

State name	RTL description	Relevant control signals
Fetch 0	IR= M(PC) PC=PC+4	IorD=0, MemRead=1, IRWrite=1  ALUSrcA=0, ALUSrcB=01, ALUop=00 (add), PCSrc=00, PCWrite=1
Decode 1	A = Rs B = Rt  ALUOut = PC+( sext(imm)<<2 )	(no signals are needed)  ALUSrcA=0, ALUSrcB=11, ALUop=00 (add) (for branch)
AdrCmp 2	ALUOut = A+( sext(imm) )  (B = Rt)	ALUSrcA=1, ALUSrcB=10, ALUop=00 (add) (for lw & sw)  (for sw)
ALU 6	ALUOut = A op B	ALUSrcA=1, ALUSrcB=00, ALUop=10 (funct bits determines op)
Branch 8	if (A == B) PC=ALUOut else do nothing	ALUSrcA=1, ALUSrcB=00, ALUop=01(sub), PCSrc=01, PCWriteCond=1
Jump 9	PC= PC[31:28]  (IR[25:0]<<2)	PCSrc=10, PCWrite=1
Load 3	MDR = M(ALUOut)	IorD=1, MemRead=1
Store 5	M(ALUOut) = B	IorD=1, MemWrite=1
WBR 7	Rd = ALUOut	RegDest=1, MemtoReg=0 RegWrite=1
WB 4	Rt = MDR	RegDest=0, MemtoReg=1 RegWrite=1



