
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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