Subject: Re: reading unformatted data into a structure
Posted by Nigel Wade on Tue, 19 Mar 2002 10:26:38 GMT
View Forum Message <> Reply to Message

Nigel Wade wrote:

> If it was a single write there *may*
> be packing problems in the struct, although the definition above wouldn't
> appear to require any packing, the C compiler could have decided
> otherwise.
>

Sorry to follow up on my own post, but I've just noticed that there is a
potential alignment problem, here:


```
  unsigned short coordSys;   /* The coordinate system used:
   0 = Geographical lat/long.
   1 = Projection */
  char projection[32];      /* Projection name (see above)   */
  int projParam1;          /* 1. projection parameter (see above). */
```

this int may well need to be aligned on a word boundary. If so 16 bits of
padding will have been inserted into the struct by the C compiler to align
it. If the struct is output by a single write this padding will have been
output with the rest of the data.

On the PC, IDL may have been built to allow structs without padding, so the
same aligment problem might not appear in IDL, so reading the struct as a
single item in IDL will store those 16 bits of padding into projParam1, and
all other items in the struct will be similarly offset.

If the struct was part of an array, then a further 16 bits of padding may
have been added at the end of the struct to ensure that the int which is
the first element of the second struct in the array was properly aligned.

--

Nigel Wade, System Administrator, Space Plasma Physics Group,
        University of Leicester, Leicester, LE1 7RH, UK
E-mail :   nmw@ion.le.ac.uk
Phone :   +44 (0)116 2523568, Fax : +44 (0)116 2523555