

RISC Machine-Level (Assembly) Instructions

PC: Program Counter

Ri: Register i for any particular i

nnnn, mmmm: Numerical value

Note: when a number is contained within angle brackets (<...>), it means that number is a memory location. The assembly code itself will not contain those angle brackets.

LD <nnnn>, Ri	Ri <-- data at memory location <nnnn>
LD Ri, Rj	Rj <-- data at memory location contained in Rj
LDi nnnn, Ri	Ri <-- nnnn
SD Ri, <nnnn>	Store data in Ri to memory location <nnnn>
SD Ri, Rj	Store data in Ri to memory location contained in Rj
SDi mmmm, <nnnn>	Store the number mmmm to memory location <nnnn>
SDi mmmm, Ri	Store the number mmmm to memory location contained in Ri

ADD Ri, Rj, Rk	Rk <-- Ri + Rj
ADDi Ri, nnnn, Rj	Rj <-- Ri + nnnn
SUB Ri, Rj, Rk	Rk <-- Ri - Rj
SUBi Ri, nnnn, Rj	Rj <-- Ri - nnnn
MUL Ri, Rj, Rk	Rk <-- Ri * Rj
MULi Ri, nnnn, Rj	Rj <-- Ri * nnnn
DIV Ri, Rj, Rk	Rk <-- Ri / Rj
DIVi Ri, nnnn, Rj	Rj <-- Ri / nnnn

JMP <nnnn>	PC <-- nnnn
JZ Ri, <nnnn>	PC <-- nnnn if Ri == 0
JNZ Ri, <nnnn>	PC <-- nnnn if Ri != 0
JGZ Ri, <nnnn>	PC <-- nnnn if Ri > 0
JGEZ Ri, <nnnn>	PC <-- nnnn if Ri >= 0
JLZ Ri, <nnnn>	PC <-- nnnn if Ri < 0
JLEZ Ri, <nnnn>	PC <-- nnnn if Ri <= 0