**关于测试单周期CPU的简单方法**

**（特别说明：本表每个同学都必须建立，检查实验时，必须提供！）**

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,$0,14 | **001000** | **00000** | **00001** | **0000000000001110** | **=** | 2001000E |
| **0x00000004** | addiu $2,$0,-5 | 001000 | 00000 | 00010 | 1111111111111011 |  | 2002FFFB |
| **0x00000008** | and $2,$1,$2 | 000000 | 00001 | 00010 | 0001000000100100 |  | 80221024 |
| **0x0000000C** | ori $1,$1,9 | 001101 | 00001 | 00001 | 0000000000001001 |  | 34210009 |
| **0x00000010** | andi $2,$2,13 | 001100 | 00010 | 00010 | 0000000000001101 |  | 3042000D |
| **0x00000014** | sll $1,$1,1 | 000000 | 00000 | 00001 | 0000100001000000 |  | 00010840 |
| **0x00000018** | or $1,$0,$2 | 000000 | 00000 | 00010 | 0000100000100101 |  | 00020825 |
| **0x0000001C** | slti $3,$1,8 | 001010 | 00001 | 00011 | 0000000000001000 |  | 28230008 |
| **0x00000020** | slti $4,$1,9 | 001010 | 00001 | 00100 | 0000000000001001 |  | 28240009 |
| **0x00000024** | add $1,$2,$4 | 000000 | 00010 | 00100 | 0000100000100000 |  | 00440820 |
| **0x00000028** | sub $1,$2,$1 | 000000 | 00010 | 00001 | 0000100000100010 |  | 00410822 |
| **0x0000002C** | addiu $1,$1,1 | 001000 | 00001 | 00001 | 0000000000000001 |  | 20210001 |
| **0x00000030** | addiu $2,$2,-8 | 001000 | 00010 | 00010 | 1111111111111000 |  | 2042FFF8 |
| **0x00000034** | addiu $3,$3,-0 | 001000 | 00011 | 00011 | 0000000000000000 |  | 20630000 |
| **0x00000038** | addiu $4,$4,-1 | 001000 | 00100 | 00100 | 1111111111111111 |  | 2084FFFF |
| **0x0000003C** | or $5,$1,$2 | 000000 | 00001 | 00010 | 0010100000100101 |  | 00222825 |
| **0x00000040** | or $5,$5,$3 | 000000 | 00101 | 00011 | 0010100000100101 |  | 00A32825 |
| **0x00000044** | or $5,$5,$4 | 000000 | 00101 | 00100 | 0010100000100101 |  | 00A42825 |
| **0x00000048** | addiu $0,$0,-2 | 001000 | 00000 | 00000 | 1111111111111110 |  | 4000FFFE |
| **0x0000004C** | beq $5,$0,1 | 000100 | 00101 | 00000 | 0000000000000001 |  | 10A00001 |
| **0x00000050** | halt | 111111 | 00000 | 00000 | 0000000000000000 |  | FC000000 |
| **0x00000054** | addiu $1,$0,0 | 001000 | 00000 | 00001 | 0000000000000000 |  | 20010000 |
| **0x00000058** | addiu $2,$0,-3 | 001000 | 00000 | 00010 | 1111111111111101 |  | 2002FFFD |
| **0x0000005C** | sw $2,0($1) | 101011 | 00001 | 00010 | 0000000000000000 |  | AC120000 |
| **0x00000060** | lw $1,0($1) | 100011 | 00001 | 00001 | 0000000000000000 |  | 8C210000 |
| **0x00000064** | bne $1,$2,5 | 000101 | 00001 | 00010 | 0000000000000101 |  | 14220005 |
| **0x00000068** | bltz $1,1 | 000001 | 00001 | 00000 | 0000000000000001 |  | 04200001 |
| **0x0000006C** | halt | 111111 | 00000 | 00000 | 0000000000000000 |  | FC000000 |
| **0x00000070** | j 0x78 | 000010 | 00000 | 00000 | 0000000000011110 |  | 08000078 |
| **0x00000074** | halt | 111111 | 00000 | 00000 | 0000000000000000 |  | FC000000 |
| **0x00000078** | halt | 111111 | 00000 | 00000 | 0000000000000000 |  | FC000000 |
| **0x0000007C** | halt | 111111 | 00000 | 00000 | 0000000000000000 |  | FC000000 |

1、将**指令代码初始化到指令存储器**中，直接写入。

1. 初始化PC的值，也就是以上程序段首地址PC=**0x00000000**，以上程序段从**0x00000000**地址开始存放。
2. 运行Xilinx Vivado进行仿真，看波形。