

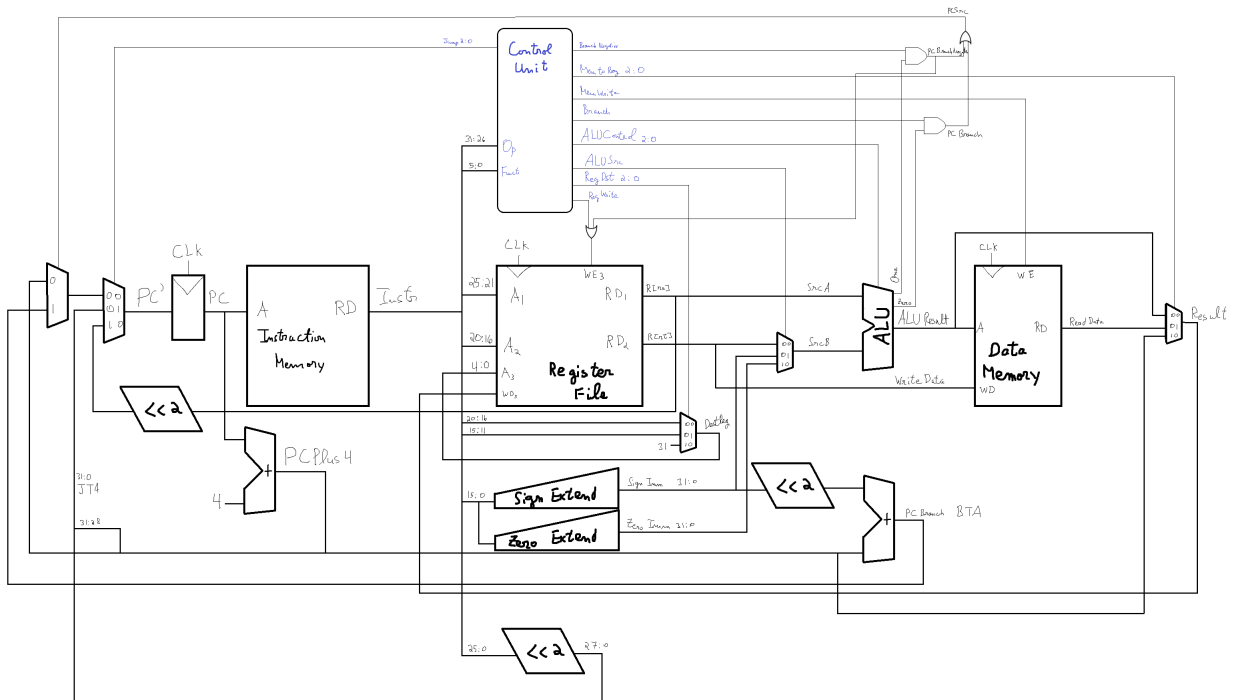
# IFT 1227 - Architecture des ordinateurs

## Rapport

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### Chemin de donnée



## Unité de contrôle

Instr	Op <sub>5:0</sub>	RegWrite	RegDst	AluSrc	Branch	BranchNegative	MemWrite	MemtoReg	Jump	F
R-type	000000	1	01	00	0	0	0	00	00	101
lw	100011	1	00	01	0	0	0	01	00	000
sw	101011	0	XX	01	0	0	1	XX	00	000
beq	000100	0	XX	00	1	0	0	XX	00	001
j	000010	0	XX	XX	X	X	0	XX	01	XXX
addi	001000	1	00	01	0	0	0	00	00	000
jr	000000	0	XX	XX	X	X	0	XX	10	XXX
andi	001100	1	00	10	0	0	0	00	00	010
jal	000011	1	10	XX	X	X	0	10	01	XXX
ori	001101	1	00	10	0	0	0	00	00	011
bNal	100100	0	10	00	0	1	0	10	00	100

ALUOp <sub>2:0</sub>	Meaning	ALUControl <sub>5:0</sub>
000	Add	100000
001	Sub	100010
010	And	100100
011	Or	100101
100	SLT	101010
101	R-type	<i>ffffff</i>

## Programme de test

Adresse	Code machine <sub>hex</sub>	Instruction MIPS	Commentaire
0	20080006	addi \$8, \$0, 6	# \$8(0) = \$0(0) + 6 = 6
1	ac08003c	sw \$8, 60(\$0)	# \$8(6) -> M[60 + \$0(0) = 60] Test #1 - addi
2	2109fffb	addi \$9, \$8, -5	# \$9(0) = \$8(6) - 5 = 1
3	ad28003c	sw \$8, 60(\$9)	# \$8(6) -> M[60 + \$9(1) = 61] Test #2 - addi and sw
4	01094020	add \$8, \$8, \$9	# \$8(6) = \$8(6) + \$9(1) = 7
5	ac08003e	sw \$8, 62(\$0)	# \$8(7) -> M[62 + \$0(0) = 62] Test #3 - add
6	01094024	and \$8, \$8, \$9	# \$8(7) = \$8(7) & \$9(1) = 1
7	ac08003f	sw \$8, 63(\$0)	# \$8(1) -> M[63 + \$0(0) = 63] Test #4 - and
8	21080004	addi \$8, \$8, 4	# \$8(1) = \$8(1) + 4 = 5
9	01094027	nor \$8, \$8, \$9	# \$8(5) = ~ (\$8(5)   \$9(1)) = -6
10	ac080040	sw \$8, 64(\$0)	# \$8(-6) -> M[64 + \$0(0) = 64] Test #5 - nor
11	20080002	addi \$8, \$0, 2	# \$8(-6) = \$0(0) + 2 = 2
12	01094025	or \$8, \$8, \$9	# \$8(2) = \$8(2)   \$9(1) = 3
13	ac080041	sw \$8, 65(\$0)	# \$8(3) -> M[65 + \$0(0) = 65] Test #6 - or
14	0128502a	slt \$10, \$9, \$8	# \$10(0) = (\$9(1) < \$8(3) ? 1 : 0) = 1
15	ac0a0042	sw \$10, 66(\$0)	# \$10(1) -> M[66 + \$0(0) = 66] Test #7 - slt
16	00084080	sll \$8, \$8, 2	# \$8(3) = \$8(3) << 2 = 12
17	ac080043	sw \$8, 67(\$0)	# \$8(12) -> M[67 + \$0(0) = 67] Test #8 - sll
18	01094022	sub \$8, \$8, \$9	# \$8(12) = \$8(12) - \$9(1) = 11
19	ac080044	sw \$8, 68(\$0)	# \$8(11) -> M[68 + \$0(0) = 68] Test #9 - sub
20	8c0a0044	lw \$10, 68(\$0)	# \$10(1) <- M[68 + \$0(0) = 68] = 11
21	ac080045	sw \$10, 69(\$0)	# \$10(11) -> M[69 + \$0(0) = 69] Test #10 - lw
22	3108000d	andi \$8, \$8, 13	# \$8(11) = \$8(11) & 13 = 9
23	ac080046	sw \$8, 70(\$0)	# \$8(9) -> M[70 + \$0(0) = 70] Test #11 - andi
24	35080003	ori \$8, \$8, 3	# \$8(9) = \$8(9)   3 = 11
25	ac080047	sw \$8, 71(\$0)	# \$8(11) -> M[71 + \$0(0) = 71] Test #12 - ori
26	11090001	beq \$8, \$9, tag1	# if \$8(11) == \$9(1) goto tag1
27	21080003	addi \$8, \$8, 3	# \$8(11) = \$8(11) + 3 = 14
28	ac080048	tag1: sw \$8, 72(\$0)	# \$8(14) -> M[72 + \$0(0) = 72] Test #13 - beq
29	00094020	add \$8, \$0, \$9	# \$8(14) = \$0(0) + \$9(1) = 1
30	11090001	beq \$8, \$9, tag2	# if \$8(1) == \$9(1) goto tag2
31	21080005	addi \$8, \$8, 5	# \$8(1) = \$8(1) + 5 = 6 EXPTECTED TO SKIP
32	ac080049	tag2: sw \$8, 73(\$0)	# \$8(1) -> M[73 + \$0(0) = 73] Test #14 - beq
33	08000023	j tag3	# goto tag3
34	21080005	addi \$8, \$8, 5	# \$8(1) = \$8(1) + 5 = 6 EXPTECTED TO SKIP
35	ac08004a	tag3: sw \$8, 74(\$0)	# \$8(1) -> M[74 + \$0(0) = 74] Test #15 - j
36	0c000026	jal tag4	# goto tag4
37	21080005	addi \$8, \$8, 5	# \$8(1) = \$8(1) + 5 = 6 EXPTECTED TO SKIP
38	ac08004b	tag4: sw \$8, 75(\$0)	# \$8(1) -> M[75 + \$0(0) = 75] Test #16 - jal
39	ac1f004c	sw \$31, 76(\$0)	# \$31(148) -> M[76 + \$0(0) = 76] Test #17 - jal
40	200a002b	addi \$10, \$0, 43	# \$10(11) = \$0 + 43 = 43
41	01400008	jr \$10	# goto \$10
42	2108fffb	addi \$8, \$8, -5	# \$8(1) = \$8(1) - 5 = -4 EXPECTED TO SKIP
43	91000001	bNal \$8, tag5	# if \$8(1) is negative, goto tag5
44	2108fff9	addi \$8, \$8, -7	# \$8(1) = \$8(1) - 7 = -6
45	ac08004d	tag5: sw \$8, 77(\$0)	# \$8(-6) -> M[77 + \$0(0) = 77] Test #18 - bNal and jr
46	ac1f004e	sw \$31, 78(\$0)	# \$31(148) -> M[78 + \$0(0) = 78] Test #19 - bNal
47	91000001	bNal \$8, tag6	# if \$8(-6) is negative, goto tag6
48	20080005	addi \$8, \$0, 5	# \$8(-6) = \$0(0) + 5 = 5 EXPECTED TO SKIP
49	ac08004f	tag6: sw \$8, 79(\$0)	# \$8(-6) -> M[79 + \$0(0) = 79] Test #20 - bNal
50	ac1f0050	sw \$31, 80(\$0)	# \$31(192) -> M[80 + \$0(0) = 80] Test #21 - bNal