NAME

mcxmap − permute or remap the indices of graphs and matrices.

SYNOPSIS

mcxmap -imx fname (*input*) **[-o** fname (*output*)**]** **[-make-map** (*output map file name*)**]** **[-make-mapc** (*output map file name*)**]** **[-make-mapr** (*output map file name*)**]** **[-cmul** a (*coefficient*)**]** **[-cshift** b (*translate*)**]** **[-rmul** c (*coefficient*)**]** **[-rshift** d (*translate*)**]** **[-mul** e (*coefficient*)**]** **[-shift** f (*translate*)**]** **[-map** fname (*row/col map file*)**]** **[-rmap** fname (*row map file*)**]** **[-cmap** fname (*column map file*)**]** **[-mapi** fname (*row/col map file (use inverse)*)**]** **[-rmapi** fname (*row map file (use inverse)*)**]** **[-cmapi** fname (*column map file (use inverse)*)**]** **[-tab** fname (*read (and map) tab file*)**]**

DESCRIPTION

This utility relabels graphs or matrices. Its main use is in applying a *map file* to a given matrix or graph. A map file contains a so called *map matrix* in mcl format that has some special properties (given further below). The functionality of mcxmap can also be provided by **mcx**, as a mapped matrix (i.e. the result of applying a map matrix to another matrix) is simply the usual matrix product of a matrix and a map matrix. However, **mcx** will construct a new matrix and leave the original matrix to be mapped alone. When dealing with huge matrices, considerable gains in efficiency memory-wise and time-wise can be achieved by doing the mapping in-place. This is what mcxmap does. In the future, its functionality may be embedded in **mcx** with new mcx operators.

The special properties of a map matrix are

- The column domain and row domain are of the same cardinality.
- Each column has exactly one entry.
- Each row domain index occurs in exactly one column.

These properties imply that the matrix can be used as a map from the column domain onto the row domain. An example map matrix is found in the **EXAMPLES** Section.

OPTIONS

-o fname (*output file*)
    Output file.

-imx fname (*input file*)
    Input file.

-map fname (*row/col map file)*)
-rmap fname (*row map file*)
-cmap fname (*column map file*)
-mapi fname (*row/col map file (use inverse)*)
-rmapi fname (*row map fil (use inverse)*)
-cmapi fname (*column map fil (use inverse)*)
    Different ways to specify map files.

-make-map (*output map file name*)
-make-mapc (*output map file name*)
-make-mapr (*output map file name*)
    Generate a map that maps the specified domain onto the appropriate canonical domain and write the map matrix to file.

-cmul a (*coefficient*)
-cshift b (*translate*)
    These options have affect if neither a column map file nor column canonification is specified. If any of the first two options is used, column indices `i` are mapped to `a*i+b`.

-rmul c (*coefficient*)
-rshift d (*translate*)
These options have affect if neither a row map file nor row canonification is specified. If any of the first two options is used, indices `i` are mapped to `c*i+d`.

-mul e (*coefficient*)
-shift f (*translate*)
If a map file is specified for a given domain, neither a map file nor canonification is specified. If any of the first two options is used, the indices `i` will be mapped to `e*i+f`.

-tab fname (*read (and map) tab file*)
This option requires the **-map** option. **mcxmap** will output the mapped tab definition.

EXAMPLES

The matrix below has two canonical domains which are identical. It denotes a map of the canonical domain onto itself, in which node 0 is relabeled to 8, node 1 is relabeled to 5, et cetera.

```
(mclheader
mcltype matrix
dimensions 12x12
)
(mclmatrix
begin
0  8  $
1  5  $
2  3  $
3  2  $
4  4  $
5  6  $
6  7  $
7  9  $
8  1  $
9  10 $
10 11 $
11 0  $
)
```

AUTHOR

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SEE ALSO

mcxio(5), **mcx(1)**, **mcxsubs(1)**, and **mclfamily(7)** for an overview of all the documentation and the utilities in the mcl family.