

ILOC Instruction Set

Operation			Meaning
loadI	$c \Rightarrow r_x$		$c \rightarrow r_x$
load	$r_x \Rightarrow r_y$		$\text{MEM}(r_x) \rightarrow r_y$
loadAI	$r_x, c_y \Rightarrow r_z$		$\text{MEM}(r_x + c_y) \rightarrow r_z$
loadAO	$r_x, r_y \Rightarrow r_z$		$\text{MEM}(r_x + r_y) \rightarrow r_z$
store	$r_x \Rightarrow r_y$		$r_x \rightarrow \text{MEM}(r_y)$
storeAI	$r_x \Rightarrow r_y, c_z$		$r_x \rightarrow \text{MEM}(r_y + c_z)$
storeAO	$r_x \Rightarrow r_y, r_z$		$r_x \rightarrow \text{MEM}(r_y + r_z)$
nop			no operation
addI	$r_x, c \Rightarrow r_z$		$r_x + c \rightarrow r_z$
add	$r_x, r_y \Rightarrow r_z$		$r_x + r_y \rightarrow r_z$
subI	$r_x, c \Rightarrow r_z$		$r_x - c \rightarrow r_z$
sub	$r_x, r_y \Rightarrow r_z$		$r_x - r_y \rightarrow r_z$
mult	$r_x, r_y \Rightarrow r_z$		$r_x * r_y \rightarrow r_z$
br	$\Rightarrow L_x$		$L_x \rightarrow \text{PC}$ (program counter)
cbr	$r_x \Rightarrow L_y, L_z$		if $r_x = \text{true}$, then $L_y \rightarrow \text{PC}$ if $r_x = \text{false}$, then $L_z \rightarrow \text{PC}$
cmp_LT	$r_x, r_y \Rightarrow r_z$		if $r_x < r_y$ then true $\rightarrow r_z$ otherwise false $\rightarrow r_z$
cmp_LE	$r_x, r_y \Rightarrow r_z$		if $r_x \leq r_y$ then true $\rightarrow r_z$ otherwise false $\rightarrow r_z$
output	c		print $\text{MEM}(c)$

The same register can occur more than once in the same instruction. Examples: load $r_1 \Rightarrow r_1$ and add $r_1, r_2 \Rightarrow r_1$. Instructions may have labels of the form L_x . Other control flow instructions such as cmp_EQ and cmp_NE follow the same definitions as the two control flow instructions listed in the table above.