Subject: Re: crazy loops
Posted by Robert Stockwell on Wed, 13 Feb 2002 17:14:03 GMT
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M Carmen wrote:

> Hello,
>
> I have a question related with loops.....can someone teel me why
>
> if i do a loop that goes to a maximum of 0.6:
> for r=0.0, 0.6, 0.1 do begin & print, r & endfor
>
> I get:
> 0.000000
> 0.100000
> [.....]
> 0.500000
> 0.600000
>
> and if now i change the maximum value of the range to 0.7:
> for r=0.0, 0.7, 0.1 do begin & print, r & endfor
>
> I get:
> 0.000000
> 0.100000
> [.....]
> 0.500000
> 0.600000
>
> EXACTLY THE SAME!!!
>
> I have IDL Version 5.4
>
> Thanks :) !
> M Carmen

One should exercise great care when comparing the results of floating

point calculations:

(If these wrap around on your read, i apologize.)

run these lines:

IDL> limit = 0.7 & for r=0.0, limit, 0.1 do print, r,limit,r le limit,format='(f50.25,f50.25,f8.4)'

```
 0.00000000000000000000000000   0.69999998807907104492187500  1.0000
 0.10000000149011611938476562   0.69999998807907104492187500  1.0000
 0.20000000298023223876953125   0.69999998807907104492187500  1.0000
 0.30000001192092895507812500   0.69999998807907104492187500  1.0000
 0.40000000596046447753906250   0.69999998807907104492187500  1.0000
 0.50000000000000000000000000   0.69999998807907104492187500  1.0000
 0.60000002384185791015625000   0.69999998807907104492187500  1.0000
IDL> limit = 0.6 & for r=0.0, limit, 0.1 do print, r,limit,r le limit,format='(f50.25,f50.25,f8.4)'
0.00000000000000000000000000   0.60000002384185791015625000  1.0000
0.10000000149011611938476562   0.60000002384185791015625000  1.0000
0.20000000298023223876953125   0.60000002384185791015625000  1.0000
0.30000001192092895507812500   0.60000002384185791015625000  1.0000
0.40000000596046447753906250   0.60000002384185791015625000  1.0000
0.50000000000000000000000000   0.60000002384185791015625000  1.0000
0.60000002384185791015625000   0.60000002384185791015625000  1.0000
```

The for loop checks r le upper limit, and then executes if true.
Here, 0.6 is actually a little gt 0.600000000000, and 0.7 is just less than
0.70000000000000000000000000.
Hence the seemingly goofy results.

Cheers,
bob

PS to explain why you do not see the limit = 0.7 case, for that iteration
r = 0.70999997854232788085937500 and the limit is 0.69999998807907104492187500.
