Subject: IDL mathematics
Posted by dean on Wed, 31 Aug 1994 17:49:54 GMT
View Forum Message <> Reply to Message

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

Subject: Re: IDL mathematics
Posted by sjt on Thu, 01 Sep 1994 12:13:42 GMT
View Forum Message <> Reply to Message

dean@phobos.cira.colostate.edu wrote:

: 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

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 devide e.g. 3/2 = 1 and 4/5 = 0.

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

```
 J =  201+((1461.*(1994+4799))/4)-(3*((1994+4899)/100.)/4)-2465022
           ^                              ^
```

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

```
   O__
  --  \/`
```

Subject: Re: IDL mathematics
Posted by pjclinch on Fri, 02 Sep 1994 11:32:45 GMT
View Forum Message <> Reply to Message

dean@phobos.cira.colostate.edu wrote:

: 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

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+((1461.0* etc etc. 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.
--
Peter Clinch University of Dundee
voice 44 382 60111 x 2604 Department of Medical Physics

fax 44 382 640177 Ninewells Hospital
email p.j.clinch@dundee.ac.uk Dundee, DD1 9SY, Scotland, UK