Dynamic Assignment Problem

October 1, 2018

`optimal_cost` *Optimal Cost*

Description

Solve the linear sum assignment problem using the Hungarian method.

Usage

```
optimal_cost(AP)
```

Arguments

`AP`	an object of the assignment_problem class produced with solve_assignment()

Examples

```
optimal_cost()
```

`optimal_matching` *Optimal Matching*

Description

Solve the linear sum assignment problem using the Hungarian method.

Usage

```
optimal_matching(AP)
```

Arguments

`AP`	an object of the assignment_problem class produced with solve_assignment()

Examples

```
optimal_matching()
```

solve_assignment *Optimal Matching*

Description

Solve the linear sum assignment problem using the Hungarian method.

Usage

```
solve_assignment(cost_matrix)
```

Arguments

cost_matrix	a square matrix with non-negative cost values

Examples

```
#Example:
A <- matrix(c(1,2,3,2,4,6,3,6,9), nrow=3)
B <- matrix(c(1,2,3,2,4,6,3,6,0), nrow=3)
AP_A <- solve_assignment(A)
AP_B <- solve_assignment(B)
matching_A <- optimal_matching(AP_A)
matching_B <- optimal_matching(AP_B)
print("Optimal matching with A:")
print(matching_A)
print("Optimal matching with B:")
print(matching_B)
update_rows(AP_A, B, 3)
update_cols(AP_B, A, 3)
matching_A <- optimal_matching(AP_A)
matching_B <- optimal_matching(AP_B)
print("Optimal matching with A:")
print(matching_A)
print("Optimal matching with B:")
print(matching_B)

#Compare with clue package function solve_LSAP
library(clue)
solve_LSAP(A)
solve_LSAP(B)
```

update_cols *Update columns of the cost matrix for the assignment problem*

Description

Solve the linear sum assignment problem using the Hungarian method.

Usage

```
update_cols(AP, cost_matrix, cols_changed)
```

Arguments

AP	an object of the assignment_problem class produced with solve_assignment()
cost_matrix	a new cost matrix
cols_changed	a vector of column indices

Examples

```
update_cols()
```

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update_rows *Update rows of the cost matrix for the assignment problem*

Description

Solve the linear sum assignment problem using the Hungarian method.

Usage

```
update_rows(AP, cost_matrix, rows_changed)
```

Arguments

AP	an object of the assignment_problem class produced with solve_assignment()
cost_matrix	a new cost matrix
rows_changed	a vector of row indices

Examples

```
update_rows()
```

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