Subject: Re: a BUG or not a BUG in IDL ?
Posted by hahn on Fri, 19 Jul 1996 07:00:00 GMT
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"Luis E. Liziola" <liziola@piura.colorado.edu> wrote:

> I have a "warning in loops" for you guys...
> Check this "stupid" routine:

(snip]

> The first loop if OK, the second loop stops after the first
> iteration, but the last loop, just keeps going forever...

I checked this on IDL 4.01 for Windows but replaced the print statement by help.
It reflects that the type was changed. The 1st loop was ok., the second one
was terminated after the first iteration and *after* that a floating point
underflow was reported. The last loop was executed 10 times while variable
i was changed in type from fix to long.

> Any comments ?

As IDL is an interpreter it should either execute the loop as programmed
(changing the loop variable and the upper limit) or report an error. I would
prefer reporting an error because changing the type of a loop variable
is usually due to a programing error!

> At least should be a "WARNING" in the manual...

Well, a bug in the program is worth two in the documentation...

A "warning" in the manual is not sufficient. Who reads the manual
if he suffers from an infinite loop ?

What we see here is a clear bug in the interpreter. It should be reported to
RSI and fixed! No excuses accepted!

> Luis
> University of Colorado

Norbert Hahn

Subject: Re: a BUG or not a BUG in IDL ?
Posted by Peter Mason on Fri, 19 Jul 1996 07:00:00 GMT
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> I have a "warning in loops" for you guys...

<see original posting for routine>
> The first loop if OK, the second loop stops after the first
> iteration, but the last loop, just keeps going forever...
>
> Any comments ?

. With IDL 4.0.1 on DEC Alpha/OSF the first 2 loops work the same as on your platform, but the third (setting counter to LONG) terminates after 10 iterations.
. On Pentium/WinNT, the behaviour is the same as for Alpha/OSF, except that a "floating point underflow" error gets reported.
. On SunOS 4.1.3, the behaviour is the same as on your platform, except that the third loop actually terminates after 655361 iterations.

Something of a worry!

Are you using a "big-endian" machine by any chance?

Just a guess, but it would appear that FOR statements might be "compiled" in such a way that there's no allowance for a change in the loop variables' types. (Maybe for a little extra speed?) And, still guessing, if the loop counter variable's type is changed within the loop, then just some of it (e.g., the 16 bits at the lowest memory address for INT counters) is used within the FOR statement. Finally, I'd guess that the FOR loop stores something back into the actual loop-counter variable in a similarly weird way. (This could account for FP loop-counters getting zapped into denormals.)

Peter Mason

Subject: Re: a BUG or not a BUG in IDL ?
Posted by g.d.nowicki on Fri, 19 Jul 1996 07:00:00 GMT
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In article <4smb8g$5o@lace.colorado.edu>, liziola@piura.colorado.edu says...
>
> I have a "warning in loops" for you guys...
> Check this "stupid" routine:
>
> ;---------------------------------------
> print,'Integers'
> J = 0
> for I = 1,10 do begin
> print,I
> I = I + J
> endfor
>

[other code deleted]
> ;---------------------------------
>
> The first loop if OK, the second loop stops after the first
> iteration, but the last loop, just keeps going forever...
>
> Any comments ?
> At least should be a "WARNING" in the manual...
>
> Luis
> University of Colorado
>

HOLD IT!!!

You all seem to be missing the point. There is no language I know of that recommends you modify a control variable within a FOR/DO loop. Results are unpredictable. If fact, there are a fair number of compilers out there that will produce an error if you mess with the control variable, not just a warning.

As with any language, there are ways to shoot yourself in the foot. IDL just allows you to do it differently.

-Greg

Subject: Re: a BUG or not a BUG in IDL ?
Posted by David Ritscher on Fri, 19 Jul 1996 07:00:00 GMT
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```
>  print,'Long'
>  J = 0L
>  for I = 1,10 do begin
>      print,I
>      I = I + J       ; Here I am also changing the type of "I"
>      ;if i gt 20 then stop
>  endfor
>  end
>  ;---------------------------------
>  The first loop if OK, the second loop stops after the first
>  iteration, but the last loop, just keeps going forever...

>  Any comments ?
>  At least should be a "WARNING" in the manual...
```

I would call it not a bug, on philosophical grounds. IDL / PV-Wave is not a strong-typed language. This has advantages and disadvantages.

One strong disadvantage is any strange behavior that results from doing things one shouldn't do with crossing variable types.

Something I would like to see added to the language is some ability to take more control over typing. For example, a system variable could be created, !variable_typing. When set to 1, it would cause an error each time that the type of a variable is changed, as in:

```
  a = 1
  a = 1.
% Assignment changes type of variable
```

I would also like to see a mechanism for controlling variable typing, for example, !min_variable_type
where if this is set to the type of long integer, a=1 would create a long integer, instead of the irksome and antiquated default of short integer.

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