Subject: Re: reading unformatted binary data (WRITEU) with FORTRAN routine
Posted by grunes on Mon, 15 Aug 1994 15:19:03 GMT
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In article <11AUG199413273078@stars.gsfc.nasa.gov> kucera@stars.gsfc.nasa.gov (Terry Kucera) writes:
> Well, this is sort of a FORTRAN question, but it has an IDL angle,
> so maybe someone here can help me.
> I've stored an array of floating points in an unformated binary data file
> using WRITEU in IDL. Can anyone tell me how to read the data back using
> FORTRAN? Terry Kucera
> kucera@stars.gsfc.nasa.gov

This is actually a very complex question. Fortran does not standardize file formats. This is (IM-not-HO) the primary reason that C and C++ have largely replaced Fortran in most of the software market, although C-Fanatics would disagree (and C has some other minor advantages).

In Sun Fortran, I use the following

```
 open(1,file=...,form='unformatted',access='direct',recl=1,
    &   status='old')
 irec=1
 ...
 read(1,rec=irec)array
 irec=irec+ <# of bytes in array>
 ...
```

(if you are using a large array, and your compiler gives you a compile or run-time error about reading too many bytes, just read smaller parts of the array.)

The same steps will work with SGI Fortran, if you compile everything with the -bytereclen switch. I would guess that, that would also work on most Unix work stations, but I may be wrong.

With Microsoft Fortran 4.01 (on PCs--very old) I think the open statement looks like

```
 open(1,file=...,form='binary',access='direct',recl=1,
    &   status='old')
```

With Lahey Fortran (for the PC) I think it looks like

```
 open(1,file=...,form='transparent',access='direct',recl=1,
    &   status='old')
```

I have assumed that the binary representation was the same on the machines doing input and output. If not (e.g., when transfering data between PC and Sun), you may be able to compensate for byte order by using the byteorder,array

statement in IDL, before you WRITEU the array.

I very much wish "they" would make raw file format I/O a part of the Fortran standard. (I complained on the Fortran news group, and it was suggested I should join the standards groups. What a waste of time.)

There is another solution: call a C language routine to read the data. Unfortunately, there is no standard on how Fortran and C talk to each other, either. But that is often the way people do it.

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