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Subject: Initialize new variable array with nan or -9999 values  
Posted by [morganlsilverman](#) on Thu, 20 Feb 2014 18:31:07 GMT  
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Hello,

This seems like it should be so simple but I can't figure out how to do it. I am creating a new array, `distance=fltarr(304,336,500)` and I want it to be initially filled with either nan or -9999. My results could possibly be 0.0 so I need to know where those are calculated values and not just part of the original array. Thank you.

Sincerely,  
Morgan

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Subject: Re: Initialize new variable array with nan or -9999 values  
Posted by [David Fanning](#) on Thu, 20 Feb 2014 18:35:33 GMT  
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Morgan Silverman writes:

>  
> Hello,  
>  
> This seems like it should be so simple but I can't figure out how to do it. I am creating a new array, `distance=fltarr(304,336,500)` and I want it to be initially filled with either nan or -9999. My results could possibly be 0.0 so I need to know where those are calculated values and not just part of the original array. Thank you.

```
distance=fltarr(304,336,500) + -9999
```

David

--

David Fanning, Ph.D.  
Fanning Software Consulting, Inc.  
Coyote's Guide to IDL Programming: <http://www.idlcoyote.com/>  
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

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Subject: Re: Initialize new variable array with nan or -9999 values  
Posted by [John Correia](#) on Thu, 20 Feb 2014 18:36:30 GMT  
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On 02/20/2014 01:31 PM, Morgan Silverman wrote:

> Hello,  
>  
> This seems like it should be so simple but I can't figure out how to

> do it. I am creating a new array, distance=fltarr(304,336,500) and I  
> want it to be initially filled with either nan or -9999. My results  
> could possibly be 0.0 so I need to know where those are calculated  
> values and not just part of the original array. Thank you.  
>  
> Sincerely, Morgan  
>

Either

```
distance = fltarr(304,336,500,/NOZERO)  
distance[*] = !values.f_nan
```

or

```
distance = make_array(304,336,500,/FLOAT,VALUE=!values.f_nan)
```

John

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Subject: Re: Initialize new variable array with nan or -9999 values  
Posted by [David Fanning](#) on Thu, 20 Feb 2014 18:37:22 GMT  
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David Fanning writes:

> distance=fltarr(304,336,500) + -9999

Whoops! Got away from me!

```
distance=fltarr(304,336,500) - 9999
```

Or,

```
distance=fltarr(304,336,500) + !Values.F_NaN
```

David

--

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Sepore ma de ni thue. ("Perhaps thou speakest truth.")

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Subject: Re: Initialize new variable array with nan or -9999 values  
Posted by [chris\\_torrence@NOSPAM](mailto:chris_torrence@NOSPAM) on Thu, 20 Feb 2014 21:11:25 GMT  
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On Thursday, February 20, 2014 11:37:22 AM UTC-7, David Fanning wrote:

> David Fanning writes:

>  
>  
>  
>> distance=fltarr(304,336,500) + -9999

>  
>  
>  
> Whoops! Got away from me!

>  
>  
>  
> distance=fltarr(304,336,500) - 9999

>  
>  
>  
> Or,

>  
>  
>  
> distance=fltarr(304,336,500) + !Values.F\_NaN

>  
>  
>  
> David

>  
>  
>  
> --  
>  
> David Fanning, Ph.D.  
>  
> Fanning Software Consulting, Inc.  
>  
> Coyote's Guide to IDL Programming: <http://www.idlcoyote.com/>  
>  
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Also take a look at REPLICATE.  
-Chris

---

Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [David Fanning](#) on Thu, 20 Feb 2014 21:28:16 GMT

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Chris Torrence writes:

> Also take a look at REPLICATE.

Since there are about 10 one-line solutions, I suppose the "best" way is the one containing the fewest keystrokes. ;-)

Cheers,

David

--

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Sepore ma de ni thue. ("Perhaps thou speakest truth.")

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Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [Paul Van Delst\[1\]](#) on Thu, 20 Feb 2014 21:33:01 GMT

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On 02/20/14 13:36, John Correira wrote:

> On 02/20/2014 01:31 PM, Morgan Silverman wrote:

>> Hello,

>>

>> This seems like it should be so simple but I can't figure out how to  
>> do it. I am creating a new array, distance=fltarr(304,336,500) and I  
>> want it to be initially filled with either nan or -9999. My results  
>> could possibly be 0.0 so I need to know where those are calculated  
>> values and not just part of the original array. Thank you.

>>

>> Sincerely, Morgan

>>

>

> Either

>

> distance = fltarr(304,336,500,/NOZERO)

> distance[\*] = !values.f\_nan

>

> or

>

> distance = make\_array(304,336,500,/FLOAT,VALUE=!values.f\_nan)

+1 on the MAKE\_ARRAY for this purpose.

It's more self-documenty (IMO).

---

---

Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [David Fanning](#) on Thu, 20 Feb 2014 21:46:48 GMT

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Paul van Delst writes:

> +1 on the MAKE\_ARRAY for this purpose.

>

> It's more self-documenty (IMO).

What!? Haven't you been watching the Olympics? We want firepower and quad jumps. I vote for the one that's the most technical and obtuse.

Cheers,

David

--

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Sepore ma de ni thue. ("Perhaps thou speakest truth.")

---

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Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [Paul Van Delst\[1\]](#) on Thu, 20 Feb 2014 22:00:22 GMT

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On 02/20/14 16:46, David Fanning wrote:

> Paul van Delst writes:

>

>> +1 on the MAKE\_ARRAY for this purpose.

>>

>> It's more self-documenty (IMO).

>

> What!? Haven't you been watching the Olympics?

Nope.

> We want firepower and

> quad jumps. I vote for the one that's the most technical and obtuse.

Not for software. Or firepower. In both cases it leads to accidental (one hopes) foot-shootin'.

cheers,

paulv

p.s. "quad jumps"?

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Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [wlandsman](#) on Thu, 20 Feb 2014 22:14:54 GMT

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On Thursday, February 20, 2014 4:33:01 PM UTC-5, Paul van Delst wrote:

> On 02/20/14 13:36, John Correira wrote:

For large arrays, there is a speed advantage to using REPLICATE or MAKE\_ARRAY in which the array is initialized with the correct value, as opposed to

```
fltarr(304,336,500) - 9999
```

in which the array is first initialized with zeros, and then 9999 is subtracted from each element. Most computers should be able easily handle a 50 Mb array, so in this case the speed difference would be a fraction of a second. But it is something to keep in mind when arrays are large enough that a factor of two speed improvement matters. --Wayne

---

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Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [Heinz Stege](#) on Fri, 21 Feb 2014 01:36:24 GMT

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On Thu, 20 Feb 2014 14:14:54 -0800 (PST), wlandsman wrote:

> For large arrays, there is a speed advantage to using REPLICATE or MAKE\_ARRAY in which the array is initialized with the correct value, as opposed to

>

```
> fltarr(304,336,500) - 9999
```

>

> in which the array is first initialized with zeros, and then 9999 is subtracted from each element.

Yes, one should think so. But it is not true. "fltarr()-9999" is faster than make\_array():

```
IDL> t0=systime(1) &for i=0,9 do a=fltarr(1000,1000,100)-9999.
```

```
&print,systemtime(1)-t0 &help,a
1.8280001
A      FLOAT   = Array[1000, 1000, 100]
IDL> t0=systemtime(1) &for i=0,9 do
a=make_array(1000,1000,100,value=-9999.) &print,systemtime(1)-t0 &help,a
2.7969999
A      FLOAT   = Array[1000, 1000, 100]
IDL> print,!version
{ x86 Win32 Windows Microsoft Windows 8.0.1 Oct 5 2010   32
64}
```

Don't ask me why.

Cheers, Heinz

---

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Subject: Re: Initialize new variable array with nan or -9999 values  
Posted by [David Fanning](#) on Fri, 21 Feb 2014 04:11:58 GMT  
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Heinz Stege writes:

```
> Yes, one should think so. But it is not true. "fltarr()-9999" ist
> faster than make_array():
>
> IDL> t0=systemtime(1) &for i=0,9 do a=fltarr(1000,1000,100)-9999.
> &print,systemtime(1)-t0 &help,a
> 1.8280001
> A      FLOAT   = Array[1000, 1000, 100]
> IDL> t0=systemtime(1) &for i=0,9 do
> a=make_array(1000,1000,100,value=-9999.) &print,systemtime(1)-t0 &help,a
> 2.7969999
> A      FLOAT   = Array[1000, 1000, 100]
> IDL> print,!version
> { x86 Win32 Windows Microsoft Windows 8.0.1 Oct 5 2010   32 64}
```

Oh, don't you just hate those guys who use their cell phones to fact check everything you say! ;-)

Cheers,

David

--

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Seppure ma de ni thue. ("Perhaps thou speakest truth.")

---

Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [John Correia](#) on Fri, 21 Feb 2014 14:47:23 GMT

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On 02/20/2014 08:36 PM, Heinz Stege wrote:

```
> IDL> t0=systime(1) &for i=0,9 do a=fltarr(1000,1000,100)-9999.
> &print,systime(1)-t0 &help,a
> 1.8280001
> A          FLOAT    = Array[1000, 1000, 100]
> IDL> t0=systime(1) &for i=0,9 do
> a=make_array(1000,1000,100,value=-9999.) &print,systime(1)-t0 &help,a
> 2.7969999
> A          FLOAT    = Array[1000, 1000, 100]
> IDL> print,!version
> { x86 Win32 Windows Microsoft Windows 8.0.1 Oct  5 2010   32
> 64}
```

MAKE\_ARRAY is faster on my machine:

```
IDL> tic
IDL> for i=0,9 do a=fltarr(1000,1000,100)-9999.
IDL> toc
IDL> help, a
```

Elapsed time is 3.018326s

```
A          FLOAT    = Array[1000, 1000, 100]
```

```
IDL> tic
IDL> for i=0,9 do a=make_array(1000,1000,100,value=-9999.)
IDL> toc
IDL> help, a
```

Elapsed time is 2.075103s

```
A          FLOAT    = Array[1000, 1000, 100]
```

```
IDL> print,!version
{ x86_64 linux unix linux 8.2 Apr 10 2012   64
  64}
```

---

Subject: Re: Initialize new variable array with nan or -9999 values

Posted by [David Fanning](#) on Fri, 21 Feb 2014 14:58:04 GMT

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John Correia writes:

```
> MAKE_ARRAY is faster on my machine:
```

```
>
> IDL> tic
> IDL> for i=0,9 do a=fltarr(1000,1000,100)-9999.
> IDL> toc
> IDL> help, a
>
> Elapsed time is 3.018326s
> A          FLOAT   = Array[1000, 1000, 100]
>
> IDL> tic
> IDL> for i=0,9 do a=make_array(1000,1000,100,value=-9999.)
> IDL> toc
> IDL> help, a
>
> Elapsed time is 2.075103s
> A          FLOAT   = Array[1000, 1000, 100]
>
> IDL> print,!version
> { x86_64 linux unix linux 8.2 Apr 10 2012   64
>   64}
```

I think you have to be a little careful how you do this experiment. But, starting IDL from scratch each time (.reset) and then running the Make\_Array method or the Add-To method, I get these results on my Windows 64-bit machine with IDL 8.2.3:

```
Make_Array Method: 1.572
Add-To Method:    1.811
```

Maybe 15% faster. I don't think I would be losing sleep over it. :-)

Cheers,

David

--

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Sepore ma de ni thue. ("Perhaps thou speakest truth.")

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