NAME

mcx diameter – compute the diameter of a graph

SYNOPSIS

mcx diameter [options]

mcxdiameter is not in actual fact a program. This manual page documents the behaviour and options of the mcx program when invoked in mode *diameter*. The options **-h**, **--apropos**, **--version**, **-set**, **--nop**, **-progress** <*num*> are accessible in all **mcx** modes. They are described in the **mcx** manual page.

mcx diameter [-abc <fname> (*specify label input*)**] [-imx** <fname> (*specify matrix input*)**] [-o** <fname> (*output file name*)**] [-tab** <fname> (*use tab file*)**] [-t** <int> (*use <int> threads*)**] [-J** <intJ> (*a total of <intJ> jobs are used*)**] [-j** <intj> (*this job has index <intj>*)**] [--summary** (*output diameter and average shortest path length*)**] [--list** (*list eccentricity for all nodes*)**] [-h** (*print synopsis, exit*)**] [--apropos** (*print synopsis, exit*)**] [--version** (*print version, exit*)**]**

DESCRIPTION

mcx diameter computes the diameter of a graph. The input graph should be symmetric. Results will be unpredictable for directed graphs. For label input this is irrelevant as **mcx diameter** will create a symmetric graph from the input.

The input graph/matrix, if specified with the **-imx** option, has to be in mcl matrix/graph format. You can use label input instead by using the **-abc** option. Refer to **mcxio(5)** for a description of these two input formats. By default **mcx diameter** reads from STDIN *and expects matrix format*. To specify label input from STDIN use **-abc -**.

OPTIONS

-abc <fname> (*label input*)
The file name for input that is in label format.

-imx <fname> (*input matrix*)
The file name for input that is in mcl native matrix format.

-o <fname> (*output file name*)
The name of the file to write output to.

-tab <fname> (*use tab file*)
This option causes the output to be printed with the labels found in the tab file. With **-abc** this option will, additionally, construct a graph only on the labels found in the tab file. If this option is used in conjunction with **-imx** the tab domain and the matrix domain are required to be identical.

-t <int> (*use <int> threads*)
-J <intJ> (*a total of <intJ> jobs are used*)
-j <intj> (*this job has index <intj>*)
Computing the diameter of a graph is time-intensive for large graphs. If you have multiple CPUs available consider using as many threads. Additionally it is possible to spread the computation over multiple jobs/machines. These three options are described in the **clm-protocols** manual page. The following set of options, if given to as many commands, defines three jobs, each running four threads.

```
-t 4 -J 3 -j 0 -o out.0
-t 4 -J 3 -j 1 -o out.1
-t 4 -J 3 -j 2 -o out.2
```

The output can then be collected with

```
mcx collect --add-column -o out.all out.[0-2]
```

--list (*list eccentricity for all nodes*)
--summary (*output diameter and average eccentricity*)
The default mode is **--list**, which results in output of the eccentricity of all nodes. The eccentricity of a node is the distance to any node that is the furthest away from it. The diameter of a graph is the maximum of the eccentricity taken over all nodes in a graph. In this mode **mcx diameter** will not output the diameter itself. Use **--summary** to output just the diameter and the average eccentricity.

SEE ALSO

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