Subject: Re: HISTOGRAM and the Razor's Edge.
Posted by meinel on Thu, 12 Jun 2003 15:03:09 GMT
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Craig Markwardt wrote ...
> timrobishaw@yahoo.com (Tim Robishaw) writes:
> ...
>> Well, there ya go. It's a roundoff error problem that results from
>> trying to balance the values on a razor's edge... the subtraction and
>> division knock a few values off balance.
>
> Partial solution number four: work in powers of 2 instead of multiples
> of 0.05.

Isn't this in the FAQ somewhere?

The technical answer: Computers represent numbers as base 2; humans represent numbers as base 10. Mapping numbers from base 10 to base 2 is exact, mapping numbers from base 10 to base 2 ain't.

5+5/10 = 5+1/2 exact correspondence

5+45/100 = 5+1/4+1/8+1/16+1/128+1/256+1/2048+... not exact, even in DP

So, depending on the machine precision, 5.45 on the computer is either slightly greater than or less than an exact representation of 5.45. On top of that, neither is 0.05 exact on the computer, so your bin size is also slightly different than what you are expecting.

Bottom line: if you want the results to be exact, think like a machine.

Ed

PS. Let's just say, ...