NAME

tsort - topological sort of a directed graph

SYNOPSIS

tsort [**-dlq**] [*file*]

DESCRIPTION

The **tsort** utility takes a list of pairs of node names representing directed arcs in a graph and prints the nodes in topological order on standard output. Input is taken from the named *file*, or from standard input if no file is given.

There must be an even number of nodes in the input. Node names specified on the same line should be white space separated.

Presence of a node in a graph can be represented by an arc from the node to itself. This is useful when a node is not connected to any other nodes.

If the graph contains a cycle (and therefore cannot be properly sorted), one of the arcs in the cycle is ignored and the sort continues. Cycles are reported on standard error.

The options are as follows:

-d   Turn on debugging.

-l   Search for and display the longest cycle. Can take a very long time.

-q   Do not display informational messages about cycles. This is primarily intended for building libraries, where optimal ordering is not critical, and cycles occur often.

EXAMPLES

Assuming a file named *dag* with the following contents representing a directed acyclic graph:

    A B
    A F
    B C
    B D
    D E

Sort the nodes of the graph:

```
$ tsort dag
A
F
B
D
C
E
```

White spaces and new line characters are considered equal. This file for example is considered equal to the one we defined before:

```
$ cat dga
A B A F B C B D D E
```

Assume we add a new directed arc from D to A creating a cycle:

```
A B
A F
B C
B D
D E
D A
```

Ordering the graph detects the cycle:

```
$ tsort dag
tsort: cycle in data
tsort: A
tsort: B
tsort: D
D
E
A
F
B
C
```

Same as above but silencing the warning about the cycle:

```
$ tsort -q dag
```

        D
        E
        A
        F
        B
        C

SEE ALSO

ar(1)

HISTORY

The **tsort** command appeared in Version 7 AT&T UNIX. This **tsort** command and manual page are derived from sources contributed to Berkeley by Michael Rendell of Memorial University of Newfoundland.

BUGS

The **tsort** utility does not recognize multibyte characters.