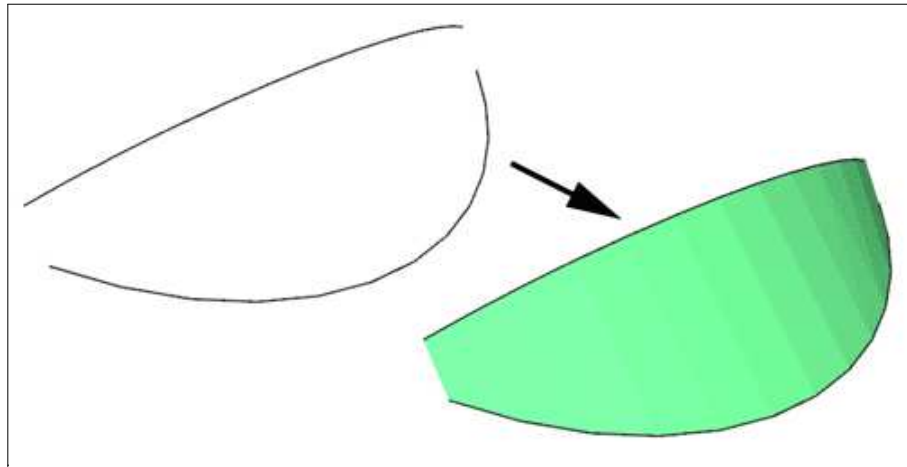


Coverer, LDraw sheet generator



Coverer utility creates a sheet of triangle and quads between two sets of lines. Each set is provided to the utility in a separate LDraw file. A third file containing the surface (and its conditional lines) is created.

It is a simple console application, source code is provided below to anyone willing to integrate it in a more powerful interface.

Download

Coverer package, including program for Windows, source files (Visual C++ 6.0), sample files.

History

- V1.0: Initial release

Usage

- Prepare the input LDraw files. **Coverer** uses only lines of input files (line type 2). Other LDraw line types are ignored. If you want to compute surface between edge primitives, they must be inlined down to lines. [LDDesignPad](#) does this very conveniently.
- Launch a command prompt
- Type the command line: `coverer [-r] [-l <length>] LdrawLineFile1 LdrawLineFile2 LdrawSurfaceFileOut`. Isecalc will create LdrawSurfaceFileOut, containing the surface. Note that if file LdrawSurfaceFileOut will be overwritten without warning. -r and -l are optional parameters controlling the behavior of Coverer. These options will be detailed below.
- **Coverer** output file with 6 digits after decimal point, this precision is excessive for most usages and values should be rounded. Here again, [LDDesignPad](#) does that very well.

Here is a screen shot of a sample run:

```

Invite de commandes

D:\Coverer>Coverer.exe arc1.dat arc2.dat arc-out.dat

Read Line File 1...
12 Lines in Line file 1

Read Line File 2...
12 Lines in Line file 2
  
```

```

12 Lines in Line file 2
Creating Triangles
24 Triangle(s) created
(0 degenerated suppressed)

Creating Conditional Lines
...and condensing coplanar Triangles into Quads
23 Conditional Line(s) created
2 Triangle(s) condensed into 1 Quad(s)

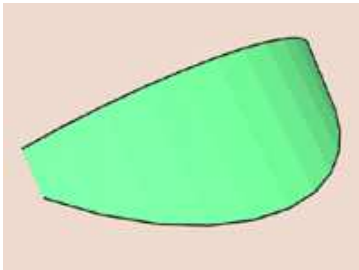
Writing output file
22 Triangle(s) written
1 Quad(s) written
23 Conditional Line(s) written
D:\Coverer>

```

How Coverer works

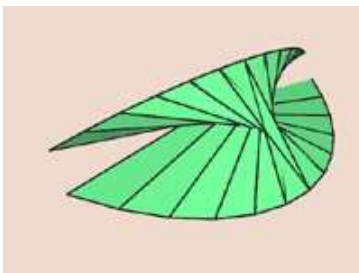
- Both input files are read and parsed. All line apexes are stored in arrays (limited to 2000 lines, should be enough!).
- These arrays are sorted, allowing to use LDraw files with lines in non-consecutive order (e.g. files from [Isecalc](#)). If more than one line path is found, a warning is issued as this probably denotes a wrong input and will likely produce a buggy result.
- If **-r** option is present, order of the second file is reversed. Use this option when the resulting surface joins from opposite ends (often looking like a jagged butterfly).
- if **-l xxx** option is used, lines longer than xxx are split in smaller segments. You may get smoother surfaces using this option.
- Triangles are created between both paths, progressing proportionally along them. When degenerated triangles (reduced to a line) happen (for example when paths have common points), they are suppressed.
- A scan is done in the generated triangle. If two consecutive triangles are in the same plane and form a quad, they are condensed. If they are not in the same plane, a conditional line is added.
- Output file is created.

Examples



A nice looking surface between 2 arcs.
Files: arc1.dat, arc2.dat --> arc-out.dat

Command line: Coverer arc1.dat arc2.dat arc-out.dat

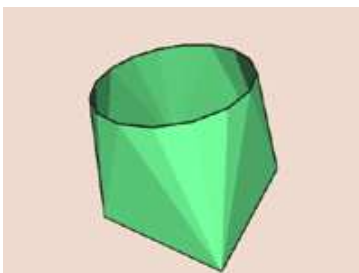


Here the order and direction of the lines of the second file was inverted.
Files: arc1.dat, arc2-r.dat --> arc-r-out.dat, arc-rok-out.dat

Command line: Coverer arc1.dat arc2-r.dat arc-r-out.dat

created that weird shape. The -r parameter corrects the order and returns the surface as the first example.

Corrected command line: Coverer -r arc1.dat arc2-r.dat arc-rok-



Fitting a square to a circle.
Files: sqc1.dat, sqc2.dat --> sqc-out.dat

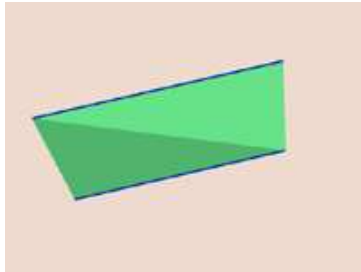
Command line: Coverer sqc1.dat sqc2.dat sqc-out.dat



Note that the relative orientation of the paths matters, even if they are symmetric. Here the circle was turned by 45°, the result is twisted.

Files: sqc1.dat, sqc2-45.dat --> sqc-45-out.dat

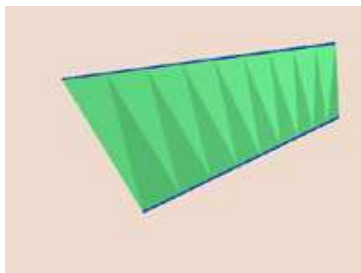
Command line: Coverer sqc1.dat sqc2-45.dat sqc-45-out.dat



This example shows how to create twisted surfaces such as the one in [43721 wedge](#). Two single lines form the edges. A simple application of coverer produces a chunky result...

Files: wedge1.dat; wedge2.dat --> wedge-out.dat

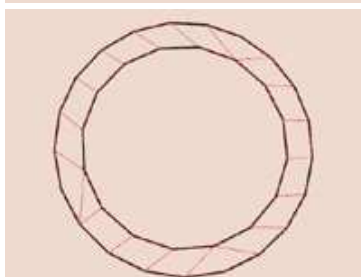
Command line: Coverer wedge1.dat wedge2.dat wedge-out.dat



...the -l parameter improves the result:

Files: wedge1.dat; wedge2.dat --> wedge-l-out.dat

Command line: Coverer -l 10 wedge1.dat wedge2.dat wedge-l-out.dat



Adapter rings are probably the most useful application of Coverer. They allow regular 16- or 48-primitives to section of parts with different period. I used them extensively in gears, wheels and tires, such as 30391 tire that has a 16-primitive based core but 40 bumps on its rim.

Files: cir21.dat, cir16.dat --> adapt1621.dat

Command line: Coverer cir16.dat cir21.dat adapt1621.dat

