Subject: Re: Freeing memory
Posted by Christian Soeller on Fri, 13 Sep 1996 07:00:00 GMT
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Phil Williams <williams@irc.chmcc.org> writes:

- > My question is why? And why is there very little descrpancy in the
- > help,/mem for the heap used? The sysmon looks like alot more than a 1%
- > difference?

It is because of the way that memory allocation in a process under unix works. Following example, from an freshly started idl process:

IDL> i=fltarr(1000000)

IDL> help,/mem

heap memory in use: 4075014, calls to MALLOC: 138, FREE: 36

ps -el for the process:

30 S 1115 21705 21701 0 26 20 * 3070:1673 8838e3e0 pts/0 0:01 idl i.e. Unix tells you that the process uses 3070 blocks of memory (1673 in physical RAM)

But then say in IDL

IDL > i=0

IDL> help,/mem

heap memory in use: 74976, calls to MALLOC: 140, FREE: 37

Now ps -el tells you

30 S 1115 21705 21701 0 26 20 * 3070:1676 8838e3e0 pts/0 0:01 idl i.e. still the same amount of memory is used by the process, even more is now in physical RAM.

The paradox is resolved by knowing that memory that has been returned by IDL (internally using some equivalent of the free (3C) function from the allocation library) is not(!) being returned to the operating system but merely put in the list of free blocks maintained by the allocation library routines. Here is what the info of the GNU allocation library tells you:

- > Occasionally, free can actually return memory to the operating system
- > and make the process smaller. Usually, all it can do is allow a later
- > later call to malloc to reuse the space. In the meantime, the space
- > remains in your program as part of a free-list used internally by
- malloc.

So, if you have a temporary computation that uses a *huge* amount of memory you will still see that in sysmon after the associated memory has been internally freed and the heap memory in IDL looks much smaller. Another related issue is memory fragmentation...

variables you won't incurr these co	osts.
Regards,	
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Obviously, if you restart the process from scratch and restore only the saved

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