Package 'igr'

July 27, 2024

Title Irish Grid Reference Utilities

Version 0.1.1

Description Convert between Irish grid references and Irish Grid coordinates. Irish grid
references can also be converted to or from an 'sf' object in any coordinate reference
system. Precisions from 1 m to 100 km are supported, as are datasets with mixed
precision. Conversion to 'sf' polygons is precision-aware.

License GPL (>= 3)

URL <https://github.com/digitalnature-ie/igr>,
<https://digitalnature-ie.github.io/igr/>

BugReports <https://github.com/digitalnature-ie/igr/issues>

Imports sf

Suggests knitr, maps, rmarkdown, testthat (>= 3.0.0), tmap

VignetteBuilder knitr

Config/testthat/edition 3

Encoding UTF-8

RoxygenNote 7.3.2

NeedsCompilation no

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Repository CRAN

Date/Publication 2024-07-27 16:20:05 UTC

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igr_is_valid   *Check if Irish grid references are valid*

Description

`igr_is_valid()` identifies valid Irish grid references.

Usage

```
igr_is_valid(x)
```

Arguments

x   A character vector of Irish grid references.

Details

Valid Irish grid references consist of a letter (other than I) optionally followed by both an easting
and northing. The easting and northing must be of the same length of between 1 and 5 digits. There
may be whitespace between the letter, easting and northing.

Value

A logical vector indicating the validity of each Irish grid reference.

Examples

```
# A vector of alternating valid and invalid Irish grid references
v <- c("N8090", "D 12 345 88800", "W34", "I30", "W", "A123", "B1234", "")

# Check validity of Irish Grid coordinates
igr_is_valid(v)
```

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igr_to_ig   *Convert Irish grid references to Irish Grid coordinates*

Description

`igr_to_ig()` converts Irish grid references into a list of Irish Grid (EPSG:29903) X and Y coordinates. The precision of each Irish grid reference in metres can be returned.

Usage

```
igr_to_ig(x, coords = c("x", "y"), precision = NULL)
```

Arguments

x	A character vector of Irish grid references. See `igr_is_valid()` for a definition of valid Irish grid references.
coords	A character vector of the names of the columns to contain the Irish Grid X and Y coordinates respectively.
precision	The name of the column to contain the precision of each Irish grid reference in metres, if required.

Value

A list containing Irish Grid X and Y coordinates and, optionally, the precision in metres of each Irish grid reference. Invalid or missing Irish grid references return NA.

Examples

```
# A vector of Irish grid references of different precisions
v <- c("N8090", "D1234588800", "W34", "")

# Convert to Irish Grid coordinates
igr_to_ig(v)

# Specify column names
igr_to_ig(v, coords = c("e", "n"))

# Also return the precision in metres of each Irish grid reference
igr_to_ig(v, precision = "prec")
```

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ig_to_igr	*Convert Irish Grid coordinates to Irish grid references*

Description

`ig_to_igr()` converts valid Irish Grid(EPSG:29903) coordinates to Irish grid references at the specified precision.

Usage

```
ig_to_igr(x, digits = 3, precision = NULL, sep = "")
```

Arguments

x	A matrix containing Irish Grid X and Y coordinates in the first and second columns respectively.
digits	An integer, the number of digits for both easting and northing in the Irish grid references.

- 0: equivalent to a precision of 100 km.
- 1: equivalent to a precision of 10 km.

- 2: equivalent to a precision of 1 km.
- 3 (the default): equivalent to a precision of 100 m.
- 4: equivalent to a precision of 10 m.
- 5: equivalent to a precision of 1 m.

precision	An integer, the precision of the Irish grid references in metres: `1`, `10`, `100`, `1000`, `10000`, or `100000`. Overrides `digits`.
sep	A character string to separate the 100 km grid letter, easting, and northing.

Details

Either `digits` or `precision` must be specified. `precision` overrides `digits`.

Value

A character vector of Irish grid references.

Examples

```
# A matrix of three Irish Grid coordinates
m <- matrix(c(0, 412300, 0, 98700, 456000, 0), byrow = TRUE, ncol = 2)

m

# Convert to Irish grid references
ig_to_igr(m)

# Insert a space between the 100 km grid letter, easting, and northing
ig_to_igr(m, sep = " ")

# Convert into Irish grid references with 4 digit easting and northing (10 m precision)
ig_to_igr(m, digits = 4)

# Convert into Irish grid references with 1 km precision (2 digit easting and northing)
ig_to_igr(m, precision = 1000)
```

---

st_igr_as_sf   *Convert a data frame containing Irish grid references into an sf object*

Description

`st_igr_as_sf()` converts a data frame containing Irish grid references into an sf object containing point or polygon features. If points, the south west corners of the grid references are returned. If polygons, squares spanning the full extent of each grid reference are returned, with each square's size depending on the precision of each grid reference. The Irish Grid (EPSG:29903) X and Y coordinates and grid reference precision in metres can also be returned.

Usage

```
st_igr_as_sf(
  x,
  igrefs = "igr",
  crs = 29903,
  remove = FALSE,
  add_coords = FALSE,
  coords = c("x", "y"),
  precision = NULL,
  polygons = FALSE
)
```

Arguments

x	A data.frame containing a column of valid Irish grid references. It must not have column names specified in coords.
igrefs	The name or index of the character column holding Irish grid references.
crs	A valid EPSG value (numeric), a string accepted by GDAL, or an object of class crs containing the coordinate reference system to be assigned. See `sf::st_crs()`.
remove	Should the column containing the Irish grid references be removed from the result?
add_coords	Should the Irish Grid coordinates with column names specified by coords be included in the result?
coords	A character vector of the names of the columns to contain the Irish Grid X and Y coordinates respectively.
precision	The name of the column to contain the precision of each Irish grid reference in metres, if required.
polygons	If FALSE (the default) the result will contain point features located at the south-west corner of each Irish grid reference. If TRUE the result will contain polygon features spanning the extent of each Irish grid reference.

Value

An sf object containing point or polygon features for each Irish grid reference in x.

Examples

```
# A data.frame containing two Irish grid references
x <- data.frame(igr = c("A00", "N8000"))

# Convert a data.frame of Irish grid references to an sf object in the
# Irish Grid coordinate reference system
st_igr_as_sf(x, "igr")

# Convert to an sf object in the WGS 84 coordinate reference system
st_igr_as_sf(x, "igr", crs = 4326)
```

```
# Include the Irish Grid coordinates and precision in the sf object
st_igr_as_sf(x, "igr", add_coords = TRUE, precision = "prec")

# Convert into polygon features rather than point features
st_igr_as_sf(x, "igr", polygons = TRUE)
```

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st_irishgridrefs   *Generate Irish grid references from an sf object*

Description

st_irishgridrefs() returns the Irish grid references for all features in an sf object of point ge-
ometries. Features located outside the Irish Grid (EPSG:29903) extent are returned as NA.

Usage

```
st_irishgridrefs(x, digits = 3, precision = NULL, sep = "")
```

Arguments

x	An sf object containing geometries of type POINT.
digits	An integer, the number of digits for both easting and northing in the Irish grid references.
	• 0: equivalent to a precision of 100 km.
	• 1: equivalent to a precision of 10 km.
	• 2: equivalent to a precision of 1 km.
	• 3 (the default): equivalent to a precision of 100 m.
	• 4: equivalent to a precision of 10 m.
	• 5: equivalent to a precision of 1 m.
precision	An integer, the precision of the Irish grid references in metres: 1, 10, 100, 1000, 10000, or 100000. Overrides digits.
sep	A character string to separate the 100 km grid letter, easting, and northing.

Value

A character vector of Irish grid references.

Examples

```
# An sf object containing point data
x_sf <- sf::st_as_sf(data.frame(x = c(0, 490000), y = c(400000, 0)),
  crs = 29903,
  coords = c("x", "y")
)

# Convert to Irish grid references
```

```
st_irishgridrefs(x_sf)

# Convert into Irish grid references with 4 digit easting and northing (10 m precision)
st_irishgridrefs(x_sf, digits = 4)

# Convert into Irish grid references with 1 km precision (2 digit easting and northing)
st_irishgridrefs(x_sf, precision = 1000)

# Insert a space between the 100 km grid letter, easting, and northing
st_irishgridrefs(x_sf, sep = " ")
```

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