
Subject: Re: Type of array to store large numbers
Posted by [Fabzi](#) on Fri, 25 May 2012 12:58:15 GMT
[View Forum Message](#) <> [Reply to Message](#)

On 05/25/2012 02:50 PM, Sir Loin Steak wrote:

> Hi all
>
> I have a lot of numbers that have high precision (such as 401.4798584)
> and I am trying to find what sort of array to use to store these
> values. Can anyone help? I've tried floats, doubles etc, and none keep
> the precision to more than 5 d.p. Am I missing something obvious, or
> is what I'm after impossible?!!

What do you mean with "keep" the precision?

```
IDL> f = 401.4798584
IDL> d = 401.4798584d
IDL> print, f
    401.480
IDL> print, d
    401.47986
IDL> print, f, FORMAT='(F12.8)'
401.47985840
IDL> print, d, FORMAT='(F12.8)'
401.47985840
```

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

Cheers

Subject: Re: Type of array to store large numbers
Posted by [Sir Loin Steak](#) on Fri, 25 May 2012 13:07:42 GMT
[View Forum Message](#) <> [Reply to Message](#)

On May 25, 1:58 pm, Fab <fabien.mauss...@gmail.com> wrote:

> On 05/25/2012 02:50 PM, Sir Loin Steak wrote:
>
>> Hi all
>
>> I have a lot of numbers that have high precision (such as 401.4798584)
>> and I am trying to find what sort of array to use to store these
>> values. Can anyone help? I've tried floats, doubles etc, and none keep
>> the precision to more than 5 d.p. Am I missing something obvious, or
>> is what I'm after impossible?!!
>
> What do you mean with "keep" the precision?
>

```
> IDL> f = 401.4798584
> IDL> d = 401.4798584d
> IDL> print, f
>    401.480
> IDL> print, d
>    401.47986
> IDL> print, f, FORMAT='(F12.8)'
> 401.47985840
> IDL> print, d, FORMAT='(F12.8)'
> 401.47985840
>
> http://www.idlcoyote.com/math_tips/sky_is_falling.html
>
> Cheers
```

Sorry, what I meant was I want to write the data to a file for another program to read, but the data were always output in the form 401.480. I never thought about specifying with a format statement! I'll give it a go now.

Thanks for the help.

Subject: Re: Type of array to store large numbers
Posted by [Russell Ryan](#) on Fri, 25 May 2012 13:36:37 GMT
[View Forum Message](#) <> [Reply to Message](#)

On May 25, 9:07 am, Sir Loin Steak <lj...@fsmail.net> wrote:

> On May 25, 1:58 pm, Fab <fabien.mauss...@gmail.com> wrote:

>
>
>
>
>
>
>
>
>
>
>

>> On 05/25/2012 02:50 PM, Sir Loin Steak wrote:

>

>>> Hi all

>

>>> I have a lot of numbers that have high precision (such as 401.4798584)
>>> and I am trying to find what sort of array to use to store these
>>> values. Can anyone help? I've tried floats, doubles etc, and none keep
>>> the precision to more than 5 d.p. Am I missing something obvious, or
>>> is what I'm after impossible?!!

>

```
>> What do you mean with "keep" the precision?
>
>> IDL> f = 401.4798584
>> IDL> d = 401.4798584d
>> IDL> print, f
>>      401.480
>> IDL> print, d
>>      401.47986
>> IDL> print, f, FORMAT='(F12.8)'
>> 401.47985840
>> IDL> print, d, FORMAT='(F12.8)'
>> 401.47985840
>
>> http://www.idlcoyote.com/math\_tips/sky\_is\_falling.html
>
>> Cheers
>
> Sorry, what I meant was I want to write the data to a file for another
> program to read, but the data were always output in the form 401.480.
> I never thought about specifying with a format statement! I'll give it
> a go now.
>
> Thanks for the help.
```

I think you missed the point of the previous post. When you declare something as a double, IDL keeps that precision but doesn't print it out when you say print. You need to use a formatted print statement to "see" all those extra digits.

The bottom line is, they're there. You just aren't seeing them. And do read that article by Fanning.

Subject: Re: Type of array to store large numbers
Posted by [Carsten Lechte](#) on Fri, 25 May 2012 14:02:54 GMT
[View Forum Message](#) <> [Reply to Message](#)

On 25/05/12 15:07, Sir Loin Steak wrote:

```
> Sorry, what I meant was I want to write the data to a file for another
> program to read, but the data were always output in the form 401.480.
```

If you want to save a number in full precision (e.g. when saving the state of some numerical code), simply increasing the number of significant digits is wasteful and does not work for numbers that are not representable in the decimal system.

You can look at binary formats, like HDF5 (look for routines starting

with H5_ in the idl help).

If you want to stay within the more universally readable ascii realm, ANSI C defines a formatting code "%a" that writes an exact representation of the floating point number, using hex for the mantissa and decimal for the exponent. Unfortunately, IDL 6.4's printf-style format codes do not implement this.

If you just want a little more precision, use the format code as you mentioned.

chl
