a list with shape data for a cartographical map caption in different slots, and the second component has for each Roman province an affiliation date when the territory became Roman province. names(rpmcd) have the acronyms according to EDH dataset.

Source

https://commons.wikimedia.org/wiki/File:RomanEmpire_117.svg
https://commons.wikimedia.org/wiki/File:Roman_provinces_trajan.svg
https://commons.wikimedia.org/wiki/File:Regioni_dell’Italia_Augustea.svg

See Also

retn, rpmp, plot.map, rp, EDH
**simil**

*Similarity between vectors in columns*

**Description**

A function to compute similarity between vectors from columns in a data frame based on common attribute characteristics.

**Usage**

```r
simil(x, vars, uniq, diag.incl, dichot, rm.isol, k)
```

**Arguments**

- `x` a list or a data frame object
- `vars` vector with column(s) in `x` representing variable attributes
- `uniq` unique entries? (optional and logical)
- `diag.incl` include also entries in matrix diagonal? (optional and logical)
- `dichot` dichotomize output? (optional and logical)
- `rm.isol` remove isolates in output? (optional and logical)
- `k` cut-off for dichotomization (if not specified, max of output)

**Details**

This is a function to compute the similarity between two or more vectors, which can arise from columns in a data frame and from list entries. The similarity of artefacts or other units having common variable attributes specified in `vars` is by simple matching, and this represents a measure of proximity among the items to compare. Comparison takes an id column from `x`; otherwise, the first column is taken provided that there are no duplicated entry names.

Both the dichotomization of the output and the removing isolated items from the system of co-occurrence relations depends on functions from package "multiplex".

**Value**

A valued matrix of similarities among items in `x`.

**Author(s)**

Antonio Rivero Ostoic

**See Also**

`edhw`, `get.edh`, `dichot`, `rm.isol`, `multigraph`
Examples

```r
## Not run:
# get inscriptions from a Roman province
arm <- edhw(province="Armenia")

# choose variables to a data frame
armv <- edhw(x=arm, as="df",
             vars=c("findspot_ancient", "type_of_inscription", "type_of_monument", "language"))

# matrix of similarities of two variables
simil(armv, vars=c("findspot_ancient", "language"))

## End(Not run)
```
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