CADfix Notes

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1 Set Management

Like most CAD programs, CADfix has a built in hierarchy for geometry. The hierarchy in CADfix is carried out through what are called "sets." Geometry entities can be placed into sets to keep a model organized. Diligence is required to maintain a nicely organized model.

Entities can belong to any number of sets. Sets can also be added to other sets. However, when a set is added to another set it is not a dynamic definition relative to the added set. If a set named *SET1* containing entities **A**, **B**, and **C** is added to *SET2*, *SET2* will contain **A**, **B**, and **C**. If entity **B** is removed from *SET1*, it will remain in *SET2*.

CADfix does have a set manager with a GUI. The author recommends using the command line for keeping sets organized because it is much quicker and easier. It is also recommended to keep notes on the set hierarchy, either handwritten or in a spreadsheet. Some of the more useful commands for set management are included in the command section of this document 2.2.

2 Command Line

2.1 General Notes

The command line in CADfix allows the user to perform CAD actions without using a GUI. Skipping the GUI can greatly increase speed and control. Commands can also be used to create user-written scripts and macros.

The command line is a CADfix home brew language, although it is reminiscent of TCL. Because it is particular to CADfix, a CADfix manual will be the best place to find syntax. There is a menu, however, that can be activated in CADfix that will show different possible branches of each command as it is being entered. The menu will also let the the user click on entities rather than typing their names into the command line.

2.2 Commands

Below is a brief list of useful commands. Words in all caps are CADfix keywords or commands that must be entered verbatim. Lower-case words are variables and anything of the expected type (string, point, surface, etc.) can be entered.

SETO name opens the set "name" (will create a set if "name" doesn't exist)

SETC name closes the set "name"

SETA setname entitycode set2 can create a set, "setname", and add entities of the kind "entitycode" from set "set2"

SETA name INV L INCORRECT set2 can create a set, "name", and add invalid lines possessing incorrect geometry from set "set2"

SETA set ASGD type MAT material can create a set, "set", and add entities of "type" assigned a property, "material."

SETI new old old Creates a new set that consists of the intersection of the two old sets.

COMP SET Completes the set "set" down to points.

COMP SET GN Completes the set "set" down to the geometric nodes. "GN" Can be replaced with other entity codes if needed.

ZAP set (hard/soft) Deletes all items in "set." Hard option is default. This will delete all dependent items of the deleted items. Soft won't delete anything not contained in "set."

PLUS LATE Adds the lattice structure to the plot

PLOT TWI ALL plots the meshed geometry

PLUS LA name Adds the lines (l) in set "name" along with their labels (a) to the plot

PLOT entity group DEFA # Plots entities in group with thickness of # of pixels.

PROC GMER OFF/ON Sets automatic merging off or on. Usually, you want it off.

FRAME entity centers and automatically fits "entity" in the screen; "entity" is optional - if omitted "ALL" is assumed

CNTR entity centers "entity" in the screen; "entity" is optional - if omitted "ALL" is assumed

SAVE PICT name saves the current viewport as "name"

REST PICT name restores the viewport previously saved as "name"

SAVE PICT TOFILE PNG string saves the current viewport as a png with name "string"

WIPE Clears the current plot

PLOC PERF MOVECULL ON sets movement culling on, which limits the refresh rate with mouse movements. Greatly improves visual performance with large models.

PNT name x y z makes a point with "name" and pos (x,y,z)

LINE name pt1 pt2 makes a line by connecting pt1 and pt2. Gives name of "name"

REPLACE pnt1 pnt2 Replaces references to a point with another point; basically collapses points.

MERGE type Merges entities of a type within the geometric tolerance

COPY group name trfm Copies "group" into a new set, "name," using the transform "trfm."

BUILD S set builds a surface using the lines in "set."

LSIM set NURBS simplifies lines in "set" to be NURB lines.

SEND setname filetype "filename" Dumps the set, "setname," into a file with a name and type specified. Usually .fb or .fbd are used.

READ "file" Reads in a file to be used as a macro. Files like .txt and .fbd are supported.

PRNT SE item Displays the sets that contain "item."

PRNT DEP entity outputs the items that are dependent on "entity"

PRNT XA entity outputs the assignments on "entity" (includes probe assignments); "entity" optional - "ALL" is assumed if "entity" is omitted.

PRNT DIST ent1 ent2 outputs the distance statistics for "ent1" to "ent2"

3 Notes

- Hold the left mouse button to enable rotation
- Hold the right mouse button to enable zoom
- Hold both mouse buttons or the third mouse button to enable scrolling/translation.
- Delete key will delete a single character in the command line
- Back arrow deletes a word in the command line
- Backspace key deletes a line in the command line
- Backslash (\) repeats the last successful command in the command line
- comma recalls a piece of a line
- Forward arrow fills in the next option using last input.
- TRA commands: coordinates are expected in the form x y z. If two or fewer inputs are given, they are read as x y or as x, depending (I think).
- When naming an entity, using ! will make CADFix name it.
- When CADFix tool fails to split surfaces, undo the attempt. The attempt will ruin the surface.
- CADFix doesn't like non ASCII characters in the file path (Chinese, Japanese, etc.)
- Exploding an assembly will flatten its hierarchy and create bodies for repeated parts.
- Make sure you have the menu open. It will provide possible options for the commands entered into the command line (PLOC MENU ON opens the menu)
- Along a geometric line, nodes are at the midpoint between cell divisions along the line.