Subject: Re: Extracting bits with IDL
Posted by dball on Mon, 18 Jul 1994 22:32:41 GMT
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In article <Ct2GM1.1780@yuma.ACNS.ColoState.EDU>, dean@phobos.cira.colostate.edu writes:
> 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.
>
> The information can fit into LONARR(2). If anyone has any suggestion that
> would allow IDL to extract the information from these LONARR(2), please
> forward your comments to me or post them. I hope to use this information to
> build a widget to navigate through this new and fine data set coming from
> GOES-8.
>
> ==========
>
> typedef struct
> {
> unsigned year_100 : 4;
> unsigned year_1000 : 4;
>
> unsigned year_1 : 4;
> unsigned year_10 : 4;
>
> unsigned day_10 : 4;
> unsigned day_100 : 3;
> unsigned time_code : 1;
>
> unsigned hour_10 : 4;
> unsigned day_1 : 4;
>
> unsigned min_10 : 4;
> unsigned hour_1 : 4;
>
> unsigned sec_10 : 4;
> unsigned min_1 : 4;
>
> unsigned msec_100 : 4;
> unsigned sec_1 : 4;
>
> unsigned msec_1 : 4;
> unsigned msec_10 : 4;
> } BCD_TIME_T;

>
> ** \   *****
> Kelly Dean   \
> E-MAIL: DEAN@PHOBOS.CIRA.COLOSTATE.EDU | \
> ** **********

You can use a combination of AND (which is a bitwise logical operator) and
ISHFT (which shifts bits left or right) to extract these values.
Its probably easier if you read it into a BYTE array. e.g.:

```
b=BYTARR(8)
READU,1,b
year_100 = ISHFT( b(0), -4 )          ; shift top 4 bits down
year_1000 = b(0) AND 'F'XB             ; mask off bottom 4 bits
day_100 = ISHFT( b(2), -1 ) AND '7'XB  ; shift bits down one, and mask off 3
```

'n'XB is just a byte size hex constant. 'F'XB = 15B and '7'XB = 7B

-- Dave
