

Package ‘hetu’

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Type Package

Title Structural Handling of Finnish Personal Identity Numbers

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Description Structural handling of Finnish identity numbers (persons and companies); extract information, check ID validity and diagnostics.

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VignetteBuilder knitr

BugReports <https://github.com/ropengov/hetu/issues>

URL <https://github.com/ropengov/hetu>

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bid_ctrl	<i>Check Finnish Business ID (y-tunnus) validity</i>
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Description

A function that checks whether a bid (Finnish Business ID) is valid. Returns TRUE or FALSE.

Usage

```
bid_ctrl(bid)
```

Arguments

bid a vector of 1 or more business identity numbers

Examples

```
bid_ctrl(c("0737546-2", "1572860-0")) # TRUE TRUE
bid_ctrl("0737546-1") # FALSE
```

hetu	<i>Finnish personal identification number extraction</i>
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Description

Extract information from Finnish personal identification numbers (hetu).

Usage

```
hetu(pin, extract = NULL, allow.temp = FALSE, diagnostic = FALSE)
```

Arguments

<code>pin</code>	Finnish personal identification number as a character vector, or vector of identification numbers as a character vectors
<code>extract</code>	Extract only selected part of the information. Valid values are "hetu", "sex", "p.num", "checksum", "date", "day", "month", "year", "century", "is.temp". If NULL (default), returns all information.
<code>allow.temp</code>	Allow artificial or temporary PINs (personal numbers 900-999). If FALSE (default), only PINs intended for official use (personal numbers 002-899) are allowed.
<code>diagnostic</code>	Print additional information about possible problems in PINs. The checks are "invalid.p.num", "invalid.checksum", "incorrect.checksum", "invalid.date", "invalid.day", "invalid.month", "invalid.length", "invalid.century". Default is FALSE which returns no diagnostic information.

Value

Finnish personal identification number data.frame, or if `extract` parameter is set, the requested part of the information as a vector. Returns an error or NA if the given character vector is not a valid Finnish personal identification number.

<code>hetu</code>	Finnish personal identification number as a character vector. A correct pin should be in the form DDMMYYCZZZQ, where DDMMYY stands for date, C for century sign, ZZZ for personal number and Q for checksum character.
<code>sex</code>	sex of the person as a character vector ("Male" or "Female").
<code>p.num</code>	Personal number part of the identification number.
<code>checksum</code>	Checksum for the personal identification number.
<code>date</code>	Birthdate.
<code>day</code>	Day of the birthdate.
<code>month</code>	Month of the birthdate.
<code>year</code>	Year of the birthdate.
<code>century</code>	Century character of the birthdate: + (1800), - (1900) or A (2000).
<code>is.temp</code>	Is the personal identification number an artificial number intended for temporary use: (TRUE or FALSE)

Author(s)

Pyry Kantanen, Jussi Paananen

See Also

[pin_ctrl](#) For validating Finnish personal identification numbers.

Examples

```

hetu("111111-111C")
hetu("111111-111C")$date
hetu("111111-111C")$sex
# Same as previous, but using extract argument
hetu("111111-111C", extract="sex")

# Process a vector of hetu's
hetu(c("010101-0101", "111111-111C"))

# Process a vector of hetu's and extract sex information from each
hetu(c("010101-0101", "111111-111C"), extract="sex")

```

hetu_diagnostic	<i>Diagnostics Tool for HETU</i>
-----------------	----------------------------------

Description

Produce a data frame of PINs that may require closer scrutiny.

Usage

```

hetu_diagnostic(pin, extract = NULL, subsetting = FALSE)

pin_diagnostic(pin, extract = NULL, subsetting = FALSE)

```

Arguments

pin	Finnish personal identification number as a character vector, or vector of identification numbers as a character vectors
extract	Extract only selected part of the diagnostic information. Valid values are "hetu", "is.temp", "valid.p.num", "valid.checksum", "correct.checksum", "valid.date", "valid.day", "valid.month", "valid.length", "valid.century". If NULL (default), returns all information.
subsetting	Print only PINs where the validity check chosen in extract returns FALSE.

Value

A data.frame containing diagnostic checks about PINs.

Examples

```

diagnosis_example <- c("010101-0102", "111111-111Q",
"010101B0101", "320101-0101", "011301-0101",
"010101-01010", "010101-0011")
## Print all diagnoses
hetu_diagnostic(diagnosis_example)
# Extract century-related checks

```

```

hetu_diagnostic(diagnosis_example, extract = "valid.century")
# Extract only rows where invalid.checksum = TRUE
hetu_diagnostic(diagnosis_example, subsetting = TRUE, extract = "valid.checksum")

diagnosis_example <- c("010101-0102", "111111-111Q",
"010101B0101", "320101-0101", "011301-0101",
"010101-01010", "010101-0011")
## Print all diagnoses
pin_diagnostic(diagnosis_example)

```

pin_age	<i>Age from ID</i>
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Description

Calculate the age in full years for a given date.

Usage

```
pin_age(pin, date = Sys.Date(), timespan = "years", allow.temp = FALSE)
```

```
hetu_age(pin, date = Sys.Date(), timespan = "years", allow.temp = FALSE)
```

Arguments

pin	Finnish personal identification number as a character vector, or vector of identification numbers as a character vectors
date	Date at which age is calculated. If a vector is provided it must be of the same length as the pin argument.
timespan	Timespan to use to calculate age. The actual timespans are: <ul style="list-style-type: none"> • years (Default) • months • weeks • days
allow.temp	Allow artificial or temporary PINs (personal numbers 900-999). If FALSE (default), only PINs intended for official use (personal numbers 002-899) are allowed.

Value

Age as an integer vector.

Examples

```
ex_pin <- c("010101-0101", "111111-111C")
pin_age(ex_pin, date = "2012-01-01")
```

```
ex_pin <- c("010101-0101", "111111-111C")
hetu_age(ex_pin, date = "2012-01-01")
```

`pin_ctrl`*Finnish Personal Identification Number Validator*

Description

Validate Finnish personal identification numbers (hetu).

Usage

```
pin_ctrl(pin, allow.temp = FALSE)
```

```
hetu_ctrl(pin, allow.temp = FALSE)
```

Arguments

<code>pin</code>	Finnish personal identification number as a character vector, or vector of identification numbers as a character vectors.
<code>allow.temp</code>	If TRUE, temporary PINs (personal numbers 900-999) are handled similarly to regular PINs (personal numbers 002-899), meaning that otherwise valid temporary PIN will return a TRUE. Default is FALSE.

Value

Logical indicating whether the input string is a valid Finnish personal identification number,

Author(s)

Pyry Kantanen

See Also

[hetu](#) For extracting information from Finnish personal identification numbers.

Examples

```
pin_ctrl("010101-0101") # TRUE
pin_ctrl("010101-010A") # FALSE
hetu_ctrl("010101-0101") # TRUE
hetu_ctrl("010101-010A") # FALSE
```

pin_date	<i>Get Birth date from PIN</i>
----------	--------------------------------

Description

Calculates the date of birth in date format.

Usage

```
pin_date(pin, allow.temp = FALSE)
```

```
hetu_date(pin, allow.temp = FALSE)
```

Arguments

pin	Finnish personal identification number as a character vector, or vector of identification numbers as a character vectors
allow.temp	Allow artificial or temporary PINs (personal numbers 900-999). If FALSE (default), only PINs intended for official use (personal numbers 002-899) are allowed.

Value

Date of birth as a vector in date format.

Examples

```
pin_date(c("010101-0101", "111111-111C"))
```

```
hetu_date(c("010101-0101", "111111-111C"))
```

pin_sex	<i>Sex From ID</i>
---------	--------------------

Description

Extract sex from Finnish personal identification number.

Usage

```
pin_sex(pin, allow.temp = TRUE)
```

```
hetu_sex(pin, allow.temp = TRUE)
```

Arguments

<code>pin</code>	Finnish personal identification number as a character vector, or vector of identification numbers as a character vectors
<code>allow.temp</code>	Allow artificial or temporary PINs (personal numbers 900-999). If FALSE (default), only PINs intended for official use (personal numbers 002-899) are allowed.

Value

Factor with label 'Male' and 'Female'.

Author(s)

Pyry Kantanen, Leo Lahti

See Also

[hetu](#) For general information extraction

Examples

```
pin_sex("010101-010A")
hetu_sex("010101-010A")
```

`rbid`*Generate a vector of random Finnish Business ID's (y-tunnus)*

Description

A function that generates random Finnish Business ID's, bid-numbers (Y-tunnus).

Usage

```
rbid(n)
```

Arguments

<code>n</code>	number of generated BIDs
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Value

a vector of generated BID-numbers.

Examples

```
x <- rbid(3)
bid_ctrl(x)
```

rpin *Generate a vector of random hetu*

Description

A function that generates random hetu-pins.

Usage

```
rpin(  
  n,  
  start_date = as.Date("1895-01-01"),  
  end_date = as.Date(Sys.Date()),  
  p.male = 0.4,  
  p.temp = 0  
)  
  
rhetu(  
  n,  
  start_date = as.Date("1895-01-01"),  
  end_date = as.Date(Sys.Date()),  
  p.male = 0.4,  
  p.temp = 0  
)
```

Arguments

n	number of generated hetu-pins
start_date	Lower limit of generated hetu dates. Default is 1895-01-01.
end_date	Upper limit of generated hetu. Default is the current date.
p.male	Proportion of males. Default is 0.4.
p.temp	Proportion of temporary identification numbers. Default is 0.0.

Value

a vector of generated hetu-pins.

Author(s)

Pyry Kantanen, Jussi Paananen

Examples

```
x <- rpin(3)  
hetu(x)  
hetu(x, extract = "sex")  
hetu(x, extract = "checksum")
```

```
x <- rhetu(3)
x
```

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