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

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