Operation	Opcode	Arguments	Description
load	000	r (1 bit) A (4 bits)	Load the byte at main memory address A into register r
store	001	r (1 bit) A (4 bits)	Store the byte in register r to main memory address A
value	010	r (1 bit) V (4 bits)	Set register r to contain the value V
jump	011	0 A (4 bits)	Set the IP to address A
jumpzero	100	r (1 bit) A (4 bits)	Set the IP to address A only if register r is zero.
add	101	00 r_0 r_1 r_2	Each r_i is 1 bit. Set register r_0 = register r_1 + register r_2
subtract	110	00 r_0 r_1 r_2	Each r_i is 1 bit. Set register r_0 = register r_1 - register r_2
halt	111	0 0000	Halt execution of the program

Table 1: Example machine code for a simple 4-bit CPU.

Decimal	Binary	Decimal	Binary	Decimal	Binary	Decimal	Binary
0	0000 0000	1	0000 0001	2	0000 0010	3	0000 0011
4	0000 0100	5	0000 0101	6	0000 0110	7	0000 0111
8	0000 1000	9	0000 1001	10	0000 1010	11	0000 1011
12	0000 1100	13	0000 1101	14	0000 1110	15	0000 1111
16	0001 0000	17	0001 0001	18	0001 0010	19	0001 0011
20	0001 0100	21	0001 0101	22	0001 0110	23	0001 0111
24	0001 1000	25	0001 1001	26	0001 1010	27	0001 1011
28	0001 1100	29	0001 1101	30	0001 1110	31	0001 1111

Table 2: Some 8 bit binary numbers.

Operation	Opcode	Arguments	Description
load	000	r (1 bit) A (4 bits)	Load the byte at main memory address A into register r
store	001	r (1 bit) A (4 bits)	Store the byte in register r to main memory address A
value	010	r (1 bit) V (4 bits)	Set register r to contain the value V
jump	011	0 A (4 bits)	Set the IP to address A
jumpzero	100	r (1 bit) A (4 bits)	Set the IP to address A only if register r is zero.
add	101	00 r_0 r_1 r_2	Each r_i is 1 bit. Set register r_0 = register r_1 + register r_2
subtract	110	00 r_0 r_1 r_2	Each r_i is 1 bit. Set register r_0 = register r_1 - register r_2
halt	111	0 0000	Halt execution of the program

Table 1: Example machine code for a simple 4-bit CPU.

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0	0000 0000	1	0000 0001	2	0000 0010	3	0000 0011
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12	0000 1100	13	0000 1101	14	0000 1110	15	0000 1111
16	0001 0000	17	0001 0001	18	0001 0010	19	0001 0011
20	0001 0100	21	0001 0101	22	0001 0110	23	0001 0111
24	0001 1000	25	0001 1001	26	0001 1010	27	0001 1011
28	0001 1100	29	0001 1101	30	0001 1110	31	0001 1111

Table 2: Some 8 bit binary numbers.