Subject: Unformatted data portability: Digital UNIX-->Windows 95
Posted by r.s.eckman on Thu, 19 Mar 1998 08:00:00 GMT
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I'm trying to do some post-processing of model results on a Windows95 Intel-based platform using IDL. The model is running on a DEC Alpha machine running Digital UNIX. In IDL on the DEC platform, we can open the output files using the "/f77_unformatted" qualifier. While the IDL manual has a nice discussion of the way Fortran programs write files on UNIX machines, I don't see any discussion relating to portability of these files to, say, a Windows95 platform. When I try to open the same file on the Windows platform using IDL, I need to insert a "junk" variable at the start and end of the logical record to get it to read properly.

For example, the file could be read on the DEC Alpha/UNIX platform using:

```
openr,1,'file.dat',/f77
readu,1,a,b,c
```

On the Windows95 platform, I seem to need to do the following:

```
openr,1,'file.dat'
readu,1,junk,a,b,c,junk
```

Is there any way around modifying all of our IDL codes on the Windows platform? Of course, the "/f77" keyword in the open statement won't work under Windows 95. In a more general sense, is this "almost" binary portability unique to the Digital UNIX/Windows95(or NT) combination or could I have written the file from a SUN or SGI and read it on a Windows95 Intel-based machine in the same way?

Thanks for any information.

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Subject: Re: Unformatted data portability: Digital UNIX-->Windows 95
Posted by rivers on Fri, 20 Mar 1998 08:00:00 GMT
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> In a more general sense, is this "almost" binary portability unique to the
> Digital UNIX/Windows95(or NT) combination or could I have written the file from
> a SUN or SGI and read it on a Windows95 Intel-based machine in the same way?

Yes, it is unique to Digital Unix/Windows 95. Both of those architectures are little-endian and use IEEE floating point. Sun's and SGI are big-endian, so

there is no binary compatibility.

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Subject: Re: Unformatted data portability: Digital UNIX-->Windows 95
Posted by dors on Mon, 23 Mar 1998 08:00:00 GMT
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Hi,

You are correct, FORTRAN outputs some weird marker bytes to files. On other platforms where "/F77" isn't available you will have to keep track of this. Using od (octal dump) on a test data file from your shell, will help you find these marker bytes if you don't have a manual which provides that information.

To make your code architeture independent, your best bet is to create a case statement on "!version.os". In the various cases ("OSF", "sunos", ...) have the architecture specific code to transform the input data such that your output data is the same no matter what architecture you are using. You will always have to be aware of the architecture of the machine where the data file was written. Prepending an ASCII header to your data files containing architecture of the file creator will facilitate this. Then you can perform the appropriate BYTEORDER or SWAP_ENDIAN commands to switch byte ordering differences and appropriately remove FORTRAN codes from the data file, if present. When writing ASCII headers to binary data files, I find it useful to include the length in bytes or the number of lines of the header as the first line of the header for easy decoding later.

Although I have not done this myself, I believe the use of CDF files will provide a seemless mechanism to pass data between architectures. So if you have FORTRAN libraries available to write CDF, you might look into this solution.

Hope this helps,

Eric

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Subject: Re: Unformatted data portability: Digital UNIX-
Posted by wmc on Mon, 23 Mar 1998 08:00:00 GMT
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In article eckman@eos1.larc.nasa.gov, r.s.eckman@larc.nasa.gov (Richard Eckman) writes:
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> Is there any way around modifying all of our IDL codes on the Windows platform?

The "junk" 4-bytes is the length of the record (for some reason, repeated
at the end of the record too).

You could try your fortran manual for the code that writes the files - perhaps
it is prepared to write a byte-stream rather than fortran-unformatted.
Alternatively, if your file only has one record it it, you can use "head" and "tail"
to cut off the first and last 4 bytes.

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> Digital UNIX/Windows95(or NT) combination or could I have written the file from

> a SUN or SGI and read it on a Windows95 Intel-based machine in the same way?

SUNs and SGIs (and everything else, in fact) are byteswapped; but this can be cured with "byteorder". (Errm, thats looking at it from the alpha perspective...)

- William

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Climate Modeller, British Antarctic Survey | Disclaimer: I speak for myself

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