

R-Type	lw/sw	Branch	New Instruction
$\text{IR} \leq \text{Memory}[\text{PC}]$ $\text{PC} \leq \text{PC} + 4$			
$\text{A} \leq \text{Reg}[\text{IR}[19:15]]$ $\text{B} \leq \text{Reg}[\text{IR}[24:20]]$ $\text{ALUOut} \leq \text{PC} + \text{SE}(2 * \text{immediate})$			
$\text{ALUOut} \leq \text{A op B}$	$\text{ALUOut} \leq \text{A} + \text{SE}(\text{immediate})$	$\text{if } (\text{A} == \text{B})$ $\text{PC} \leq \text{ALUOut}$	
$\text{Reg}[\text{IR}[11:7]] \leq \text{ALUOut}$	$\text{lw: MDR} \leq \text{Memory}[\text{ALUOut}]$ $\text{sw: Memory}[\text{ALUOut}] \leq \text{B}$		
	$\text{lw: Reg}[\text{IR}[11:7]] \leq \text{MDR}$		