Package 'FuzzyAHP'

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Type Package

Title (Fuzzy) AHP Calculation

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URL http://github.com/JanCaha/FuzzyAHP/

Description Calculation of AHP (Analytic Hierarchy Process -
<http://en.wikipedia.org/wiki/Analytic_hierarchy_process>)
with classic and fuzzy weights based on Saaty's pairwise
comparison method for determination of weights.

Encoding UTF-8

Depends R (>= 3.0.0), methods, MASS

Suggests knitr, testthat

License LGPL (>= 3)

LazyData TRUE

VignetteBuilder knitr

RoxygenNote 7.0.1

Collate 'class-FuzzyData.R' 'class-PairwiseComparisonMatrix.R'
'class-FuzzyPairwiseComparisonMatrix.R' 'class-FuzzyWeights.R'
'class-Weights.R' 'function-bindFuzzyData.R'
'function-buildFuzzyPairwiseComparisonMatrix.R'
'function-buildPairwiseComparisonMatrix.R'
'function-calculateAHP.R' 'function-calculateWeights.R'
'function-compare.R' 'function-consistencyIndex.R'
'function-consistencyRatio.R' 'function-defuzzify.R'
'function-getFuzzyNumbers.R' 'function-getFuzzyScale.R'
'function-insertInto.R' 'function-internal-optimization.R'
'function-internal-weights.R' 'function-print.R'
'function-strictConsistency.R' 'function-textRepresentation.R'
'function-weakConsistency.R' 'package-FuzzyAHP.R'

NeedsCompilation no

Author Jan Caha [aut, cre]

Contents

FuzzyAHP-package   *Package for calculation of classic and Fuzzy AHP*

Description

FuzzyAHP is an open source (LGPL 3) package for R. The package is only suitable for AHP that uses categorical rating of criteria for alternatives instead of pairwise comparison of alternatives according to each criteria. This adaptation of AHP is common in situations when the number of alternatives is hight and the pairwise comparison is thus inadequate or impossible to construct. The weights for criteria are, however, still determined from the pairwise comparison matrix. This approach towards AHP is common in Geosciences as well as other fields.

The determination of criteria weights is done according to process described by Krejčí, Pavlačka, and Talašová (2016), which yelds significantly narrower fuzzy numbers than previously used approaches.

Details

Please see vignettes for more details about the package and examples of use.

Complete list of classes and methods call `help(package="FuzzyAHP")`.

Author(s)

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References

Krejčí, Jana, Ondřej Pavlačka, and Jana Talašová. 2016. "A fuzzy extension of Analytic Hierarchy Process based on the constrained fuzzy arithmetic." Fuzzy Optimization and Decision Making. doi:10.1007/s10700-016-9241-0.

---

bindColums	*Function that binds two FuzzyData together into one FuzzyData*

Description

This methods construct object FuzzyData based on two FuzzyData. The functions merges the sources into single output. This method should be used in situations when both weights and input data are fuzzy.

Usage

```
bindColums(data1, data2)

## S4 method for signature 'FuzzyData,FuzzyData'
bindColums(data1, data2)
```

Arguments

data1	An object of [FuzzyData]().
data2	An object of [FuzzyData]().

Value

An object of class [FuzzyData]()

---

buildFuzzyPairwiseComparisonMatrix

> *Function that builds Fuzzy Pairwise Comparison Matrix based on list of Pairwise Comparison Matrices*

Description

This functions builds Fuzzy Pairwise Comparison Matrix based on list of Pairwise Comparison Matrices the resulting Fuzzy Pairwise Comparison Matrix is calculated as minimum, geometric mean and maximum of each cell of all Pairwise Comparison Matrices in listOfMatrices.

Usage

```
buildFuzzyPairwiseComparisonMatrix(listOfMatrices)

## S4 method for signature 'list'
buildFuzzyPairwiseComparisonMatrix(listOfMatrices)
```

Arguments

listOfMatrices An object of [list]().

Value

An object of class [FuzzyPairwiseComparisonMatrix]()

---

buildPairwiseComparisonMatrix

> *Function that builds Pairwise Comparison Matrix based on list of Pairwise Comparison Matrices*

Description

This functions builds Pairwise Comparison Matrix based on list of Pairwise Comparison Matrices the resulting Pairwise Comparison Matrix is calculated as geometric mean of all Pairwise Comparison Matrices in listOfMatrices.

Usage

```
buildPairwiseComparisonMatrix(listOfMatrices)

## S4 method for signature 'list'
buildPairwiseComparisonMatrix(listOfMatrices)
```

Arguments

listOfMatrices   An object of [list](.).

Value

An object of class [PairwiseComparisonMatrix](.)

---

calculateAHP   *Function to calculate result of AHP*

Description

This function calculates output of AHP based on [Weights](.) or [FuzzyWeights](.) on data represented either by matrix or [FuzzyData](.).

Usage

```
calculateAHP(weights, data)

## S4 method for signature 'Weights,matrix'
calculateAHP(weights, data)

## S4 method for signature 'FuzzyWeights,matrix'
calculateAHP(weights, data)

## S4 method for signature 'FuzzyWeights,FuzzyData'
calculateAHP(weights, data)

## S4 method for signature 'PairwiseComparisonMatrix,matrix'
calculateAHP(weights, data)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix,matrix'
calculateAHP(weights, data)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix,FuzzyData'
calculateAHP(weights, data)
```

Arguments

weights   object of class Weights or FuzzyWeights. Alternatively objects of classes PairwiseComparisonMatrix or FuzzyPairwiseComparisonMatrix can be passed to directly calculate weights from these classes.

data   matrix or FuzzyData with number of colums equal to number of rows in weights.

Value

Either a matrix (if Weights and matrix were used as inputs) or FuzzyData (if FuzzyWeights were used).

---

calculateWeights   *Function to calculate fuzzy weights based on comparison matrix*

Description

This functions calculates `Weights` or `FuzzyWeights` based on input pairwise comparison matrix.

Usage

```
calculateWeights(comparisonMatrix)

## S4 method for signature 'PairwiseComparisonMatrix'
calculateWeights(comparisonMatrix)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix'
calculateWeights(comparisonMatrix)
```

Arguments

comparisonMatrix

         object of either PairwiseComparisonMatrix or FuzzyPairwiseComparisonMatrix

References

KREJČÍ, Jana, PAVLAČKA, Ondřej and TALAŠOVÁ, Jana, 2016, A fuzzy extension of Analytic Hierarchy Process based on the constrained fuzzy arithmetic. Fuzzy Optimization and Decision Making. 2016. DOI 10.1007/s10700-016-9241-0.

See Also

PairwiseComparisonMatrix-class

calculateWeights_old_methods

Function to calculate fuzzy weights based on comparison matrix using older approaches

---

Description

This functions calculates [FuzzyWeights](#) based on input fuzzy pairwise comparison matrix.

Usage

```
calculateWeights_old_methods(comparisonMatrix, type = "Chang")

## S4 method for signature 'FuzzyPairwiseComparisonMatrix'
calculateWeights_old_methods(comparisonMatrix, type = "Chang")
```

Arguments

comparisonMatrix

object of [FuzzyPairwiseComparisonMatrix](#)

type A "character" representing type of method used for weights or fuzzy weights determination. Currently implemented methods are "Chang", "Wang" and "Tesfamariam". The default value is "Chang".

Value

[FuzzyWeights](#). If fuzzy weighting vector is to be obtained please see [calculate_weighting_vector](#) function.

References

CHANG, Da-Yong, 1996, Applications of the extent analysis method on fuzzy AHP. European Journal of Operational Research. 1996. Vol. 95, no. 3, p. 649–655. DOI 10.1016/0377-2217(95)00300-2.

TESFAMARIAM, Solomon and SADIQ, Rehan, 2006, Risk-based environmental decision-making using fuzzy analytic hierarchy process (F-AHP). Stochastic Environmental Research and Risk Assessment. 2006. Vol. 21, no. 1, p. 35–50. DOI 10.1007/s00477-006-0042-9.

WANG, Tien-Chin and CHEN, Yueh-Hsiang, 2008, Applying fuzzy linguistic preference relations to the improvement of consistency of fuzzy AHP. Information Sciences [online]. October 2008. Vol. 178, no. 19, p. 3755–3765. DOI 10.1016/j.ins.2008.05.028.

See Also

[calculate_weighting_vector](#)

---

calculate_weighting_vector
Function to calculate fuzzy weighting vector

Description

This functions calculates fuzzy weighting vector from `FuzzyWeights`. The calculation was first described by Chang (1996).

Usage

```
calculate_weighting_vector(fuzzyWeights)

## S4 method for signature 'FuzzyWeights'
calculate_weighting_vector(fuzzyWeights)
```

Arguments

fuzzyWeights   object of FuzzyWeights

Value

weighting vector for defined FuzzyWeights.

References

CHANG, Da-Yong, 1996, Applications of the extent analysis method on fuzzy AHP. European Journal of Operational Research. 1996. Vol. 95, no. 3, p. 649–655. DOI 10.1016/0377-2217(95)00300-2.

---

compareFuzzyNumbers   *Function to mutually compare fuzzy data*

Description

This function compares fuzzy data `FuzzyData` to identify the optimal (best) cases. The `FuzzyData` can only contain one fuzzy number, otherwise the comparison is not possible. The calculation of type `"possibilityTheory"` can be time consuming as it is based on comparing each fuzzy number to a maximal fuzzy number obtained from the set of fuzzy numbers.

Usage

```
compareFuzzyNumbers(fuzzyData, type, progressBar = FALSE)

## S4 method for signature 'FuzzyData,character'
compareFuzzyNumbers(fuzzyData, type, progressBar = FALSE)
```

Arguments

fuzzyData   A FuzzyData

type   A "character" representing type of comparison. Currently implemented methods are "Chen" and "possibilityTheory".

progressBar   logical value indicating if textual progress bar should be printed (default value FALSE)

Value

A "matrix" of numeric value in case of "Chen" method or a "matrix" with two values in case of "possibilityTheory".

---

compareResults   *Function to rank results*

Description

This function ranks data from the highest value to the lowest. Essentially it does (nrow(data)+1) - rank(data, na.last = "keep", ties.method = "max").

Usage

```
compareResults(data)

## S4 method for signature 'matrix'
compareResults(data)
```

Arguments

data   A matrix with one column. Usually an output of function calculateAHP.

Value

A "matrix" of numeric value that indicates ranking of each row, with the highest value ranked as 1.

---

consistencyIndex   *Function to determine Consistency Index*

Description

This methods calculates Consistency index for `PairwiseComparisonMatrix`.

Usage

```
consistencyIndex(comparisonMatrix)

## S4 method for signature 'PairwiseComparisonMatrix'
consistencyIndex(comparisonMatrix)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix'
consistencyIndex(comparisonMatrix)
```

Arguments

```
comparisonMatrix
```
> A `PairwiseComparisonMatrix`

Value

A numeric value of Consistency index.

---

consistencyRatio   *Function to determine Consistency Ratio*

Description

This methods calculates Consistency Ratio for `PairwiseComparisonMatrix`. The consistency ratio can only be provided for `PairwiseComparisonMatrix` with less than 10 rows. For bigger matrices the value is not known.

Usage

```
consistencyRatio(comparisonMatrix, print.report = TRUE)

## S4 method for signature 'PairwiseComparisonMatrix'
consistencyRatio(comparisonMatrix, print.report = TRUE)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix'
consistencyRatio(comparisonMatrix, print.report = TRUE)
```

Arguments

comparisonMatrix

                A `PairwiseComparisonMatrix`

print.report   Optional boolean parameter stating if short report should be printed along with determination of Consistency Ratio. Default value is `TRUE`.

Details

Generally pairwise comparison matrixes are considered to be consistent if the value of Consistency Ration is smaller than 0.1. For matrices comparing more then 10 elements then Consistency Ratio is unsuitable, because the values of random index, that is necessary to obtain Consistency Ratio, are only known for matrixes with size smaller than 10×10.

Value

A numeric value of Consistency Ratio, for `PairwiseComparisonMatrix` with more than 10 an error is raised.

---

defuzziffy   *Function to defuzzify fuzzy data*

Description

This function defuzzifies `FuzzyData` into single value. The `FuzzyData` can only contain one fuzzy number, otherwise the defuzzification is not possible.

Usage

```
defuzziffy(fuzzyData, type = "mean")

## S4 method for signature 'FuzzyData'
defuzziffy(fuzzyData, type = "mean")
```

Arguments

fuzzyData   A `FuzzyData`

type   A `"character"` representing type of defuzzification. Currently implemented methods are `"Yager"`, `"modalValue"`, `"modalValueDominancy"`, `"mean"`. The default value is `"mean"`.

Details

The triangular fuzzy numbers $\tilde{A}$ represented as triplet $[a1, a2, a3]$ are defuzzified using these methods: `"Yager"`:

$$def(\tilde{A}) = \frac{(a2 - a1)(a1 + 2/3(a2 - a1) + (a3 - a2)(a2 + 1/3(a3 - a2))}{(a2 - a1) + (a3 - a2))}$$

"modalvalue":
$$def(\tilde{A}) = a2$$

"modalValueDominancy":
$$def(\tilde{A}) = (a1 + 4 * a2 + a3)/6$$

"mean":
$$def(\tilde{A}) = (a1 + a2 + a3)/3$$

.

Value

A numeric value of defuzzified value, based on deffuzification method.

---

fuzzyData   *Function that creates FuzzyData*

Description

This methods construct object `FuzzyData` based on provided `matrix`. The matrix needs to be have rows represent individual fuzzy numbers and three colums that represent minimal, modal and maximal value of fuzzy number.

Usage

```
fuzzyData(data, single.value = TRUE)

## S4 method for signature 'matrix'
fuzzyData(data, single.value = TRUE)
```

Arguments

data   A `matrix` with 3 colums.

single.value   An optional boolean parameter (default value TRUE) specifying if the data to be turn into fuzzy data is single vector of fuzzy numbers (then it needs to have 3 colums) or if the whole matrix needs to be turn into fuzzy values.

Value

An object of class `FuzzyData`

See Also

FuzzyData

FuzzyData-class *Class "FuzzyData"*

Description

An S4 class to represent fuzzy data.

Slots

fnMin A numeric vector of minimal values of fuzzy data.

fnModal A numeric vector of modal values of fuzzy data.

fnMax A numeric vector of maximal values of fuzzy data.

---

fuzzyPairwiseComparisonMatrix

Function that creates Fuzzy Pairwise Comparions Matrix

Description

This methods construct object [FuzzyPairwiseComparisonMatrix](#) based on provided [PairwiseComparisonMatrix](#) and an optional fuzzy scale.

Usage

```
fuzzyPairwiseComparisonMatrix(pairwiseComparisonMatrix, fuzzyScale,
comparsionNotInScale, width)

## S4 method for signature 'PairwiseComparisonMatrix'
fuzzyPairwiseComparisonMatrix(
  pairwiseComparisonMatrix,
  fuzzyScale = getFuzzyScale(type = "full"),
  comparsionNotInScale = FALSE,
  width = 1
)

## S4 method for signature 'matrix'
fuzzyPairwiseComparisonMatrix(pairwiseComparisonMatrix)
```

Arguments

pairwiseComparisonMatrix

[PairwiseComparisonMatrix](#) or matrix.

fuzzyScale A numeric vector that definies fuzzy scale. Default scale is described in details. Default value getFuzzyScale(type="full").

comparsionNotInScale

>A boolean variable. If TRUE the intensities not found in fuzzyScale are calculated with use of width parameter. Default value FALSE.

width
>A numeric parameter, specifying the width of calculated fuzzy intensity. If comparsionNotInScale is FALSE then the parameter is not considered. Default value 1.

Details

Parameter fuzzyScale is expected as a vector containing n*3 values that represent triangular fuzzy numbers used as fuzzy intensity of importance (only the values equal or higher than 1, inverse values are calculated automatically). The values need to be ordered by fuzzy values. Default value of this parameter is as.double(c(1/2,1,2,1,2,3,2,3,4,3,4,5,4,5,6,5,6,7,6,7,8,7,8,9,8,9,9)). Another possibility is eg. as.double(c(1/3,1,3,1,3,5,3,5,7,5,7,9,7,9,9))

If param pairwiseComparisonMatrix is matrix then it needs to be of character type. Each element in the matrix must be specified as triplet "x;y;z", where x<=y<=z. From this matrix a pairwise comparison is constructed from y values and x and z function as lower and upper limits of y respectively. In this case the optional parameter fuzzyScale is not taken into account at all.

Value

Object of class [FuzzyPairwiseComparisonMatrix](#)

FuzzyPairwiseComparisonMatrix-class
                    Class "FuzzyPairwiseComparisonMatrix"

Description

An S4 class to represent a fuzzy pairwise comparison matrix.

Slots

fnMin A matrix of minimal values of fuzzy preferences.

fnModal A matrix of modal values of fuzzy preferences.

fnMax A matrix of maximal values of fuzzy preferences.

variableNames Names of variables in the pariwise comparison matrix obtained either as colnames or rownames.

fuzzyPairwiseComparisonMatrix1

Function that creates Fuzzy Pairwise Comparions Matrix

Description

This methods construct object FuzzyPairwiseComparisonMatrix based on provided PairwiseComparisonMatrix and two matrices that form lower an upper significant values of the PairwiseComparisonMatrix that form middle significant value.

Usage

```
fuzzyPairwiseComparisonMatrix1(lowerValues, pairwiseComparisonMatrix, upperValues)

## S4 method for signature 'matrix,PairwiseComparisonMatrix,matrix'
fuzzyPairwiseComparisonMatrix1(
  lowerValues,
  pairwiseComparisonMatrix,
  upperValues
)
```

Arguments

lowerValues   A matrix of "double" that consists of lower significant values.

pairwiseComparisonMatrix
                  PairwiseComparisonMatrix that consists of middle significant values.

upperValues   A matrix of "double" that consists of upper significant values.

Details

This function allows user to specify fuzzy pairwise comparison matrix that is not based on fuzzy scale but rely more on user's specification. The middle significant values have to be definied by PairwiseComparisonMatrix to ensure some elementary properties. The significant values provided to this function have to be correctly ordered and fuzzy numbers have to be reciprocal otherwise the function fails.

Value

Object of class FuzzyPairwiseComparisonMatrix

FuzzyWeights-class   *Class "FuzzyWeights"*

Description

An S4 class to represent fuzzy weights for fuzzy AHP calculation.

Slots

fnMin Object of class numeric containing minimal values of fuzzy weights.

fnModal Object of class numeric containing modal values of fuzzy weights.

fnMax Object of class numeric containing maximal values of fuzzy weights.

---

getFuzzyNumber   *Function to extract specific fuzzy numbers*

Description

This methods helps with extracting fuzzy numbers from FuzzyData and FuzzyWeights.

Usage

```
getFuzzyNumber(object, index)

## S4 method for signature 'FuzzyData,integer'
getFuzzyNumber(object, index)

## S4 method for signature 'FuzzyWeights,integer'
getFuzzyNumber(object, index)
```

Arguments

object	An object of class FuzzyData or FuzzyWeights
index	An object of class integer that represents one or more indices to extract the data from

Value

A matrix where rows are fuzzy numbers and columns are important values.

---

getFuzzyScale *Function to create Fuzzy Scale*

Description

This methods creates fuzzy scale that are used while fuzzifying Piecewise comparison matrix.

Full scale is:

1/2	1	2
1	2	3
2	3	4
3	4	5
4	5	6
5	6	7
6	7	8
7	8	9
8	9	9

Basic scale is:

1/3	1	3
1	3	5
3	5	7
5	7	9
7	9	9

Usage

```
getFuzzyScale(type)

## S4 method for signature 'character'
getFuzzyScale(type)
```

Arguments

type   An object of class `character`. Two values are possible "full" and "basic".

Value

A `matrix` representing the fuzzy scale.

---

insertInto   *Function that inserts FuzzyData on specific column number in another*
                                    FuzzyData

Description

This methods construct object `FuzzyData` based on two `FuzzyData` and index. The functions
merges the sources into single output. It inserts data2 onto specific position (defined by index)
in data1.

Usage

```
insertInto(data1, data2, index)

## S4 method for signature 'FuzzyData,FuzzyData'
insertInto(data1, data2, index)
```

Arguments

data1	An object of `FuzzyData` - data to insert into.
data2	An object of `FuzzyData` - data that should be inserted.
index	An integer specifying the column position on which data2 should be inserted.

Value

An object of class `FuzzyData`

Examples

```
values = (c(1,2,3,4,5,6,7,8,9))
values = matrix(values, nrow = 3, ncol = 3, byrow = TRUE)
fData = fuzzyData(values, single.value = FALSE)

v = (c(15,16,17))
v = matrix(v, nrow = 3, ncol = 1, byrow = TRUE)
fd = fuzzyData(v, single.value = FALSE)

fData = insertInto(fData, fd, 2)
```

pairwiseComparisonMatrix

Function that creates Pairwise Comparions Matrix

Description

This methods construct object `PairwiseComparisonMatrix` based on provided `matrix`. The matrix needs to be square and reciprocal with the intensity of importance (comparisons). Since the version 0.6.9 the comparsions can be represented as either characters (e.g. "1", "9", "1/9") or numeric (e.g. 1, 9, 1/9) .

Usage

```
pairwiseComparisonMatrix(matrix)

## S4 method for signature 'matrix'
pairwiseComparisonMatrix(matrix)
```

Arguments

matrix   A reciprocal square matrix with ones on the main diagonal.

Value

An object of class `PairwiseComparisonMatrix`

See Also

[PairwiseComparisonMatrix](#)

Examples

```
comparisonMatrixValues = c("1","9","5","1/9","1","1/3","1/5","3","1")
comparisonMatrix = matrix(comparisonMatrixValues, nrow = 3, ncol = 3, byrow = TRUE)
matrix = pairwiseComparisonMatrix(comparisonMatrix)

comparisonMatrixValues = c(1,9,5,1/9,1,1/3,1/5,3,1)
comparisonMatrix = matrix(comparisonMatrixValues, nrow = 3, ncol = 3, byrow = TRUE)
matrix = pairwiseComparisonMatrix(comparisonMatrix)
```

PairwiseComparisonMatrix-class

Class "PairwiseComparisonMatrix"

Description

An S4 class to represent a pairwise comparison matrix.

Slots

valuesChar A pairwise comparison matrix based on Saaty's method as characters.

values A pairwise comparison matrix based on Saaty's method as numeric.

variableNames Names of variables in the pariwise comparison matrix obtained either as colnames
or rownames.

---

strictConsistency   *Function to assess strict consistency of Comparison Matrix*

Description

Check if

$$a_{ik} = a_{ij} \times a_{jk}$$

applies for all $i, j, k = 1, 2, \ldots, n$, where n is size of a.

Usage

```
strictConsistency(PairwiseComparisonMatrix, print.report = TRUE)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix'
strictConsistency(PairwiseComparisonMatrix, print.report = TRUE)

## S4 method for signature 'PairwiseComparisonMatrix'
strictConsistency(PairwiseComparisonMatrix, print.report = TRUE)
```

Arguments

PairwiseComparisonMatrix

A FuzzyPairwiseComparisonMatrix or PairwiseComparisonMatrix.

print.report Optional boolean parameter stating if short report should be printed along with
determination of Weak Consistency. Default value is TRUE.

Value

Boolean value indicating if Comparison Matrix passed the weak consistency test and a warning
message listing the problematic triplets if the matrix is not consisten.

---

textRepresentation	*Function to create text representation of (Fuzzy) Pairwise comparison matrix*

Description

This methods creates text representation of Pairwise comparison matrices.

Usage

```
textRepresentation(x, whole = TRUE)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix'
textRepresentation(x, whole = TRUE)

## S4 method for signature 'PairwiseComparisonMatrix'
textRepresentation(x, whole = TRUE)
```

Arguments

x	An object of class FuzzyPairwiseComparisonMatrix or PairwiseComparisonMatrix
whole	A boolean object specifying if the whole matrix should be created or only its upper half should be filled.

Value

A dataframe of character type.

---

weakConsistency	*Function to assess Weak Consistency of Comparison Matrix*

Description

Check if for $a_{ij} > 1, a_{jk} > 1$ applies that

$$a_{ik} >= \max(a_{ij}, a_{jk})$$

for all $i, j, k = 1, 2, \ldots, n$, where n is size of a.

Usage

```
weakConsistency(PairwiseComparisonMatrix, print.report = TRUE)

## S4 method for signature 'FuzzyPairwiseComparisonMatrix'
weakConsistency(PairwiseComparisonMatrix, print.report = TRUE)

## S4 method for signature 'PairwiseComparisonMatrix'
weakConsistency(PairwiseComparisonMatrix, print.report = TRUE)
```

Arguments

PairwiseComparisonMatrix

A [FuzzyPairwiseComparisonMatrix](#) or [PairwiseComparisonMatrix](#).

print.report   Optional boolean parameter stating if short report should be printed along with determination of Weak Consistency. Default value is TRUE.

Value

Boolean value indicating if Comparison Matrix passed the weak consistency test and a warning message listing the problematic triplets if the matrix is not consisten.

Weights-class   *Class "Weights"*

Description

An S4 class representing weights for AHP calculation. Each value in numeric vector represents one weight.

Slots

weights Object of class numeric containing weights.

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