**关于测试多周期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,$0,8 | **001001** | **00000** | **00001** | **00000000 00001000** | **=** | 24010008 |
| **0x00000004** | ori $2,$0,2 | **001101** | **00000** | **00010** | **00000000 00000010** | **=** | 34020002 |
| **0x00000008** | xori $3,**$2**,8 | **001110** | **00010** | **00011** | **00000000 00001000** | **=** | 38430008 |
| **0x0000000C** | sub $4,**$3**,$1 | **000000** | **00011** | **00001** | **00100 00000 100010** | **=** | 00612022 |
| **0x00000010** | and $5,**$4**,$2 | **000000** | **00100** | **00010** | **00101 00000 100100** | **=** | 00822824 |
| **0x00000014** | **sll $5,$5,2** | **000000** | **00000** | **00101** | **00101 00010 000000** | **=** | 00052880 |
| **0x00000018** | **beq $5,$1,-2(=,转14)** | **000100** | **00101** | **00001** | **11111111 11111110** | **=** | 10A1FFFE |
| **0x0000001C** | **jal 0x0000050** | **000011** | **00000** | **00000** | **00000000 00010100** | **=** | 0C000014 |
| **0x00000020** | **slt $8,$13,$1** | **000000** | **01101** | **00001** | **01000 00000 101010** | **=** | 01A1402A |
| **0x00000024** | **addiu $14,$0,-2** | **001001** | **00000** | **01110** | **11111111 11111110** | **=** | 240DFFFE |
| **0x00000028** | **slt $9,$8,$14** | **000000** | **01000** | **01110** | **01001 00000 101010** | **=** | 010D482A |
| **0x0000002C** | **slti $10,$9,2** | **001010** | **01001** | **01010** | **00000000 00000010** | **=** | 292A0002 |
| **0x00000030** | **slti $11,$10,0** | **001010** | **01010** | **01011** | **00000000 00000000** | **=** | 294B0000 |
| **0x00000034** | add $11,**$11**,$10 | **000000** | **01011** | **01010** | **01011 00000 100000** | **=** | 016A5820 |
| **0x00000038** | **bne $11,$2,-2 (≠,转34)** | **000101** | **01011** | **00010** | **11111111 11111110** | **=** | 1562FFFE |
| **0x0000003C** | addiu $12,$0,-2 | **001001** | **00000** | **01100** | **11111111 11111110** | **=** | 240CFFFE |
| **0x00000040** | addiu $12,$12,1 | **001001** | **01100** | **01100** | **00000000 00000001** | **=** | 258C0001 |
| **0x00000044** | **bltz $12,-2 (<0,转40)** | **000001** | **01100** | **00000** | **11111111 11111110** | **=** | 0580FFFE |
| **0x00000048** | andi $12,$2,2 | **001100** | **00010** | **01100** | **00000000 00000010** | **=** | 304C0002 |
| **0x0000004C** | **j 0x000005C** | **000010** | **00000** | **00000** | **00000000 00010111** | **=** | 08000017 |
| **0x00000050** | sw $2,4($1) | **101011** | **00001** | **00010** | **00000000 00000100** | **=** | AC220004 |
| **0x00000054** | lw $13,4($1) | **100011** | **00001** | **01101** | **00000000 00000100** | **=** | 8C2B0004 |
| **0x00000058** | **jr $31** | **000000** | **11111** | **00000** | **00000000 00001000** | **=** | 03E00008 |
| **0x0000005C** | **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。
2. 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。
3. 运行Xilinx Vivado进行仿真，看波形。