A PLG file processing package
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Getting Started:
   PLGX is a multipurpose PLG file processing utility designed to improve the level of standardization among PLG files, and to make modification and combination of PLG files easier. It supports many types of file transformation, cleanup and modification, while preserving the comments needed to make the PLG file readable.

   When staring PLGX, you can get a quick syntax giude by typing PLGX with no arguments. You will see:

PLGX.EXE PLG file processor (c) 1993 by Dave STampe
USE: PLGX <infile> <outfile> <commands>
Commands: <angle brackets> enclose a numeric argument

 /I information on objects
 /? this help screen
 /C or /CXYZ center object in x,y,z overall
 /G or /GXYZ ground (bottom y default) or other axis
 /Z use center of gravity instead of box center
 /V or /V <delta> combines duplicate vertices (IRIT, NorthCad, etc)
 /N renumber vertices in comments (use with /V or new files)
 /W integer (whole) numbers only in output
/T <tx,ty,tz> translate PLG objects
 /R <rx,ry,rz> left-handed, degrees: rotate PLG objects about (0,0,0)
 /S <scale> or /S <sx,sy,sz> scale PLG
 /B <size> or /B <sx,sy,sz> scale PLG to given size bounding box
 /L or /L <size> sets ize of longest axis, default 1000
 /D default size box, equivalent to /B 1000
 /P <color> repaints all polys in given color
 /Q repaints polys to random colors for debugging
 /F reverse vertex order of all polygons
 /O object in file to process
 /Y all objects in file are considered one for /B, /D, /C, /G, /I

   on the computer screen. There are a number of commands available for you to use. You can use PLGX from the command line, typing in the arguments each time, or make a batch file to implement your favorite transformations.

   PLGX CAPABILITES:

   PLGX supports these operations on PLG files:

   Information: /I
        gives PLG object names, polygon and vertex counts, color mapping type (surface mapped, standard colors, or one-to-one palette (absolute or raw palette) colors. Also gives the box bounds (the x, y, and z axis planes that would enclose the object), the center of the box and the size of the box (and thus the PLG object)

in the x, y, and z directions.

These sizes are given seperately for each object in a PLG file, if more than one exists. By adding the /Y command to the command line. the PLG file will be prescanned to get the bounding box for all the objects in the file, and these objects may then be treated as one object for the purpose of transformation.

Standardization:

several commands can be used to place a PLG object in a standard location (centered about 0,0,0, usually) or to change it to a standard size. The commands for this are /C, /G, /Z, /L, and /D.

/C: Centers the object about (0,0,0). If you add the /Z command, the center will be the average of the vertices rather than the center of the bounding box. If several objects in one PLG file are to be loaded as one object, use the /Y command to prevent all the subobjects from being moved relative to each other. If you don't want to center the object in all directions, add the axis names you do want to change to the command: for example, /CXZ or /CY.

/G: "Grounds" the object, making the lower limit of the box at (0,0,0). This is useful for setting an object to load with its bottom flush to the "ground", for example /CXZ /GY will center an object, and make its bottom flush to the ground when loaded with no offset. Grounding is also useful for setting the rotation point of an object when animated or rotated in PLGX, since rotation takes place around the (0,0,0) point of an object.

/D sets an object into a standard size bounding box of 1000x1000x1000 units. This will make loading of objects that need resizing (for example, rectangular objects from cubes or wall section in a building) easier to calculate.

Not all objects look good when cubic, so a proportion-aving varient is available. /L sets the longest dimension to be 1000 units long. You can also specify a size for the longest dimension: for example, /L 100 will make the longest dimension of an object 100 units in length.

Modifications:

other commands let you modify objects to combine them or to make loading easier. These commands are /B, /S, /R, and /T.

A very flexible version is /B, which sets the size of the PLG object in all directions. /B 100 will fit the object into a 100x100x100 cube, while /B 1000,100,10 will fit the object into a 1000x100x10 box. This is useful for litting objects together into one larger objects. All parts of a composite object are affected together by these sizing commands: to affect only part of a PLG file, use the /O command. For example, to affect only the second object in a PLG file, add /O 2 to the command line.

For absolute scaling, as when objects are loaded in REND386, use the /S command. You can scale the object symmetricly: for example /S 1.5 will expland it 50%. You can expand it differently on each axis: for example /S 10,20,5 to change its shape. DO NOT USE NEGATIVE SCALING FACTORS: these will cause some parts of the object to become invisible!

/R will rotate the object as a whole about it (0,0,0) point. The /C and /G commands take effect before rotation occurs to simplfy your task. Rotation occurs in the same way as in REND386: left-handed rotation, with rotation about the Y axis firtst, X axis next, and Z axis last. By rotating around only one object at a time, you won't need to worry about this. Rotation is given in degrees: for example /R 0,90,0 will rotate a figure 90 degrees about the Y axis.

/T moves an object's center after rotation. This can be used to exactly center an object, set its (0,0,0) point about which it will turn as part of a jointed figure, or to place it in a composite object. For example, /T 0,10,-10 will move an object up 10 units and out (negative z) by 10 units.

Coloring and Painting:
        are required to make PLG objects visible for editing or debugging. Two simple paint commands are included: /P and /Q.

/P will paint every polygon in the PLG file the color that follows it. The color can be of any format that is legal in a PLG file. /P 0x1FFF would paint evey polygon cosine-lit white. You can paint any one object in the file by using the /O command.

/Q paints all the polygons in the file using a color sequence, using cosine-lit colors with hues from 1 through 15. This makes it easy to distinguish polygons for debugging or painting the object.

Emergency Surgery:
        is needed when PLG files are created by some translators from other 3D editors. For example, IRIT and NorthCad both produce seperate vertices for each polygon of each object, increasing memory useage by 50% and slowing REND386 by 40%. Also, some translators produce polygons with the vertex lists in the wrong order, making objects appear inside out.

/V is used to merge duplicate vertices. It will usually check to see that each vertex is within 0.0001 unit of the duplicate: this is the delta. You can set the delta: for example, /V 10 will merge any vertices that are within 10 units of each other. THIS CAN CAUSE DUPLICATE VERTICES IN A POLYGON AND COULD CRASH REND386.

If you use /V, you should use /N as well. This will add comments to vertex lines in the PLG file, making debugging easier. These will be added to those comments already present, so you may have to clean up the resulting file. This function is also good for annoting new PLG files automatically.

/F will reverse the order of polygon's vertex lists, to fix inside-out problems. This should be used with care.

/W will round of the final vertex coordinates after scaling, rotating, etc. to the nearest integer. This makes the PLG files look cleaner, especially if the original polygon files used had many fractional numbers, or the object had to be reduced in

size.

Order of operations:
in PLGX is important to determine how to best modify your PLG files. If you need to perform certain actions out of sequence, you will have to create intermediate PLG files and eun PLGX several times.

First: load file, /I
Second: /C /G
Third: /R
Fourth: /D /B /S (all these operations are mutually exclusive)
Fifth: /F
Sixth: /T
Seventh: /W
Eighth: /V
Ninth: save file

File Specifications:
allow you to specify PLG source and destination files. You need only specify the file names: PLGX will add the .PLG extension if needed and if you have not specified your own extension. The first file name is always the source file: the second is the destination file.
Generally, you should be very careful if specifying the same source and destination files. This can confuse DOS, or destroy your files. You can use al least part of the source file name to make the destination file name (this is handy in batch files). Just place a '$' in the destination file name wher you want the source file name to be inserted: PLGX file1 new\$ would process file1.plg to new\file1.plg, for example.

SAMPLE USES:

You should always run this on a new PLG file, so it has a known size, and is as efficient as possible:

plgx <source> <dest> /I /V /N /L /C

To make an object recolorable by surface mapping, try

plgx <source> <dest> /P 0x8001

To look at a file's contents, try

plgx <source> /I