
Subject: Re: Divide By Zero error

Posted by [Logan Lindquist](#) on Wed, 07 Nov 2001 21:25:05 GMT

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<META content="MSHTML 6.00.2600.0" name=GENERATOR>
<STYLE></STYLE>
</HEAD>
<BODY bgColor=#ffffff>
<DIV><FONT face=Arial size=2>Uh nevermind. I went and checked what was going on.
Apparently I can't take the logarithm of zero. [oh ya!] That was giving me the
error. I am going to solve this by checking my frequency component for any zero's
before I take the log of it and replace it with a 1. Hopefully that will
stop giving me the error. Then I can move onto display problems. Don't ya just
love debugging? </FONT></DIV>
<DIV><FONT face=Arial size=2></FONT>&nbsp;</DIV>
<DIV><FONT face=Arial size=2>Logan</FONT></DIV>
<BLOCKQUOTE dir=ltr
style="PADDING-RIGHT: 0px; PADDING-LEFT: 5px; MARGIN-LEFT: 5px; BORDER-LEFT:
#000000 2px solid; MARGIN-RIGHT: 0px">
  <DIV>"Logan Lindquist" &lt;<A
href="mailto:llindquist@mrdoc.cc">llindquist@mrdoc.cc</A>> wrote in message
<A
```

```
href="news:9s995b$bnq$1@sulawesi-fi.lerc.nasa.gov">news:9s995b$bnq$1@sulawesi-fi.lerc.nas
a.gov</A>...</DIV></BLOCKQUOTE></BODY></HTML>
```

Subject: Re: Divide By Zero error

Posted by [Logan Lindquist](#) on Thu, 08 Nov 2001 15:37:39 GMT

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<META content="MSHTML 6.00.2600.0" name=GENERATOR>
<STYLE></STYLE>
</HEAD>
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<DIV><FONT face=Arial size=2>Does anyone know what the minum window size is for
the fft function? Does it have to be divisible by a certain number? I am getting
0's with a 8x8 array. The array is pretty flat and dark [all around pixel value
of 50] but I wouldn't think that I should get zero's returned as a frequency
component. </FONT></DIV>
<DIV><FONT face=Arial size=2></FONT>&nbsp;</DIV>
<DIV><FONT face=Arial size=2>The solution that I see is to check to see if there
```

are zero's in the array and then either change them to 0.1 or skip that array when trying to display it. [with a note to the user letting them know that no frequency component can be found.]</DIV>

<DIV> </DIV>

<DIV>Hopefully someone will read this! I am going to try calling RSI to see if they have an answer. </DIV>

<DIV> </DIV>

<DIV>Thanks, </DIV>

<DIV> </DIV>

<DIV>Logan Lindquist</DIV>

<BLOCKQUOTE dir=ltr

style="PADDING-RIGHT: 0px; PADDING-LEFT: 5px; MARGIN-LEFT: 5px; BORDER-LEFT: #000000 2px solid; MARGIN-RIGHT: 0px">

<DIV>"Logan Lindquist" <llindquisit@mrdoc.cc> wrote in message

news:9sc8tm\$otu\$1@sulawesi-fi.lerc.nasa.gov...</DIV>

<DIV> </DIV></BLOCKQUOTE></BODY></HTML >

Subject: Re: Divide By Zero error

Posted by [Paul Manusiu](#) on Fri, 09 Nov 2001 05:24:04 GMT

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<!doctype html public "-//w3c//dtd html 4.0 transitional//en">

<html>

<body bgcolor="#FFFFFF">

What is the log of zero ??

<p>Logan Lindquist wrote:

<blockquote TYPE=CITE><style></style>

I

got another one for all you math whiz's! Here

is the error*****IDL>

.STEP% Program caused arithmetic error: Floating divide

by 0% Program caused arithmetic error: Floating illegal

operand Caused by second

statement [log]****<font

face="Arial">f

= fft(tempfft, -1)power

= -alog10(double(f)) I

tried a bunch of different things trying to isolate the error and get it

to stop. That is why the code looks that way and not all nice and compact.

I don't understand exactly why it's giving me invalid numbers and so this

is why I shall include the output data: print,

f*****(

55.0313, 0.000000)(0.378331, 1.10309)(-0.281250, 0.312500)(-0.284581,
0.134343)(-0.281250, 0.000000)(-0.284581, -0.134343)(
-0.281250, -0.312500)(0.378331, -1.10309)(0.467505,
0.265950)(0.117743, -0.359700)(0.0514515, -0.0800206)(0.0514515, -0.0175206)(
0.0643956, -0.00457645)(0.0735485, 0.00457646)(0.0643956,
0.0396177)(0.139840, 0.0266735)(-0.234375, 0.265625)(
0.0312500, -0.0845971)(-0.0156250, -0.0156250)(-0.0129442, -0.0533471)(
0.0156250, -0.0468750)(0.0312500, -0.0404029)(-0.0156250,
-0.0156250)(0.0754442, -0.00915291)(-0.217505, 0.109700)(
0.0735485, -0.0487706)(-0.00189563, 0.0708677)(0.00725728, -0.0159502)(
-0.00189563, 0.0266735)(-0.0148398, -0.00457646)(0.0735485,
0.0137294)(0.0514515, -0.0266735)(-0.187500,
0.000000)(0.0377221, -0.0156250)(0.000000, 0.000000)(-0.00647209, 0.0156250)(
0.000000, 0.000000)(-0.00647209, -0.0156250)(0.000000,
0.000000)(0.0377221, 0.0156250)(-0.217505, -0.109700)(
0.0514515, 0.0266735)(0.0735485, -0.0137294)(-0.0148398, 0.00457646)(
-0.00189563, -0.0266735)(0.00725728, 0.0159502)(-0.00189563,
-0.0708677)(0.0735485, 0.0487706)(-0.234375,
-0.265625)(0.0754442, 0.00915291)(-0.0156250, 0.0156250)(0.0312500,
0.0404029)(0.0156250, 0.0468750)(-0.0129442, 0.0533471)(-0.0156250,
0.0156250)(0.0312500, 0.0845971)(0.467505,
-0.265950)(0.139840, -0.0266735)(0.0643956, -0.0396177)(0.0735485, -0.00457646)(
0.0643956, 0.00457645)(0.0514515, 0.0175206)(0.0514515,
0.0800206)(0.117743, 0.359700) print,
power*****IDL>
print, power-1.7406094 0.42212772 NaN NaN NaN NaN
NaN 0.422127720.33021387 0.92906595 1.2886023 1.2886023
1.1911436 1.1334259 1.1911436 0.85436921NaN 1.5051500
NaN NaN 1.8061800 1.5051500 NaN 1.1223743NaN 1.1334259
NaN 2.1392261 NaN NaN 1.1334259 1.2886024NaN 1.4234043
Infinity NaN Infinity NaN Infinity 1.4234043NaN 1.2886024
1.1334259 NaN NaN 2.1392261 NaN 1.1334259NaN 1.1223743
NaN 1.5051500 1.8061800 NaN NaN 1.50515000.33021387
0.85436921 1.1911436 1.1334259 1.1911436 1.2886023 1.2886023
0.92906595 What
is this NaN business and why am I getting Infinity? Arg :) <font
face="Arial">Thanks
to the math geeks,<font
size=-1>Logan</blockquote>

 </body></html>

Subject: Re: Divide By Zero error

Posted by [Nigel Wade](#) on Fri, 09 Nov 2001 09:34:25 GMT

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Paul Manusiu wrote:

> What is the log of zero ??
>
> Logan Lindquist wrote:
>
> What is this NaN
>> business and why am I getting Infinity?

Also, what is the log of a negative number?

--

Nigel Wade, System Administrator, Space Plasma Physics Group,
University of Leicester, Leicester, LE1 7RH, UK

E-mail : nmw@ion.le.ac.uk

Phone : +44 (0)116 2523568, Fax : +44 (0)116 2523555

Subject: Re: Divide By Zero error

Posted by [Craig Markwardt](#) on Fri, 09 Nov 2001 22:59:44 GMT

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"Logan Lindquist" <llindqsit@mrdoc.cc> writes:

> This is a multi-part message in MIME format.
>
> -----=_NextPart_000_0009_01C16841.6350B0C0
> Content-Type: text/plain;
> charset="iso-8859-1"
> Content-Transfer-Encoding: quoted-printable
>
> Does anyone know what the minum window size is for the fft function? =
> Does it have to be divisble by a certain number? I am getting 0's with a =
> 8x8 array. The array is pretty flat and dark [all around pixel value of =
> 50] but I wouldn't think that I should get zero's returned as a =
> frequency component.=20
>
> The solution that I see is to check to see if there are zero's in the =
> array and then either change them to 0.1 or skip that array when trying =
> to display it. [with a note to the user letting them know that no =
> frequency component can be found.]
>
> Hopefully someone will read this! I am going to try calling RSI to see =
> if they have an answer.=20

Logan, the usual way fourier power is defined, is the *squared magnitude* of the fourier coefficients.

If you define

power = -alog10(abs(f)^2)

then I think your problems will be alleviated.

Craig

--

Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response

Subject: Re: Divide By Zero error
Posted by [Logan Lindquist](#) on Sat, 10 Nov 2001 22:06:20 GMT
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```
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<HTML><HEAD>
<META http-equiv=Content-Type content="text/html; charset=iso-8859-1">
<META content="MSHTML 6.00.2600.0" name=GENERATOR>
<STYLE></STYLE>
</HEAD>
<BODY bgColor=#ffffff>
<DIV><FONT face=Arial size=2>Paul,</FONT></DIV>
<DIV><FONT face=Arial size=2></FONT>&nbsp;</DIV>
<DIV><FONT face=Arial size=2>As far as I know :) The log[base 10]&nbsp;</DIV>
and the log[base 0] do not exist. I am not qualified to give you an mathematical
rule or proof that proves the reason behind this. I think of it as another of
those rules in mathmatics that are just because. I do think that it has
something to do with&nbsp;</DIV>how logs [plural of the mathmatical term and not the
wooden kind] describe the curve of lines occuring in a coordinate system. Thus a
zero would indicate that no line exists. </FONT></DIV>
<DIV><FONT face=Arial size=2></FONT>&nbsp;</DIV>
<DIV><FONT face=Arial size=2>If you question was meant to make me aware of the
reason behind my error in IDL, I thank you. I figured this out last week and now
I am working on a solution to solve it. Any&nbsp;</DIV>suggestions to what I should do
with&nbsp;</DIV>the zero's in my array would be helpful!</FONT></DIV>
<DIV><FONT face=Arial size=2></FONT>&nbsp;</DIV>
<DIV><FONT face=Arial size=2>Regards,</FONT></DIV>
<DIV><FONT face=Arial size=2></FONT>&nbsp;</DIV>
<DIV><FONT face=Arial size=2>Logan</FONT></DIV>
```

```
<DIV><FONT face=Arial size=2></FONT>&nbsp;</DIV>
<BLOCKQUOTE
style="PADDING-RIGHT: 0px; PADDING-LEFT: 5px; MARGIN-LEFT: 5px; BORDER-LEFT:
#000000 2px solid; MARGIN-RIGHT: 0px">
  <DIV>"Paul Manusiu" &lt;<A
href="mailto:phpvm@alinga.newcastle.edu.au">phpvm@alinga.newcastle.edu.au</A>&gt;
wrote in message <A
href="news:3BEB6874.8305BCD@alinga.newcastle.edu.au">news:3BEB6874.8305BCD@alinga.
newcastle.edu.au</A>...</DIV>
  <DIV>What is the log of zero ?? </DIV></BLOCKQUOTE></BODY></HTML>
```

Subject: Re: Divide By Zero error
Posted by [Logan Lindquist](#) on Sat, 10 Nov 2001 22:10:29 GMT
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"Nigel Wade" <nmw@ion.le.ac.uk> wrote in message
news:9sg7v1\$9ofc\$1@rook.le.ac.uk...
> Also, what is the log of a negative number?

Nigel,

I guess those don't exist either and I should be taking the absolute value
or converting it to a data format that doesn't include negative numbers
BEFORE taking the log of it. That might help things a bit. Thanks for the
suggestion!

Regards,

Logan

Subject: Re: Divide By Zero error
Posted by [Stein Vidar Hagfors H\[1\]](#) on Mon, 12 Nov 2001 16:52:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

Nigel Wade <nmw@ion.le.ac.uk> writes:

```
> Paul Manusiu wrote:
>
>> What is the log of zero ??
>>
>> Logan Lindquist wrote:
>>
>> What is this NaN
>>> business and why am I getting Infinity?
```

>
> Also, what is the log of a negative number?
>
> --
> -----
> Nigel Wade, System Administrator, Space Plasma Physics Group

Hey, someone else in the Space Plasma Physics dept might tell you
that $\text{alog}(-1)$ should return $\text{complex}(0, \pm i\pi)$!

$$e^{(-i\pi)} + 1 = 0$$

And therein lies a lot!

--

Stein Vidar Hagfors Haugan
ESA SOHO SOC/European Space Agency Science Operations Coordinator for SOHO

NASA Goddard Space Flight Center, Email: shaugan@esa.nascom.nasa.gov
Mail Code 682.3, Bld. 26, Room G-1, Tel.: 1-301-286-9028/240-354-6066
Greenbelt, Maryland 20771, USA. Fax: 1-301-286-0264

Subject: Re: Divide By Zero error
Posted by [Paul Manusiu](#) on Wed, 14 Nov 2001 01:57:26 GMT
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<!doctype html public "-//w3c//dtd html 4.0 transitional//en">
<html>

<body bgcolor="#FFFFFF">

Yes, it was a rhetorical question. The reason why you can't take the log
of zero is simple. Best described by an example.

given,

 $y = 10^x$

<p>than,

 $\log_{\text{base } 10}$ both sides gives

<p> $\log(y) = x$

<p>if $x = 0$, than, in the first equation $y = 1$,

<p>if $y = 0$, x is not defined. (i.e. there is no power of 10
that can give you $y = 0$)

<p>Therefore, $\log(0)$ does not exist.

<p>As for what you do with zeros, I usually set a limit on my arrays.

<p>If $\text{array}[i]$ less than limit,

than $\text{array}[i]$ equal limit.

<p>Usually I set limit equal to 10^{-6} . But it depends on your array values.

Best thing to do is normalize array before setting limit, than scale back

</html>
