Package ‘evolMap’

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Title Dynamic and Interactive Maps
Description Dynamic and Interactive Maps with R, powered by 'leaflet' <https://leafletjs.com>. 'evolMap' generates a web page with interactive and dynamic maps to which you can add geometric entities (points, lines or colored geographic areas), and/or markers with optional links between them. The dynamic ability of these maps allows their components to evolve over a continuous period of time or by periods.
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Description

Add a description of the evolMap object to be shown on screen.

Usage

```r
add_description(map, content = "", width = NULL)
```

Arguments

- `map`: an object of class `evolMap`.
- `content`: a character string indicating a description text for the graph.
- `width`: a percentage indicating the width for the description panel (25% of the window by default).

Value

Object of class `evolMap`.

Author(s)

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Examples

```r
# create map
map <- create_map()
map <- add_description(map, "Lorem ipsum dolor sit amet, consectetur adipiscing elit.

# plot map
plot(map)
```
add_entities  Add entities.

Description

Add entities to the interactive map.

Usage

add_entities(map, entities, attributes = NULL, name = NULL,
label = NULL, color = NULL, text = NULL,
info = NULL, infoFrame = c("right","left"),
start = NULL, end = NULL, period = NULL, opacity = 0.2)

Arguments

map an object of class evolMap.
entities a spatial object of geometries.
attributes a data frame with information to show for each geometry. Its columns names can be passed as parameters to the arguments.
name name of the column with names in the entities or attributes data frame.
label name of the column with labels in the entities or attributes data frame.
color name of the column with color variable in the entities or attributes data frame.
text name of the column in the entities or attributes data frame with texts in the entities or attributes data frame. This information will be shown as a popup.
info name of the column with information to display in a panel in the data matrix.
infoFrame Panel (right or left) where the information is to be displayed. The left panel is only available if a description is provided with add_description.
start name of the column with the start time of a period in the entities or attributes data frame.
end name of the column with the end time of a period in the entities or attributes data frame.
period name of the column with the period name in the entities or attributes data frame.
opacity Entity opacity expressed as a numeric vector between 0 and 1. Default: 0.2.

Value

Object of class evolMap.

Author(s)

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Examples

```
data(World)
map <- create_map()
map <- add_entities(map, World, color="pop")

# plot map
plot(map)
```

---

**add_links**

*Add links.*

**Description**

Add links to the interactive map.

**Usage**

```
add_links(map, links, color = NULL, start = NULL, end = NULL, period = NULL)
```

**Arguments**

- **map**: an object of class `evolMap`.
- **links**: a link data frame with two first columns as source and target marker names (specified with the name argument in `add_markers`) and any other column with link attributes. Column names can be passed as parameters to the arguments.
- **color**: name of the column with color variable in the link data frame.
- **start**: name of the column with the start time of a period in the link data frame.
- **end**: name of the column with the end time of a period in the link data frame.
- **period**: name of the column with the period name in the link data frame.

**Value**

Object of class `evolMap`.

**Author(s)**

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**add_markers**

**Examples**

```r
# create data
markers <- data.frame(
  lat=c(39,47,53,40,53),
  lon=c(-5, 2,-8,-8,-1),
  name=c("m1","m2","m3","m4","m5")
)

links <- data.frame(
  source=c("m4","m1","m2","m5"),
  target=c("m1","m2","m5","m3"),
  num=1:4
)

# create map
map <- create_map()
map <- add_markers(map, markers, name="name", color="name", markerCluster=FALSE)
map <- add_links(map, links, color="num")

# plot map
plot(map)
```

---

**add_markers**

*Add markers.*

**Description**

Add markers to the interactive map.

**Usage**

```r
add_markers(map, data, latitude = NULL, longitude = NULL, name = NULL,
    label = NULL, image = NULL, color = NULL, shape = NULL, text = NULL,
    info = NULL, infoFrame = c("right","left"),
    start = NULL, end = NULL, period = NULL,
    markerCluster = FALSE, roundedIcons = TRUE, jitteredPoints = 0)
```

**Arguments**

- `map`:
  - an object of class `evolMap`.
- `data`:
  - a marker data frame with the locations and information to show in each marker.
  - Its column names can be passed as parameters to the arguments of the function.
- `latitude`:
  - name of the column with the latitude coordinates for each marker (first column by default).
- `longitude`:
  - name of the column with the longitude coordinates for each marker (second column by default).
### add_markers

name | name of the column with names in the marker data frame.
label | name of the column with labels in the marker data frame.
image | name of the column with the path to marker image files in the marker data frame.
color | name of the column with color variable in the marker data frame.
shape | name of the column with shape variable in the marker data frame.
text | name of the column with texts in the marker data frame. This information will be shown as a popup.
info | name of the column with information to display in a panel in the marker data frame.
infoFrame | Panel (right or left) where the information is to be displayed. The left panel is only available if a description is provided with add_description.
start | name of the column with the start time of a period in the marker data frame.
end | name of the column with the end time of a period in the marker data frame.
period | name of the column with the period name in the marker data frame.
markerCluster | enable joining of nearby markers when zooming out.
roundedIcons | display markers with rounded borders.
jitteredPoints | add an amount of noise to markers to avoid overlapping.

### Value

Object of class evolMap.

### Author(s)

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### Examples

```r
# load data
data(sociologists)
data(locations)

# load pictures
sociologists$picture <- system.file("extdata", sociologists$picture, package="evolMap")

# join locations
sociologists$latitude <- locations[,1]
sociologists$longitude <- locations[,2]

# create map
map <- create_map()
map <- add_markers(map, sociologists,
                   latitude = "latitude", longitude = "longitude",
```

add_periods

label = "label", image = "picture",
start = "birth", end = "death")

# plot map
plot(map)

---

**add_periods**

*Add Periods.*

**Description**

Add periods to the interactive map.

**Usage**

```r
add_periods(map, periods, name = NULL, start = NULL, end = NULL,
            latitude = NULL, longitude = NULL, zoom = NULL,
            description = NULL, duration = NULL, periodrep = TRUE)
```

**Arguments**

- **map**: an object of class evolMap.
- **periods**: a period data frame defining periods with the following columns: name, start and end.
- **name**: name of the column with names in the period data frame (first column by default).
- **start**: name of the column with the start time of a period in the period data frame (second column by default).
- **end**: name of the column with the end time of a period in the period data frame (third column by default).
- **latitude**: name of the column with the latitude coordinates to center zoom on each period.
- **longitude**: name of the column with the longitude coordinates for center zoom in each period.
- **zoom**: name of the column with the zoom size to display each period.
- **description**: name of the column with the description of each period.
- **duration**: name of the column with the period duration in seconds.
- **periodrep**: If false, time will run by year, and the period will only be shown in the header. Otherwise, time will run by period.

**Value**

Object of class evolMap.
Author(s)

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Examples

data(sociologists)
data(locations)

# load pictures
sociologists$picture <- system.file("extdata", sociologists$picture,
   package="evolMap")

# join locations
sociologists$latitude <- locations[,1]
sociologists$longitude <- locations[,2]

# create map
map <- create_map()
map <- add_markers(map, sociologists,
   latitude = "latitude", longitude = "longitude",
   label = "label", image = "picture",
   start = "birth", end = "death",
   period = "generation", markerCluster = FALSE)

periods <- data.frame(
   name = c("1775-1799","1800-1824","1825-1850","1851-1874"),
   start = c(1775,1800,1825,1851),
   end = c(1799,1824,1850,1874)
)
map <- add_periods(map, periods)

# plot map
plot(map)

add_tutorial

Description

add_tutorial adds a tutorial for a map.

Usage

add_tutorial(map, image = NULL, description = NULL)
create_map

Arguments

- **map**: object of class `evolMap`.
- **image**: character vector indicating the image path, header for the tutorial.
- **description**: a character string indicating a description text to insert in the tutorial.

Value

Object of class `evolMap`.

Author(s)

Modesto Escobar, Department of Sociology and Communication, University of Salamanca.

Examples

```r
# create map
map <- create_map()
map <- add_tutorial(map)

# plot map
plot(map)
```

create_map  

*Interactive map.*

Description

`create_map` produces the structure of an interactive map with 'Leaflet'.

Usage

```r
create_map(center = NULL, zoom = NULL, provider = "OpenStreetMap",
            note = NULL, defaultColor = "#2f7bee",
            controls = 1:4, language = c("en","es","ca"))
```

Arguments

- **center**: a numeric two size vector length giving latitude and longitude to set the initial view.
- **zoom**: a number greater than or equal to 0 to establish the startet zoom.
- **provider**: character string with the map provider to represent as background, `OpenStreetMap` by default. See `list_providers` for available map providers.
- **note**: text to appear at the bottom of the map.
- **defaultColor**: a character vector giving a valid html color for marker representation.
get_location

controls

a numeric vector indicating which controls will be shown. 1 = tools, 2 = buttons, 3 = legends, 4 = search box. NULL hides all controls, negative values deny each control and 0 denies all.

language

a character string indicating the language of the graph (en=english (default); es=spanish; ca=catalan).

Value

Object of class evolMap.

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Examples

# create map
map <- create_map()

# plot map
plot(map)

get_location

Get location coordinates.

Description

get_location returns the latitude and longitude of each input place name.

Usage

get_location(x)

Arguments

x

da vector string with place names ("city, country") whose coordinates will be downloaded from OpenStreetMap.

Value

Matrix with the latitude and longitude coordinates of each input place.
list_providers

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Examples
get_location(c("Salamanca, Spain","New York, United States"))

---

list_providers  Get location coordinates.

Description
List of all providers with their map variations.

Usage
list_providers()

Value
This function returns a list of available map providers for the create_map function.

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Examples
list_providers()

---

locations  Data: Birthplaces locations of classical sociologists.

Description
Matrix with birthplace locations of certain sociologists.

Usage
data("locations")
Format

A matrix with birthplace locations of 16 sociologists:

lat: latitude.
lon: longitude.

Source

Own elaboration from manuals of sociology and OpenStreetMap.

References

See sociologists.

Examples

data(locations)

data("sociologists")

Description

Data frame with names, birth and death year data, birth country and school of thought.

Usage

data("sociologists")

Format

A data frame of 16 sociologists with 11 variables to study time coincidences:

name: first and last name of the sociologist.
birth: birth year.
death: death year.
birth_place: birth city.
birth_country: birth country.
death_place: death city.
death_country: death country.
label: combination of name, birth and death dates.
generation: generation (every 25 years) of the sociologist.
school: school of thought.
picture: name and path of the file where their picture is.
Source

Own elaboration from manuals of sociology.

Examples

data(sociologists)
head(sociologists, 10)
tail(sociologists, 10)

World  World country polygons

Description

The object loaded is an sf object containing world map data from Natural Earth with a few variables from World Bank.

Usage

data("World")

Format

Formal class 'sf' [package "sf"]; the data contains a data frame with 177 obs. of 11 variables:

- iso_a2 : character vector of ISO 2 character country codes
- name_long : character vector of country names
- continent : character vector of continent names
- region_un : character vector of region names
- subregion : character vector of subregion names
- type : character vector of type names
- area_km2 : integer vector of area values
- pop : integer vector of population in 2014
- lifeExp : integer vector of life expectancy at birth in 2014
- gdpPercap : integer vector of per-capita GDP in 2014
- geom : sfc_MULTIPOLYGON

The object is in geographical coordinates using the WGS84 datum.

Source

Examples

```r
if (requireNamespace("sf", quietly = TRUE)) {
  library(sf)
  data(World)
  plot(World)
}
```
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