
Subject: Unexpected rebin behavior

Posted by [mchinand](#) on Wed, 03 Sep 2003 16:20:10 GMT

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Performing rebin on 2-d (or any higher dimension) integer arrays sometimes give results I didn't expect. Here's a trivial example array:

```
IDL> help, b
B          INT      = Array[2, 2]
```

```
IDL> print, b
      8      9
     10     13
```

Minifying this to a 1x1 array with rebin gives:

```
IDL> print, rebin(b,1,1)
      9
```

But,

```
IDL> print, fix(total(b)/4)
     10
```

which is what I would have expected as the result from rebin. I think what rebin is doing is first performing a rebin in one direction and then performing it in the other direction on the new, intermediate rebinned array. So the above is equivalent to:

```
IDL> print, rebin(rebin(b,1,2),1,1)
      9
```

Switching the order of the rebinning yields a different result:

```
IDL> print, rebin(rebin(b,2,1),1,1)
     10
```

Or equivalently:

```
IDL> print, rebin(transpose(b),1,1)
     10
```

I was using rebin to reduce the size of an image and expected it to do neighborhood averaging for the new array. The integer truncation after rebinning along each direction can lead to different results than averaging the neighborhood in a single step. I guess this isn't really a bug (the manual only describes how rebin works in one dimension), but was

unexpected, at least for me. I simple work-around is to cast the array to float and then back to integer (or just keep as float) after the rebin:

```
IDL> print, fix(rebin(float(b),1,1))
10
```

--Mike Chinander

--

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Subject: Re: Unexpected rebin behavior

Posted by [James Kuyper](#) on Wed, 03 Sep 2003 16:31:30 GMT

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Mike Chinander wrote:

```
>
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> give results I didn't expect. Here's a trivial example array:
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> IDL> print, fix(total(b)/4)
>     10
```

What it's doing is $\text{total}(b)/4$, rather than $\text{total}(b)/4$. This has the advantage of handling large numbers without producing overflow. It has the disadvantage of underflowing for very small numbers, and producing wierd results when re-binning integer data.

Subject: Re: Unexpected rebin behavior
Posted by [mchinand](#) on Wed, 03 Sep 2003 17:02:31 GMT
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In article <3F561762.B0B31F0B@saicmodis.com>,
James Kuyper <kuyper@saicmodis.com> wrote:

> Mike Chinander wrote:

>>
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>> give results I didn't expect. Here's a trivial example array:

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>> IDL> print, rebin(b,1,1)
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>> But,

>>
>> IDL> print, fix(total(b)/4)
>> 10
>

> What it's doing is total(b/4), rather than total(b)/4. This has the
> advantage of handling large numbers without producing overflow. It has
> the disadvantage of underflowing for very small numbers, and producing
> wierd results when re-binning integer data.

Then why does rebin of the transpose give a different result?

IDL> print, rebin(transpose(b),1,1)
10

If it were just doing total(b/4), b and tranpose(b) should give the same results.

--Mike Chinander

--

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