表6‑3 Minisys-1的31条指令

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| 助记符 | 指 令 格 式 | | | | | | 示 例 | 示例含义 | 操 作 及 解 释 |
| BIT # | 31..26 | 25..21 | 20..16 | 15..11 | 10..6 | 5..0 |  |  |  |
| R-类型 | op | rs | rt | rd | shamt | func |  |  |  |
| add | 000000 | rs | rt | rd | 00000 | 100000 | add $1,$2,$3 | $1=$2+S3 | (rd)←(rs)+(rt); rs=$2,rt=$3,rd=$1 |
| addu | 000000 | rs | rt | rd | 00000 | 100001 | addu $1,$2,$3 | $1=$2+S3 | (rd)←(rs)+(rt); rs=$2,rt=$3,rd=$1 |
| sub | 000000 | rs | rt | rd | 00000 | 100010 | sub $1,$2,$3 | $1=$2-S3 | (rd)←(rs)-(rt); rs=$2,rt=$3,rd=$1 |
| subu | 000000 | rs | rt | rd | 00000 | 100011 | subu $1,$2,$3 | $1=$2-S3 | (rd)←(rs)-(rt); rs=$2,rt=$3,rd=$1 |
| and | 000000 | rs | rt | rd | 00000 | 100100 | and $1,$2,$3 | $1=$2&S3 | (rd)←(rs)&(rt); rs=$2,rt=$3,rd=$1 |
| or | 000000 | rs | rt | rd | 00000 | 100101 | or $1,$2,$3 | $1=$2|S3 | (rd)←(rs) | (rt); rs=$2,rt=$3,rd=$1 |
| xor | 000000 | rs | rt | rd | 00000 | 100110 | xor $1,$2,$3 | $1=$2^S3 | (rd)←(rs)^(rt); rs=$2,rt=$3,rd=$1 |
| nor | 000000 | rs | rt | rd | 00000 | 100111 | nor $1,$2,$3 | $1= ~($2 | S3) | (rd)←~((rs) | (rt)); rs=$2,rt=$3,rd=$1 |
| slt | 000000 | rs | rt | rd | 00000 | 101010 | slt $1,$2,$3 | if($2<$3)  $1=1 else  $1=0 | if (rs< rt) rd=1 else rd=0;rs＝$2，rt=$3, rd=$1 |
| sltu | 000000 | rs | rt | rd | 00000 | 101011 | sltu $1,$2,$3 | if($2<$3)  $1=1 else  $1=0 | if (rs< rt) rd=1 else rd=0;rs＝$2，rt=$3, rd=$1, 无符号数 |
| sll | 000000 | 00000 | rt | rd | shamt | 000000 | sll $1,$2,10 | $1=$2<<10 | (rd)←(rt)<<shamt,rt=$2,rd=$1,shamt=10 |
| srl | 000000 | 00000 | rt | rd | shamt | 000010 | srl $1,$2,10 | $1=$2>>10 | (rd)←(rt)>>shamt, rt=$2, rd=$1, shamt=10, (逻辑右移) |
| sra | 000000 | 00000 | rt | rd | shamt | 000011 | sra $1,$2,10 | $1=$2>>10 | (rd)←(rt)>>shamt, rt=$2, rd=$1, shamt=10, (算术右移，注意符号位保留) |
| sllv | 000000 | rs | rt | rd | 00000 | 000100 | sllv $1,$2,$3 | $1=$2<<$3 | (rd)←(rt)<<(rs), rs=$3,rt=$2,rd=$1 |
| srlv | 000000 | rs | rt | rd | 00000 | 000110 | srlv $1,$2,$3 | $1=$2>>$3 | (rd)←(rt)>>(rs), rs=$3,rt=$2,rd=$1, (逻辑右移) |
| srav | 000000 | rs | rt | rd | 00000 | 000111 | srav $1,$2,$3 | $1=$2>>$3 | (rd)←(rt)>>(rs), rs=$3,rt=$2,rd=$1, (算术右移，注意符号位保留) |
| jr | 000000 | rs | 00000 | 00000 | 00000 | 001000 | jr $31 | goto $31 | (PC)←(rs) |
| I-类型 | op | rs | rt | immediate | | |  | | |
| addi | 001000 | rs | rt | immediate | | | addi $1,$2,10 | $1=$2+10 | (rt)←(rs)+(sign-extend)immediate,rt=$1,rs=$2 |
| addiu | 001001 | rs | rt | immediate | | | addiu $1,$2,10 | $1=$2+10 | (rt)←(rs)+(sign-extend)immediate,rt=$1,rs=$2 |
| andi | 001100 | rs | rt | immediate | | | andi $1,$2,10 | $1=$2&10 | (rt)←(rs)&(zero-extend)immediate,rt=$1,rs=$2 |
| ori | 001101 | rs | rt | immediate | | | ori $1,$2,10 | $1=$2|10 | (rt)←(rs)|(zero-extend)immediate,rt=$1,rs=$2 |
| xori | 001110 | rs | rt | immediate | | | xori $1,$2,10 | $1=$2^10 | (rt)←(rs)^(zero-extend)immediate,rt=$1,rs=$2 |
| lui | 001111 | 00000 | rt | immediate | | | lui $1,10 | $1=10\*65536 | (rt)←immediate<<16 & 0FFFF0000H，将16位立即数放到目的寄存器高16位，目的寄存器的低16位填0 |
| lw | 100011 | rs | rt | offset | | | lw $1,10($2) | $1=Memory[  $2+10] | (rt)←Memory[(rs)+(sign\_extend)offset],  rt=$1,rs=$2 |
| sw | 101011 | rs | rt | offset | | | sw $1,10($2) | Memory[  $2+10] =$1 | Memory[(rs)+(sign\_extend)offset]←(rt),  rt=$1,rs=$2 |
| beq | 000100 | rs | rt | offset | | | beq $1,$2,40 | if($1=$2)  goto PC+4+40 | if ((rt)=(rs)) then (PC)←(PC)+4+( (Sign-Extend) offset<<2), rs=$1, rt=$2 |
| bne | 000101 | rs | rt | offset | | | bne $1,$2,40 | if($1≠$2)  goto PC+4+40 | if ((rt)≠(rs)) then (PC)←(PC)+4+(  (Sign-Extend) offset<<2) , rs=$1, rt=$2 |
| slti | 001010 | rs | rt | immediate | | | slti $1,$2,10 | if($2<10)    $1=1 else    $1=0 | if ((rs)<(Sign-Extend)immediate) then (rt)←1; else (rt)←0, rs=$2, rt=$1 |
| sltiu | 001011 | rs | rt | immediate | | | sltiu $1,$2,10 | if($2<10)    $1=1 else    $1=0 | if ((rs)<(Zero-Extend)immediate) then (rt)←1; else (rt)←0, rs=$2, rt=$1 |
| J-类型 | op | address | | | | |  | | |
| j | 000010 | address | | | | | j 10000 | goto 10000 | (PC)←( (Zero-Extend) address<<2),  address=10000/4 |
| jal | 000011 | address | | | | | jal 10000 | $31=PC+4  goto 10000 | ($31)←(PC)+4;  (PC)←( (Zero-Extend) address<<2),  address=10000/4 |