Subject: Array Subscripting Memory Usage (watch out!)
Posted by Dick Jackson on Wed, 02 Oct 2002 21:28:47 GMT
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Hi all,

This may be old news to some of you, but it surprised me and a couple of colleagues, and I couldn't find any discussion of it on this group, so I'll share it around.

I was surprised to find how much memory is used during access to a subset of an array. I ran this, which makes a 1000x1000 array, and accesses a subset of it using an array of subscripts:

```
a = bindgen(1000, 1000)
subscripts = Long(RandomU(seed, 500)*1000)
baseMem = (memory())[0]
help, a[subscripts, *]
highWaterMem = (memory())[3]
Print, 'Memory used during access: ', highWaterMem-baseMem

IDL> .GO
<Expression>    BYTE      = Array[500, 1000]
Memory used during access:       2500076
```

The array being extracted is 0.5 million bytes, but it took 2.5 million bytes to do it! I'm guessing that there's a Long array being made behind the scenes that contains the indices of the elements I'm going to get back.

This came to light when my client was using a couple of 100MB images on a machine with 1GB of RAM, and my program ran out of memory! There are other factors here, but it was unexpected that accessing N bytes from an array requires 5*N bytes for the operation! I know now to be more careful.

Hope this helps out someone else.

Cheers,
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-Dick

Dick Jackson / dick@d-jackson.com
D-Jackson Software Consulting / http://www.d-jackson.com
Calgary, Alberta, Canada / +1-403-242-7398 / Fax: 241-7392