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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | R-R(R-I)指令：有两个寄存器操作数或一个寄存器和一个立即数操作数的指令 | | | L-S(Load-Store）读取内存的指令 | | | | 改变control-flow（控制流）的指令 | | | 其他MISC | |
| 指令名称 | 操作对象 | opq rA,rB | cmovcc rA,rB | irmovq V,rB | rmmovq rA,D(rB) | mrmovq D(rB),rA | pushq rA | popq rA | jcc Dest | call Dest | ret | nop | halt |
| Fetch（取指） | icode:ifun | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] | M1[PC] |
| rA:rB | M1[PC+1] | M1[PC+1] | M1[PC+1] | M1[PC+1] | M1[PC+1] | M1[PC+1] | M1[PC+1] |  |  |  |  |  |
| valC |  |  | M8[PC+2] | M8[PC+2] | M8[PC+2] |  |  | M8[PC+1] | M8[PC+1] |  |  |  |
| valP | PC+2 | PC+2 | PC+10 | PC+10 | PC+10 | PC+2 | PC+2 | PC+9 | PC+9 | PC+1 | PC+1 |  |
| Decode（译码，从寄存器文件中读） | srcA | rA | rA |  | rA |  | rA | rsp |  |  | rsp |  |  |
| valA | R[rA] | R[rA] |  | R[rA] |  | R[rA] | R[rsp] |  |  | R[rsp] |  |  |
| srcB | rB | 0 | 0 | rB | rB | rsp | rsp |  | rsp | rsp |  |  |
| valB | R[rB] | 0 | 0 | R[rB] | R[rB] | R[rsp] | R[rsp] |  | R[rsp] | R[rsp] |  |  |
| Exec（执行） | aluA | valA | valA | valC | valC | valC | -8 | 8 |  | -8 | 8 |  |  |
| alu Func | ifun | + | + | + | + | + | + |  | + | + |  |  |
| valE | valB op aluA | valB + aluA | valB + aluA | valB + aluA | valB + aluA | valB + aluA | valB + aluA |  | valB + aluA | valB + aluA |  |  |
| cnd | set CC | cond (CC,ifun) |  |  |  |  |  | cond(CC,ifun) |  |  |  |  |
| Mem（访存） | M8[valE] |  |  |  | valA |  | valA |  |  | valP |  |  |  |
| valM |  |  |  |  | M8[valE] |  | M8[valA] |  |  | M8[valA] |  |  |
| 写回 | dest E | rB | if(!)rB=F;rB | rB |  |  | rsp | rsp |  | rsp | rsp |  |  |
| R[dest E] | valE | valE | valE |  |  | valE | valE |  | valE | valE |  |  |
| dest M |  |  |  |  | rA |  | rA |  |  |  |  |  |
| R[dest M] |  |  |  |  | valM |  | valM |  |  |  |  |  |
| PC-update | PC | valP | valP | valP | valP | valP | valP | valP | if(!)valP;valC | valC | valM | valP | halt |