

Dec	Bin	Instruction	Description
0	00000	HALT	Ends the program's execution
1	00001	MOVIR #0 R0	Moves integer 0 to R0
2	00010	MOVRR R0 R1	Moves contents of R0 to R1
3	00011	MOVXR X0 R0	Moves the contents of memory address X0 to R0
4	00100	MOVIX #0 X0	Moves integer 0 to memory address X0
5	00101	MOVRX R0 X0	Moves contents of R0 to memory address X0
6	00110	MOVXX X0 X1	Moves the contents of memory address X0 to memory address X1
7	00111	ADDIR #0 R0	Adds 0 to R1
8	01000	ADDRR R0 R1	Adds R0 to R1
9	01001	SUBIR #0 R0	Subtracts 0 from R1
10	01010	SUBRR R0 R1	Subtracts R0 from R1
11	01011	MULIR #0 R0	Multiplies R0 by 0
12	01100	MULRR R0 R1	Multiplies R1 by R0
13	01101	DIVIR #0 R0	Divides R0 by 0
14	01110	DIVRR R0 R1	Divides R1 by R0
15	01111	CMPIR #0 R0	Stores R0 minus 0 in CMP
16	10000	CMPRR R0 R1	Stores R1 minus R0 in CMP
17	10001	JMPI #0	Sets the PC to 0
18	10010	JMPR R0	Sets the PC to value stored in R0
19	10011	JMPNEX X0	Sets the PC to X0 if CMP is not equal to 0
20	10100	JMPNER R0	Sets the PC to value stored in R0 if CMP is not equal to 0
21	10101	JMPPIX X0	Sets the PC to X0 if CMP is last compare was positive
22	10110	JMPPIR R0	Sets the PC to value stored in R0 if last compare was positive
23	10111	OUTI #0	Displays 0 to the output terminal
24	11000	OUTR R0	Displays the value stored in R0 to the output terminal
25	11001	OUTCI #0	Displays ASCII character 0 to the output terminal
26	11010	OUTCR R0	Displays ASCII character of value stored in R0 to the output terminal
27	11011	INR A R0	Stores the integer from Input A in R0
28	11100	INX A X0	Stores the integer from Input A in memory address X0
29	11101	INCR A R0	Stores the ASCII value of Input A in R0
30	11110	INCX A X0	Stores the ASCII value of Input A in memory address X0
31	11111	NOP	No operation is executed

PAL-1 Architecture	
Feature	Memory
RAM	256 bytes
5 General Purpose Registers	1 byte each
Compare Register	1 byte
Program Counter	1 byte
2 Inputs	1 byte each
Display Console	String of bytes (integers or ASCII characters)

Assembly Language		
Syntax	Meaning	Dec
R0	Register 0	0
#0	Immediate Integer 0	0
X0	Memory Address 0	0
A/B	Input Byte	65/66

The machine's behavior is determined by the **program counter**.

This special register stores and maintains the current memory address to be processed.

It always begins at memory address 0 and assumes an **instruction code**.

From there, the machine will update the program counter and process the next byte of memory accordingly.

It will continue this process until it reaches a **HALT** instruction.