Subject: VARRAY, memory & extracting subarrays
Posted by Kristine Hensel on Mon, 02 Jul 2001 06:21:53 GMT
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I'm processing large (105 MB) arrays of images, and I've been running into memory problems. (Not surprisingly, right?) I've started using Eric Korpela's VARRAY routine, which has helped, but I still can't manage to extract a subarray without using all of the available memory. Theoretically I have 1 GB of memory, and we've tried maximizing every system variable that we can, but I'm still crashing ("Unable to allocate memory to create array") when I try to run my image processing program.

I can declare the main array and subarray using VARRAY, and I can read images into the main array. However, once I try to put anything from main array in the subarray, e.g. subarray=main_array[i:j,k:l,*], or even subarray=main_array, I start chewing up memory.

Two not-very-good workarounds are:
 - using subarray=temporary(main_array), but then I lose main_array. I suppose I could read the main array into main_array and then into some temporary variable, so that I could do subarray=temporary(tmp_array), but that involves more I/O
 - writing the subsection of main_array to a file, then reading it directly into subarray - this is slow

I've attached sample code below, along with the results of memory(/current) along the way.

Any assistance with VARRAY would be greatly appreciated.

Thanks,
 Kristine

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```
>>>> >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> >>>>>>
pro sector_noaa

  filename = '/home/meteor/mapped_data/200105171839N14.map'

  openr, lun, filename, /get_lun, error=err
  nlon=0L
  nlat=0L
  nchannel=0L
```

```
  readu, lun, nlon, nlat, nchannel
  lons=fltarr(nlon)
  lats=fltarr(nlat)
  readu, lun, lons, lats
                          ; declare main images array:
  file_delete, '/home/meteor/mapped_data/images.dat', /quiet

*** Memory in use: 71 kB

  images = varray("/home/meteor/mapped_data/images.dat",byte(0), $
                nlon,nlat,nchannel,/writable)

*** Memory in use: 71 kB
                          ; read in images array:
  readu, lun, images

*** Memory in use: 71 kB

  free_lun, lun

                          ; declare subarray:
  file_delete, '/home/meteor/mapped_data/sector_images.dat', /quiet

*** Memory in use: 70 kB

  sector_images = varray("/home/meteor/mapped_data/sector_images.dat", $
                    byte(0),nlon,nlat,nchannel,/writable)

*** Memory in use: 70 kB
                          ; write out subarray:
  openw, lun, filename+'_sector', /get_lun, error=err
  writeu, lun, images[0:nlon-1,0:nlat-1,*]
  free_lun, lun
                          ; read in sector images:
  openr, lun, filename+'_sector', /get_lun, error=err
  readu, lun, sector_images
*** Memory in use: 70 kB
  free_lun, lun

                          ; try to copy directly:
  sector_images = images
*** Memory in use: 10531 kB

end
```