**关于检查单周期CPU的要求**

**（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、要求程序指令以文件形式读入指令寄存器，检查时可以灵活更改程序指令内容。

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或ModuleSim进行仿真，看波形。
3. 检查时依据(学号mod 4)+1，准备好相应程序段。

测试程序段1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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 |  |  |  |  | **=** |  |
| **0x00000004** | ori $2,$0,2 |  |  |  |  |  |  |
| **0x00000008** | add $3,$2,$1 |  |  |  |  |  |  |
| **0x0000000C** | sub $5,$3,$2 |  |  |  |  |  |  |
| **0x00000010** | and $4,$5,$2 |  |  |  |  |  |  |
| **0x00000014** | or $8,$4,$2 |  |  |  |  |  |  |
| **0x00000018** | sll $8,$8,1 |  |  |  |  |  |  |
| **0x0000001C** | **bne $8,$1,-2 (≠,转18)** |  |  |  |  |  |  |
| **0x00000020** | slti $6,$2,4 |  |  |  |  |  |  |
| **0x00000024** | slti $7,$6,0 |  |  |  |  |  |  |
| **0x00000028** | addiu $7,$7,8 |  |  |  |  |  |  |
| **0x0000002C** | **beq $7,$1,-2 (=,转28)** |  |  |  |  |  |  |
| **0x00000030** | sw $2,4($1) |  |  |  |  |  |  |
| **0x00000034** | lw $9,4($1) |  |  |  |  |  |  |
| **0x00000038** | addiu $10,$0,-2 |  |  |  |  |  |  |
| **0x0000003C** | addiu $10,$10,1 |  |  |  |  |  |  |
| **0x00000040** | **bltz $10,-2(<0,转3C)** |  |  |  |  |  |  |
| **0x00000044** | andi $11,$2,2 |  |  |  |  |  |  |
| **0x00000048** | **j 0x00000050** |  |  |  |  |  |  |
| **0x0000004C** | or $8,$4,$2 |  |  |  |  |  |  |
| **0x00000050** | **halt** | 111111 | 00000 | 00000 | 0000000000000000 | **=** | FC000000 |

测试程序段2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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 $9,$0,8 |  |  |  |  | **=** |  |
| **0x00000004** | ori $10,$0,4 |  |  |  |  |  |  |
| **0x00000008** | sub $9,$9,$10 |  |  |  |  |  |  |
| **0x0000000C** | add $0,$9,$10 |  |  |  |  |  |  |
| **0x00000010** | ori $13,$0,1 |  |  |  |  |  |  |
| **0x00000014** | or $9,$13,$10 |  |  |  |  |  |  |
| **0x00000018** | sw $9,4($1) |  |  |  |  |  |  |
| **0x0000001C** | andi $10,$9,0 |  |  |  |  |  |  |
| **0x00000020** | sll $9,$9,8 |  |  |  |  |  |  |
| **0x00000024** | **beq $9,$10,1** |  |  |  |  |  |  |
| **0x00000028** | j 0x00000020 |  |  |  |  |  |  |
| **0x0000002C** | lw $9,4($1) |  |  |  |  |  |  |
| **0x00000030** | ori $10,$0,2 |  |  |  |  |  |  |
| **0x00000034** | sub $10,$10,$9 |  |  |  |  |  |  |
| **0x00000038** | **bltz $10,1** |  |  |  |  |  |  |
| **0x0000003C** | ori $10,$0,7 |  |  |  |  |  |  |
| **0x00000040** | **halt** | 111111 | 00000 | 00000 | 0000000000000000 | **=** | FC000000 |

测试程序段3

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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 $8,$0,0 |  |  |  |  | **=** |  |
| **0x00000004** | addiu $9,$zero,1 |  |  |  |  |  |  |
| **0x00000008** | sw $9,0($8) |  |  |  |  |  |  |
| **0x0000000C** | addiu $9,$zero,2 |  |  |  |  |  |  |
| **0x00000010** | sw $9,4($8) |  |  |  |  |  |  |
| **0x00000014** | addiu $9,$zero,3 |  |  |  |  |  |  |
| **0x00000018** | sw $9,8($8) |  |  |  |  |  |  |
| **0x0000001C** | lw $9,0($8) |  |  |  |  |  |  |
| **0x00000020** | lw $10,4($8) |  |  |  |  |  |  |
| **0x00000024** | lw $11,8($8) |  |  |  |  |  |  |
| **0x00000028** | sll $9,$9,1 |  |  |  |  |  |  |
| **0x0000002C** | **beq $9,$10,1** |  |  |  |  |  |  |
| **0x00000030** | sw $11,12($8) |  |  |  |  |  |  |
| **0x00000034** | **j 0x3C** |  |  |  |  |  |  |
| **0x00000038** | sw $11,12($8) |  |  |  |  |  |  |
| **0x0000003C** | **halt** | 111111 | 00000 | 00000 | 0000000000000000 | **=** | FC000000 |

测试程序段4

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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** | addi $2,$0,5 |  |  |  |  | **=** |  |
| **0x00000004** | addi $3,$0,12 |  |  |  |  |  |  |
| **0x00000008** | addi $7,$3,-9 |  |  |  |  |  |  |
| **0x0000000C** | or $4,$7,$2 |  |  |  |  |  |  |
| **0x00000010** | and $5,$3,$4 |  |  |  |  |  |  |
| **0x00000014** | add $5,$5,$4 |  |  |  |  |  |  |
| **0x00000018** | **beq $5,$7,end** |  |  |  |  |  |  |
| **0x0000001C** | slti $4,$3,7 |  |  |  |  |  |  |
| **0x00000020** | **beq $4,$0,1** |  |  |  |  |  |  |
| **0x00000024** | addi $5,$0,0 |  |  |  |  |  |  |
| **0x00000028** | slt $4,$7,$2 |  |  |  |  |  |  |
| **0x0000002C** | add $7,$4,$5 |  |  |  |  |  |  |
| **0x00000030** | sub $7,$7,$2 |  |  |  |  |  |  |
| **0x00000034** | sw $7,68($3) |  |  |  |  |  |  |
| **0x00000038** | lw $2,80($0) |  |  |  |  |  |  |
| **0x0000003C** | **j 0x44** |  |  |  |  |  |  |
| **0x00000040** | addi $s2,$0,1 |  |  |  |  |  |  |
| **0x00000044** | sw $s2,84($s0) |  |  |  |  |  |  |
| **0x00000048** | **halt** | 111111 | 00000 | 00000 | 0000000000000000 | **=** | FC000000 |