

nemu启动rt-thread时difftest报错

我已经将spike-diff配置成只支持M态

nemu在启动rt-thread时，在执行完ecall指令之后，difftest报了如下错误:

```
[/home/feng/code/ysyx-workbench/nemu/include/cpu/difftest.h:55 difftest_check_csr] mstatus is different after executing instruction at pc = 0x80057c80, right = 0x00203800, wrong = 0x00001800, diff = 0x00202000
$0 = 0x00000000
ra = 0x80000150
sp = 0x802d317c
gp = 0x23232323
tp = 0x23232323
t0 = 0x23232323
t1 = 0x23232323
t2 = 0x23232323
s0 = 0x822e0380
s1 = 0x822e03ac
a0 = 0x822e0380
a1 = 0x822e03ac
a2 = 0x802cf0f0
a3 = 0x822e0c40
a4 = 0x822e0460
a5 = 0x822e0ba0
a6 = 0x23232323
a7 = 0xffffffff
s2 = 0x802d321c
s3 = 0x00000000
s4 = 0x802d4364
s5 = 0x23232323
s6 = 0x23232323
s7 = 0x23232323
s8 = 0x23232323
s9 = 0x23232323
s10 = 0x23232323
s11 = 0x23232323
t3 = 0x23232323
t4 = 0x23232323
t5 = 0x23232323
t6 = 0x23232323
mstatus = 0x00001800
mtvec = 0x80057c90
mepc = 0x80057c80
mcause = 0x0000000b
```

在查完特权级手册后，发现是 `mstatus` 的 `TW` 和 `FS` 字段不一样，但是即便是在了解了这两个字段的意义之后，我依旧不知道为什么这两个字段会被修改，于是我便在 `difftest` 时跳过检查 `mstatus` 这个寄存器

然后又发生了如下错误:

```
[/home/feng/code/ysyx-workbench/nemu/include/cpu/difftest.h:45 difftest_check_reg] t1 is different after executing instruction at pc = 0x80057d10, right = 0x00203800, wrong = 0x00001800, diff = 0x00202000
$0 = 0x00000000
ra = 0x80000150
sp = 0x802d30f0
gp = 0x23232323
tp = 0x23232323
t0 = 0x0000000b
t1 = 0x00001800
t2 = 0x23232323
s0 = 0x822e0380
s1 = 0x822e03ac
a0 = 0x822e0380
a1 = 0x822e03ac
a2 = 0x802cf0f0
a3 = 0x822e0c40
a4 = 0x822e0460
a5 = 0x822e0ba0
a6 = 0x23232323
a7 = 0xffffffff
s2 = 0x802d321c
s3 = 0x00000000
s4 = 0x802d4364
s5 = 0x23232323
s6 = 0x23232323
s7 = 0x23232323
s8 = 0x23232323
s9 = 0x23232323
s10 = 0x23232323
s11 = 0x23232323
t3 = 0x23232323
t4 = 0x23232323
t5 = 0x23232323
t6 = 0x23232323
mstatus = 0x00001800
mtvec = 0x80057c90
mepc = 0x80057c80
mcause = 0x0000000b
```

故技重施，我又跳过了 `t1` 寄存器的检查

结果difftest就通过了

我现在能推测出来的是，这也许是个不太大的问题，因为这两个寄存器的错误没有传播到状态机的其他寄存器上，但我依旧不知道为什么那两个字段会被改写