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1  #baseAddr 0000
2  j    start;                //0
3  add $zero, $zero, $zero;   //4
4  add $zero, $zero, $zero;   //8
5  add $zero, $zero, $zero;   //C
6  add $zero, $zero, $zero;   //10
7  add $zero, $zero, $zero;   //14
8  add $zero, $zero, $zero;   //18
9  add $zero, $zero, $zero;   //1C
10
11 start:
12  lui $v1, f000;            //r3=F0000000
13  lui $a0, e000;            //r4=E0000000
14  lui $t0, 8000;            //r8=80000000
15
16  addi $s4, $zero, 003f;     //r20=0000003F
17  lui $a2, f800;            //r6=F8000000
18
19 loop:
20  nor $at, $zero, $zero;     //r1=FFFFFFFF
21  slt $v0, $zero, $at;       //r2=00000001
22  addi $t2, $at, -1;         //r10=FFFFFFFE
23
24 loop1:
25  sw $a2, 4($v1);            //计数器端口:F0000004, 送计数常数r6=F8000000
26  lw $a1, 0($v1);           //读GPIO端口F0000000状态:{out0, out1, out2, D28-D20, LED7-LE
27  add $a1, $a1, $a1;         //左移
28  add $a1, $a1, $a1;         //左移2位将SW与LED对齐, 同时D1D0置00, 选择计数器通道0
29  sw $a1, 0($v1);           //r5输出到GPIO端口F0000000, 设置计数器通道counter_set=00端口
30  addi $t1, $t1, 1;         //r9=r9+1
31  sw $t1, 0($a0);           //r9送r4=E0000000七段码端口
32  lw $t5, 14($zero);        //取存储器20单元预存数据至r13, 程序计数延时常数
33
34 loop2:
35  lw $a1, 0($v1);           //读GPIO端口F0000000状态:{out0, out1, out2, D28-D20, LED7-LE
36  add $a1, $a1, $a1;
37  add $a1, $a1, $a1;         //左移2位将SW与LED对齐, 同时D1D0置00, 选择计数器通道0
38  sw $a1, 0($v1);           //r5输出到GPIO端口F0000000, 计数器通道counter_set=00端口不变
39
40  lw $a1, 0($v1);           //再读GPIO端口F0000000状态
41  and $t3, $a1, $t0;         //取最高位=out0, 屏蔽其余位送r11
42  // bne $t3, $t0, l_next;    //out0计数=0, Counter通道0溢出, 转计数器初始化, 修改7段码显示
43  addi $t5, $t5, 1;         //程序计数延时
44  bne $t5, $zero, l_next;
45  jal C_init;               //程序计数r13=0, 转计数器初始化, 修改7段码显示:C_init
46
47 l_next:
48  lw $a1, 0($v1);           //判断7段码显示模式: SW[4:3]控制
49  addi $s2, $zero, 0008;     //再读GPIO端口F0000000开关SW状态
50  add $s6, $s2, $s2;         //r18=00000008
51  add $s2, $s2, $s6;         //r18=00000018(00011000)
52  and $t3, $a1, $s2;         //取SW[4:3]
53  beq $t3, $zero, L00;       //SW[4:3]=00, 7段显示"点"循环移位: L00, SW0=0
54  beq $t3, $s2, L11;         //SW[4:3]=11, 7段显示显示七段图形: L11, SW0=0
55  addi $s2, $zero, 0008;     //r18=8
56  beq $t3, $s2, L01;         //SW[4:3]=01, 七段显示预置数字, L01, SW0=1
57  sw $t1, 0($a0);           //SW[4:3]=10, 显示r9, SW0=1
58  j    loop2;
59
60 L00:

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61     bne     $t2, $at, L3;                //r10=ffffffff, 转移L4
62
63 L4:
64     nor     $t2, $zero, $zero;           //r10=ffffffff
65     add     $t2, $t2, $t2;               //r10=fffffffe
66
67 L3:
68     sw      $t2, 0($a0);                 //SW[4:3]=00, 7段显示点移位后显示
69     j       loop2;
70
71 L11:
72     lw      $t1, 60($s1);                //SW[4:3]=11, 从内存取预存七段图形
73     sw      $t1, 0($a0);                //SW[4:3]=11, 显示七段图形
74     j       loop2;
75
76 L01:
77     lw      $t1, 20($s1);                //SW[4:3]=01, 从内存取预存数字
78     sw      $t1, 0($a0);                //SW[4:3]=01, 七段显示预置数字
79     j       loop2;
80
81 C_init:
82     lw      $t5, 14($zero);              //取程序计数延时初始化常数
83     add     $t2, $t2, $t2;               //r10=fffffffc, 7段图形点左移
84     ori     $t2, $t2, 1;                 //r10末位置1, 对应右上角不显示
85     addi    $s1, $s1, 4;                 //r17=00000004, LED图形访存地址+4
86     and     $s1, $s1, $s4;               //r17=000000XX, 屏蔽地址高位, 只取6位
87     add     $t1, $t1, $v0;               //r9+1
88     bne     $t1, $at, L7;               //若r9=ffffffff, 重置r9=5
89
90     addi    $t1, $t1, 5;                 //重置r9=5
91
92 L7:
93     lw      $a1, 0($v1);                 //读GPIO端口F0000000状态
94     add     $t3, $a1, $a1;
95     add     $t3, $t3, $t3;               //左移2位将SW与LED对齐, 同时D1D0置00, 选择计数器通道0
96     sw      $t3, 0($v1);                 //r5输出到GPIO端口F0000000, 计数器通道counter_set=00端口不变
97     sw      $a2, 4($v1);                 //计数器端口:F0000004, 送计数常数r6=F8000000
98     jr      $ra;                         //j l_next;
99

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