Subject: Re: Extracting bits with IDL
Posted by gumley on Mon, 18 Jul 1994 13:51:49 GMT
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In article <Ct2GM1.1780@yuma.ACNS.ColoState.EDU>,
dean@phobos.cira.colostate.edu wrote:

> We are set up to routinely collect GOES-8 GVAR data. Like with most data
> from satellites, they put information in the individual bits. Below is a C
> structure that extracts the individual bits from part of the data header which
> contains some time information. Extracting individual bits from data with IDL
> is difficult. At first I consider building an IDL structure, but IDL is
> unable to break down to bits.

IDL can actually extract bits quite easily. You just need to use the ISHFT and AND functions. ISHFT shifts byte, integer, or longword arguments to the left or right, and fills any vacant positions with zeros. AND performs a bitwise AND on byte, integer, or longword arguments. For example, let's say I have an eight bit word, and I want to extract the first 4 bits and the last 4 bits as two separate values. To extract the leftmost 4 bits, you would use

value = ishft( bytval, -4 )

which shifts to the right 4 positions, and fills in the space created on the left with zeros. To get the rightmost 4 bits, you would use

value = bytval and 15

which does a bitwise AND with any bits to set to 1 in the rightmost 4 positions. You can also use shift/mask(and) operations to extract other bit fields. For example if you wanted to extract bits 4 and 3 (bits are typically numbered left to right in descending order i.e. bit 7 to bit 0 in an 8 bit word), you would use

value = ishft( bytval, -3 ) and 3

I hope this helps. It is usually instructive to write a short test program to convince yourself that it works.

Cheers,
Liam.

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