Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by Fabzi on Tue, 26 Mar 2013 16:44:04 GMT
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The error comes because your are putting a NaN float in an integer
array. Try:

p = PLOT([1.,2,3,4,!VALUES.F_NAN,6,7,8,9])

cheers,

Fab

On 03/26/2013 04:59 PM, Karlo Janos wrote:
> Hi group,
>
> can somebody confirm, that the PLOT function in IDL 8.2.2 produces the
> "arithmetic error: Floating illegal operand" when plotting a vector
> which contains NaN values?
>
> Example:
> p = PLOT([1,2,3,4,!VALUES.F_NAN,6,7,8,9])
>
> If I remember correctly, the former versions of IDL just skipped the
> NaNs without any error message.
>
> I am frustrated...
>
> Thanks
>
> Karlo
>

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by Karlo Janos on Tue, 26 Mar 2013 17:05:34 GMT
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Thanks Fabien,

but actually in my program where I have found the error for the first
time (after the upgrade to IDL 8.2.2) I use FLOAT arrays.

The code line which I have posted was just an example. And it does not
make any difference whether I use mine or yours.

And in either case the error does not appear in IDL 8.2.1.

Thanks

Karlo

Am 26.03.2013 17:44, schrieb Fabien:>
> The error comes because your are putting a NaN float in an integer
> array. Try:
>
> p = PLOT([1.,2,3,4,!VALUES.F_NAN,6,7,8,9])
>
> cheers,
>
> Fab

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by Michael Galloy on Tue, 26 Mar 2013 18:21:16 GMT
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On 3/26/13 11:05 AM, Karlo Janos wrote:
> Thanks Fabien,
>
> but actually in my program where I have found the error for the first
> time (after the upgrade to IDL 8.2.2) I use FLOAT arrays.
>
> The code line which I have posted was just an example. And it does not
> make any difference whether I use mine or yours.
>
> And in either case the error does not appear in IDL 8.2.1.
>
> Thanks
>
> Karlo
>
>
>
> Am 26.03.2013 17:44, schrieb Fabien:>
>> The error comes because your are putting a NaN float in an integer
>> array. Try:
>>
>> p = PLOT([1.,2,3,4,!VALUES.F_NAN,6,7,8,9])
>>
>> cheers,
>>
>> Fab

>

No error appears for me on 8.2.2:

IDL> print, !version
{ x86_64 darwin unix Mac OS X 8.2.2 Jan 23 2013 64 64}
IDL> p = PLOT([1,2,3,4,!VALUES.F_NAN,6,7,8,9])
% Loaded DLM: PNG.

Mike
--
Michael Galloy
www.michaelgalloy.com
Modern IDL: A Guide to IDL Programming (http://modernidl.idldev.com)
Research Mathematician
Tech-X Corporation

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by Karlo Janos on Wed, 27 Mar 2013 08:21:58 GMT
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Here is my output for IDL 8.2.2 and Windows 7 64 bit:

IDL> print, !version
{ x86_64 Win32 Windows Microsoft Windows 8.2.2 Jan 23 2013 64 64}
IDL> p = PLOT([1,2,3,4,!VALUES.F_NAN,6,7,8,9])
% Program caused arithmetic error: Floating illegal operand

And for IDL 8.2.1 and Linux 64 bit:

IDL> print, !version
{ x86_64 linux unix linux 8.2.1 Aug 20 2012 64 64}
IDL> p=PLOT([1,2,3,4,!VALUES.F_NAN,6,7,8,9])

(no error here)

Maybe an issue of the version for Windows?

Karlo

26.03.2013 19:21, Michael Galloy:
> No error appears for me on 8.2.2:

>
> IDL> print, !version
> { x86_64 darwin unix Mac OS X 8.2.2 Jan 23 2013 64 64}
> IDL> p = PLOT([1,2,3,4,!VALUES.F_NAN,6,7,8,9])
> % Loaded DLM: PNG.
>
> Mike

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by Fabzi on Wed, 27 Mar 2013 09:39:22 GMT
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On 03/27/2013 09:21 AM, Karlo Janos wrote:
> Maybe an issue of the version for Windows?
>

Quoting IDL help:

"The detection of math errors, such as division by zero, overflow, and attempting to take the logarithm of a negative number, is hardware and operating system dependent."

http://www.exelisvis.com/docs/Math_Errors.html

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by Karlo Janos on Wed, 27 Mar 2013 10:08:17 GMT
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Thanks Fabien,

but the thing is that the error is apparently not only depending on the operating system but also on the IDL version. Because before the update to IDL 8.2.2 (Windows 7) I did not get the error. So the new version seems to handle the PLOT command with NaN elements in a different way now, doesn't it?

Karlo

27.03.2013 10:39, Fabien:
> On 03/27/2013 09:21 AM, Karlo Janos wrote:
>> Maybe an issue of the version for Windows?
>>
>

> Quoting IDL help:
>
> "The detection of math errors, such as division by zero, overflow, and
> attempting to take the logarithm of a negative number, is hardware and
> operating system dependent."
>
> http://www.exelisvis.com/docs/Math_Errors.html

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by wlandsman on Wed, 27 Mar 2013 21:10:23 GMT
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Not only are the math errors hardware dependent, but today I came across the fact that it can depend on how the array is ordered.

```
IDL> print,min([2.,!values.f_nan,3.])
      2.00000
IDL> print,min([!values.f_nan,3.,2.])
         NaN
IDL> print,!version
{ x86_64 linux unix linux 8.2.2 Jan 23 2013      64      64}
```

The help for MIN says
"Note: If the MIN function is run on an array containing NaN values and the NAN keyword is not set, an invalid result will occur."

but this should probably read

Note: If the MIN function is run on an array containing NaN values and the NAN keyword is not set, an invalid result **may** occur.

On Wednesday, March 27, 2013 5:39:22 AM UTC-4, Fabien wrote:

> Quoting IDL help:
>
>
>
> "The detection of math errors, such as division by zero, overflow, and
>
> attempting to take the logarithm of a negative number, is hardware and
>
> operating system dependent."
>
>
>

> http://www.exelisvis.com/docs/Math_Errors.html

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by Lajos Foldy on Wed, 27 Mar 2013 21:39:22 GMT
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On Wednesday, March 27, 2013 10:10:23 PM UTC+1, wlandsman wrote:
> Not only are the math errors hardware dependent, but today I came across the fact that it can depend on how the array is ordered.
>
> IDL> print,min([2.,!values.f_nan,3.])
> 2.00000
> IDL> print,min([!values.f_nan,3.,2.])
> NaN
> IDL> print,!version
> { x86_64 linux unix linux 8.2.2 Jan 23 2013 64 64}
>
> The help for MIN says
>
> "Note: If the MIN function is run on an array containing NaN values and the NAN keyword is not set, an invalid result will occur."
>
> but this should probably read
>
> Note: If the MIN function is run on an array containing NaN values and the NAN keyword is not set, an invalid result **may** occur.

This can be explained: a MIN function implementation may look like:

```
min=arr[0]
for j=1,n_elements(arr)-1 do min=min<arr[j]
```

so a non-NaN first elements is vital (without /NaN). For small arrays, only this first element counts. For large arrays, multithreading comes into the picture and there are multiple first elements (each thread has one somewhere in the array).

regards,
Lajos

Subject: Re: IDL 8.2.2 and PLOT with NaN values
Posted by chris_torrence@NOSPAM on Fri, 29 Mar 2013 15:36:02 GMT
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On Tuesday, March 26, 2013 9:59:36 AM UTC-6, Karlo Janos wrote:
> Hi group,

>
>
>
> can somebody confirm, that the PLOT function in IDL 8.2.2 produces the
>
> "arithmetic error: Floating illegal operand" when plotting a vector
>
> which contains NaN values?
>
>
>
> Example:
>
> p = PLOT([1,2,3,4,!VALUES.F_NAN,6,7,8,9])
>
>
>
> If I remember correctly, the former versions of IDL just skipped the
>
> NaNs without any error message.
>
>
>
> I am frustrated...
>
>
>
> Thanks
>
>
>
> Karlo

Hi Karlo,

This bug has now been fixed, and will be in the next IDL release. Thanks for reporting it!

In case you're interested, we added code to compute the maximum value of the plot, so that we could adjust the plot margins in case the Y range was huge. We just needed to use /NAN when computing the maximum, so that NaN values would be skipped.

Cheers,
Chris
ExelisVIS

Subject: Re: IDL 8.2.2 and PLOT with NaN values

Posted by Karlo Janos on Tue, 02 Apr 2013 07:13:48 GMT
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Thanks Chris,

it is always nice getting to know why things happen.
I am looking forward to the new release.
Ciao

Karlo

29.03.2013 16:36, Chris Torrence:
> Hi Karlo,
>
> This bug has now been fixed, and will be in the next IDL release. Thanks for reporting it!
>
> In case you're interested, we added code to compute the maximum value of the plot,
> so that we could adjust the plot margins in case the Y range was huge.
We just needed
> to use /NAN when computing the maximum, so that NaN values would be
skipped.
>
> Cheers,
> Chris
> ExelisVIS
>