R200 INSTRUCTION SET v1.1

№	Mnemonics	Operands	Description	Operation
			DATA TRANSFER INSTRUCTIONS	
1	movc	Rd, a	Load from CONST	$Rd \leftarrow CONST(a)$
2	mov	RB, k	Load immediate	$Rd \leftarrow k$
3	movm	Rd, a	Load from RAM	$Rd \leftarrow RAM(a)$
4	movm	a, Rs	Store to RAM	$RAM(a) \leftarrow Rd$
5	lim		Load indirect from RAM	$RA \leftarrow RAM(RB)$
6	sim		Store indirect to RAM	$RAM(RA) \leftarrow RB$
7	lic		Load indirect from CONST	$RA \leftarrow CONST(RB)$
8	clrz		Clear zero flag	$z \leftarrow 0$
9	clrc		Clear carry flag	$c \leftarrow 0$
10	setc		Set carry flag	$c \leftarrow 1$
11	buc		Buffer carry flag	$bc \leftarrow c$
12	rec		Recall carry flag	$c \leftarrow bc$
			ARITHMETIC AND LOGIC INSTRUCTIONS	
13	add	Rd	Add two GPRs	$c{:}Rd \leftarrow Rd+Rs; z \leftarrow (Rd == 0)$
14	adc	Rd	Add with carry two GPRs	$c{:}Rd \leftarrow Rd+Rs+c; z \leftarrow (Rd == 0) \wedge z$
15	sub	Rd	Subtract two GPRs	$c{:}Rd \leftarrow Rd-Rs; z \leftarrow (Rd == 0)$
16	sbc	Rd	Subtract with carry two GPRs	$c{:}Rd \leftarrow Rd-Rs-(\neg c); z \leftarrow (Rd == 0) \wedge z$
17	inc	Rd	Increment GPR	$c{:}Rd \leftarrow Rd+1; z \leftarrow (Rd == 0)$
18	dec	Rd	Decrement GPR	$c{:}Rd \leftarrow Rd-1; z \leftarrow (Rd == 0)$
19	shcr	Rd	Shift circular right through carry	$c \leftarrow Rd_0; Rd \leftarrow c{:}(Rd{>}{>}1); z \leftarrow (Rd == 0) \wedge z$
20	shr	Rd	Shift circular right	$Rd \leftarrow Rd_0{:}(Rd{>}{>}1)$
21	shcl	Rd	Shift circular left through carry	$c \leftarrow Rd_{N-1}; Rd \leftarrow (Rd{<}{<}1){:}c; z \leftarrow (Rd == 0) \wedge z$
22	shl	Rd	Shift circular left	$Rd \leftarrow (Rd{<}{<}1){:}Rd_{N-1}$
23	not	Rd	Bitwise NOT	$c \leftarrow Rd_{N-1}; Rd \leftarrow \neg Rd; z \leftarrow (Rd == 0)$
24	and	Rd	Bitwise AND of two GPRs	$c \leftarrow 1; Rd \leftarrow Rd \wedge Rs; z \leftarrow (Rd == 0)$
25	or	Rd	Bitwise OR of two GPRs	$c \leftarrow (Rs{\rightarrow}Rd); Rd \leftarrow Rd \vee Rs; z \leftarrow (Rd == 0)$
26	xor	Rd	Bitwise XOR of two GPRs	$c \leftarrow (Rd{\rightarrow}Rs); Rd \leftarrow Rd \oplus Rs; z \leftarrow (Rd == 0)$
27	ide	Rd	Identity (check GPR for zero)	$Rd \leftarrow Rd; z \leftarrow (Rd == 0) \wedge z$
			BRANCH INSTRUCTIONS	
28	jmp	a	Jump	$PC \leftarrow CONST(a)$
29	jc	a	Jump if carry	if $(c = 1)$ then $PC \leftarrow CONST(a)$
30	jz	a	Jump if zero	if $(z = 1)$ then $PC \leftarrow CONST(a)$
31	jnc	a	Jump if if not carry	if $(c = 0)$ then $PC \leftarrow CONST(a)$
32	jnz	a	Jump if not zero	if $(z = 0)$ then $PC \leftarrow CONST(a)$
33	leaf		Store PC+1 to LEAF	$LEAF \leftarrow PC+1$
34	ret		Return	$PC \leftarrow LEAF$; skip next instruction
35	sc		Skip next instruction if carry	if $(c = 1)$ then skip next instruction
36	sz		Skip next instruction if zero	if $(z = 1)$ then skip next instruction
37	snc		Skip next instruction if not carry	if $(c = 0)$ then skip next instruction
38	snz		Skip next instruction if not zero	if $(z = 0)$ then skip next instruction
39	mov	RC, Rs	Jump indirect	$PC \leftarrow Rs$
			CONTROL INSTRUCTIONS	
40	nop		No operation	
41	halt		Stop machine clock	

Symbol	Description
Rs	source GPR (RA or RB)
Rd	destination GPR (RA or RB)
a	address
k	constant 0..15
c	carry flag
z	zero flag
X_n	n-th bit of X
N	12