

## ASS Assembly Language (Aray's Simple System)

Instruction	Code	Operands			Comments
<b>HALT</b>	<b>0</b>				
<b>LOAD</b>	<b>1</b>	<b>RD</b>	<b>MS</b>		$RD \leftarrow MS$ Load data from memory S into register D
<b>SAVE</b>	<b>2</b>	<b>MD</b>		<b>RS</b>	$MS \leftarrow RD$ Save data from register D into memory S
<b>LADD</b>	<b>3</b>	<b>RD</b>	<b>RA</b>		Load data to RD from memory address specified in RA
<b>SADD</b>	<b>4</b>	<b>RA</b>	<b>RS</b>		Save data from RS into memory address specified in RA
<b>MOVE</b>	<b>5</b>	<b>RD</b>	<b>RS</b>		$RD \leftarrow RS$
<b>NOT</b>	<b>6</b>				$RD \leftarrow \text{NOT}(RS)$
<b>AND</b>	<b>7</b>	<b>RD</b>	<b>RS1</b>	<b>RS2</b>	$RD \leftarrow RS1 \text{ AND } RS2$ (bitwise)
<b>OR</b>	<b>8</b>				$RD \leftarrow RS1 \text{ OR } RS2$ (bitwise)
<b>XOR</b>	<b>9</b>				$RD \leftarrow RS1 \text{ XOR } RS2$ (bitwise)
<b>INC</b>	<b>A</b>	<b>R</b>			$R \leftarrow R + 1$ (R++)
<b>DEC</b>	<b>B</b>	<b>R</b>			$R \leftarrow R - 1$ (R--)
<b>ADD</b>	<b>C</b>	<b>RD</b>	<b>RS1</b>	<b>RS2</b>	$RD \leftarrow RS1 + RS2$
<b>JUMP</b>	<b>D</b>	<b>R</b>	<b>PC=(<b>&amp;MD</b>)</b>		if $R \neq R0$ then GOTO specified line in program.
<b>CSHFT</b>	<b>E</b>	<b>R</b>	<b>n</b>		Circular Shift, n=0 Shift RIGHT else LEFT (no bit loss)
<b>ASHFT</b>	<b>F</b>	<b>R</b>	<b>n</b>		Arithmetic Shift, n=0 Shift RIGHT else LEFT