Package 'WtTopsis'

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Title Weighted Method for Multiple-Criteria Decision Making

Version 1.0

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Description Evaluation of alternatives based on multiple criteria using weighted technique for Order preference by similarity to an ideal solution method. Reference: Hwang CL. (1981, ISBN:978-3-540-10558-9).

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.2

Depends R (>= 2.10)

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

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Contents

`data2max` *data2max Maximized the data.*

Description

data2max Maximized the data.

Usage

```
data2max(data, mth, zmth, xbest, qlow, qup)
```

Arguments

`data`	The Data that needs to be maximized.
`mth`	A vector describing the type of each indicator.
`zmth`	A vector describing the method from negative to positive, including DS: reciprocal method, it is not recommended to use when the data has 0, CZ: using the maximum subtraction method, other types of indicators are marked as NA.
`xbest`	An optimal value vector of intermediate numerical values,other types of indicators are marked as NA.
`qlow`	An interval lower bound vector with interval numeric value forward,other types of indicators are marked as NA.
`qup`	An interval upper bound vector of the interval value maximize,other types of indicators are marked as NA.

Value

A maximized data set

Examples

```
sampleData<-sampleData
mth<-c("ZH","ZJ","QJ","ZH","FU","ZH","QJ","FU","FU","ZH")
zmth<-c(NA,NA,NA,NA,"CZ",NA,NA,"DS","CZ",NA)
xbest<-c(NA,4,NA,NA,NA,NA,NA,NA,NA,NA)
qup<-c(NA,NA,5,NA,NA,NA,5,NA,NA,NA)
qlow<-c(NA,NA,3,NA,NA,NA,3,NA,NA,NA)
data2max(sampleData,mth,zmth,xbest,qlow,qup)
```

DataNormal *DataNormal Normalize the maximized data set.*

Description

DataNormal Normalize the maximized data set.

Usage

```
DataNormal(data)
```

Arguments

data	A maximized data set

Value

A Normalized data set

Examples

```
## Not run:
sampleData<-sampleData
mth<-c("ZH","ZJ","QJ","ZH","FU","ZH","QJ","FU","FU","ZH")
zmth<-c(NA,NA,NA,NA,"CZ",NA,NA,"DS","CZ",NA)
xbest<-c(NA,4,NA,NA,NA,NA,NA,NA,NA,NA)
qup<-c(NA,NA,5,NA,NA,NA,5,NA,NA,NA)
qlow<-c(NA,NA,3,NA,NA,NA,3,NA,NA,NA)
maxdata<-data2max(sampleData,mth,zmth,xbest,qlow,qup)
DataNormal(maxdata)

## End(Not run)
```

DataNormalpre *DataNormalpre Prepare the normalized data set.*

Description

DataNormalpre Prepare the normalized data set.

Usage

```
DataNormalpre(data, i)
```

Arguments

data	A maximized data set
i	Index column

Value

Index column normalized

`Ejcaul` *Ejcaul Calculate Ej value.*

Description

Ejcaul Calculate Ej value.

Usage

```
Ejcaul(data, i)
```

Arguments

`data`	A normalized data set.
`i`	Index column.

Value

Index column weight Ej

`Errmax` *Errmax Function on error.*

Description

Errmax Function on error.

Usage

```
Errmax(x, i)
```

Arguments

`x`	The Data that needs to be maximized.
`i`	Index column.

Value

Index column maximized.

GetWeight *GetWeight Calculate weights on standardized data us the entropy method.*

Description

GetWeight Calculate weights on standardized data us the entropy method.

Usage

```
GetWeight(data)
```

Arguments

data	A Normalized data set

Value

WeightEij is Ej value of Index,weight is weight value of Index

Examples

```
sampleData<-sampleData
mth<-c("ZH","ZJ","QJ","ZH","FU","ZH","QJ","FU","FU","ZH")
zmth<-c(NA,NA,NA,NA,"CZ",NA,NA,"DS","CZ",NA)
xbest<-c(NA,4,NA,NA,NA,NA,NA,NA,NA,NA)
qup<-c(NA,NA,5,NA,NA,NA,5,NA,NA,NA)
qlow<-c(NA,NA,3,NA,NA,NA,3,NA,NA,NA)
weightdata<-data2max(sampleData,mth,zmth,xbest,qlow,qup)
GetWeight(weightdata)
```

max2max *max2max positive Data conversion.*

Description

max2max positive Data conversion.

Usage

```
max2max(x, i)
```

Arguments

x	The Data that needs to be maximized.
i	Index column.

Value

Index column maximized

`min2maxC` *min2maxC negative Data conversion use Maximum subtraction method*

Description

min2maxC negative Data conversion use Maximum subtraction method

Usage

```
min2maxC(x, i)
```

Arguments

`x`	The Data that needs to be maximized.
`i`	Index column.

Value

Index column maximized

`min2maxD` *min2maxD negative Data conversion use reciprocal method*

Description

min2maxD negative Data conversion use reciprocal method

Usage

```
min2maxD(x, i)
```

Arguments

`x`	The Data that needs to be maximized.
`i`	Index column.

Value

Index column maximized

qj2max *qj2max Interval Data conversion*

Description

qj2max Interval Data conversion

Usage

```
qj2max(x, qlow, qup, i)
```

Arguments

x	The Data that needs to be maximized.
qlow	An interval lower bound vector with interval numeric value forward,other types of indicators are marked as NA.
qup	An interval upper bound vector of the interval value maximize,other types of indicators are marked as NA.
i	Index column.

Value

Index column maximized

sampleData *A example of multiple-criteria decision making data.*

Description

A example of multiple-criteria decision making data.

Usage

```
sampleData
```

Format

A data fram with 21 rows and 11 variables.

Source

Randomly generated.

`WtTopsis` *WtTopsis Weighted TOPSIS method for multiple-criteria decision making (MCDM).*

Description

WtTopsis Weighted TOPSIS method for multiple-criteria decision making (MCDM).

Usage

```
WtTopsis(data, mth, zmth, xbest, qlow, qup)
```

Arguments

`data`	The Data that needs to be maximized.
`mth`	A vector describing the type of each indicator.
`zmth`	A vector describing the method from negative to positive, including DS: reciprocal method, it is not recommended to use when the data has 0, CZ: using the maximum subtraction method, other types of indicators are marked as NA.
`xbest`	An optimal value vector of intermediate numerical values,other types of indicators are marked as NA.
`qlow`	An interval lower bound vector with interval numeric value forward,other types of indicators are marked as NA.
`qup`	An interval upper bound vector of the interval value maximize,other types of indicators are marked as NA.

Value

Data set containing D+,D- and C values

Examples

```
sampleData<-sampleData
mth<-c("ZH","ZJ","QJ","ZH","FU","ZH","QJ","FU","FU","ZH")
zmth<-c(NA,NA,NA,NA,"CZ",NA,NA,"DS","CZ",NA)
xbest<-c(NA,4,NA,NA,NA,NA,NA,NA,NA,NA)
qup<-c(NA,NA,5,NA,NA,NA,5,NA,NA,NA)
qlow<-c(NA,NA,3,NA,NA,NA,3,NA,NA,NA)
WtTopsis(sampleData,mth,zmth,xbest,qlow,qup)
```

`WtTopsisN` *WtTopsis Weighted TOPSIS method for multiple-criteria decision making (MCDM) us Normalized data.*

Description

WtTopsis Weighted TOPSIS method for multiple-criteria decision making (MCDM) us Normalized data.

Usage

```
WtTopsisN(data)
```

Arguments

`data`	Normalized data.

Value

Data set containing D+,D- and C values

Examples

```
sampleData<-sampleData
mth<-c("ZH","ZJ","QJ","ZH","FU","ZH","QJ","FU","FU","ZH")
zmth<-c(NA,NA,NA,NA,"CZ",NA,NA,"DS","CZ",NA)
xbest<-c(NA,4,NA,NA,NA,NA,NA,NA,NA,NA)
qup<-c(NA,NA,5,NA,NA,NA,5,NA,NA,NA)
qlow<-c(NA,NA,3,NA,NA,NA,3,NA,NA,NA)
maxdata<-data2max(sampleData,mth,zmth,xbest,qlow,qup)
normaldata<-DataNormal(maxdata)
WtTopsisN(normaldata)
```

`zj2max` *zj2max Intermediate Data conversion*

Description

zj2max Intermediate Data conversion

Usage

```
zj2max(x, xbest, i)
```

Arguments

x	The Data that needs to be maximized.
xbest	An optimal value vector of intermediate numerical values,other types of indicators are marked as NA.
i	Index column.

Value

Index column maximized

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