\PH*	PH ^ currInt<<2
\PL*	PL ^ currInt<<2

test	Din == 011xxxxx
math	Din != x11xxxxx
jump	Din == 111x11xx
imm	Din == 111xxxxx & !jump
k	Din == xxx1xxxx
zs	Din == xxxx11xx
zd	Din == xxxxxx11
jop	Din[4,1:0]
aluOp	Imm ? Din[4:2] : Din[7:5]
cond	Din[3:0]
\fetch	TZ?fetcha:timer

	\decodeSkip	\decode	
test	fetch	test	
Math & zs & zf	skip2	useK?$zpa,mathzzb:$zpa,mathzz	note:
Math & !zs & zd	skip1	useK?$zpa,kmathrz:$zpa,mathrz	
Math & zs & !zd	skip1	$zpa,mathzr	
Math & !zs & !zd	fetch	mathrr	
Imm & zd	skip2	mathiz	
Imm & !zd	skip1	mathir	
Jump & jop == 0	skip2	jump	
Jump & jop == 1	skip2	call	
Jump & jop == 2	fetch	fetch	
Jump & jop == 3	fetch	return	
Jump & jop == 4	skip1	$zpa,jumpz	
Jump & jop == 5	skip1	callz	
Jump & jop == 6	fetch	fetch	
Jump & jop == 7	skip1	$zpa,table	

\memz	svZInd?mem:(svZReg?(svZIO?{1,reg[0]}:B):mem)
\mA	SvAluOp[2]?00:SvAluOp[1:0]
\mL	SvAluOp[2]?svAluOp[1:0]:11
\mCin	!svAluOp[2]&svAluOp[0]
\S	{00,svS}
\D	{00,svD}
\kD	prevK ? 0011 : {00,svD}
\kD2	useK ? 0011 : {00,svD}

label	aAd	bAd	wAd	wReg	dIn	rMem	dOut	wMem	aSel	bSel	logSel	Cin
reset	x	x	PL	1	?	0	?	0	0	B	^	0
resetb	x	x	PH	1	?	0	?	0	0	B	^	0
resetc	x	x	TL	1	?	0	?	0	0	B	^	0
resetd	x	x	TH	1	?	0	?	0	0	B	^	0
timer	x	TL	TL	1	?	0	?	0	-2	B	B	1

timerb	x	TH	TH	1 ?	0 ?	0	-2	B	B	1
timerc	x	TL	TL	1 ?	0 ?	0	-2	B	B	0
fetcha	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
fetchb	x	PH*	PH*	1 Inst	0 ?	0	0	B	B	1
fetchc	x	x	x	0 Inst	0 ?	0	x	x	x	x
skipf	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
skipfb	x	PH*	PH*	1 Inst	0 ?	0	0	B	B	1
skipfc	x	x	x	0 Inst	0 ?	0	x	x	x	x
skip2	x	PL*	PL*	1 ?	0 ?	0	0	B	B	1
skip2b	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
skip1	x	PL*	PL*	1 ?	0 ?	0	0	B	B	1
skip1b	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
test	x	x	K	1 ?	0 ?	0	0	B	^	tr
mathrr	S	kD	kD2	1 ?	0 ?	0	mA	B	mL	mCir
call	x	PL*	LL	1 ?	0 ?	0	0	B	B	0
callb	x	PH*	LH	1 ?	0 ?	0	0	B	B	0
jump	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
jumpb	x	x	ML	1 PCL	0 ?	0	0	mem	B	0
jumpc	x	x	ML	1 PCL	0 ?	0	0	mem	B	0
jumpd	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
jumpe	PH*	PL*	x	0 ?	1 ?	0	x	x	x	x
jumpf	x	x	PH*	1 PCH	0 ?	0	0	mem	B	0
jumpg	x	ML	PL*	1 ?	0 ?	0	0	B	B	0
return	x	LL	PL*	1 ?	0 ?	0	0	B	B	0
returnb	x	LH	PH*	1 ?	0 ?	0	0	B	B	0
mathir	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
mathirb	kD	x	D	1 #	0 ?	0	mA	mem	mL	mCir
mathirc	kD	x	D	1 #	0 ?	0	mA	mem	mL	mCir
mathird	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
zpa	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
zpab	x	x	ZL	1 zpa	0 ?	0	0	mem	B	0
zpac	x	x	ZL	1 zpa	0 ?	0	0	mem	B	0
zpad	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
zpae	ZH	ZL	x	0 ?	1 ?	0	x	x	x	x
zpaf	ZH	ZL	x	0 ?	1 ?	0	x	x	x	x
zpag	x	x	ML	1 lowp	0 ?	0	0	mem	B	0
zpah	ZH	ZL	x	0 ?	1 ?	0	x	x	x	x
zpai	x	x	MH	1 highp	0 ?	0	0	mem	B	0
zpaj	x	ML	x	0 ?	0 ?	0	0	B	B	1
zpak	ZH	ZL	x	0 ?	0 ML+1	1	x	x	x	x
zpal	ZH	ZL	x	0 ?	0 ML+1	1	x	x	x	x
zpam	x	MH	x	0 ?	0 ?	0	0	B	B	1
zpan	ZH	ZL	x	0 ?	0 MH+1	1	x	x	x	x
zpao	MH	ML	x	0 ?	1 ?	0	x	x	x	x

mathiz	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
mathizb	x	reg	K	1 #	0 ?	0	0	memz	B	0
mathizc	x	reg	K	1 #	0 ?	0	0	memz	B	0
mathizd	K	reg	K	1 #	0 ?	0	mA	memz	mL	mCir
mathize	K	reg	K	1 #	0 ?	0	mA	memz	mL	mCir
mathizf	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
mathizg	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
mathizo	K	reg	K	1 value	0 ?	0	mA	memz	mL	mCir
mathizp	x	K	x	0 ?	0 ?	0	0	B	B	0
mathizq	MH	ML	x	0 ?	0	K	1	x	x	x
mathizr	x	K	reg	1 ?	0	K	0	0	B	B
mathizs	x	K	reg	0 ?	0	K	0	0	B	B
callz	x	PL*	LL	1 ?	0 ?	0	0	B	B	0
callzb	x	PH*	LH	1 ?	0 ?	0	0	B	B	0
jumpz	x	ML	PL*	1 ?	0 ?	0	0	B	B	0
jumpzb	x	MH	PH*	1 ?	0 ?	0	0	B	B	0
table	LL	reg	ML	1 ?	0 ?	0	0	memz	B	0
tableb	x	LH	MH	1 ?	0 ?	0	0	B	B	1
tablec	x	LH	MH	1 ?	0 ?	0	0	B	B	0
tabled	MH	ML	ML	1 ?	1 ?	0	0	B	B	1
tablee	x	x	PL	1 newPL	0 ?	0	0	mem	B	0
tablef	x	x	PL	1 newPL	0 ?	0	0	mem	B	0
tableg	MH	ML	x	0 ?	1 ?	0	x	x	x	x
tableh	x	MH	MH	1 ?	0 ?	0	0	B	B	1
tablei	x	x	PH	1 newPL	0 ?	0	0	mem	B	0
mathzr	kD	reg	kD2	1 value	0 ?	0	mA	memz	mL	mCir
mathrz	S	reg	K	1 value	0 ?	0	mA	memz	mL	mCir
mathrzb	MH	ML	x	0 ?	0	K	1	x	x	x
mathrzc	x	K	reg	1 ?	0	K	0	0	B	B
mathrzd	x	K	reg	0 ?	0	K	0	0	B	B
kmathrz	S	K	K	1 ?	0 ?	0	mA	B	mL	mCir
mathzz	x	reg	K	1 value	0 ?	0	0	memz	B	0
mathzzb	K	x	K	1 value	0 ?	0	mA	memz	mL	mCir
mathzzc	MH	ML	x	0 ?	0	K	1	x	x	x
mathzzd	x	K	reg	1 ?	0	K	0	0	B	B
mathzze	x	K	reg	0 ?	0	K	0	0	B	B

15: PH	PH*	PH*	PH*
14: PL	?	PL*	PL*
13: MH	MH	MH	MH
12: ML	?	ML	ML
11: iH	?	?	?
10: iL	?	?	?
9: LH	?	LH	LH

8:	LL	LL	LL	LL					
7:	ZH	ZH	?	?					
6:	ZL	?	ZL	ZL					
5:	TH	?	TH	TH		aSel	bSel	logSel	Cin
4:	TL	?	TL	TL					
3:	K	K	K	K		x	x	x	tr
2:	Y	?	?	kD2		mA	memz	^	mCir
1:	X	kD	kD	D			-2 mem	mL	1
0:	W	S	reg	reg			0 B	B	0

: useK will become prevK at the end of this clock cycle

sA7	sA0	A0	wIR	wFL	next	
x	x	x	0	0	resetb	PH,PL = 0
x	x	x	0	0	resetc	
x	x	x	0	0	resetd	TH,TL = 0
x	x	x	0	0	fetch	
x	x	x	0	0	Z?(TZ?fetcha:timerb):timer	TL -= 1

```
x    x    x       0    0 timerc                TH -= 1
x    x    x       0    0 timer                 TL -= 2

     0    0 x     0    0 C?fetchb:fetchc
x    x    x       1    0 decode
x    x    x       1    0 decode

     0    0 x     0    0 C?skipfb:skipfc
x    x    x       0    0 decodeSkip
x    x    x       0    0 decodeSkip
x    x    x       0    0 C?skip2b:skip1
x    x    x       0    0 skip1
x    x    x       0    0 C?skip1b:fetch
x    x    x       0    0 fetch

x    x    x       0    0 useK|tr?fetch:skipf

x    x    x       0    1 fetch

x    x    x       0    0 callb
x    x    x       0    0 jump
     0    0 x     0    0 C?jumpb:jumpc
x    x    x       0    0 jumpd
x    x    x       0    0 jumpe
x    x    x       0    0 jumpe
     0    0 x     0    0 jumpf
x    x    x       0    0 jumpg
x    x    x       0    0 fetch

x    x    x       0    0 returnb
x    x    x       0    0 fetch

     0    0 x     0    0 C?mathirb:mathirc
x    x    x       0    1 mathird
x    x    x       0    1 fetch
x    x    x       0    0 fetch

     0    0 x     0    0 C?zpab:zpac
x    x    x       0    0 zpad
x    x    x       0    0 svlnd?zpaf:zpae
x    x    x       0    0 svlnd?zpaf:zpae
     0    0 x     0    0 rtn
     1    1  0    0    0 zpag
x    x    x       0    0 zpah
     1    1  1    0    0 zpai
x    x    x       0    0 svlnc?zpaj:zpao
x    x    x       0    0 C?zpak:zpal
     1    1  0    0    0 zpam
     1    1  0    0    0 zpao
x    x    x       0    0 zpan
     1    1  1    0    0 zpao
x    x    x       0    0 rtn
```

```
    0    0 x      0    0 prevK?(C?mathizd:mathize):(C?mathizb:mathizc)
    0    0 x      0    0 $zpa,mathizo
    0    0 x      0    0 mathizf
x   x    x        0    1 $zpa,mathizp
x   x    x        0    1 mathizg
x   x    x        0    0 $zpa,mathizo
x   x    x        0    0 $zpa,mathizp
x   x    x        0    1 mathizp
x   x    x        0    0 svZReg?(svZIO?mathizs:mathizr):mathizq
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    0 fetch

x   x    x        0    0 callzb
x   x    x        0    0 $zpa,jumpz
x   x    x        0    0 jumpzb
x   x    x        0    0 fetch

x   x    x        0    0 C?tableb:tablec
x   x    x        0    0 tabled
x   x    x        0    0 tabled
x   x    x        0    0 C?tablee:tablef
x   x    x        0    0 tableg
x   x    x        0    0 tableh
x   x    x        0    0 tablei
x   x    x        0    0 tableg
x   x    x        0    0 fetch

x   x    x        0    1 fetch

x   x    x        0    1 svZReg?(svZIO?mathrzd:mathrzc):mathrzb
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    1 svZReg?(svZIO?mathrzd:mathrzc):mathrzb

x   x    x        0    0 $zpa,mathzzb
x   x    x        0    1 svZReg?(svZIO?mathzze:mathzzd):mathzzc
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    0 fetch
```

reset	x	x	PL	1 ?	0 ?	0	0	B	^	0
resetb	x	x	PH	1 ?	0 ?	0	0	B	^	0
resetc	x	x	TL	1 ?	0 ?	0	0	B	^	0
resetd	x	x	TH	1 ?	0 ?	0	0	B	^	0
timer	x	TL	TL	1 ?	0 ?	0	-2	B	B	1
timerb	x	TH	TH	1 ?	0 ?	0	-2	B	B	1
timerc	x	TL	TL	1 ?	0 ?	0	-2	B	B	0
fetcha	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
fetchb	x	PH*	PH*	1 Inst	0 ?	0	0	B	B	1
fetchc	x	x	x	0 Inst	0 ?	0	x	x	x	x
skipf	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
skipfb	x	PH*	PH*	1 Inst	0 ?	0	0	B	B	1
skipfc	x	x	x	0 Inst	0 ?	0	x	x	x	x
skip2	x	PL*	PL*	1 ?	0 ?	0	0	B	B	1
skip2b	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
skip1	x	PL*	PL*	1 ?	0 ?	0	0	B	B	1
skip1b	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
test	x	x	K	1 ?	0 ?	0	0	B	^	tr
mathrr	S	kD	kD2	1 ?	0 ?	0	mA	B	mL	mCir
call	x	PL*	LL	1 ?	0 ?	0	0	B	B	0
callb	x	PH*	LH	1 ?	0 ?	0	0	B	B	0
jump	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
jumpb	x	x	ML	1 PCL	0 ?	0	0	mem	B	0
jumpc	x	x	ML	1 PCL	0 ?	0	0	mem	B	0
jumpd	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
jumpe	PH*	PL*	x	0 ?	1 ?	0	x	x	x	x
jumpf	x	x	PH*	1 PCH	0 ?	0	0	mem	B	0
jumpg	x	ML	PL*	1 ?	0 ?	0	0	B	B	0
return	x	LL	PL*	1 ?	0 ?	0	0	B	B	0
returnb	x	LH	PH*	1 ?	0 ?	0	0	B	B	0
mathir	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
mathirb	kD	x	D	1 #	0 ?	0	mA	mem	mL	mCir
mathirc	kD	x	D	1 #	0 ?	0	mA	mem	mL	mCir
mathird	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
zpa	PH*	PL*	PL*	1 ?	1 ?	0	0	B	B	1
zpab	x	x	ZL	1 zpa	0 ?	0	0	mem	B	0
zpac	x	x	ZL	1 zpa	0 ?	0	0	mem	B	0
zpad	x	PH*	PH*	1 ?	0 ?	0	0	B	B	1
zpae	ZH	ZL	x	0 ?	1 ?	0	x	x	x	x
zpaf	ZH	ZL	x	0 ?	1 ?	0	x	x	x	x
zpag	x	x	ML	1 lowp	0 ?	0	0	mem	B	0
zpah	ZH	ZL	x	0 ?	1 ?	0	x	x	x	x
zpai	x	x	MH	1 highp	0 ?	0	0	mem	B	0
zpaj	x	ML	x	0 ?	0 ?	0	0	B	B	1

zpak	ZH	ZL	x	0 ?	0	ML+1	1	x	x	x	x
zpal	ZH	ZL	x	0 ?	0	ML+1	1	x	x	x	x
zpam	x	MH	x	0 ?	0	?	0		0	B	B	1
zpan	ZH	ZL	x	0 ?	0	MH+1	1	x	x	x	x
zpao	MH	ML	x	0 ?	1	?	0	x	x	x	x
mathiz	PH*	PL*	PL*	1 ?	1	?	0		0	B	B	1
mathizb	x	reg	K	1 #	0	?	0		0	memz	B	0
mathizc	x	reg	K	1 #	0	?	0		0	memz	B	0
mathizd	K	reg	K	1 #	0	?	0	mA		memz	mL	mCir
mathize	K	reg	K	1 #	0	?	0	mA		memz	mL	mCir
mathizf	x	PH*	PH*	1 ?	0	?	0		0	B	B	1
mathizg	x	PH*	PH*	1 ?	0	?	0		0	B	B	1
mathizo	K	reg	K	1 value	0	?	0	mA		memz	mL	mCir
mathizp	x	K	x	0 ?	0	?	0		0	B	B	0
mathizq	MH	ML	x	0 ?	0	K	1	x	x	x	x
mathizr	x	K	reg	1 ?	0	K	0		0	B	B	0
mathizs	x	K	reg	0 ?	0	K	0		0	B	B	0
callz	x	PL*	LL	1 ?	0	?	0		0	B	B	0
callzb	x	PH*	LH	1 ?	0	?	0		0	B	B	0
jumpz	x	ML	PL*	1 ?	0	?	0		0	B	B	0
jumpzb	x	MH	PH*	1 ?	0	?	0		0	B	B	0
table	LL	reg	ML	1 ?	0	?	0		0	memz	B	0
tableb	x	LH	MH	1 ?	0	?	0		0	B	B	1
tablec	x	LH	MH	1 ?	0	?	0		0	B	B	0
tabled	MH	ML	ML	1 ?	1	?	0		0	B	B	1
tablee	x	x	PL	1 newPL	0	?	0		0	mem	B	0
tablef	x	x	PL	1 newPL	0	?	0		0	mem	B	0
tableg	MH	ML	x	0 ?	1	?	0	x	x	x	x
tableh	x	MH	MH	1 ?	0	?	0		0	B	B	1
tablei	x	x	PH	1 newPL	0	?	0		0	mem	B	0
mathzr	kD	reg	kD2	1 value	0	?	0	mA		memz	mL	mCir
mathrz	S	reg	K	1 value	0	?	0	mA		memz	mL	mCir
mathrzb	MH	ML	x	0 ?	0	K	1	x	x	x	x	x
mathrzc	x	K	reg	1 ?	0	K	0		0	B	B	0
mathrzd	x	K	reg	0 ?	0	K	0		0	B	B	0
kmathrz	S	K	K	1 ?	0	?	0	mA		B	mL	mCir
mathzz	x	reg	K	1 value	0	?	0		0	memz	B	0
mathzzb	K	x	K	1 value	0	?	0	mA		memz	mL	mCir
mathzzc	MH	ML	x	0 ?	0	K	1	x	x	x	x	x
mathzzd	x	K	reg	1 ?	0	K	0		0	B	B	0
mathzze	x	K	reg	0 ?	0	K	0		0	B	B	0

label	aAd	bAd	wAd	wReg	dIn	rMem	dOut	wMem	aSel	bSel	logSel	Cin
15: PH	PH*	PH*	PH*									
14: PL	?	PL*	PL*									
13: MH	MH	MH	MH									
12: ML	?	ML	ML									
11: iH	?	?	?									
10: iL	?	?	?									
9: LH	?	LH	LH									

8:	LL	LL	LL	LL					
7:	ZH	ZH	?	?					
6:	ZL	?	ZL	ZL					
5:	TH	?	TH	TH		aSel	bSel	logSel	Cin
4:	TL	?	TL	TL					
3:	K	K	K	K		x	x	x	tr
2:	Y	?	?	kD2		mA	memz	^	mCir
1:	X	kD	kD	D			-2 mem	mL	1
0:	W	S	reg	reg			0 B	B	0

\PH*	PH ^ currInt<<2
\PL*	PL ^ currInt<<2
test	Din == 011xxxxx
math	Din != x11xxxxx
jump	Din == 111x11xx
imm	Din == 111xxxxx & !jump
k	Din == xxx1xxxx
zs	Din == xxxx11xx
zd	Din == xxxxxx11
jop	Din[4,1:0]
aluOp	Imm ? Din[4:2] : Din[7:5]
cond	Din[3:0]
\fetch	TZ?fetcha:timer

	\decodeSkip	\decode	
test	fetch	test	
Math & zs & zf	skip2	useK?$zpa,mathzzb:$zpa,mathzz	note:
Math & !zs & zd	skip1	useK?$zpa,kmathrz:$zpa,mathrz	
Math & zs & !zd	skip1	$zpa,mathzr	
Math & !zs & !zd	fetch	mathrr	
Imm & zd	skip2	mathiz	
Imm & !zd	skip1	mathir	
Jump & jop == 0	skip2	jump	
Jump & jop == 1	skip2	call	
Jump & jop == 2	fetch	fetch	
Jump & jop == 3	fetch	return	
Jump & jop == 4	skip1	$zpa,jumpz	
Jump & jop == 5	skip1	callz	
Jump & jop == 6	fetch	fetch	
Jump & jop == 7	skip1	$zpa,table	

\memz	svZInd?mem:(svZReg?(svZIO?{1,reg[0]}:B):mem)
\mA	SvAluOp[2]?00:SvAluOp[1:0]

\mL	SvAluOp[2]?svAluOp[1:0]:11
\mCin	!svAluOp[2]&svAluOp[0]
\S	{00,svS}
\D	{00,svD}
\kD	prevK ? 0011 : {00,svD}
\kD2	useK ? 0011 : {00,svD}

```
x    x    x       0    0 resetb
x    x    x       0    0 resetc
x    x    x       0    0 resetd
x    x    x       0    0 fetch

x    x    x       0    0 Z?(TZ?fetcha:timerb):timer
x    x    x       0    0 timerc
x    x    x       0    0 timer

     0    0 x     0    0 C?fetchb:fetchc
x    x    x       1    0 decode
x    x    x       1    0 decode

     0    0 x     0    0 C?skipfb:skipfc
x    x    x       0    0 decodeSkip
x    x    x       0    0 decodeSkip
x    x    x       0    0 C?skip2b:skip1
x    x    x       0    0 skip1
x    x    x       0    0 C?skip1b:fetch
x    x    x       0    0 fetch

x    x    x       0    0 useK|tr?fetch:skipf

x    x    x       0    1 fetch

x    x    x       0    0 callb
x    x    x       0    0 jump
     0    0 x     0    0 C?jumpb:jumpc
x    x    x       0    0 jumpd
x    x    x       0    0 jumpe
x    x    x       0    0 jumpe
     0    0 x     0    0 jumpf
x    x    x       0    0 jumpg
x    x    x       0    0 fetch

x    x    x       0    0 returnb
x    x    x       0    0 fetch

     0    0 x     0    0 C?mathirb:mathirc
x    x    x       0    1 mathird
x    x    x       0    1 fetch
x    x    x       0    0 fetch

     0    0 x     0    0 C?zpab:zpac
x    x    x       0    0 zpad
x    x    x       0    0 svInd?zpaf:zpae
x    x    x       0    0 svInd?zpaf:zpae
     0    0 x     0    0 rtn
     1    1    0  0    0 zpag
x    x    x       0    0 zpah
     1    1    1  0    0 zpai
x    x    x       0    0 svInc?zpaj:zpao
x    x    x       0    0 C?zpak:zpal
```

```
    1    1   0    0    0 zpam
    1    1   0    0    0 zpao
x   x    x        0    0 zpan
    1    1   1    0    0 zpao
x   x    x        0    0 rtn

    0    0 x      0    0 prevK?(C?mathizd:mathize):(C?mathizb:mathizc)
    0    0 x      0    0 $zpa,mathizo
    0    0 x      0    0 mathizf
x   x    x        0    1 $zpa,mathizp
x   x    x        0    1 mathizg
x   x    x        0    0 $zpa,mathizo
x   x    x        0    0 $zpa,mathizp
x   x    x        0    1 mathizp
x   x    x        0    0 svZReg?(svZIO?mathizs:mathizr):mathizq
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    0 fetch

x   x    x        0    0 callzb
x   x    x        0    0 $zpa,jumpz
x   x    x        0    0 jumpzb
x   x    x        0    0 fetch

x   x    x        0    0 C?tableb:tablec
x   x    x        0    0 tabled
x   x    x        0    0 tabled
x   x    x        0    0 C?tablee:tablef
x   x    x        0    0 tableg
x   x    x        0    0 tableh
x   x    x        0    0 tablei
x   x    x        0    0 tableg
x   x    x        0    0 fetch

x   x    x        0    1 fetch

x   x    x        0    1 svZReg?(svZIO?mathrzd:mathrzc):mathrzb
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    1 svZReg?(svZIO?mathrzd:mathrzc):mathrzb

x   x    x        0    0 $zpa,mathzzb
x   x    x        0    1 svZReg?(svZIO?mathzze:mathzzd):mathzzc
x   x    x        0    0 fetch
x   x    x        0    0 fetch
x   x    x        0    0 fetch
```

sA7 sA0 A0 wIR wFL next

Z?(TZ?fetcha:timerb):timer
C?b:c
useK|tr?fetch:skipf
svInd?b:c
prevK?(C?mathizd:mathize):(C?mathizb:mathizc)
$zpa,mathzzb
rtn
decode
decodeSkip

useK will become prevK at the end of this clock cycle