**关于测试单周期CPU的简单方法**

1、测试程序段

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **地址** | **汇编程序** | **指令代码** | | | | | |
| **op（6）** | **rs(5)** | **rt(5)** | **rd(5)/immediate (16)** | **16进制数代码** | |
| **0x00000000** | addiu $1,$0,8 | **001001** | **00000** | **00001** | **0000000000001000** | **=** | 2401 0008 |
| **0x00000004** | ori $2,$0,2 | 001101 | 00 000 | 00010 | 00000000 00000010 | = | 3402 0002 |
| **0x00000008** | add $3,$2,$1 | 000000 | 00 010 | 00001 | 00011000 00100000 | = | 0041 1820 |
| **0x0000000C** | sub $5,$3,$2 | 000000 | 00 011 | 00010 | 00101000 00100010 | = | 00622822 |
| **0x00000010** | and $4,$5,$2 | 000000 | 00 101 | 00010 | 00100000 00100100 | = | 00A22024 |
| **0x00000014** | or $8,$4,$2 | 000000 | 00 100 | 00010 | 01000000 00100101 | = | 00824025 |
| **0x00000018** | sll $8,$8,1 | 000000 | 00 000 | 01000 | 01000000 01000000 | = | 00084040 |
| **0x0000001C** | bne $8,$1,-2 (≠,转18) | 000101 | 01 000 | 00001 | 11111111 11111110 | = | 1501FFFE |
| **0x00000020** | slti $6,$2,4 | 001010 | 00 010 | 00110 | 00000000 00000100 | = | 28460004 |
| **0x00000024** | slti $7,$6,0 | 001010 | 00 110 | 00111 | 00000000 00000000 | = | 28C70000 |
| **0x00000028** | addiu $7,$7,8 | 001001 | 00 111 | 00111 | 00000000 00001000 | = | 24E70008 |
| **0x0000002C** | beq $7,$1,-2 (=,转28) | 000100 | 00 111 | 00001 | 11111111 11111110 | = | 10E1FFFE |
| **0x00000030** | sw $2,4($1) | 101011 | 00 001 | 00010 | 00000000 00000100 | = | AC220004 |
| **0x00000034** | lw $9,4($1) | 100011 | 00 001 | 01001 | 00000000 00000100 | = | 8C290004 |
| **0x00000038** | addiu $10,$0,-2 | 001001 | 00 000 | 01010 | 11111111 11111110 | = | 240AFFFE |
| **0x0000003C** | addiu $10,$10,1 | 001001 | 01010 | 01010 | 00000000 00000001 | = | 254A0001 |
| **0x00000040** | blez $10,-2(≤0,转3C) | 000110 | 01010 | 00000 | 11111111 11111110 | = | 1940FFFE |
| **0x00000044** | andi $11,$2,2 | 001100 | 00010 | 01011 | 00000000 00000010 | = | 304B0002 |
| **0x00000048** | j 0x0000004C | 000010 | 00000 | 00000 | 00000000 01001100 | = | 0800 004C |
| **0x0000004C** | or $8,$4,$2 | 000000 | 00 100 | 00010 | 01000000 00100101 | = | 0082 4025 |
| **0x00000050** | halt | 111111 | 00000 | 00000 | 00000000 00000000 | = | FC00 0000 |