

Re: Simple/Fast Algorithm for binary logarithm in C (on ARM7)

Source: <http://coding.derkeiler.com/Archive/General/comp.arch.embedded/2007-05/msg00435.html>

- *From:* CBFalconer <cbfalconer@xxxxxxxx>
 - *Date:* Fri, 11 May 2007 21:16:27 -0400
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CBFalconer wrote:

Tilmann Reh wrote:

in a current ARM7 project I need to do some calculations which include a logarithm. All other math is done with integers (i.e. fixed point arithmetic), and I would like to calculate the log fast and with little code – so I don't prefer using FP conversion and the standard math libraries.

Can anyone point to fixed–point logarithmic routines I could use (resp. tailor to my needs)?

If you are using integers the logs are also integers. The bit position of the most significant bit gives the binary log. If you wish you can also round it up if the next two bits are 11. This is probably about as good as you can do in integers.

You can extract this with (untested)

```
while (b = c & (c - 1)) do c = b;
/* now c is the log2 of the original c value */
```

Correction – the c bit position is the log.

It may be worthwhile to test for a zero value before starting this.

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<http://www.cs.auckland.ac.nz/~pgut001/pubs/vista_cost.txt>

<<http://www.securityfocus.com/columnists/423>>

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<<http://www.aaxnet.com/editor/edit043.html>>

<<http://kadaitcha.cx/vista/dogsbreakfast/index.html>>

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