

# Gameboy CPU (LR35902) instruction set

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF	
0x	NOP 1 4 - - - -	LD BC,d16 3 12 - - - -	LD (BC),A 1 8 - - - -	INC BC 1 8 - - - -	INC B 1 4 Z 0 H -	DEC B 1 4 Z 1 H -	LD B,d8 2 8 - - - -	RLCA 1 4 0 0 0 C	LD (a16),SP 3 20 - - - -	ADD HL,BC 1 8 - 0 H C	LD A,(BC) 1 8 - - - -	DEC BC 1 8 - - - -	INC C 1 4 Z 0 H -	DEC C 1 4 Z 1 H -	LD C,d8 2 8 - - - -	RRCA 1 4 0 0 0 C	
1x	STOP 0 2 4 - - - -	LD DE,d16 3 12 - - - -	LD (DE),A 1 8 - - - -	INC DE 1 8 Z 0 H -	INC D 1 4 Z 1 H -	DEC D 1 4 Z 1 H -	LD D,d8 2 8 - - - -	RLA 1 4 0 0 0 C	JR r8 2 12 - - - -	ADD HL,DE 1 8 - 0 H C	LD A,(DE) 1 8 - - - -	DEC DE 1 8 - - - -	INC E 1 4 Z 0 H -	DEC E 1 4 Z 1 H -	LD E,d8 2 8 - - - -	RRA 1 4 0 0 0 C	
2x	JR NZ,r8 2 12/8 - - - -	LD HL,d16 3 12 - - - -	LD (HL),A 1 8 - - - -	INC HL 1 8 Z 0 H -	INC HL 1 4 Z 1 H -	DEC H 1 4 Z 1 H -	LD H,d8 2 8 Z - 0 C	DAA 1 4 Z - 0 C	JR r8 2 12/8 - - - -	ADD HL,HL 1 8 - 0 H C	LD A,(HL+) 1 8 - - - -	DEC HL 1 8 - - - -	INC L 1 4 Z 0 H -	DEC L 1 4 Z 1 H -	LD L,d8 2 8 - - - -	CPL - 1 1 -	
3x	JR NC,r8 2 12/8 - - - -	LD SP,d16 3 12 - - - -	LD (HL),A 1 8 - - - -	INC SP 1 8 Z 0 H -	INC (HL) 1 12 Z 1 H -	DEC (HL) 1 12 Z 1 H -	LD (HL),d8 2 12 - 0 0 1	SCF 1 4 - 0 0 1	JR r8 2 12/8 - - - -	ADD HL,SP 1 8 - 0 H C	LD A,(HL-) 1 8 - - - -	DEC SP 1 8 - - - -	INC A 1 4 Z 0 H -	DEC A 1 4 Z 1 H -	LD A,d8 2 8 - - - -	CCF - 0 0 C	
4x	LD B,B 1 4 - - - -	LD B,C 1 4 - - - -	LD B,D 1 4 - - - -	LD B,E 1 4 - - - -	LD B,H 1 4 - - - -	LD B,L 1 4 - - - -	LD B,(HL) 1 8 - - - -	LD C,B 1 4 - - - -	LD C,C 1 4 - - - -	LD C,D 1 4 - - - -	LD C,E 1 4 - - - -	LD C,H 1 4 - - - -	LD C,L 1 4 - - - -	LD C,(HL) 1 8 - - - -	LD C,A 1 4 - - - -		
5x	LD D,B 1 4 - - - -	LD D,C 1 4 - - - -	LD D,D 1 4 - - - -	LD D,E 1 4 - - - -	LD D,H 1 4 - - - -	LD D,L 1 4 - - - -	LD D,(HL) 1 8 - - - -	LD D,A 1 4 - - - -	LD E,B 1 4 - - - -	LD E,C 1 4 - - - -	LD E,D 1 4 - - - -	LD E,E 1 4 - - - -	LD E,H 1 4 - - - -	LD E,L 1 4 - - - -	LD E,(HL) 1 8 - - - -	LD E,A 1 4 - - - -	
6x	LD H,B 1 4 - - - -	LD H,C 1 4 - - - -	LD H,D 1 4 - - - -	LD H,E 1 4 - - - -	LD H,H 1 4 - - - -	LD H,L 1 4 - - - -	LD H,(HL) 1 8 - - - -	LD H,A 1 4 - - - -	LD L,B 1 4 - - - -	LD L,C 1 4 - - - -	LD L,D 1 4 - - - -	LD L,E 1 4 - - - -	LD L,H 1 4 - - - -	LD L,(HL) 1 8 - - - -	LD L,A 1 4 - - - -		
7x	LD (HL),B 1 8 - - - -	LD (HL),C 1 8 - - - -	LD (HL),D 1 8 - - - -	LD (HL),E 1 8 - - - -	LD (HL),H 1 8 - - - -	HALT 1 8 - - - -	LD (HL),L 1 8 - - - -	LD (HL),A 1 8 - - - -	LD A,B 1 4 - - - -	LD A,C 1 4 - - - -	LD A,D 1 4 - - - -	LD A,E 1 4 - - - -	LD A,H 1 4 - - - -	LD A,L 1 4 - - - -	LD A,(HL) 1 8 - - - -	LD A,A 1 4 - - - -	
8x	ADD A,B 1 4 Z 0 H C	ADD A,C 1 4 Z 0 H C	ADD A,D 1 4 Z 0 H C	ADD A,E 1 4 Z 0 H C	ADD A,H 1 4 Z 0 H C	ADD A,L 1 4 Z 0 H C	ADD A,(HL) 1 8 Z 0 H C	ADD A,A 1 4 Z 0 H C	ADC A,B 1 4 Z 0 H C	ADC A,C 1 4 Z 0 H C	ADC A,D 1 4 Z 0 H C	ADC A,E 1 4 Z 0 H C	ADC A,H 1 4 Z 0 H C	ADC A,L 1 4 Z 0 H C	ADC A,(HL) 1 4 Z 0 H C	ADC A,A 1 4 Z 0 H C	
9x	SUB B 1 4 Z 1 H C	SUB C 1 4 Z 1 H C	SUB D 1 4 Z 1 H C	SUB E 1 4 Z 1 H C	SUB F 1 4 Z 1 H C	SUB G 1 4 Z 1 H C	SUB H 1 4 Z 1 H C	SUB I 1 4 Z 1 H C	SUB J 1 4 Z 1 H C	SUB K 1 4 Z 1 H C	SUB L 1 4 Z 1 H C	SUB M 1 4 Z 1 H C	SBC A,B 1 4 Z 1 H C	SBC A,D 1 4 Z 1 H C	SBC A,E 1 4 Z 1 H C	SBC A,(HL) 1 4 Z 1 H C	SBC A,A 1 4 Z 1 H C
Ax	AND B 1 4 Z 0 1 0	AND C 1 4 Z 0 1 0	AND D 1 4 Z 0 1 0	AND E 1 4 Z 0 1 0	AND H 1 4 Z 0 1 0	AND L 1 4 Z 0 1 0	AND (HL) 1 8 Z 0 1 0	AND A 1 4 Z 0 1 0	XOR B 1 4 Z 0 0 0	XOR C 1 4 Z 0 0 0	XOR D 1 4 Z 0 0 0	XOR E 1 4 Z 0 0 0	XOR H 1 4 Z 0 0 0	XOR L 1 4 Z 0 0 0	XOR R 1 4 Z 0 0 0	XOR (HL) 1 4 Z 0 0 0	XOR A 1 4 Z 0 0 0
Bx	OR B 1 4 Z 0 0 0	OR C 1 4 Z 0 0 0	OR D 1 4 Z 0 0 0	OR E 1 4 Z 0 0 0	OR H 1 4 Z 0 0 0	OR L 1 4 Z 0 0 0	OR (HL) 1 8 Z 0 0 0	OR A 1 4 Z 0 0 0	CP B 1 4 Z 1 H C	CP C 1 4 Z 1 H C	CP D 1 4 Z 1 H C	CP E 1 4 Z 1 H C	CP H 1 4 Z 1 H C	CP L 1 4 Z 1 H C	CP (HL) 1 4 Z 1 H C	CP A 1 4 Z 1 H C	
Cx	RET NZ 1 20/8 - - - -	POP BC 1 12 - - - -	JP NZ,a16 3 16/12 - - - -	JP a16 3 16 - - - -	CALL NZ,a16 3 24/12 - - - -	PUSH BC 1 16 Z 0 H C	ADD A,d8 1 8 Z 0 H C	RST 00H 1 16 Z 0 H C	RET Z 1 16 - - - -	RET 1 16 - - - -	JP Z,a16 3 16/12 - - - -	PREFIX CB 1 4 - - - -	CALL a16 3 24/12 - - - -	CALL a16 2 8 Z 0 H C	RST 08H 1 16 Z 0 H C		
Dx	RET NC 1 20/8 - - - -	POP DE 1 12 - - - -	JP NC,a16 3 16/12 - - - -	CALL NC,a16 3 24/12 - - - -	PUSH DE 1 16 Z 1 H C	SUB d8 1 28 Z 1 H C	RST 10H 1 16 Z 1 H C	RET C 1 16 - - - -	RET I 1 16 - - - -	JP C,a16 3 16/12 - - - -	CALL C,a16 3 24/12 - - - -	SBC A,d8 2 8 Z 1 H C	RST 18H 1 16 Z 1 H C	- - - -	- - - -		
Ex	LDH A,(a8),A 2 12 - - - -	POP HL 1 12 - - - -	LD (C),A 2 8 - - - -			PUSH HL 1 16 Z 0 1 0	AND d8 1 28 Z 0 1 0	RST 20H 1 16 Z 0 1 0	ADD SP,r8 2 16 Z 0 H C	JP (HL) 1 4 Z 3 16 - - - -	LD (a16),A 3 16 - - - -				XOR d8 2 8 Z 0 0 0	RST 28H 1 16 Z 0 0 0	
Fx	LDH A,(a8),A 2 12 - - - -	POP AF 1 12 - - - -	LD A,(C) 2 8 Z N H C		DI 1 4 - - - -	PUSH AF 1 16 Z 0 0 0	OR d8 1 28 Z 0 0 0	RST 30H 1 16 Z 0 0 0	LD HL,SP+r8 2 16 Z 0 H C	LD SP,HL 1 22 Z 0 H C	LD A,(a16) 3 16 - - - -	EI 1 4 - - - -			CP d8 2 8 Z 1 H C	RST 38H 1 16 Z 1 H C	

## Prefix CB

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	RLC B 2 8 Z 0 0 C	RLC C 2 8 Z 0 0 C	RLC D 2 8 Z 0 0 C	RLC E 2 8 Z 0 0 C	RLC H 2 8 Z 0 0 C	RLC L 2 8 Z 0 0 C	RLC (HL) 2 8 Z 0 0 C	RLC A 2 8 Z 0 0 C	RRC B 2 8 Z 0 0 C	RRC C 2 8 Z 0 0 C	RRC D 2 8 Z 0 0 C	RRC E 2 8 Z 0 0 C	RRC H 2 8 Z 0 0 C	RRC L 2 8 Z 0 0 C	RRC (HL) 2 8 Z 0 0 C	RRCA 2 8 Z 0 0 C
1x	RL B 2 8 Z 0 0 C	RL C 2 8 Z 0 0 C	RL D 2 8 Z 0 0 C	RL E 2 8 Z 0 0 C	RL H 2 8 Z 0 0 C	RL L 2 8 Z 0 0 C	RL (HL) 2 8 Z 0 0 C	RL A 2 8 Z 0 0 C	RRB 2 8 Z 0 0 C	RR C 2 8 Z 0 0 C	RR D 2 8 Z 0 0 C	RR E 2 8 Z 0 0 C	RR H 2 8 Z 0 0 C	RR L 2 8 Z 0 0 C	RR (HL) 2 8 Z 0 0 C	RR A 2 8 Z 0 0 C
2x	SLA B 2 8 Z 0 0 C	SLA C 2 8 Z 0 0 C	SLA D 2 8 Z 0 0 C	SLA E 2 8 Z 0 0 C	SLA H 2 8 Z 0 0 C	SLA L 2 8 Z 0 0 C	SLA (HL) 2 8 Z 0 0 C	SLA A 2 8 Z 0 0 C	SRA B 2 8 Z 0 0 C	SRA C 2 8 Z 0 0 C	SRA D 2 8 Z 0 0 C	SRA E 2 8 Z 0 0 C	SRA H 2 8 Z 0 0 C	SRA L 2 8 Z 0 0 C	SRA (HL) 2 8 Z 0 0 C	SRA A 2 8 Z 0 0 C
3x	SWAP B 2 8 Z 0 0 0	SWAP C 2 8 Z 0 0 0	SWAP D 2 8 Z 0 0 0	SWAP E 2 8 Z 0 0 0	SWAP F 2 8 Z 0 0 0	SWAP G 2 8 Z 0 0 0	SWAP H 2 8 Z 0 0 0	SWAP L 2 8 Z 0 0 0	SWAP A 2 8 Z 0 0 0	SWAP B 2 8 Z 0 0 0	SRL C 2 8 Z 0 0 0	SRL D 2 8 Z 0 0 0	SRL E 2 8 Z 0 0 0	SRL H 2 8 Z 0 0 0	SRL (HL) 2 8 Z 0 0 0	SRL A 2 8 Z 0 0 0
4x	BIT 0,B 2 8 Z 0 1 -	BIT 0,C 2 8 Z 0 1 -	BIT 0,D 2 8 Z 0 1 -	BIT 0,E 2 8 Z 0 1 -	BIT 0,H 2 8 Z 0 1 -	BIT 0,L 2 8 Z 0 1 -	BIT 0,(HL) 2 8 Z 0 1 -	BIT 0,A 2 8 Z 0 1 -	BIT 1,B 2 8 Z 0 1 -	BIT 1,C 2 8 Z 0 1 -	BIT 1,D 2 8 Z 0					