#### **NAME**

cluster – find clusters in a graph and augment the graph with this information.

#### **SYNOPSIS**

```
cluster [-\mathbf{v}] [-\mathbf{c}k] [-\mathbf{c}k] [-\mathbf{o} outfile ] [ files ]
```

## DESCRIPTION

**cluster** takes as input a graph in DOT format, finds node clusters and augments the graph with this information. The clusters are specified by the "cluster" attribute attached to nodes; cluster values are non-negative integers. **cluster** attempts to maximize the modularity of the clustering. If the edge attribute "weight" is defined, this will be used in computing the clustering.

## **OPTIONS**

The following options are supported:

- **-C**k specifies a targeted number of clusters that should be generated. The specified number k is only a suggestion and may not be realisable. If k == 0, the default, the number of clusters that approximately optimizes the modularity is returned.
- -ck specifies clustering method. If k == 0, the default, modularity clustering will be used. If k == 1 modularity quality will be used.

-ooutfile

Specifies that output should go into the file outfile. By default, stdout is used.

- **-v** Verbose mode.
- -? Prints the usage and exits.

# **EXAMPLES**

Applying cluster to the following graph,

```
graph {
    1--2 [weight=10.]
    2--3 [weight=1]
    3--4 [weight=10.]
    4--5 [weight=10]
    5--6 [weight=10]
    3--6 [weight=0.1]
    4--6 [weight=10.]
   }
gives
 graph {
     node [cluster="-1"];
     1 [cluster=1];
     2 [cluster=1];
     3 [cluster=2];
     4 [cluster=2];
     5 [cluster=2];
     6 [cluster=2];
     1 -- 2 [weight="10."];
     2 -- 3 [weight=1];
     3 -- 4 [weight="10."];
     4 -- 5 [weight=10];
     5 -- 6 [weight=10];
     3 -- 6 [weight="0.1"];
     4 -- 6 [weight="10."];
 }
```

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# SEE ALSO

gvmap(1)

Blondel, V.D., Guillaume, J.L., Lambiotte, R., Lefebvre, E.: Fast unfolding of communities in large networks. Journal of Statistical Mechanics: Theory and Experiment (2008), P10008.

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