Subject: Re: Absolute value of negative number is negative
Posted by Dick Jackson on Tue, 09 Feb 2016 21:26:51 GMT
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On Monday, 8 February 2016 11:00:20 UTC-8, wlandsman wrote:
> I was surprised to find that taking the absolute value of a 16 bit integer vector was yielding negative numbers.
> While this is non-intuitive, I think it is unavoidable. --Wayne
>
>
> IDL> tab= -32768S ;IDL won't let us define -32768 as a short integer
>
> tab= -32768
> ^
> % Integer constant must be less than 32768.
>
> IDL> tab = intarr(1) ;but we can assign a short integer to -32768
> IDL> tab[0] = -32768
> IDL> help,tab ;Still a short integer
> TAB INT = Array[1]
> IDL> print,tab[0] ;Still a value of -32768
> -32768
> IDL> print,abs(tab[0]) ;Absolute value is negative!
> -32768

Good find, Wayne. That's the trouble when there are more available negative values than positive ones.

In case this is helpful, here's an easier way to get that constant:

```
IDL> tab = Fix(-32768)
IDL> help, tab, Abs(tab)
TAB             INT       =   -32768
<Expression>    INT       =   -32768
```

And, to show the problem appears on larger integer types as well:

```
IDL> tab = Fix(2L^15L)
IDL> help, tab, Abs(tab)
TAB             INT       =   -32768
<Expression>    INT       =   -32768

IDL> tab = 2L^31
IDL> help, tab, Abs(tab)
TAB             LONG      =  -2147483648
<Expression>    LONG      =  -2147483648

IDL> tab = 2LL^63
```

```
IDL> help, tab, Abs(tab)
TAB             LONG64    =   -9223372036854775808
<Expression>    LONG64    =   -9223372036854775808
```

Cheers,
-Dick

Dick Jackson Software Consulting Inc.
Victoria, BC, Canada --- http://www.d-jackson.com
