MicroTESK - Developer Request #9472

Неочевидные преобразования типов при вычислении выражений

02/05/2019 12:25 PM - Alexander Protsenko

Status:	Open	**Start date:**	02/05/2019
Priority:	High	**Due date:**	
Assignee:	Artem Kotsynyak	**% Done:**	0%
Category:	nML Translator	**Estimated time:**	0.00 hour
Target version:	2.5	**Spent time:**	0.00 hour
Published in build:			

Description

```
        trace("store_global: MEM_WORD 1");
        tmp_qword = MEM[mem_index + 1]::MEM[mem_index];
        trace("store_global: MEM_WORD 2 tmp_bit_offset = 0x%x", tmp_bit_offset);
        tmp_qword<tmp_bit_offset + 31..0+tmp_bit_offset> = rs2_op<31..0>;
        trace("store_global: MEM_WORD 3");
        MEM[mem_index + 1]::MEM[mem_index] = tmp_qword;
        trace("store_global: MEM_WORD 4");

Mmu.PreTranslateAddress: satp.mode=0. No translation or protection.
PreTranslateAddress
PreTranslateAddress: read 2
PreTranslateAddress: read 3
store_global: MEM_WORD 2 tmp_bit_offset = 0x28
********************************************************************************
ATTENTION! An unexpected error has occurred:
java.lang.IllegalArgumentException: Assigning 32-bit data to 34-bit location is not allowed.

The program will be terminated. Please contact us at:
microtesk-support@ispras.ru
We are sorry for the inconvenience.

Exception stack:

java.lang.IllegalArgumentException: Assigning 32-bit data to 34-bit location is not allowed.
    at ru.ispras.microtesk.model.memory.Location.store(ru/ispras/microtesk/model/memory/Location.j
ava:131)
    at ru.ispras.microtesk.model.riscv.op.store_global.action(ru/ispras/microtesk/model/riscv/op/s
tore_global.java:99)
    at ru.ispras.microtesk.model.IsaPrimitive.execute(ru/ispras/microtesk/model/IsaPrimitive.java:
183)
    at ru.ispras.microtesk.model.riscv.op.store_rvi.action(ru/ispras/microtesk/model/riscv/op/stor
e_rvi.java:74)
    at ru.ispras.microtesk.model.IsaPrimitive.execute(ru/ispras/microtesk/model/IsaPrimitive.java:
183)
    at ru.ispras.microtesk.model.riscv.op.sw.action(ru/ispras/microtesk/model/riscv/op/sw.java:118
)
    at ru.ispras.microtesk.model.IsaPrimitive.execute(ru/ispras/microtesk/model/IsaPrimitive.java:
183)
    at ru.ispras.microtesk.model.riscv.op.instruction.action(ru/ispras/microtesk/model/riscv/op/in
struction.java:77)
    at ru.ispras.microtesk.model.IsaPrimitive.execute(ru/ispras/microtesk/model/IsaPrimitive.java:
183)
    at ru.ispras.microtesk.model.InstructionCall.execute(ru/ispras/microtesk/model/InstructionCall
.java:68)
    at ru.ispras.microtesk.test.template.ConcreteCall.execute(ru/ispras/microtesk/test/template/Co
ncreteCall.java:155)
    at ru.ispras.microtesk.test.Executor.executeCall(ru/ispras/microtesk/test/Executor.java:455)
    at ru.ispras.microtesk.test.Executor.executeToBreak(ru/ispras/microtesk/test/Executor.java:348
)
    at ru.ispras.microtesk.test.Executor.execute(ru/ispras/microtesk/test/Executor.java:276)
    at ru.ispras.microtesk.test.TemplateProcessor.runExecution(ru/ispras/microtesk/test/TemplatePr
```

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ocessor.java:707)
    at ru.ispras.microtesk.test.TemplateProcessor.runExecutionFromStart(ru/ispras/microtesk/test/T
emplateProcessor.java:723)
    at ru.ispras.microtesk.test.TemplateProcessor.finish(ru/ispras/microtesk/test/TemplateProcesso
r.java:193)
    at ru.ispras.microtesk.test.template.Template.endMainSection(ru/ispras/microtesk/test/template
/Template.java:213)
    at jdk.internal.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
    at RUBY.generate(C:/!microtesk/MicroTESK-RISC-V/microtesk-riscv/microtesk-riscv/build/target/l
ib/ruby/template.rb:1066)
    at RUBY.main(C:\!microtesk\MicroTESK-RISC-V\microtesk-riscv\microtesk-riscv\build\target\lib\r
uby\microtesk.rb:33)
    at org.jruby.RubyHash.each(org/jruby/RubyHash.java:1342)
    at RUBY.main(C:\!microtesk\MicroTESK-RISC-V\microtesk-riscv\microtesk-riscv\build\target\lib\r
uby\microtesk.rb:29)
    at RUBY.(root)(C:\!microtesk\MicroTESK-RISC-V\microtesk-riscv\microtesk-riscv\build\target\lib
\ruby\microtesk.rb:52)
    at ru.ispras.microtesk.RubyRunner.run(ru/ispras/microtesk/RubyRunner.java:62)
    at ru.ispras.microtesk.ScriptRunner.run(ru/ispras/microtesk/ScriptRunner.java:43)
    at ru.ispras.microtesk.test.TestEngine.generate(ru/ispras/microtesk/test/TestEngine.java:172)
    at ru.ispras.microtesk.MicroTESK.generate(ru/ispras/microtesk/MicroTESK.java:284)
    at ru.ispras.microtesk.MicroTESK.runTask(ru/ispras/microtesk/MicroTESK.java:131)
    at ru.ispras.microtesk.MicroTESK.main(ru/ispras/microtesk/MicroTESK.java:79)

********************************************************************************
```

Возможно стоит выводить больше информации, например имена переменных.

History

#1 - 01/20/2020 10:43 AM - Alexander Kamkin

- Target version set to 2.5

У меня одно объяснение:

1. судя по всему, tmp_qword имеет разрядность 64 бита;
2. значение tmp_bit_offset равно 0x28 = 40.
3. 40 + 31 = 7 (mod 64);
4. 40 + 0 = 40 (mod 64);
5. поле <7..40> имеет разрядность 34.

#2 - 01/20/2020 11:08 AM - Alexander Kamkin

- Category set to ISA Simulator

Немного расширил диагностику.

#3 - 01/21/2020 05:54 PM - Alexander Kamkin

- Status changed from New to Open

#4 - 01/22/2020 01:41 PM - Alexander Kamkin

- Subject changed from Странная ошибка и непонятная диагностика to Неочевидные преобразования типов при вычислении выражений

#5 - 01/22/2020 01:44 PM - Alexander Kamkin

Нужно определить, как происходит преобразование типов при вычислении выражений. Сейчас, например, tmp_bit_offset + 31 приведется к типу tmp_bit_offset из-за чего могут потеряться старшие биты.

#6 - 01/23/2020 11:31 AM - Alexander Kamkin

- Priority changed from Normal to High

#7 - 01/27/2020 12:20 PM - Alexander Kamkin

- Assignee changed from Alexander Kamkin to Artem Kotsynyak

- Category changed from ISA Simulator to nML Translator

Необходимо реализовать правила неявного приведения типов, описанные в
https://forge.ispras.ru/projects/microtesk-docs/repository/677/revisions/master/entry/microtesk-2.5/microtesk-2.5-user-guide-ru.adoc