## Subject: Why does 0.8 = 0.80000001 ?

Posted by Benjamin Panter on Mon, 26 Aug 2002 12:34:00 GMT

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Hi Chaps,

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

Many Thanks!

Ben

-----Using IDLDE 5.4 on a Linux machine -----

```
IDL> print, transpose(str1)
   9.3810789e-07
   3.9122462e-07
   5.3666963e-07
   1.0000000e-07
    0.079999998
   1.0000000e-07
      2.4324324
   1.0000000e-07
     0.62996066
     0.053492580
     0.013443811
      0.57078505
       1.5306662
     0.019947363
       3.0532773
       2.0000000
     0.039999999

IDL> str1[6]=0.8

IDL> print, transpose(str1)
   9.3810789e-07
   3.9122462e-07
   5.3666963e-07
   1.0000000e-07
     0.079999998
```

```
   1.0000000e-07
    0.80000001
   1.0000000e-07
    0.62996066
   0.053492580
   0.013443811
    0.57078505
    1.5306662
   0.019947363
    3.0532773
    2.0000000
   0.039999999

IDL> print, str1[6]
    0.80000001

IDL> help, str1
STR1          DOUBLE   = Array[17]
```

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