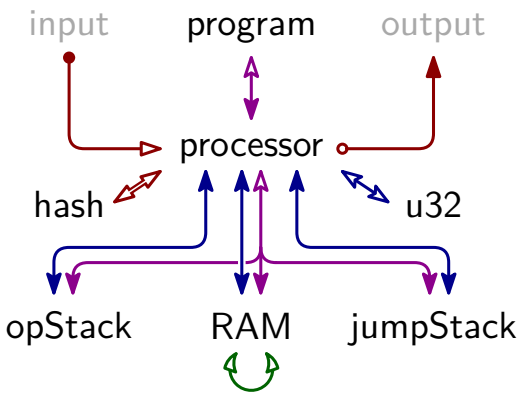
2	$\ominus$	pop	_ st_0	_
1	$\oplus$	push + a	_	_ a
8	$\oplus$	divine	_	_ a
9	$\oplus$	dup + i	_ st_{15} ... st_0	_ st_{15} ... st_0 st_i
17	$\bigcirc^{16}$	swap + i	_ ... st_i ... st_0	_ ... st_0 ... st_i
16	$\bigcirc$	nop	_	_
10	$\ominus$	skiz	_ st_0	_
25	$\bigcirc$	call + d	_	_
24	$\bigcirc$	return	_	_
32	$\bigcirc$	recurse	_	_
18	$\ominus$	assert	_ st_0	_
0	$\bigcirc$	halt	_	_
40	$\ominus$	read_mem	_ addr st_0	_ addr val
26	$\oplus$	write_mem	_ addr val	_ addr val
48	$\bigcirc^{10}$	hash	_ $st_9 \ldots st_0$	_ $d_4 \ldots d_0$ $0 \ldots 0$
56	$\bigcirc^{11}$	divine_sibling	_ idx $st_9 \ldots st_5$ $d_4 \ldots d_0$	_ idx>>1 $r_4 \ldots r_0$ $l_4 \ldots l_0$
64	$\bigcirc$	assert_vector	_	_
72	$\bigcirc$	absorb_init	_	_
80	$\bigcirc$	absorb	_	_
88	$\bigcirc^{10}$	squeeze	_ st_9 ... st_0	_ sq_9 ... sq_0
34	$\ominus^1$	add	_ st_1 st_0	_ sum
42	$\ominus^1$	mul	_ st_1 st_0	_ prod
96	$\bigcirc^1$	invert	_ st_0	_ st_0^{-1}
50	$\ominus^1$	eq	_ st_1 st_0	_ (st_0==st_1)
4	$\oplus^2$	split	_ st_0	_ hi lo
12	$\ominus^1$	lt	_ st_1 st_0	_ (st_0<st_1)
20	$\ominus^1$	and	_ st_1 st_0	_ (st_0&st_1)
28	$\ominus^1$	xor	_ st_1 st_0	_ (st_0^st_1)
36	$\bigcirc^1$	log_2_floor	_ st_0	_ $\lfloor \log_2(st_0) \rfloor$
44	$\ominus^1$	pow	_ e b	_ b^e
52	$\bigcirc^2$	div	_ denom num	_ quot rem
104	$\bigcirc^3$	xxadd	_ y_2 y_1 y_0 x_2 x_1 x_0	_ y_2 y_1 y_0 z_2 z_1 z_0
112	$\bigcirc^3$	xxmul	_ y_2 y_1 y_0 x_2 x_1 x_0	_ y_2 y_1 y_0 z_2 z_1 z_0
120	$\bigcirc^3$	xinvert	_ x_2 x_1 x_0	_ y_2 y_1 y_0
58	$\ominus^3$	xbmul	_ x_2 x_1 x_0 b	_ y_2 y_1 y_0
128	$\oplus$	read_io	_	_ a
66	$\ominus$	write_io	_ st_0	_

Table	Base Columns
Program	Address, Instruction, LookupMultiplicity, IsPadding
Processor	CLK, IsPadding, IP, PI, CI, NIA, IB0, ..., IB7, JSP, JSO, JSD, ST0, ..., ST15, OSP, OSV, HV0, ..., HV3, RAMP, RAMV, cjd_mul
OpStack	CLK, IB1 (≙ shrink stack), OSP, OSV
RAM	CLK, PI, bcpc0, bcpc1, RAMPDiffInv, RAMP, RAMV
JumpStack	CLK, CI, JSP, JSO, JSD
Hash	RoundNumber, CI, ST0, ..., ST15, CONSTANT0A, ..., CONSTANT15B
U32	CF, Bits, Bits-33_inv, CI, LHS, RHS, LT, AND, XOR, Log2Floor, Pow, LHS_inv, RHS_inv

#clk	instruction
2	neg
4	sub
7	is_u32
3	lsb



$p = 18446744069414584321$

i	$\mathbb{F}_p(1/i)$	$-\mathbb{F}_p(1/i)$
2	092...161	922...160
3	122...881	614...440
4	138...241	461...080
5	147...457	368...864
6	153...601	307...720

	base	ext	$\sum$
Program	4	1	5
Processor	42	11	53
OpStack	4	2	6
RAM	7	6	13
JumpStack	5	2	7
Hash	50	3	53
U32	14	1	15
$\sum$	126	26	152

	init	cons	trans	term	$\sum$
Program	2	1	3		6
Processor	37	11	73	1	122
OpStack	5		4		9
Ram	8		12	1	21
JumpStack	6		6		12
Hash	5	40	26		71
U32	2	14	22	2	40
Cross-Table				1	1
$\sum$	65	66	146	5	282