

GROMACS - Bug #1997

big-endian power7 testbits is broken

06/28/2016 02:07 AM - Mark Abraham

Status: Closed	
Priority: Low	
Assignee:	
Category: testing	
Target version: 2016	
Affected version - extra info:	Difficulty: uncategorized
Affected version: 2016	
Description	
<pre>[RUN] SimdFloatingpointTest.testBits ../src/gromacs/simd/tests/simd_floatingpoint.cpp:392: Failure Failing SIMD comparison between rSimd_1_2_3 and selectByMask(rSimd_1_2_3, eq) Ref. values: { 1, 2 } Test values: { 0, 0 } [FAILED] SimdFloatingpointTest.testBits (0 ms)</pre>	
This seems to be because vec_cmpeq does a logical comparison of the two zeros, but the test requires a bitwise comparison of the two zeros. I don't think there is a fix available for gcc on this arch, so probably we need to de-support some set of things here.	
Related issues:	
Related to GROMACS - Bug #1988: Double-precision SIMD test failure on powerpc Closed	

Associated revisions

Revision 49b323e3 - 07/04/2016 04:45 PM - Mark Abraham

Fixes for Power7 big-endian

Now compiles and passes all tests in both double and single precision with gcc 4.9.3, 5.4.0 and 6.1.0 for big-endian VSX.

The change for the code in incrStoreU and decrStoreU addresses an apparent regression in 6.1.0, where the compiler thinks the type returned by vec_extract is a pointer-to-float, but my attempts a reduced test case haven't reproduced the issue.

Added some test cases that might hit more endianness cases in future.

We have not been able to test this on little-endian Power8; there is a risk the gcc-specific permutations could be endian-sensitive. We'll test this when we have hardware access, or if somebody runs the tests for us.

Fixes #1997.

Refs #1988.

Change-Id: Iede0eac22504b22973f1a40d2b0180f10a34b7ed

History

#1 - 06/28/2016 02:07 AM - Mark Abraham

- Related to Bug #1988: Double-precision SIMD test failure on powerpc added

#2 - 06/28/2016 11:41 AM - Mark Abraham

cvtr2l, cvttR2l also look like they use a wrong rounding mode:

```
[-----] 5 tests from SimdIntegerTest
[ RUN      ] SimdIntegerTest.cvtr2l
../src/gromacs/simd/tests/simd_integer.cpp:190: Failure
Failing SIMD comparison between setSimdIntFromlI(102448688) and cvttR2l(setSimdRealFromlR(102448689.3))
```

```
Ref. values: { 102448688, 102448688 }
Test values: { 102448689, 102448689 }
```

```
../src/gromacs/simd/tests/simd_integer.cpp:191: Failure
Failing SIMD comparison between setSimdIntFromlI(-102448688) and cvttr2I(setSimdRealFromlR(-102448689.3))
Ref. values: { -102448688, -102448688 }
Test values: { -102448689, -102448689 }
```

```
[ FAILED ] SimdIntegerTest.cvtR2I (0 ms)
[ RUN      ] SimdIntegerTest.cvttr2I
../src/gromacs/simd/tests/simd_integer.cpp:202: Failure
Failing SIMD comparison between setSimdIntFromlI(102448688) and cvttr2I(setSimdRealFromlR(102448689.3))
Ref. values: { 102448688, 102448688 }
Test values: { 102448689, 102448689 }
```

```
../src/gromacs/simd/tests/simd_integer.cpp:203: Failure
Failing SIMD comparison between setSimdIntFromlI(-102448688) and cvttr2I(setSimdRealFromlR(-102448689.3))
Ref. values: { -102448688, -102448688 }
Test values: { -102448689, -102448689 }
```

```
[ FAILED ] SimdIntegerTest.cvttr2I (0 ms)
```

when running <https://gerrit.gromacs.org/#/c/5993/2>

#3 - 06/30/2016 07:19 PM - Mark Abraham

This happens only with GMX_DOUBLE=on, whether gcc 4.9.3, 5.4.0, or 6.1.0

#4 - 06/30/2016 07:27 PM - Gerrit Code Review Bot

Gerrit received a related patchset '3' for Issue [#1997](#).
Uploader: Mark Abraham (mark.j.abraham@gmail.com)
Change-Id: lede0eac22504b22973f1a40d2b0180f10a34b7ed
Gerrit URL: <https://gerrit.gromacs.org/5993>

#5 - 07/04/2016 07:00 PM - Mark Abraham

- Status changed from New to Resolved
- Target version set to 2016

#6 - 07/05/2016 12:48 AM - Erik Lindahl

- Status changed from Resolved to Closed

#7 - 07/05/2016 01:46 AM - Mark Abraham

Mark Abraham wrote:

 cvtR2I, cvttr2I also look like they use a wrong rounding mode:

For the record, that looks like it was the input value overflowing float.