JN Instruction Set

Instruction	Description	Effects on SR								Syntax	Operation	Example	Cycles	Size	Pipe
		-	-	-	-	N	Z	C	V						
Arithmetic Operations															
ADD								C	V	ADD Ra, Rb	Ra = Ra + Rb	ADD X, R1	1	2	
ADD.X								C	V	ADD.X Ra, Rb, Rc	Ra = Rb + Rc	ADD R0, R1, R2	2	3	
SUB								C	V	SUB Ra, Rb	Ra = Ra – Rb	SUB A, R2	1	2	
SUB.X								C	V	SUB Ra, Rb, Rc	Ra = Rb – Rc	SUB R3, A, R2	2	3	
MUL								C	V	MUL Ra, Rb	Ra = Ra x Rb	MUL R0, R1	4	2	
MUL.X								C	V	MUL Ra, Rb, Rc	Ra = Rb x Rc	MUL R0, R1, R2	5	3	
DIV	Unsigned division									DIV Ra, Rb	Ra = Ra / Rb	DIV R0, R1	16	2	
DIV.X	Unsigned extended division									DIV Ra, Rb, Rc	Ra = Rb / Rc	DIV A, R0, R1	17	3	
MOD										DIV Ra, Rb	Ra = Ra % Rb	MOD R0, R1	20	2	
INC							Z		V	INC Ra	Ra = Ra + 1	INC R1	4	2	
DEC						N	Z		V	DEC Ra	Ra = Ra – 1	DEC R1	4	2	
Logic Operations															
AND	Bitwise ANDs operands									AND Ra, Rb	Ra = Ra & Rb		1	2	
OR										OR Ra, Rb	Ra = Ra | Rb		1	2	
XOR										XOR Ra, Rb	Ra = Ra ^ Rb		1	2	
NOT										NOT Ra	Ra = ~Ra		1	2	
SHL										SHL Ra, Rb	Ra = Ra << Rb		2	2	
SHR										SHR Ra, Rb	Ra = Ra >> Rb		2	2	
Transfer															
LD										LD Ra, #0x12	Ra = 0x12		1	3	
LD										LD Ra, #0x1213	Ra = 0x1213		1	4	
LD										LD Ra, #0x12131415	Ra = 0x12131415		1	6	
LD										LD Ra, 0x12131415	Ra = MEM[0x12131415]		4	6	
LD										LD Ra, *0x12131415	Ra = MEM[MEM[0x12131415]]		6	6	
LD										LD Ra, 0x12 + A|X|Y|SP|PC	Ra = MEM[0x12 + A|X|Y|SP|PC]		5	3	
LD										LD Ra, 0x1213 + A|X|Y|SP|PC	Ra = MEM[0x1213 + A|X|Y|SP|PC]		5	4	
ST										ST Ra, 0x12131415	MEM[0x12131415] = Ra		4	6	
ST										ST Ra, *0x12131415	MEM[MEM[0x12131415] = Ra		6	6	
ST										ST Ra, 0x12 + A|X|Y|SP|PC	MEM[0x12 + A|X|Y|SP|PC] = Ra		5	3	
ST										ST Ra, 0x1213 + A|X|Y|SP|PC	MEM[0x1213 + A|X|Y|SP|PC] = Ra		5	4	
MOV										MOV Ra, Rb	Ra = Rb		1	2	
Subroutines															
CALL										CALL Ra	PC = Ra		6	2	FLUSH
RET										RET				1	FLUSH
Branching															
CMP						N	Z	C	V	CMP Ra, Rb	Test { Ra – Rb }		1	2	
JE										JE Ra	if Z then PC = Ra		1	2	FLUSH
JNE										JNE Ra	if !Z then PC = Ra		1	2	FLUSH
JG										JG Ra	if !N and !Z then PC = Ra		1	2	FLUSH
JGE										JGE Ra	if !N then PC = Ra		1	2	FLUSH
JL										JL Ra	if N and !Z then PC = Ra		1	2	FLUSH
JLE										JLE Ra	if N then PC = Ra		1	2	FLUSH
JMP										JMP Ra	PC = Ra		1	2	FLUSH
Misc															
NOP										NOP			1	1	