Subject: DXF and other CAD file formats
Posted by Georg Wiora on Thu, 29 Nov 2001 14:15:23 GMT
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Hi everybody,

I have problems using the polyline feature in an IDLffDXF object. I connect 4 points with a line, using the CONNECTIVITY array. When I add this object, I allways get the following message:
% IDLFFDXF::PUTENTITY: DXF error: DXF Polyline: explicit connectivity ignored
For a little test program see the code below.

Does anyone know about this problem?

Is there any other free code to create 3D-CAD-Files formats like STL or IGES or whatever?

Thanks for your help!

Georg

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```
PRO Write_DXF_Lines

  dxf = OBJ_NEW('IDLffDXF')

  ; 4 points
  points = DBLARR(3,5)
  points(*,0) = [0,0,0]
  points(*,1) = [1,0,0]
  points(*,2) = [1,1,0]
  points(*,3) = [1,1,1]
  points(*,4) = [0,1,1]
  ; Connectivity
  connect = [0,1,2]
  ; Create pointers
  ppoints = PTR_NEW(points,/NO_COPY)
  pconnect = PTR_NEW(connect,/NO_COPY)


  ; Create a polyline object
  pline = {IDL_DXF_POLYLINE}
  pline.Vertices=ppoints
  pline.Connectivity=pconnect
  pline.Color=256
  pline.DXF_Type=7  ;    7=POLYLINE
  pline.BLOCK=''    ; default block
  pline.Layer='0'   ; default layer
```

```
  dxf->PutEntity, pline

  IF NOT dxf->Write('test.dxf') THEN $
    MESSAGE,'Write failed',/INFORMATIONAL

  ; Free pointers
  PTR_FREE,ppoints
  PTR_FREE,pconnect
  OBJ_DESTROY,dxf

  xdxf,'test.dxf'
END
```

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Subject: Re: DXF and other CAD file formats
Posted by Rick Towler on Mon, 03 Dec 2001 17:45:07 GMT
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I have waited a few days for someone who knows what they are talking about to sound off and that hasn't happened. Sorry Georg, I guess you'll have to put up with my response...

Although I haven't tried writing DXF files, my guess is that your connectivity array is wrong. I know that if I were trying to create an IDL (opengl) polyline, my connectivity array would have more elements than that (in your case it would be [4,0,1,2,3]). I didn't see any documentation regarding this in the IDLffDXF docs but there was an example similar to yours. Maybe you should start there?

-Rick

"Georg Wiora" <georg.wiora@DaimlerChrysler.com> wrote in message news:1104_1007043323@rtulmrb142...
> Hi everybody,
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> xdxf,'test.dxf'

> END
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>
>

Subject: Re: DXF and other CAD file formats
Posted by Dick Jackson on Mon, 03 Dec 2001 18:21:10 GMT
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> "Georg Wiora" <georg.wiora@DaimlerChrysler.com> wrote in message
> news:1104_1007043323@rtulmrb142...
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>> ; Create a polyline object
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>> pline.Vertices=ppoints
>> pline.Connectivity=pconnect

"Rick Towler" <rtowler@u.washington.edu> wrote in message
news:9ugdov$hd6$1@nntp6.u.washington.edu...
>
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> connectivity array is wrong. I know that if I were trying to create an

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that
> (in your case it would be [4,0,1,2,3]). I didn't see any documentation
> regarding this in the IDLffDXF docs but there was an example similar to
> yours. Maybe you should start there?

Rick's right, there is this clue in IDLffDXF::GetEntity help:

CONNECTIVITY is the array used to connect these points into polygons (see
the POLYGONS keyword for IDLgrPolygon::Init). If this array is not present,
the connectivity is implicit in (U, V) space defined by the values in
MESH_DIMS; the vertices represent a quad mesh of dimensions (MESH_DIMS[0],
MESH_DIMS[1]).

and this leads to this clue in IDLgrPolygon::Init:

A polygon description is an integer or longword array of the form: [n, i0,
i1, ..., in-1], where n is the number of vertices that define the polygon,
and i0..in-1 are indices into the X, Y, and Z arguments that represent the
polygon vertices.

This explains how to describe one polygon, but doesn't tell the whole story,
that you can put any number of polygons in one description array. It's just
treated as a 1D array of numbers, e.g.:

[3, 0, 1, 2, 4, 2, 1, 3, 4] describes two polygons:
| \ | / | \ \ / /
| indices | indices
vertices # vertices

So we get a triangle joining vertices 0, 1 and 2, and a quadrilateral
joining vertices 2, 1, 3 and 4.

If you have a set of polygons of same type (same number of sides), you might
find it easier to work with a 2D array, e.g:

[[3, 0, 1, 2],
[3, 2, 1, 3],
[3, 3, 4, 0]] describes three triangles
| \ | /
| indices of each triangle
vertices (will all be same)

This is a technique that comes up in a few places when working with IDL
polygons. Hope this helps.

Cheers,

--
-Dick

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Subject: Re: DXF and other CAD file formats
Posted by Georg Wiora on Tue, 04 Dec 2001 08:18:06 GMT
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Am Mon, 3 Dec 2001 09:45:07 -0800, hat "Rick Towler"
<rtowler@u.washington.edu> geschrieben:
> Although I haven't tried writing DXF files, my guess is
that your
> connectivity array is wrong. I know that if I were trying
to create an IDL
> (opengl) polyline, my connectivity array would have more
elements than that
> (in your case it would be [4,0,1,2,3]). I didn't see any
documentation
> regarding this in the IDLffDXF docs but there was an
example similar to
> yours. Maybe you should start there?

Thank you Rick! I tried it, but it did not work. I got a hint
from RSI that the polyline feature is not implemented in
IDLffDXF yet.
There seems to be another problem with IDLffDXF: The point
coordinates I supplied to the object are clearly 3
dimensional, but the object displayed with the XDXF procedure
is flat!

So there is either a lack of documentation for the IDLffDXF
object or a lack of implementation :-(

regards, Georg

####################################
Dr. Georg Wiora
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georg.wiora@DaimlerChrysler.com
####################################

Subject: Re: DXF and other CAD file formats
Posted by Dick Jackson on Tue, 04 Dec 2001 17:37:13 GMT
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"Georg Wiora" <georg.wiora@DaimlerChrysler.com> wrote in message
news:1103_1007453886@rtulmrb142...

> Thank you Rick! I tried it, but it did not work. I got a hint
> from RSI that the polyline feature is not implemented in
> IDLffDXF yet.
> There seems to be another problem with IDLffDXF: The point
> coordinates I supplied to the object are clearly 3
> dimensional, but the object displayed with the XDXF procedure
> is flat!
>
> So there is either a lack of documentation for the IDLffDXF
> object or a lack of implementation :-(

Looking a little deeper, it really is ignoring whatever you put as the
connectivity. I did this after running your Write_DXF_Lines:

```
IDL> toView = Get_DXF_Objects('test.dxf')
IDL> o=toview->get()
IDL> xobjview,o
```

It looks like a flat polyline shaped like this:] :-)
But this is what's surprising...

```
IDL> o->getproperty,polylines=poly
IDL> print,poly
          5          0          1          2          3          4
```

... so it has five vertices, four segments, and...

```
IDL> o->getproperty,data=data
IDL> print,data
      0.00000000      0.00000000      0.00000000
       1.0000000      0.00000000      0.00000000
       1.0000000       1.0000000      0.00000000
       1.0000000       1.0000000      0.00000000
      0.00000000       1.0000000      0.00000000
```

The five points are there, but they're all flattened to Z=0. Now I'm not a
fluent reader of DXF, but looking into the DXF file, it looks like there's
something called an AcDb2dVertex, here's a sample:

```
VERTEX
  5
29
```

100
AcDbEntity
 8
0
100
AcDbVertex
100
AcDb2dVertex
 10
0.0
 20
1.0
 30
1.0
 0

It looks like it *should* be the point [0,1,1] (that's XYZ at the end), but
it ends up treated as [0,1,0] when read in. I'd guess this is where
PutEntity is making a mistake.

Sorry, this probably doesn't help a lot, but it's curious.

Cheers,
--
-Dick

Dick Jackson / dick@d-jackson.com
D-Jackson Software Consulting / http://www.d-jackson.com
Calgary, Alberta, Canada / +1-403-242-7398 / Fax: 241-7392

Subject: Re: DXF and other CAD file formats
Posted by Martin Downing on Thu, 13 Dec 2001 10:27:08 GMT
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Georg,

No solution but just to reiterate:
Does anyone out there know of an alternative CAD reader to DXF format for
IDL which can read any of (.par, .igs, .stp, .stl, .sat)?

Thanks

Martin

"Georg Wiora" <georg.wiora@DaimlerChrysler.com> wrote in message
news:1104_1007043323@rtulmrb142...
>

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