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Subject: IDL mathematics

Posted by [dean](#) on Wed, 31 Aug 1994 17:49:54 GMT

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How come the following expression gives the wrong answer.

$$J = 201 + ((1461 * (1994 + 4799)) / 4) - (3 * ((1994 + 4899) / 100) / 4) - 2465022$$
$$J = -2457713$$

It should be:

$$J = 201 + ((1461. * (1994 + 4799.)) / 4.) - (3. * ((1994 + 4899.) / 100.) / 4.) - 24 65022.$$
$$J = 16270.5$$

Kelly Dean

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Subject: Re: IDL mathematics

Posted by [sjt](#) on Thu, 01 Sep 1994 12:13:42 GMT

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dean@phobos.cira.colostate.edu wrote:

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: Kelly Dean

The problem is IDL's conversion rules. You have two problems here:

a)  $1461 * (1994 + 4799)$  is a combination of 3 ints and is thus evaluated as an int whereas it needs to be a long or float to get the right answer

b) Division of integers is an integer divide e.g.  $3/2 = 1$  and  $4/5 = 0$ .

I think the minimal modification to get the right answer is:

$$J = 201 + \frac{(1461 * (1994 + 4799))}{4} - \frac{3 * ((1994 + 4899) / 100)}{4} - 2465022$$

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James Tappin, School of Physics & Space Research  
University of Birmingham  
sjt@xun8.sr.bham.ac.uk  
"If all else fails--read the instructions!"

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-- V

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Subject: Re: IDL mathematics  
Posted by [pjclinch](#) on Fri, 02 Sep 1994 11:32:45 GMT  
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dean@phobos.cira.colostate.edu wrote:

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The system starts off assuming j will be an integer, because that's what all the arguments are. After a while, it runs out of room in a 16 bit integer and converts to a long, where it stays, having acquired some novel errors on the way.

To get what you \*really\* want, tell IDL/Wave you expect a floating point calculation, which is achieved by making the arguments floating point to begin with, so:

$j = 201.0 + \frac{(1461.0 * \text{etc etc.})}{4} - \frac{3 * ((1994 + 4899) / 100)}{4} - 2465022$  will give you the right answer.

If you want to see exactly where the problem lies, follow through your original calculation step by step and check the \*type\* of j after each step. This should throw some light onto how and why your original went wrong.

Pete.

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