

Addressing Mode RTL for 1 Operand Instructions and Conditional Jumps

Zachary Bonneau | Texas Tech University | Spring 2024 | Rev. 1.0

Dst	Clk Count	RTL	Address/Mux 0 = MDB 1 = SP-2 2 = Address 3 = R[dst]	srcM 0 = R[src] 1 = PC 2 = dataFwd 3 = MDB	src Latch	dstM 0 = R[dst] 1 = Branch 2 = dataFwd 3 = MDB	dst Latch	Indirect	Ex	MR	MW	MO 0 = None 1 = IF 2 = Offset 3 = SP--
Rm	1	dst <- R[dst]	-	-	0	0	1	0	1	0	0	1
@Rm @Rm+	3	dst <- M[Rdst], Addr <- R[dst] None (MDB <- FU)	3	-	0	1	1	1	1	0	1	0
		Instruction Fetch	-	-	0	0	0	0	0	0	0	0
x(Rm) EDE &EDE	4	dst <- R[dst], ADDR <- Offset dst <- MDB, Addr <- Address	0	-	0	0	1	0	0	1	0	2
		None (MDB <- FU)	2	-	0	1	1	0	1	0	1	0
		Instruction Fetch	-	-	0	0	0	0	0	0	0	0
			-	-	0	0	0	0	0	0	0	1
PUSH	Clk Count											
Rm	3	dst <- R[dst], Addr <- SP-2 None (MDB <- FU = dst)	1	-	0	1	1	0	0	0	1	3
		Instruction Fetch	-	-	0	0	0	0	0	0	0	0
@Rm @Rm+ #N	3	dst <- M[Rdst], Addr <- SP-2 None (MDB <- FU = dst)	1	-	0	1	1	1	0	0	1	3
		Instruction Fetch	-	-	0	0	0	0	0	0	0	0
			-	-	0	0	0	0	0	0	0	1
x(Rm) EDE &EDE	4	dst <- R[dst], Addr <- Offset dst <- M[Rdst+Address], Addr <- SP-2	0	-	0	1	1	0	0	1	0	2
		None (MDB <- FU = dst)	1	-	0	1	1	0	0	1	1	3
		Instruction Fetch	-	-	0	0	0	0	0	0	0	0
			-	-	0	0	0	0	0	0	0	1
Call	Clk Count											
Rm	4	dst <- R[dst] src <- PC, Addr <- SP-2 None (MDB <- FU = src)	-	-	0	1	1	0	0	0	0	0
		Instruction Fetch	1	1	1	0	0	0	1	0	1	3
			-	-	0	0	0	0	0	0	0	0
@Rm @Rm+ #N	4	dst <- M[R[dst]] src <- PC, Addr <- SP-2 None (MDB <- FU = src)	-	-	0	1	1	1	0	0	0	0
		Instruction Fetch	1	1	1	0	0	0	1	0	1	3
			-	-	0	0	0	0	0	0	0	0
			-	-	0	0	0	0	0	0	0	1
x(Rm) EDE &EDE	5	dst <- R[dst], Addr <- Offset dst <- M[R[dst] + Addr] src <- PC, Addr <- SP-2 None (MDB <- FU = src)	0	-	0	1	1	0	0	1	0	2
		Instruction Fetch	-	-	0	0	0	0	0	0	0	0
			-	-	0	0	0	0	0	0	0	1
RETI	Clk Count											
		src <- M[SP], resA <- SR None	-	3	1	0	0	1	1	0	0	0
RETI	5	src <- M[SP], resA <- PC None Instruction Fetch	-	3	1	0	0	0	0	0	0	0
			-	-	0	0	0	0	0	0	0	0
			-	-	0	0	0	0	0	0	0	1
Jumps	Clk Count											
Jxx	2	src <- PC, dst <- Branch Instruction Fetch	-	1	1	1	1	0	1	0	0	0
			-	-	0	0	0	0	0	0	0	1