Microcode

\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

Microcode

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
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
mathzzd	x	K	reg	1 ?	0 K	0	0 B	B	0
mathzze	x	K	reg	0 ?	0 K	0	0 B	B	0

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
4:	TL	?	TL	TL
3:	K	K	K	K
2:	Y	?	?	kD2
1:	X	kD	kD	D
0:	W	S	reg	reg

	aSel	bSel	logSel	Cin
	x	x	x	tr
	mA	memz	^	mCir
	-2	mem	mL	1
	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	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

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ROM

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

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

label	aAd	bAd	wAd	wReg	rMem	wMem	aSel	bSel	logSel	Cin	sA7	sA0	A0	wIR
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											

					aSel	bSel	logSel	Cin
8: LL	LL	LL	LL					
7: ZH	ZH	?	?					
6: ZL	?	ZL	ZL					
5: TH	?	TH	TH					
4: TL	?	TL	TL					
3: K	K	K	K		x	x	x	tr
2: Y	?	?	kD2		mA	memz	^	mCin
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

\decode\decode

test		fetch	test
Math & zs & zf		skip2	useK?$zpa,mathzzb:$zpa,mathzz	note: useK will become p
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}
```

0 resetb
0 resetc
0 resetd
0 fetch

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

0 C?fetchb:fetchc
0 decode
0 decode

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

0 useK|tr?fetch:skipf

1 fetch

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

0 returnb
0 fetch

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

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

0 zpam
0 zpao
0 zpan
0 zpao
0 rtn

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

0 callzb
0 $zpa,jumpz
0 jumpzb
0 fetch

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

1 fetch

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

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

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

prevK at the end of this clock cycle