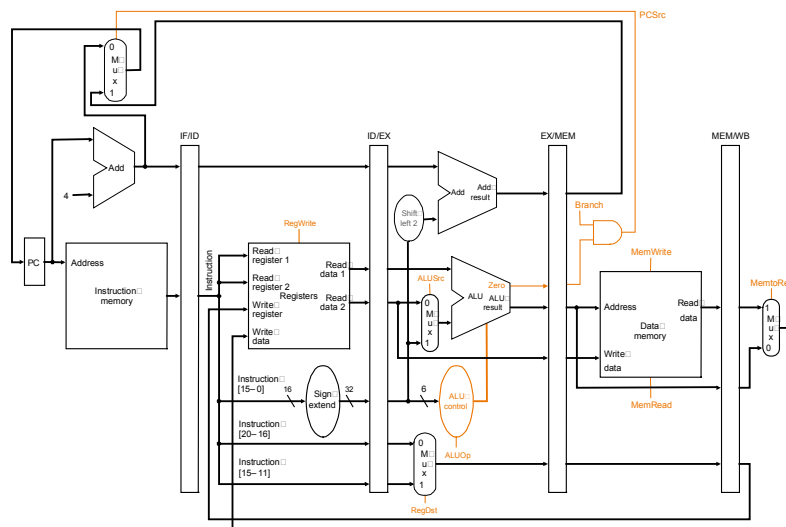
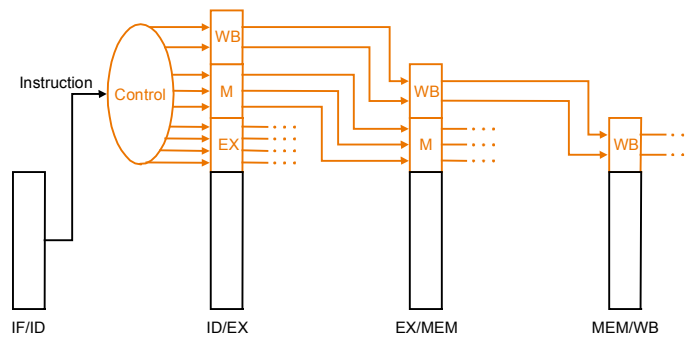


Il controllo nel pipeline

Pipeline



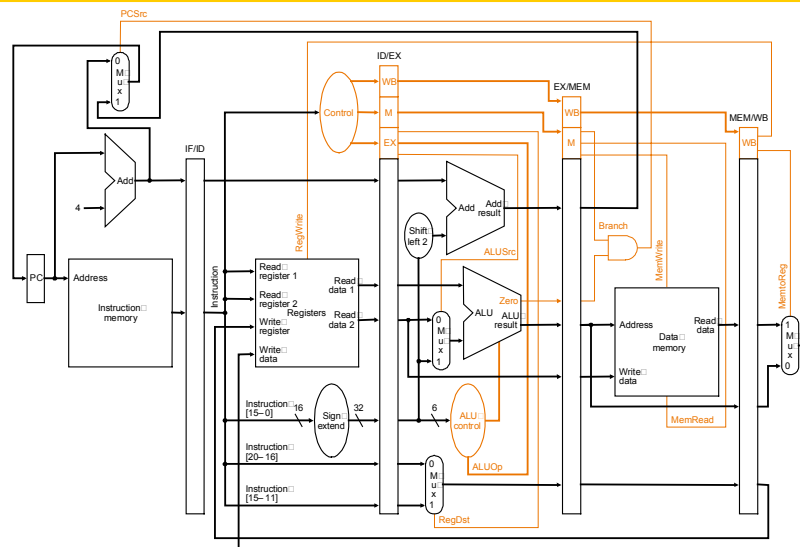
Controllo per il pipeline



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Unità di Elaborazione + Unità di controllo



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Istruzioni utilizzate

| | | | | | | |
|-------------------------|--------|-------|-------|-------------|-------|--------|
| lw rt, spiazamento (rs) | 100000 | rs | rt | spiazamento | | |
| | 31 | 26 25 | 21 20 | 16 15 | | 0 |
| sw rt, spiazamento (rs) | 101000 | rs | rt | spiazamento | | |
| | 31 | 26 25 | 21 20 | 16 15 | | 0 |
| beq rs, rt, spiazamento | 000100 | rs | rt | spiazamento | | |
| | 31 | 26 25 | 21 20 | 16 15 | | 0 |
| addi rt, rs, immediato | 000010 | rs | rt | immediato | | |
| | 31 | 26 25 | 21 20 | 16 15 | | 0 |
| and rd, rs, rt | 000000 | rs | rt | rd | 0 | 100100 |
| | 31 | 26 25 | 21 20 | 16 15 | 11 10 | 6 5 0 |

Segnali prodotti dalla Unità di Controllo

| Istruzione | Codice | RegDst | ALUOp | ALUSrc |
|------------|--------|--------|-------|--------|
| Lw | 100000 | 0 | 00 | 1 |
| Sw | 101000 | X | 00 | 1 |
| Beq | 000100 | X | 01 | 0 |
| Addi | 001000 | 0 | 00 | 1 |
| Tipo R | 000000 | 1 | 10 | 0 |

EXECUTE

| Istruzione | Codice | Branch | MemRead | MemWrite |
|------------|--------|--------|---------|----------|
| Lw | 100000 | 0 | 1 | 0 |
| Sw | 101000 | 0 | 0 | 1 |
| Beq | 000100 | 1 | 0 | 0 |
| Addi | 001000 | 0 | 0 | 0 |
| Tipo R | 000000 | 0 | 0 | 0 |

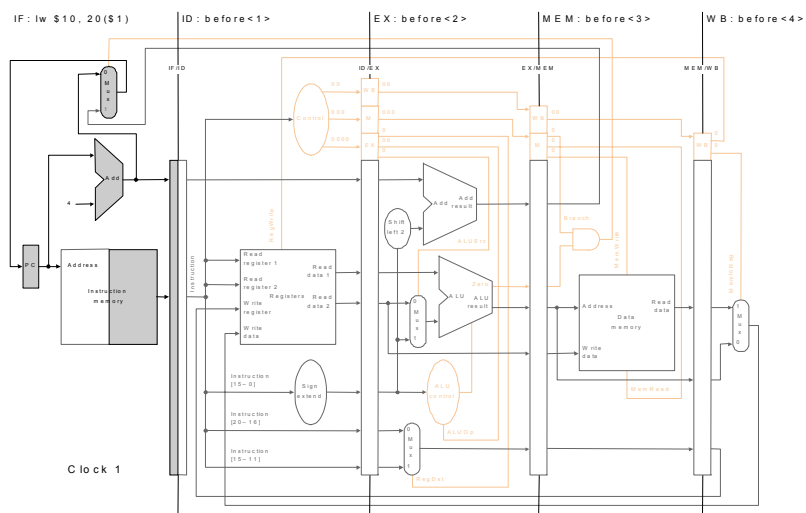
MEM.
ACCESS

Segnali prodotti dalla Unità di Controllo

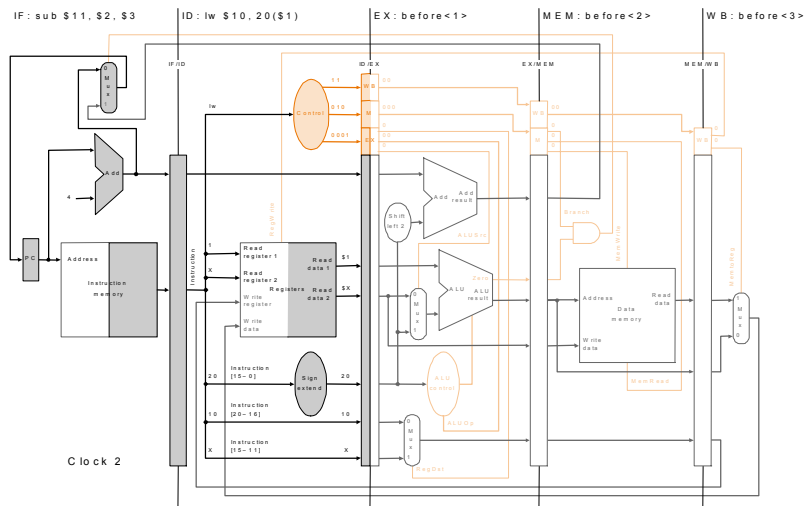
| Istruzione | Codice | MemtoReg | RegWrite |
|------------|--------|----------|----------|
| Lw | 100000 | 1 | 1 |
| Sw | 101000 | X | 0 |
| Beq | 000100 | X | 0 |
| Addi | 001000 | 0 | 1 |
| Tipo R | 000000 | 0 | 1 |

WRITE BACK

IF: lw



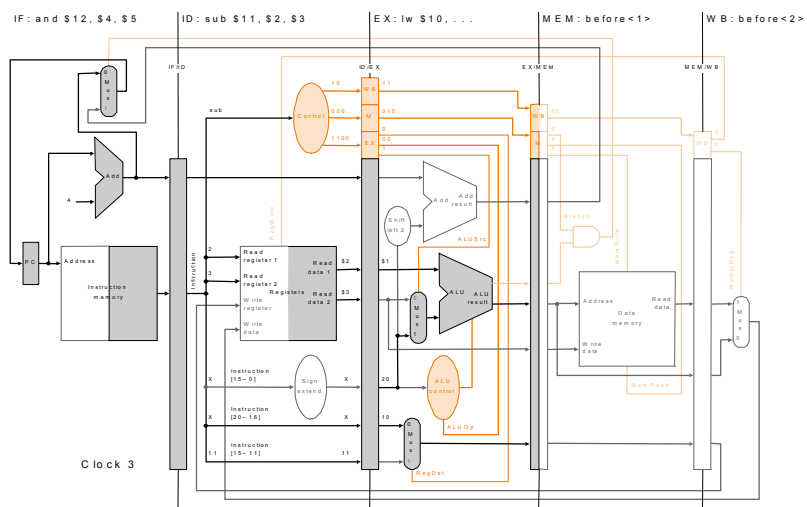
ID: lw + IF: sub



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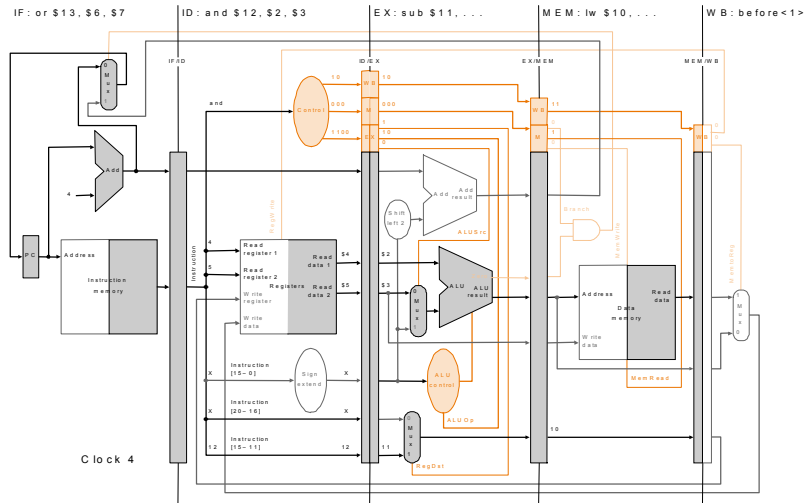
EX: lw, ID: sub, IF: and



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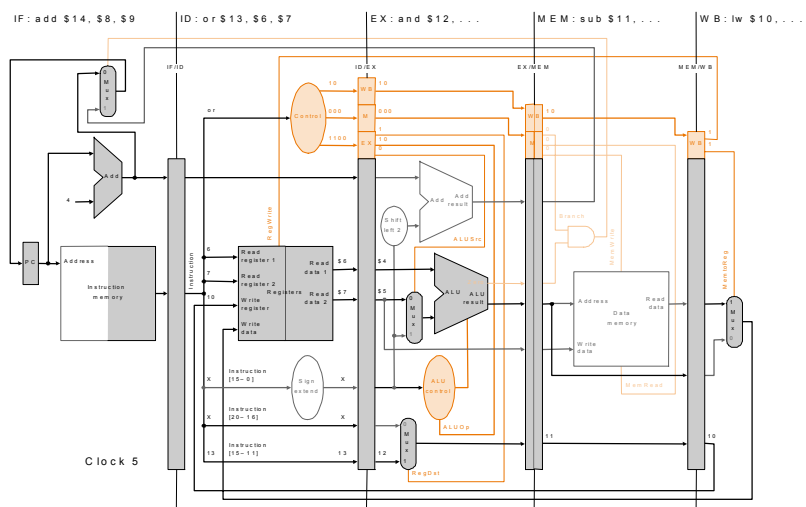
MEM: lw, EX: sub, ID: and, IF: or



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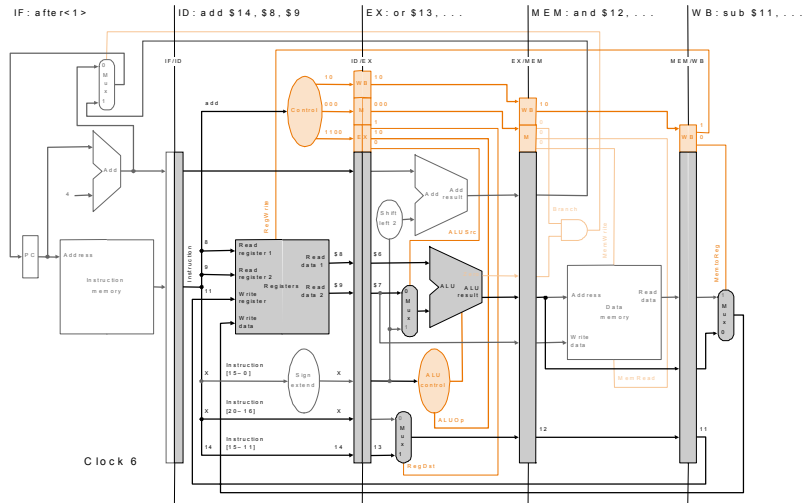
WB: lw, MEM: sub, EX: and, ID: or, IF: add



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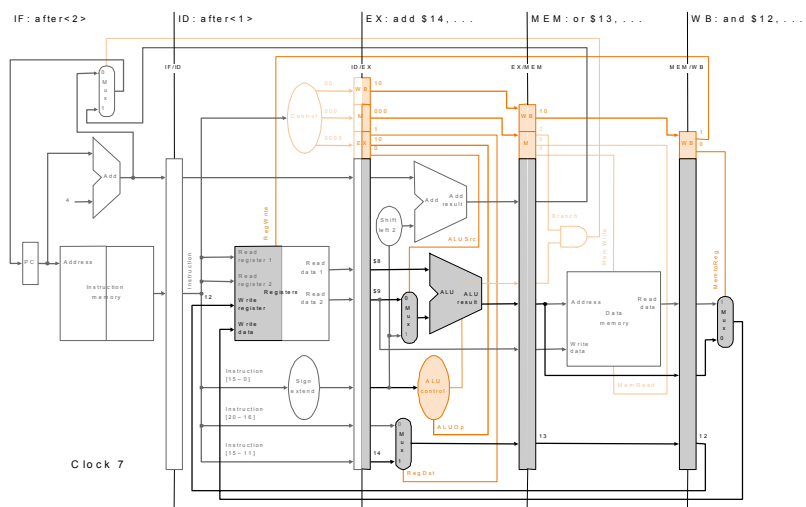
WB: sub, MEM: and, EX: or, ID: add



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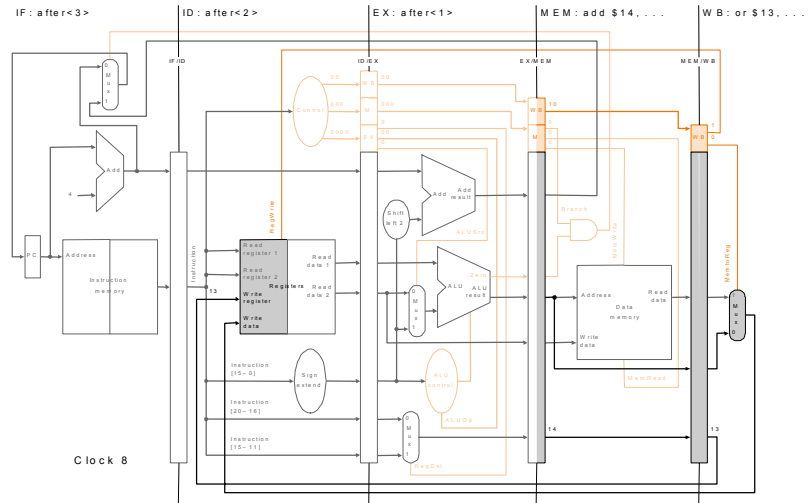
WB: and, MEM: or, EX: add



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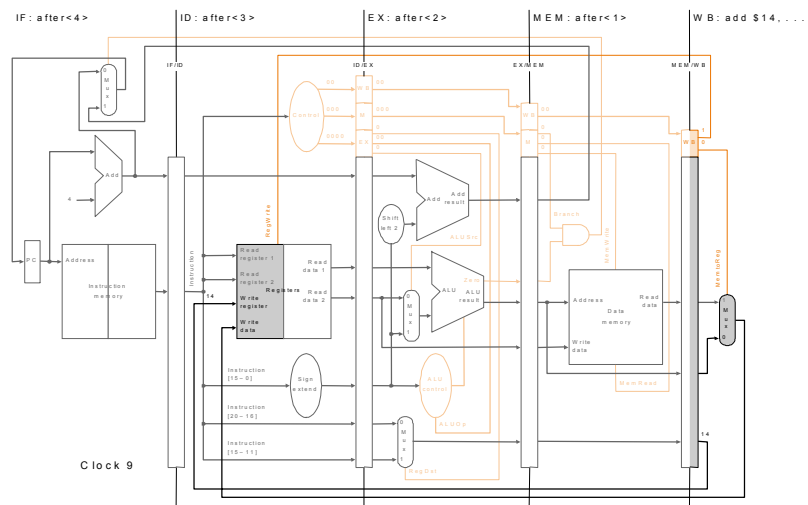
WB: or, MEM: add



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WB: add



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