Subject: Re: Windows/Linux reading binary data - sign problem
Posted by Nigel Wade on Wed, 09 Jan 2008 10:06:37 GMT
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RussellGrew wrote:

> Hello,
>
> Interesting scenario here. I have some code (not written by myself)
> that reads a bunch of data series from a binary file.
>
> Most of the data series contain positive floating point numbers. One
> of them contains negative numbers. On windows, this works fine. On
> linux, whenever the negative numbers should appear, the values have
> reverted to -2147.48. The series with only positive numbers reads fine
> on both machines.

That looks very suspicious. It's 32bit -MAXINT, with a decimal scaling factor.

>
> There is some manipulation to produce the data series.

Is the number above what is read by IDL, or the result of the "manipulation"?

>
> Both machines are little endian, checked with
http://www.dfanning.com/tips/endian_machines.html,
> using IDL6.3 in both cases. Linux is 64bit gentoo, windows is a 64bit
> processor running 32 bit windows.
>
> Ideas? Perhaps there is some obvious difference between platforms that
> I am unaware of?

There shouldn't be. What method are you using to read the floating point binary data? Are you running a 32bit or 64bit version of IDL on Linux, and are the floating point numbers 32bit or 64bit (float or double)? READU should work the same on all platforms provided the data is in the correct machine format and you ask it to read floats/doubles.

For example, this writes a 32bit and 64bit floating point values to a file, then reads them back. The platform is 64bit Linux and IDL is 64bit.

```
IDL Version 6.4 (linux x86_64 m64). (c) 2007, ITT Visual Information Solutions
IDL> a=float(-32.0)
IDL> b=double(-64)
IDL> openw,1,'tmp.tmp'
IDL> writeu,1,a,b
IDL> close,1
```

```
IDL> openr,2,'tmp.tmp'
IDL> c=float(1)
IDL> d=double(1)
IDL> readu,2,c,d
IDL> print,c,d
    -32.0000      -64.000000
IDL> exit
```

I can also read it back using 32bit IDL:

```
IDL Version 6.4 (linux x86 m32). (c) 2007, ITT Visual Information Solutions
IDL> c=float(1)
IDL> d=double(1)
IDL> openr,2,'tmp.tmp'
IDL> readu,2,c,d
IDL> print,c,d
     -32.0000       -64.000000
```

If I transfer the binary file tmp.tmp to a 32bit Windows machine I can still
read it using the same code.

--
Nigel Wade, System Administrator, Space Plasma Physics Group,
University of Leicester, Leicester, LE1 7RH, UK
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Phone : +44 (0)116 2523548, Fax : +44 (0)116 2523555

Subject: Re: Windows/Linux reading binary data - sign problem
Posted by russell.grew on Wed, 09 Jan 2008 23:36:42 GMT
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Hi Nigel,

The number is the result of further manipulation. I think the
manipulation may be the problem here.

I have tried the code on IDL 6.3 64 bit and IDL 6.1 32 bit in linux
[both little endian machines] - both with the same problem!

Code extract follows. The final values are stored in the 'a' matrix. I
dont have the documentation for the binary file format handy.

```
openr,u,fnm, /get_lun
status = FSTAT(u)
dd = status.size / (4*60)
```

```
a=lonarr(dd,60)
bdat=byte(1)
dat=bytarr(4)

for j=0,dd-1 do $            ;Loop to count total data rows and
begin
 for i=0,59 do $
 begin
 fdat=double(0.0)
 sgn=1.
 for aa=0,3 do $         ;data component rows in file.
  begin
  READU,u,bdat
  dat(aa)=bdat
  end
 dat(0)=dat(0)-64   ; take off 2^30
  fdat=dat(0)*256.*256.*256.+dat(1)*256.*256.+dat(2)*256.+dat( 3)
 fdat=sgn*fdat
 a[j,i]=fdat
 end
endfor
free_lun, u
```

Any ideas? I assume Linux must handle some part of the above
differently.

Thanks.

Russell.

On Jan 9, 9:06 pm, Nigel Wade <n...@ion.le.ac.uk> wrote:
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> Nigel Wade, System Administrator, Space Plasma Physics Group,
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