
Subject: Re: 32-bit Unsigned Integers, Was: Unsigned Integers - How?

Posted by [plugge](#) on Thu, 13 Feb 1997 08:00:00 GMT

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In article <330039AF.23DB@star.sr.bham.ac.uk>, James Tappin

<sjt@star.sr.bham.ac.uk> writes:

|>David Fanning wrote:

|>[SNIP]

|>

|>>

|>> Now, here is where I start to get unsure of myself. I know

|>> how to turn *one* unsigned 32-bit integer into its real value.

|>> You use the BYTE function to individually read the four

|>> bytes of information in the 32-bit integer and you reconstruct

|>> those bytes into a DOUBLE-PRECISION value. The code looks

|>> like this:

|>>

|>> number = data(0)

|>> factor = 256.0D

|>> realNumber = BYTE(number, 0)*factor^3 + BYTE(number,1)*factor^2 + \$

|>> BYTE(number,2)*factor^1 + BYTE(number,3)*factor^0

|>>

|>> This is for a big endian machine, like most UNIX machines. If

|>> you are on a little endian machine (like a PC), you will have to

|>> reverse the order in which the real number is constructed. Your

|>> code will look like this:

|>>

|>> number = data(0)

|>> factor = 256.0D

|>> realNumber = BYTE(number, 0)*factor^0 + BYTE(number,1)*factor^1 + \$

|>> BYTE(number,2)*factor^2 + BYTE(number,3)*factor^3

|>>

|>> What I don't know how to do (perhaps Bill Thompson or Mitchell Grunes

|>> can help us here), is how to do this for the whole array at once in

|>> an "array" type way. I certainly know how to write a loop! :-)

|>>

|>> realNumbers = DBLARR(N_ELEMENTS(data))

|>> factor = 256.0D

|>> FOR j=0, N_ELEMENTS(data)-1 DO BEGIN

|>> realNumbers(j) = BYTE(data(j), 0)*factor^0 + BYTE(data(j),1)*factor^1

|>+\$

|>> BYTE(data(j),2)*factor^2 + BYTE(data(j),3)*factor^3

|>> ENDFOR

|>>

|>

|>Here's my version in vector form

|>

another vector version:

```
x=2000000000L+ 1000000000L ;a large integer
help,x
y=replicate(x, 4,4) ;generate the array
y(0,0)=1 ;some values should be positive
y(1,1)=10
y(2,2)=100
y(3,3)=1000
print,y
w=where(y lt 0) ;check for negative values
s=size(y)
dbl=make_array(/double,size=s) ;make the new array
help,dbl
dbl(0,0)=y
dbl(w)=dbl(w)+4294967296d0 ;that's it!! ;-))
print,dbl
```
