Universität des Saarlandes
FR 6.2 - Informatik
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DLX-Instruktionssatz
Informatik II 2008

Alle immediate-Konstanten sind sign-extended.

I-type Instructions

I[31:26]	mnemonic	effect
load/store		
100011	lw	RD = m(RS1+imm)
101011	sw	m(RS1+imm) = RD
01****	compimm	RD = aluop(I[29:26])(RS1, imm)
control		
110100	beqz	PC = PC + (RS1 = 0 ? imm:1)
110101	bnez	PC = PC + (RS1 $\neq$ 0 ? imm:1)
110110	jr	PC = RS1
110111	jalr	R31=PC+1 ; PC = RS1

R-type Instructions

I[31:26]	I[5:0]	mnemonic	effect
000000	00****	comp	RD = aluop(I[3:0])(RS1, RS2)
special moves			
000000	010000	movs2i	SA = RS1 (SPR[SA] $\rightarrow$ GPR[RS1])
000000	010001	movi2s	RD = SA (GPR[RD] $\rightarrow$ SPR[SA])

J-type Instructions

I[31:26]	mnemonic	effect
control		
000010	j	PC = PC + imm
000011	jal	R31=PC+1 ; PC = PC + imm
111110	trap	spaeter
111111	rfe	spaeter

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I-type compimm

I[31:26]	mnemonic	effect
01 ****	compimm	RD = aluop(I[29:26])(RS1, imm)
Arithmetic, Logical, Operation		
01 0000	addio	RD = RS1 + imm
01 0001	addi	RD = RS1 + imm (no overflow)
01 0010	subio	RD = RS1 - imm
01 0011	subi	RD = RS1 - imm (no overflow)
01 0100	andi	RD = RS1 $\wedge$ imm
01 0101	ori	RD = RS1 $\vee$ imm
01 0110	xori	RD = RS1 $\oplus$ imm
01 0111	lhgi	RD = imm 0^{16}
Test Set Operation		
01 1000	clri	RD = (false ? 1 : 0);
01 1001	sgri	RD = (RS1 $>$ imm ? 1 : 0);
01 1010	seqi	RD = (RS1 $=$ imm ? 1 : 0);
01 1011	sgei	RD = (RS1 $\geq$ imm ? 1 : 0);
01 1100	slsi	RD = (RS1 $<$ imm ? 1 : 0);
01 1101	snei	RD = (RS1 $\neq$ imm ? 1 : 0);
01 1110	slei	RD = (RS1 $\leq$ imm ? 1 : 0);
01 1111	seti	RD = (true ? 1 : 0);

R-type comp

I[31:26]	I[5:0]	mnemonic	effect
000000	00 ****	comp	RD = aluop(I[3:0])(RS1, RS2)
Arithmetic, Logical, Operation			
000000	00 0000	addo	RD = RS1 + RS2
000000	00 0001	add	RD = RS1 + RS2 (no overflow)
000000	00 0010	subo	RD = RS1 - RS2
000000	00 0011	sub	RD = RS1 - RS2 (no overflow)
000000	00 0100	and	RD = RS1 $\wedge$ RS2
000000	00 0101	or	RD = RS1 $\vee$ RS2
000000	00 0110	xor	RD = RS1 $\oplus$ RS2
000000	00 0111	lhg	RD = RS2[15:0] 0^{16}
Test Set Operation			
000000	00 1000	clr	RD = (false ? 1 : 0);
000000	00 1001	sgr	RD = (RS1 > RS2 ? 1 : 0);
000000	00 1010	seq	RD = (RS1 = RS2 ? 1 : 0);
000000	00 1011	sge	RD = (RS1 $\geq$ RS2 ? 1 : 0);
000000	00 1100	sls	RD = (RS1 < RS2 ? 1 : 0);
000000	00 1101	sne	RD = (RS1 $\neq$ RS2 ? 1 : 0);
000000	00 1110	sle	RD = (RS1 $\leq$ RS2 ? 1 : 0);
000000	00 1111	set	RD = (true ? 1 : 0);