# Package 'EpistemicGameTheory'

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**Type** Package

**Title** Constructing an Epistemic Model for the Games with Two Players

**Version** 0.1.2

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**Imports** stats,utils

**Depends** lpSolve

**Description** Constructing an epistemic model such that, for every player i and for every choice c(i) which is optimal, there is one type that expresses common belief in rationality.

**License** GPL-3

**LazyData** TRUE

**RoxygenNote** 6.0.1

**Suggests** testthat

**NeedsCompilation** no

**Repository** CRAN

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## Contents

esdc *Eliminating strictly dominated choices*

## Description

This function eliminates strictly dominated choices.

## Usage

```
esdc(n, m, A, choices.A, B, choices.B, iteration)
```

## Arguments

| | |
|---|---|
| n | an integer representing the number of choices of player 1 |
| m | an integer representing the number of choices of player 2 |
| A | an nxm matrix representing the payoff matrix of player 1 |
| choices.A | a vector of length n representing the names of player 1's choices |
| B | an nxm matrix representing the payoff matrix of player 2 |
| choices.B | a vector of length m representing the names of player 2's choices |
| iteration | an integer representing the iteration number of algorithm |

## Details

This function works for the games with two players.

## Value

The reduced matrices of players' that are obtained after eliminating strictly dominated choices

## Author(s)

Bilge Baser

## Examples

```
a=4
b=4
pay.A=matrix(c(0,3,2,1,4,0,2,1,4,3,0,1,4,3,2,0),4,4)
ch.A=c("Blue","Green","Red","Yellow")
pay.B=matrix(c(5,4,4,4,3,5,3,3,2,2,5,2,1,1,1,5),4,4)
ch.B=c("Blue","Green","Red","Yellow")
iter=5
esdc(a,b,pay.A,ch.A,pay.B,ch.B,iter)
```

type *Finding types that express common belief in rationality for optimal choices*

## Description

This function takes the reduced payoff matrices and finds out the probabilities for the types that expresses common belief in rationality for optimal choices.

## Usage

```
type(A, B, choices.A, choices.B)
```

## Arguments

| | |
|---|---|
| A | an nxm matrix representing the reduced payoff matrix of player 1 |
| B | an nxm matrix representing the reduced payoff matrix of player 2 |
| choices.A | a vector of length n representing the names of player 1's choices |
| choices.B | a vector of length m representing the names of player 2's choices |

## Details

This function works for the games with two players. It returns infeasible solution for the irrational choices.

## Value

Probabilities of the types that expresses common belief in rationality for optimal choices

## Author(s)

Bilge Baser

## See Also

lp

## Examples

```
Ar=matrix(c(0,3,2,4,0,2,4,3,0),3,3)
choices.Ar=c("Blue","Green","Red")
Br=matrix(c(5,4,4,3,5,3,2,2,5),3,3)
choices.Br=c("Blue","Green","Red")
type(Ar,Br,choices.Ar,choices.Br)
```

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