

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] * R[t]	signed	R
multu \$rs, \$rt		unsigned	R

HI: high 32 bits

LO: low 32 bits

Note that \$rd does not appear (set to 00000 in instruction)

Division

div \$rs, \$rt	}	LO = R[s] / R[t]	signed	R
divu \$rs, \$rt		HI = R[s] % R[t]	unsigned	R

LO: quotient

HI: remainder

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

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