Multiplication, Division

Result of multiplying 2 32-bit numbers can be up to 64 bits

Instructions          Semantics          Type
mult   $rs, $rt       \{ (HI, LO) = R[s] \times R[t] \}     signed  R
multu  $rs, $rt       \{ Hi: high 32 bits
LO: low 32 bits
HI: high 32 bits
LO: low 32 bits
Note that $rd does not appear (set to 00000 in instruction)

Division

\{ LO = R[s] / R[t] \} signed  R
           \{ HI = R[s] \% R[t] \} unsigned R

To access HI, LO:

mfhi  $rd           \{ R[d] = HI \} R
mflo  $rd           \{ R[d] = LO \} R

Note that $rs, $rt both 00000

Multiplication, division are slow: results not available for 2 instructions afterward.
How can we ensure that?

nop: "no operation"
sll $0, $0, 0       \# shift reg 0 left 0 bits; store result in $0
Machine code: all 0's