Subject: Re: Why does 0.8 = 0.80000001 ?
Posted by David Fanning on Mon, 26 Aug 2002 13:14:51 GMT
View Forum Message <> Reply to Message

Benjamin Panter (benpanterREMOVE@bigfoot.com) writes:

> I've just found something quite interesting and I wonder if anyone had
> any clues as to why it's happening
>
> I have a rather huge program which spits out a set of numbers in an
> array called str1, declared as a double. When I try to set one of the
> elements to 0.8, it actually sets to 0.80000001... this is below the
> accuracy that I worry about, but I'm just rather interested as to why it
> happens. Some output is below

You will want to read this article:

http://www.dfanning.com/math_tips/sky_is_falling.html

Cheers,

David
--
David W. Fanning, Ph.D.
Fanning Software Consulting, Inc.
Phone: 970-221-0438, E-mail: david@dfanning.com
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Toll-Free IDL Book Orders: 1-888-461-0155

Subject: Re: Why does 0.8 = 0.80000001 ?
Posted by Benjamin Panter on Mon, 26 Aug 2002 13:43:06 GMT
View Forum Message <> Reply to Message

David Fanning wrote:

>
> You will want to read this article:
>
> http://www.dfanning.com/math_tips/sky_is_falling.html
>

Oops - what a numpty!

I had it in my head that it was 12 sig fig with an internal mantissa of 14,
as I mentioned I wasn't overly paniced about it, more interested in finding
out what was going on. Glad to get that cleared up!

Thanks for your help,

Ben

Subject: Re: Why does 0.8 = 0.80000001 ?
Posted by condor on Thu, 29 Aug 2002 00:35:34 GMT
View Forum Message <> Reply to Message

Benjamin Panter <benpanterREMOVE@bigfoot.com> wrote in message
news:<3D6A306A.BF422364@bigfoot.com>...

> I had it in my head that it was 12 sig fig with an internal mantissa of 14,
> as I mentioned I wasn't overly paniced about it, more interested in finding
> out what was going on. Glad to get that cleared up!

It is actually about 15 significant figures:

```
  help,str1
STR1           DOUBLE    = Array[17]
  str1[6] = 0.8 ; the original example
  print,str1[6]
     0.80000001
  str1[6] = 0.8d0 ; the correct way
  print,str1[6]
     0.80000000
```

...
