Subject: Re: bit operations
Posted by thompson on Thu, 02 May 2002 18:01:52 GMT
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"Dominik Paul" <dpaul@ukl.uni-freiburg.de> writes:

> Hi there,

> are there any other bit operations in IDL except shift and ishift?
> I would like to know, if a bit is set and I would like to set a bit by
> myself in a variable.

Dom:

The logical operators AND, OR, XOR and NOT are bitwise operators. These can be used to both set and interrogate bits in integer values.

For example, suppose that J=5b, which is '0101' in bit notation. One can turn on the second bit from the right with the command

```
IDL> J = J OR 2b
```

This converts J to '0111', i.e. 7b.

On the other hand, if you want to know if the 2nd bit is turned on or not, you can find out with

```
IDL> IF (J AND 2B) NE 0 THEN PRINT, 'Second bit is turned on'
```

Bill Thompson

Subject: Re: bit operations
Posted by Liam E. Gumley on Thu, 02 May 2002 18:17:47 GMT
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Dominik Paul wrote:
> are there any other bit operations in IDL except shift and ishift?
> I would like to know, if a bit is set and I would like to set a bit by
> myself in a variable.

The Boolean operators in IDL (AND, NOT, OR, XOR) perform bit-wise operations on integer arguments (BYTE, INT, LONG, etc.). To check if a particular bit is set,

(a) SHIFT the bit into position zero
(b) Use AND to test if the bit is set

For example:

```
IDL> word = 35B    ; bits 5, 1,and 0 are set
IDL> bit = 5
IDL> print, ishft(word, -bit) and 1B
   1
IDL> bit = 4
IDL> print, ishft(word, -bit) and 1B
   0
```

To set a particular bit, simply add the appropriate power of two:

```
IDL> bit = 6
IDL> tmp = word    ; this variable protects the type of WORD
IDL> tmp[0] = 2
IDL> word = word + tmp ^ bit
IDL> print, ishft(word, -bit) and 1B
   1
```

For more information, see section 2.6 of my book "Practical IDL Programming". To earn extra credit, try coding a pair of functions named GETBIT and SETBIT that operate on integer arguments. Better still, try the IDL Astronomy library, because someone has probably done it already.

Cheers,
Liam.
Practical IDL Programming
http://www.gumley.com/
