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Type Package

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Description Functions for admin needs of employees of
Thomas Jefferson University and Thomas Jefferson
University Hospital, Philadelphia, PA.

License GPL-2

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writexl, zoo

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addProbs	<i>Conditional and/or Marginal Probabilities</i>
----------	--

Description

Add conditional and/or marginal probabilities to a two-way contingency table.

Usage

```
addProbs(A, margin = seq_len(nd), fmt = "%d (%.1f%%)")
```

Arguments

- A [matrix](#) of [typeof integer](#), two-dimensional contingency table. See [addmargins](#)
- margin [integer](#) scalar or [vector](#), see [addmargins](#)
- fmt [character](#) scalar, C-style string format with a %d and an %f%% for the counts and proportions (order enforced).

Details

Function [addProbs](#) provides the joint, marginal (using `margin = 1:2`) and conditional (using `margin = 1L` or `margin = 2L`) probabilities of a two-dimensional contingency table.

Value

Function [addProbs](#) returns an 'addProbs' object, which inherits from [table](#) and [noquote](#).

Note

[margin.table](#) (which is to be renamed as [marginSums](#)) is much slower than [colSums](#).

The use of argument `margin` is the same as [addmargins](#), and different from [proportions](#)!

See Also

[rowSums](#) [colSums](#) [proportions](#)

Examples

```
addProbs(table(warpbreaks$tension))

storage.mode(VADeaths) = 'integer'
addProbs(VADeaths)
addProbs(VADeaths, margin = 1L)
rowSums(proportions(VADeaths, margin = 1L))
addmargins(VADeaths, margin = 1L)
```

anniversary	<i>Number of Anniversaries Between Two Dates</i>
-------------	--

Description

Number of anniversaries between two dates.

Usage

```
anniversary(to, from)
```

Arguments

<code>to</code>	an R object convertible to POSIXlt , end date/time
<code>from</code>	an R object convertible to POSIXlt , start date/time

Details

1. Year difference between `from` and `to` dates are calculated
2. In either situation below, subtract one (1) year from the year difference obtained in Step 1.
 - Month of `from` is later than month of `to`;
 - Months of `from` and `to` are the same, but day of `from` is later than day of `to`.

In either of such situations, the anniversary of the current year has not been reached.
3. If any element from Step 2 is negative, [stop](#).

Value

Function [anniversary](#) returns an [integer](#) scalar or [vector](#).

asDifftime

*Create Time Differences, Extended***Description**

To create [difftime](#) object with additional time units 'months' and 'years'.

Usage

```
asDifftime(
  tim,
  units = names(timeUnits()),
  negative_do = stop(sQuote(deparse1(substitute(tim))), " has negative value!"),
  ...
)
```

Arguments

tim	numeric or difftime object, similar usage as in function as.difftime
units	character scalar, similar usage as in function as.difftime , but with additional options 'months' and 'years'
negative_do	exception handling if input tim has negative element(s). Default is to stop
...	additional parameters, currently not in use

Details

Function [asDifftime](#) improves function [as.difftime](#) in terms that

- If input tim is a [difftime](#) object, function [units_difftime<-](#) is called and the unit of tim is updated. In function [as.difftime](#), tim is returned directly, i.e., parameter units is ignored
- Time units 'months' and 'years' are supported, in addition to 'secs', 'mins', 'hours', 'days', 'weeks' supported in function [as.difftime](#). Moreover, partial matching (via function [match.arg](#)) is allowed, while function [as.difftime](#) requires exact matching.
- End user may choose to [stop](#) if tim has negative values. Function [as.difftime](#) does not check for negative tim.

Value

Function [asDifftime](#) returns a [difftime](#) object.

Note

Potential name clash with function [as_difftime](#)

bibentry2rmd	<i>R Markdown Format of citation and/or bibentry</i>
--------------	--

Description

R markdown format of a [citation](#) and/or [bibentry](#) object.

Usage

```
bibentry2rmd(x = "R")
```

Arguments

x [character](#) scalar, 'R' (default) or name of an R package

Details

Function [bibentry2rmd](#) beautifies the output from function `utils::format.bibentry` (with option `style = 'text'`) in the following ways.

- Line break '`\n`' is replaced by a white space;
- Fancy quotes “, ”, ‘ and ’ are removed;
- doi entries are shown as URLs with labels (in R markdown grammar).

Value

Function [bibentry2rmd](#) returns a [character](#) scalar or [vector](#).

Examples

```
bibentry2rmd('survival')
if (FALSE) { # disabled for ?devtools::check
ap = rownames(installed.packages())
lapply(ap, FUN = bibentry2rmd)
}
```

checkCount	<i>Positive Counts in a logical vector</i>
------------	--

Description

Number and percentage of positive counts in a [logical vector](#).

Usage

```
checkCount(x)
```

Arguments

x [logical vector](#)

Value

Function [checkCount](#) returns a [character](#) scalar.

Examples

```
checkCount(as.logical(infert$case))
```

checkDuplicated	<i>Inspect Duplicated Records in a data.frame</i>
-----------------	---

Description

To inspect duplicated records in a [data.frame](#).

Usage

```
checkDuplicated(
  data,
  f,
  dontshow = character(length = 0L),
  file = tempfile(pattern = "checkDuplicated_", fileext = ".xlsx"),
  ...
)
```

Arguments

data	data.frame
f	formula , criteria of duplication, e.g., use ~ mrn to identify duplicated mrn, or use ~ mrn + visitdt to identify duplicated mrn:visitdt
dontshow	(optional) character scalar or vector , variable names to be omitted in output diagnosis file
file	character scalar, path of diagnosis file, print out of substantial duplicates
...	additional parameters, currently not in use

Value

Function [checkDuplicated](#) returns a [data.frame](#).

Examples

```
(d1 = data.frame(A = c(1, 1), B = c(NA_character_, 'text')))
```

```
(d2 = data.frame(A = c(1, 2), B = c(NA_character_, 'text')))
```

date_diffime_	Concatenate a <i>Date</i> and a <i>diffime</i> Object
---------------	---

Description

..

Usage

```
date_diffime_(date_, diffime_, tz = "UTC", tol = sqrt(.Machine$double.eps))
```

Arguments

date_	an R object containing Date information
diffime_	a diffime object
tz	character scalar, time zone, see as.POSIXlt.Date and ISOdatetime
tol	numeric scalar, tolerance in finding second. Default <code>sqrt(.Machine\$double.eps)</code> as in all.equal.numeric

Value

Function `date_diffime_` returns a [POSIXct](#) object.

Note

For now, I do not know how to force function `readxl::read_excel` to read a column as [POSIXt](#). By default, such column will be read as [diffime](#).

See `lubridate::date.default` for the handling of year and month!

Examples

```
(x = as.Date(c('2022-09-10', '2023-01-01', NA, '2022-12-31')))\ny = as.diffime(c(47580.3, NA, 48060, 30660), units = 'secs')\nunits(y) = 'hours'\ny\ndate_diffime_(x, y)
```

date_time_	<i>Concatenate Date and Time</i>
------------	----------------------------------

Description

Concatenate date and time information from two objects.

Usage

date_time_(date_, time_)

Arguments

- date_ an R object containing [Date](#) information
- time_ an R object containing time ([POSIXt](#)) information

Details

Function [date_time_](#) is useful as clinicians may put date and time in different columns.

Value

Function [date_time_](#) returns a [POSIXct](#) object.

Examples

```
(today = Sys.Date())
(y = ISOdatetime(year = c(1899, 2010), month = c(12, 3), day = c(31, 22),
  hour = c(15, 3), min = 2, sec = 1, tz = 'UTC'))
date_time_(today, y)
```

hexavigesimalExcel	<i>Hexavigesimal (Base 26L) and Excel Columns</i>
--------------------	---

Description

Convert between decimal, hexavigesimal in C-style, and hexavigesimal in Excel-style.

Usage

Excel2int(x)

Excel2C(x)

Arguments

x **character** scalar or **vector**, which consists of (except missingness) only letters A to Z and a to z.

Details

Convert between decimal, hexavigesimal in C-style, and hexavigesimal in Excel-style.

Decimal	0	1	25	26	27	51	52	676	702	703
Hexavigesimal; C	0	1	P	10	11	1P	20	100	110	111
Hexavigesimal; Excel	0	A	Y	Z	AA	AY	AZ	YZ	ZZ	AAA

Function **Excel2C** converts from hexavigesimal in Excel-style to hexavigesimal in C-style.

Function **Excel2int** converts from hexavigesimal in Excel-style to decimal, using function **Excel2C** and **strtoi**.

Value

Function **Excel2int** returns an **integer vector**.

Function **Excel2C** returns a **character vector**.

References

<http://mathworld.wolfram.com/Hexavigesimal.html>

See Also

[as.hexmode](#)

Examples

```
int1 = c(NA_integer_, 1L, 25L, 26L, 27L, 51L, 52L, 676L, 702L, 703L)
Excel1 = c(NA_character_, 'A', 'Y', 'Z', 'AA', 'AY', 'AZ', 'YZ', 'ZZ', 'AAA')
C1 = c(NA_character_, '1', 'P', '10', '11', '1P', '20', '100', '110', '111')
stopifnot(identical(int1, Excel2int(Excel1)), identical(int1, strtoi(C1, base = 26L)))

int2 = c(NA_integer_, 1L, 4L, 19L, 37L, 104L, 678L)
Excel2 = c(NA_character_, 'a', 'D', 's', 'aK', 'cZ', 'Zb')
stopifnot(identical(int2, Excel2int(Excel2)))
Excel2C(Excel2)

head(swiss[Excel2int('A')])
```

matchDF

*Match Rows of One [data.frame](#) to Another***Description**

To [match](#) the rows of one [data.frame](#) to the rows of another [data.frame](#).

Usage

```
matchDF(
  x,
  table = unique.data.frame(x),
  by = names(x),
  by.x = character(),
  by.table = character(),
  view.table = character(),
  trace = FALSE,
  ...
)
```

Arguments

<code>x</code>	data.frame , the rows of which to be matched.
<code>table</code>	data.frame , the rows of which to be matched <i>against</i> .
<code>by</code>	character scalar or vector
<code>by.x</code> , <code>by.table</code>	character scalar or vector
<code>view.table</code>	(optional) character scalar or vector , variable names of table to be printed in fuzzy suggestion (if applicable)
<code>trace</code>	logical scalar, to provide detailed diagnosis information, default FALSE
<code>...</code>	additional parameters, currently not in use

Value

Function [matchDF](#) returns a [integer vector](#)

Note

Unfortunately, R does not provide case-insensitive [match](#). Only case-insensitive [grep](#) methods are available.

Examples

```
DF = swiss[sample(nrow(swiss), size = 55, replace = TRUE), ]
matchDF(DF)
```

mergedF

*An Alternative Merge Operation***Description**

..

Usage

```
mergedF(
  x,
  table,
  by = character(),
  by.x = character(),
  by.table = character(),
  ...
)
```

Arguments

x [data.frame](#), on which new columns will be added. All rows of x will be retained in the returned object, *in their original order*.

table [data.frame](#), columns of which will be added to x. Not all rows of table will be included in the returned object

by [character](#) scalar or [vector](#)

by.x, by.table [character](#) scalar or [vector](#)

... additional parameters of [matchDF](#)

Value

Function [mergeDF](#) returns a [data.frame](#).

Note

We avoid [merge.data.frame](#) as much as possible, because it's slow and even `sort = FALSE` may not completely retain the original order of input x.

Examples

```
# examples inspired by ?merge.data.frame

(authors = data.frame(
  surname = c('Tukey', 'Venables', 'Tierney', 'Ripley', 'McNeil'),
  nationality = c('US', 'Australia', 'US', 'UK', 'Australia'),
  deceased = c('yes', rep('no', 4))))
(books = data.frame(
  name = c('Tukey', 'Venables', 'Tierney', 'Ripley',
```

```
'Ripley', 'McNeil', 'R Core', 'Diggle'),
title = c(
  'Exploratory Data Analysis',
  'Modern Applied Statistics',
  'LISP-STAT', 'Spatial Statistics', 'Stochastic Simulation',
  'Interactive Data Analysis', 'An Introduction to R',
  'Analysis of Longitudinal Data'),
other.author = c(
  NA, 'Ripley', NA, NA, NA, NA, 'Venables & Smith',
  'Heagerty & Liang & Scott Zeger'))))

(m = mergeDF(books, authors, by.x = 'name', by.table = 'surname'))
attr(m, 'nomatch')
```

phone10	<i>10-digit US phone number</i>
---------	---------------------------------

Description

..

Usage

```
phone10(x, sep = "")
```

Arguments

- x [character vector](#)
- sep [character](#) scalar

Details

Function [phone10](#) converts all US and Canada (+1) phone numbers to 10-digit.

Value

Function [phone10](#) returns a [character vector](#) of [nchar](#)-10.

Examples

```
x = c(
  '+1(800)275-2273', # Apple
  '1-888-280-4331', # Amazon
  '000-000-0000'
)
phone10(x)
phone10(x, sep = '-')
```

rbinds	Row-Bind a <i>list</i> of <i>data.frame</i>
--------	---

Description

..

Usage

```
rbinds(x, make.row.names = FALSE, ..., .id = "idx")
```

Arguments

`x` a *list* of named *data.frame*
`make.row.names, ...` additional parameters of *rbind.data.frame*
`.id` *character* value to specify the name of ID column, nomenclature follows *rbindlist*

Details

Yet to look into `ggplot2::rbind_dfs` closely.

Mine is slightly slower than the fastest alternatives, but I have more checks which are useful.

Value

Function *rbinds* returns a *data.frame*.

References

<https://stackoverflow.com/questions/2851327/combine-a-list-of-data-frames-into-one-data-frame>

Examples

```
x = list(A = swiss[1:3, 1:2], B = swiss[5:9, 1:2]) # list of 'data.frame'  
rbinds(x)  
rbinds(x, make.row.names = TRUE)
```

sample.by.int	<i>Indices of Stratified Sampling</i>
---------------	---------------------------------------

Description

Indices of Stratified Sampling

Usage

```
sample.by.int(f, ...)
```

Arguments

f	factor
...	potential parameters of sample.int

Details

End user should use [interaction](#) to combine multiple [factors](#).

Value

Function [sample.by.int](#) returns an [integer vector](#).

See Also

`dplyr::slice_sample`

Examples

```
id1 = sample.by.int(state.region, size = 2L)
state.region[id1]

id2 = sample.by.int(f = with(npk, interaction(N, P)), size = 2L)
npk[id2, c('N', 'P')] # each combination selected 2x
```

sign2	<i>Sign of Difference of Two Objects</i>
-------	--

Description

..

Usage

```
sign2(
  e1,
  e2,
  name1 = substitute(e1),
  name2 = substitute(e2),
  na.detail = TRUE,
  ...
)
```

Arguments

e1, e2	two R objects, must be both numeric vectors , or ordered factors with the same levels
name1, name2	two language objects, or character scalars
na.detail	logical scalar, whether to provide the missingness details of e1 and e2. Default TRUE.
...	additional parameters, currently not in use

Details

Function [sign2](#) extends [sign](#) in the following ways

- two [ordered factors](#) can be compared;
- (detailed) information on missingness are provided.

Value

Function [sign2](#) returns [character vector](#) when na.detail = TRUE, or [ordered factor](#) when na.detail = FALSE.

Examples

```
lv = letters[c(1,3,2)]
x0 = letters[1:3]
x = ordered(sample(x0, size = 100, replace = TRUE), levels = lv)
y = ordered(sample(x0, size = 50, replace = TRUE), levels = lv)
x < y # base R ok
pmax(x, y) # base R okay
```

```

pmin(x, y) # base R okay
x[c(1,3)] = NA
y[c(3,5)] = NA
table(sign(unclass(y) - unclass(x)))
table(sign2(x, y))
table(sign2(x, y, na.detail = FALSE), useNA = 'always')

```

sourcePath	<i>Source All R Files under a Directory</i>
------------	---

Description

[source](#) all *.R and *.r files under a directory.

Usage

```
sourcePath(path, ...)
```

Arguments

path	character scalar, parent directory of .R files
...	additional parameters of source

Value

Function [sourcePath](#) does not have a returned value

splitDF	<i>Split data.frame by Row</i>
---------	--

Description

[split.data.frame](#) into individual rows.

Usage

```
splitDF(x)
```

Arguments

x	data.frame
---	----------------------------

Value

Function [splitDF](#) returns a [list](#) of [nrow-1](#) [data.frames](#).

Note

We use [split.data.frame](#) with argument `f` being `attr(x, which = 'row.names', exact = TRUE)` instead of `seq_len(.row_names_info(x, type = 2L))`, not only because the former is faster, but also `.rowNamesDF<-` enforces that [row.names.data.frame](#) must be unique.

Examples

```
splitDF(head(mtcars)) # data.frame with rownames
splitDF(head(warpbreaks)) # data.frame without rownames
splitDF(data.frame()) # exception
```

subset_	<i>Inspect a Subset of data.frame</i>
---------	---

Description

..

Usage

```
subset_(x, subset, select, select_pattern, avoid, avoid_pattern)
```

Arguments

<code>x</code>	a data.frame
<code>subset</code>	logical expression , see function subset.data.frame
<code>select</code>	character vector , columns to be selected, see function subset.data.frame
<code>select_pattern</code>	regular expression regex for multiple columns to be selected
<code>avoid</code>	character vector , columns to be avoided
<code>avoid_pattern</code>	regular expression regex , for multiple columns to be avoided

Details

Function [subset_](#) is different from [subset.data.frame](#), such that

- if both `select` and `select_pattern` are missing, only variables mentioned in `subset` are selected;
- be able to select all variables, except those in `avoid` and `avoid_pattern`;
- always returns [data.frame](#), i.e., forces `drop = FALSE`

Value

Function [subset_](#) returns a [data.frame](#), with additional [attributes](#)

`attr(, 'vline')` [integer](#) scalar, position of a vertical line (see `?flextable::vline`)

`attr(, 'jhighlight')` [character vector](#), names of columns to be `flextable::highlighted`.

Examples

```
subset_(trees, Girth > 9 & Height < 70)
subset_(swiss, Fertility > 80, avoid = 'Catholic')
subset_(warpbreaks, wool == 'K')
```

Surv_3Date

*Create [Surv](#) Object using Three [Dates](#)***Description**

Create right-censored [Surv](#) object using start, stop and censoring dates.

Usage

```
Surv_3Date(start, stop, censor, units = "years", ...)
```

Arguments

start, stop, censor
 [Date](#), [POSIXlt](#) or [POSIXct](#) object

units
 (optional) [character](#) scalar, time units

...
 potential parameters, currently not in use

Value

Function [Surv_3Date](#) returns a [Surv](#) object.

Examples

```
library(survival)
d1 = within(survival::udca, expr = {
  edp_yr = Surv_3Date(entry.dt, death.dt, last.dt, units = 'years')
  edp_mon = Surv_3Date(entry.dt, death.dt, last.dt, units = 'months')
})
head(d1)

noout = within(survival::udca, expr = {
  edp_bug = Surv_3Date(entry.dt, death.dt, as.Date('1991-01-01'), units = 'months')
})
subset(survival::udca, subset = entry.dt > as.Date('1991-01-01')) # check error as suggested
```

TJU_Cayuse

*Award & Effort from Cayuse***Description**

Print out grant and effort from Cayuse.

Usage

```
aggregateAwards(path = "~/Downloads", fiscal.year = year(Sys.Date()))
```

```
viewProposal(path = "~/Downloads", fiscal.year = year(Sys.Date()))
```

```
viewAward(path = "~/Downloads")
```

```
award2LaTeX(path = "~/Downloads")
```

Arguments

`path` [character](#) scalar, directory of downloaded award .csv file. Default is the download directory '~/Downloads'

`fiscal.year` [integer](#) scalar

Details

- go to <https://jefferson.cayuse424.com/sp/index.cfm>
- My Proposals -> Submitted Proposals. Lower-right corner of screen, 'Export to CSV'. Downloaded file has name pattern '^proposals_.*\\.csv'
- My Awards -> Awards (*not* 'Active Projects'). Lower-right corner of screen, 'View All', then 'Export to CSV'. Downloaded file has name pattern '^Awards_.*\\.csv'
- My Awards -> Awards. Click into each project, under 'People' tab to find my 'Sponsored Effort'

Function [aggregateAwards](#) aggregates grant over different period (e.g. from Axx-xx-001, Axx-xx-002, Axx-xx-003 to Axx-xx). Then we need to manually added in our 'Sponsored Effort' in the returned .csv file.

Value

..

Examples

```
if (FALSE) {
  aggregateAwards()
  viewAward()
  viewProposal()
}
```

```
award2LaTeX()  
}
```

TJU_Fiscal_Year	<i>TJU Fiscal Year</i>
-----------------	------------------------

Description

..

Usage

```
TJU_Fiscal_Year(x)
```

Arguments

x integer scalar

Value

Function [TJU_Fiscal_Year](#) returns a length-two [Date vector](#), indicating the start (July 1 of the previous calendar year) and end date (June 30) of a fiscal year.

Examples

```
TJU_Fiscal_Year(2022L)
```

TJU_SchoolTerm	<i>TJU School Term</i>
----------------	------------------------

Description

..

Usage

```
TJU_SchoolTerm(x)
```

Arguments

x [Date](#) object

Value

[TJU_SchoolTerm](#) returns a [character vector](#)

Examples

```
TJU_SchoolTerm(as.Date(c('2021-03-14', '2022-01-01', '2022-05-01')))
```

TJU_Workday

Thomas Jefferson University Workdays

Description

To summarize the number of workdays, weekends, holidays and vacations in a given time-span (e.g., a month or a quarter of a year).

Usage

```
TJU_Workday(x, vacations)
```

Arguments

x [character](#) scalar or [vector](#) (e.g., '2021-01' for January 2021, '2021 Q1' for 2021 Q1 (January to March)), or [integer](#) scalar or [vector](#) (e.g., 2021L for year 2021); The time-span to be summarized. Objects of classes [yearqtr](#) and [yearmon](#) are also accepted.

vacations [Date vector](#), vacation days

Details

Function [TJU_Workday](#) summarizes the workdays, weekends, Jefferson paid holidays (New Year's Day, Martin Luther King, Jr. Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving and Christmas) and your vacation (e.g., sick, personal, etc.) days (if any), in a given time-span.

Per Jefferson policy (source needed), if a holiday is on Saturday, then the preceding Friday is considered to be a weekend day. If a holiday is on Sunday, then the following Monday is considered to be a weekend day.

Value

Function [TJU_Workday](#) returns a [factor](#).

Examples

```
table(TJU_Workday(c('2021-01', '2021-02')))
```

```
tryCatch(TJU_Workday(c('2019-10', '2019-12')), error = identity)
```

```
table(c(TJU_Workday('2019-10'), TJU_Workday('2019-12'))) # work-around
```

```
table(TJU_Workday('2022-12'))
```

```
table(TJU_Workday('2022 Q1', vacations = seq.Date(
  from = as.Date('2022-03-14'), to = as.Date('2022-03-18'), by = 1)))
```

```
table(TJU_Workday('2022 Q2', vacations = as.Date(c(
  '2022-05-22', '2022-05-30', '2022-06-01', '2022-07-04'))))

table(TJU_Workday(2021L))
```

trimws_	<i>Remove Leading/Trailing and Duplicated (Symbols that Look Like) White Spaces</i>
---------	---

Description

To remove leading/trailing and duplicated (symbols that look like) white spaces.
 More aggressive than function [trimws](#).

Usage

```
trimws_(x)
```

Arguments

x an object with [typeof](#) being [character](#)

Details

Function [trimws_](#) is more aggressive than [trimws](#), that it removes

- duplicated white spaces
- symbols that look like white space, such as `\u00a0` (no-break space)

Value

Function [trimws_](#) returns an object of [typeof character](#).

Note

[gsub](#) keeps [attributes](#)

Examples

```
(x = c(A = ' a b ', b = 'a . s', ' a ', b ; ', '\u00a0 ab '))
base::trimws(x)
# raster::trim(x) # do not want to 'Suggests'
trimws_(x)

(xm = matrix(x, nrow = 2L))
trimws_(xm)
```

```
#library(microbenchmark)
#microbenchmark(trimws(x), trimws_(x))
```

zip5*5-digit US Zip Code*

Description

..

Usage

```
zip5(x)
```

Arguments

x [character vector](#)

Details

Function [zip5](#) converts all US zip codes to 5-digit.

Value

Function [zip5](#) returns a [character vector](#) of `nchar=5`.

Examples

```
zip5(c('14901 ', '41452-1423'))
```

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