Subject: Re: 4-bit words
Posted by David S. Foster/Admin on Thu, 21 Dec 1995 08:00:00 GMT
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orbach@rockvax.rockefeller.edu (Darren Orbach) wrote:
>
> I have a file that consists of a 256*256 array of 4-bit
> words created in another application, written as a binary
> file. I need to manipulate this array by shifting these
> 4-bit elements to the right by various amounts, and wrapping
> around to the other side of the array. However, since the
> smallest data type in WAVE or IDL is a full byte, I don't see
> a straightforward way to do this. Any suggestions?

I think I would write a routine that reads in the data two
elements (8 bits) at a time, then extract the two elements
from the byte, and puts these two bytes into a
corresponding 256x256 array of bytes; then manipulate
this byte array.

Given a byte of data stored in 'value':

```
 val = value
 lo = 0B
 for i = 0, 3 do begin
  higher_bit = 2L ^ long(i+1)
  rem = val mod higher_bit
  if (rem ne 0) then begin
   lo = lo + 2L ^ long(i)
   val = val - rem
  endif
 endfor

 hi = 0B
 for i = 4, 7 do begin
  higher_bit = 2L ^ long(i+1)
  rem = val mod higher_bit
  if (rem ne 0) then begin
   hi = hi + 2L ^ long(i-4)
   val = val - rem
  endif
 endfor
```

This *should* give the lower and upper halves of the original byte,
as two byte values, 'lo' and 'hi'. I've tested this and it seems
to work. But hey, my job description says that my programming
only has to be 90% accurate!

Wouldn't it be nice if IDL had bitwise operators!

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