
Subject: Re: Unsigned Integers - How?
Posted by [davidf](#) on Fri, 07 Feb 1997 08:00:00 GMT
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Folks,

I have the distinct feeling that it is Friday and a lot of us are not taking enough exercise and getting the ol' oxygen going to the brain.

Let me see if I can summerize this discussion without causing any more head scratching and muttering.

If you have unsigned 16-bit integers in a file, you first read them into **signed** 16-bit integers.

```
data = INTARR(100)
READU, lun, datafile, data
```

If the unsigned **value** is important to you, you will have to convert this data to LONG integers with a command like this:

```
data = LONG(data) AND 'FFFF'x
```

(Yes, those of you uncomfortable with hexadecimal numbers may use 65535L.)

If memory is important, you probably want to throw a TEMPORARY in there, like this:

```
data = LONG(TEMPORARY(data)) AND 'FFFF'x
```

If the unsigned **value** is not terribly important to you, but the **relative position of the value in relation to other values in the data** is important (e.g. maybe you want to display the data as an image and don't care what the **real** values are), then you can keep the data as 16-bit integers, but you have to, as they say, "twiddle" or change the top-most bit. This in effect means you subtract an "offset" of -32768 from each member of the data set.

The unsigned value 0 becomes the signed value -32768.
The unsigned value 32768 becomes the signed value 0.
The unsigned value 65535 becomes the signed value 32768.
And so forth.

According to a wonderful post by Struan Gray earlier (and explained to me in a private e-mail posting by Mitchell Grunes, to which I am very appreciative), this is most easily done by a command like this:

```
data = TEMPORARY(data) XOR (-32768)
```

If you are going to use this 16-bit data set for some kind of real-world purpose, you will have to remember that the *real* values are offset by this -32768 amount.

There. I hope this clarifies rather than further muddles the issue. :-)

I'm going to go play basketball with the boys and see if I can't get a few more brain cells in gear!

David

David Fanning, Ph.D.
Fanning Software Consulting
2642 Bradbury Court, Fort Collins, CO 80521
Phone: 970-221-0438 Fax: 970-221-4762
E-Mail: davidf@dfanning.com
Coyote's Guide to IDL Programming: <http://www.dfanning.com>
