NAME

xform - transform a RADIANCE scene description

SYNOPSIS

xform [**−c**][**−I**][**−n** name][**−m** newmod][**−f** argfile][xf0][**−a** n1 xf1 ..][**−i** 1 xff] file ..

DESCRIPTION

Xform transforms each scene description *file* according to the options given. If no *file* is specified, the standard input is read. The *−c* option causes commands in the input not to be expanded. The default is to execute all in line commands. (See note below about file names.) The *−n* option causes all identifiers to be prefixed with *name*. The *−m* option causes all surfaces to be given the modifier *newmod*. The *−I* option causes all surfaces to be inverted, reversing their surface normal orientations. These options are followed by the transformation options, which are described below.

The *−f* option causes the *xform* command line to be constructed from the given file, by inserting each line of the file at the current point in the command argument list. Each line in the file will result in a logically separate invocation of *xform,* and may contain any valid *xform* arguments, including nested *−f* options. This is a convenient way to specify multiple copies of an object that do not fit a regular array pattern, without having to actually execute *xform* many times. Separate scene files may be specified this way as well, but remember that the constructed command line must fit the format of initial options *(-n, -m, -c, -I)* followed by the transform then the scene files. No initial options may appear after the first transform option, and no transform options will be understood after the first named file. In the special case where the argument to the *−f* option is a hyphen ('-'), *xform* will take its arguments from the standard input. Note that *xform* cannot simultaneously take its scene information from the standard input if the option is used in this way. Competely empty lines and lines beginning with a pound sign ('#') will be passed through to the output. Beginning "!xform" or "xform" command names will also be ignored.

If one or more scene files are given on the command line, *xform* will search the RADIANCE library directories for each file. (No search takes place if a file name begins with a '.', '/' or '~' character.) Unless the *−c* option is present, *xform* will also change to that file's directory before loading it. Thus, any commands executed within that file will happen in that file's directory, which simplifies object hierarchy construction.

The transformation consists of a sequence of operations which are executed in the order they appear.

OPTIONS

-t *x y z*   Translate the scene along the vector *x y z* .

-rx *degrees*

Rotate the scene *degrees* about the x axis. A positive rotation corresponds to counter-clockwise when looking down the axis.

-ry *degrees*

Rotate the scene *degrees* about the y axis.

-rz *degrees*

Rotate the scene *degrees* about the z axis.

-s *factor*   Scale the scene by *factor.*

−mx   Mirror the scene about the yz plane.

−my   Mirror the scene about the xz plane.

−mz   Mirror the scene about the xy plane.

-i *count*   Iterate (repeat) the following transformation (up to the next *−i* option) *count* times. This option is primarily to support the *−a* option, which is described below.

Arrays

An array is a repeated transformation that results in a repeated object. It is specified using the *−a* option, which takes the number to repeat as its argument. The objects will step by the transformation given between this *−a* option and the next *−a* or *−i* option. The first object will have zero applications of the transform. A two-dimensional array is given by two different transformations each preceded by an array

count.

EXAMPLE

To rotate ''book'' 30 degrees about the x axis then move 20 in y, prepending the name book1:

xform −n book1 −rx 30 −t 0 20 0 book > book1

To expand all commands and see what information is actually used by RADIANCE:

xform scene | more

To create a two-dimensional array of 20 lights, after an initial rotation and followed by a global translation (no command expansion):

xform −c −rz 90 −a 5 −t 2 0 0 −a 4 −t 0 1.5 0 −i 1 −t 0 0 10 light

ENVIRONMENT

RAYPATH   path to search for scene files

AUTHOR

Greg Ward

BUGS

Only regular (distortion-free) transformations are allowed.

SEE ALSO

genbox(1), gensurf(1), oconv(1), replmarks(1), rpict(1), rvu(1)