
Subject: Re: Decomposing a bit field?

Posted by [greg.addr](#) on Wed, 21 Jul 2010 10:31:27 GMT

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On 21 Jul., 11:40, Rob <ry...@le.ac.uk> wrote:

> Hi all,
>
> I have some data that is contained within a 32-bit field.
>
> I'm using some code from a colleague which seems to almost do what I
> want but not quite.
>
> An example of one of the data values is 15982561
>
> The following code takes this and creates an array of 1s and 0s for
> whether each bit is set or not.
>
> test=intarr(32)
> for i=0, 31 do begin test[i]=(ISHFT((15982561),-i) AND 1B)
>
> However, for example bits 1-4 need to be combined (and contain data
> from 0-15). As I don't quite understand what the code above is doing
> I'm not sure how to (or if it can be) modified to not just operate on
> the individual bits but on groups of bits.
>
> What I need to extract is the information in the following form:
>
> Bit 0: 0 or 1
> Bits 1-4: 0-15
> Bit 5: 0 or 1
> Bits 6-8: 0-8
> etc
>
> Thanks in advance

The code you have is progressively shifting the bits to the right
(i.e. dividing by 2^i) and copying the resulting least significant bit
into the test array. You can achieve what you want with something like
this:

```
IDL> a=15982561
IDL> print,(a and ishft(1,indgen(32))) gt 0 ;decomposition like yours
(least significant on the left)
  1 0 0 0 0 1 1 1 1 1 1 1 1 0 1 1 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

IDL> bit=[0,1,5,6] ;start bit for each group
IDL> n_bits=[1,4,1,3] ;no. of bits in each
```

```
IDL> print,2^n_bits-1 ;max values for each group
```

```
1    15    1    7
```

```
IDL> print,2^n_bits-1 and ishft(a,-bit) ;the result
```

```
1      0      1      7
```

regards,

Greg
