实验报告 1 七段数码管显示

【实验内容】

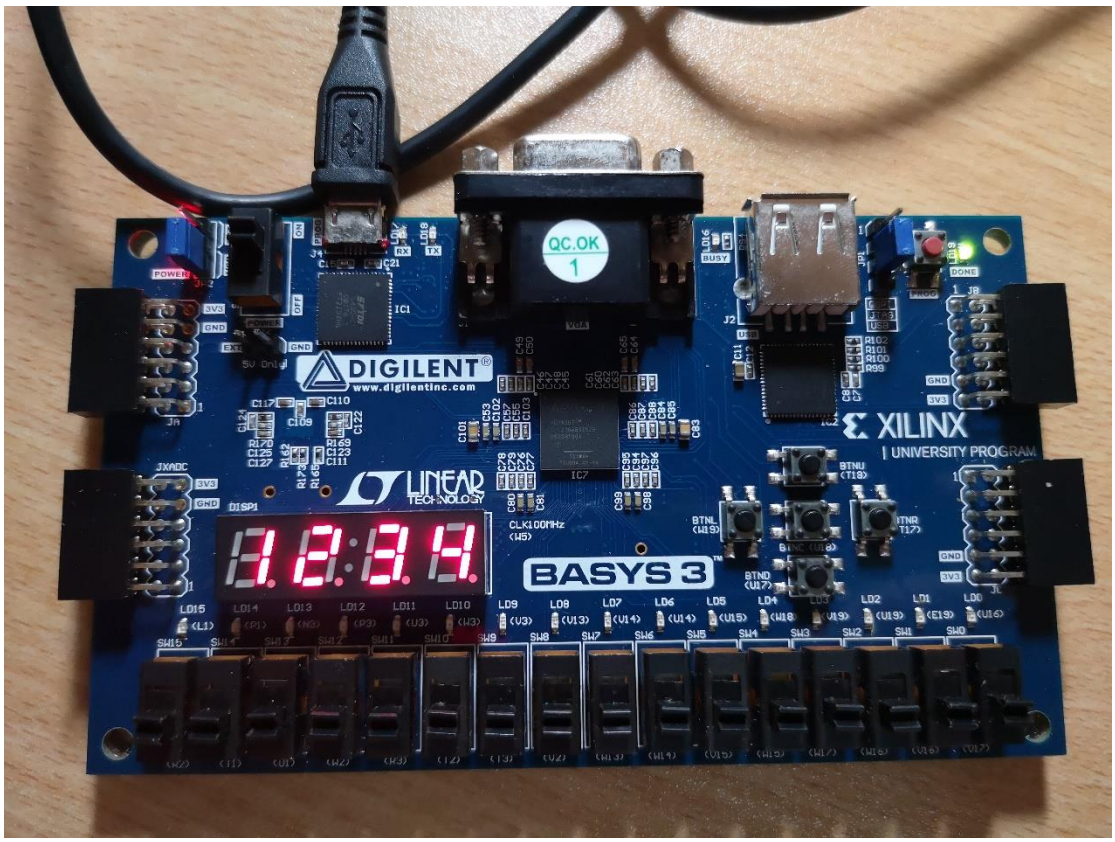
利用开发板 4 个 7 段数码管依次显示数字“1234”和“4321”，通过判断拨键开关 SW0 的状态进行选择数码管是顺序显示数字还是逆序显示数字。亦可使用按键开关控制模式转换。

如：当 SW0=0 时显示“1234”

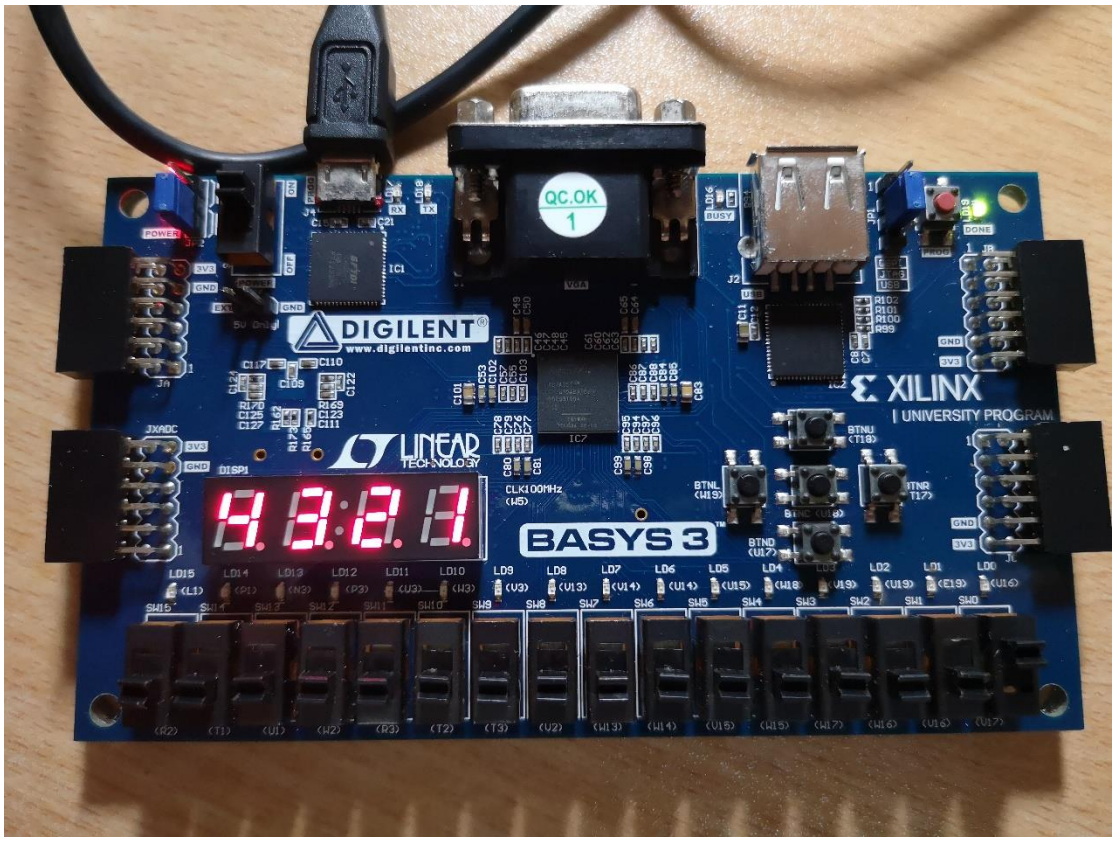
当 SW0=1 时显示“4321”

【实验结果与分析】

当 SW0=0 时显示“1234”



当 SW0=1 时显示“4321”



实验报告 2 跑马灯

【实验内容】

利用开发板 16 个 LED，实现一个跑马灯，通过判断拨键开关 SW0 的状态进行选择 LED 是从左到右依次亮起，还是从右到左依次亮起。如：当 SW0=1 时显示“左到右依次亮起”

当 SW0=0 时显示“右到左依次亮起”

【实验设计】

```
`timescale 1ns / 1ps

module led_light(
  input CLK,
    input SW_in,
    output reg[15:0] led                          //选择 16 个灯
    );
    reg [31:0]count=0;                            //计数量
    reg [4:0] sel=0;
    parameter T1MS=50000000;                       //延时
    always@(posedge CLK)
       begin
            if(SW_in==0)                          //SW0=0 右到左亮起
                 begin
```

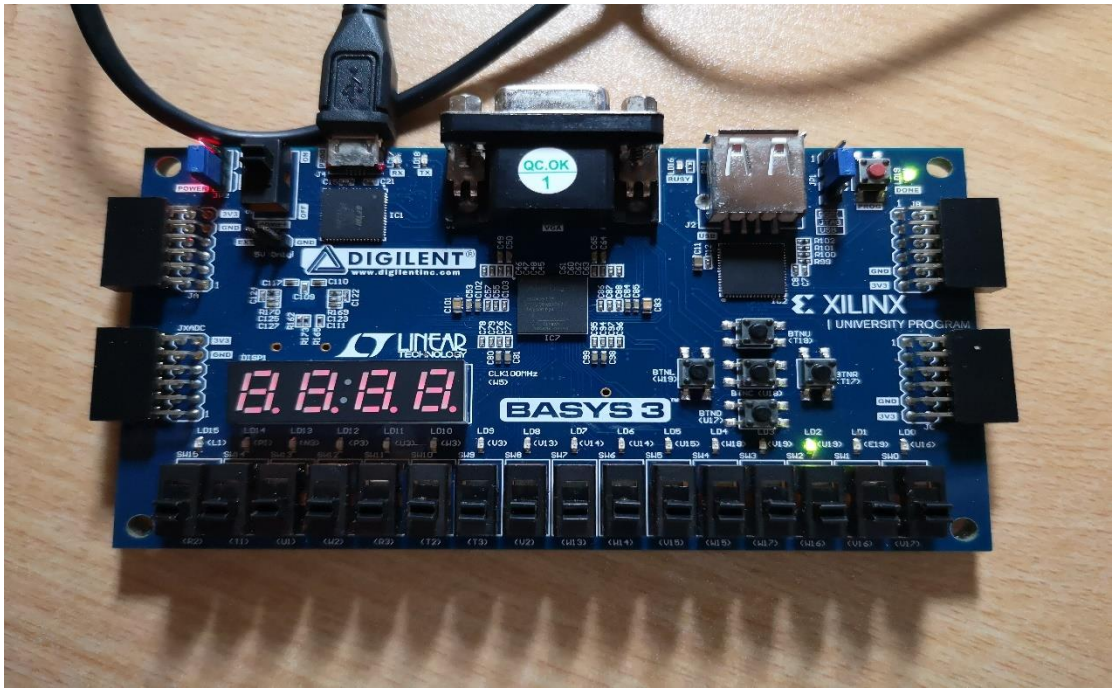
```
            case(sel)
                0:led<=16'b0000000000000001;
                1:led<=16'b0000000000000010;
                2:led<=16'b0000000000000100;
                3:led<=16'b0000000000001000;
                4:led<=16'b0000000000010000;
                5:led<=16'b0000000000100000;
                6:led<=16'b0000000001000000;
                7:led<=16'b0000000010000000;
                8:led<=16'b0000000100000000;
                9:led<=16'b0000001000000000;
                10:led<=16'b0000010000000000;
                11:led<=16'b0000100000000000;
                12:led<=16'b0001000000000000;
                13:led<=16'b0010000000000000;
                14:led<=16'b0100000000000000;
                15:led<=16'b1000000000000000;
                default:led<=16'b0000000000000000;
            endcase
        end
    else
        begin
```

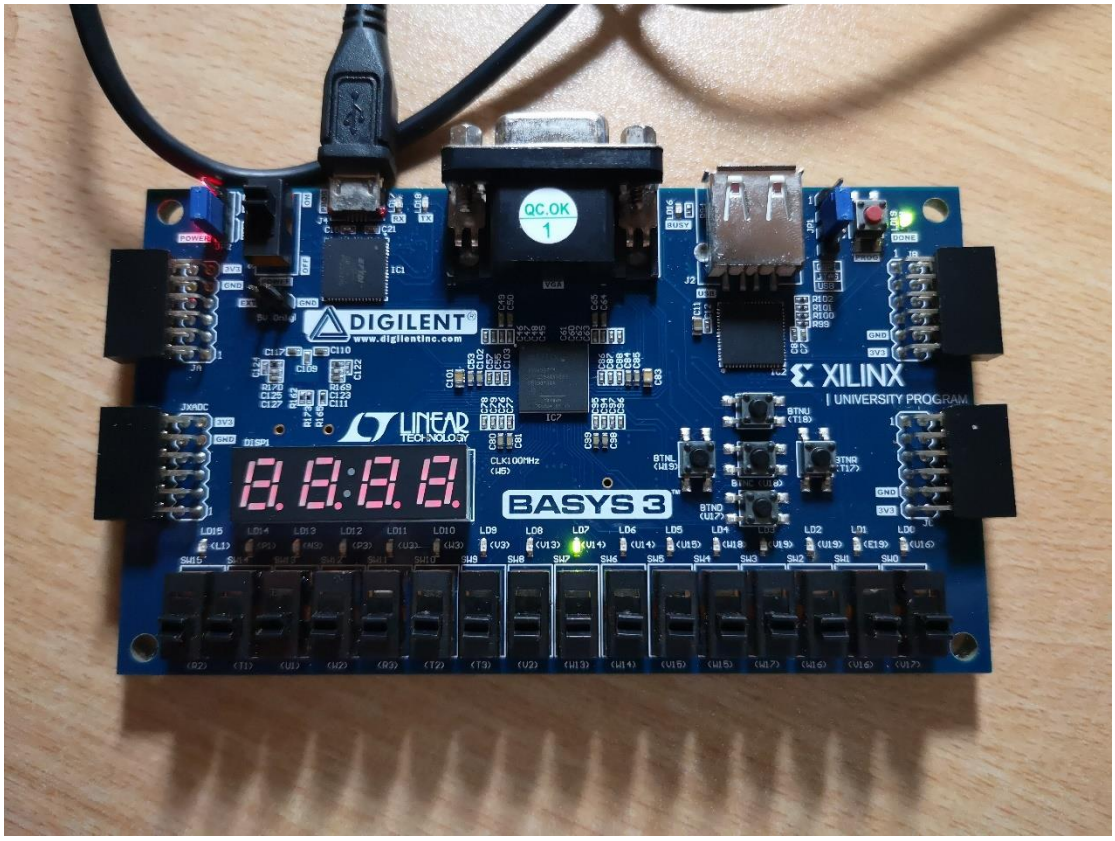
```
                case(sel)                       //SW0=1 左到右亮起
                    0:led<=16'b1000000000000000;
                    1:led<=16'b0100000000000000;
                    2:led<=16'b0010000000000000;
                    3:led<=16'b0001000000000000;
                    4:led<=16'b0000100000000000;
                    5:led<=16'b0000010000000000;
                    6:led<=16'b0000001000000000;
                    7:led<=16'b0000000100000000;
                    8:led<=16'b0000000010000000;
                    9:led<=16'b0000000001000000;
                    10:led<=16'b0000000000100000;
                    11:led<=16'b0000000000010000;
                    12:led<=16'b0000000000001000;
                    13:led<=16'b0000000000000100;
                    14:led<=16'b0000000000000010;
                    15:led<=16'b0000000000000001;
                    default:led<=16'b0000000000000000;
                endcase
            end
        end
always@(posedge CLK)
```

```
    begin
        count<=count+1;
            if(count==T1MS)
                begin
                    count<=0;
                    sel<=sel+1;
                    if(sel==16)
                        sel<=0;
                end
    end
endmodule
```

【实验结果与分析】

SW0=0 灯从右向左亮起




QC.OK
1
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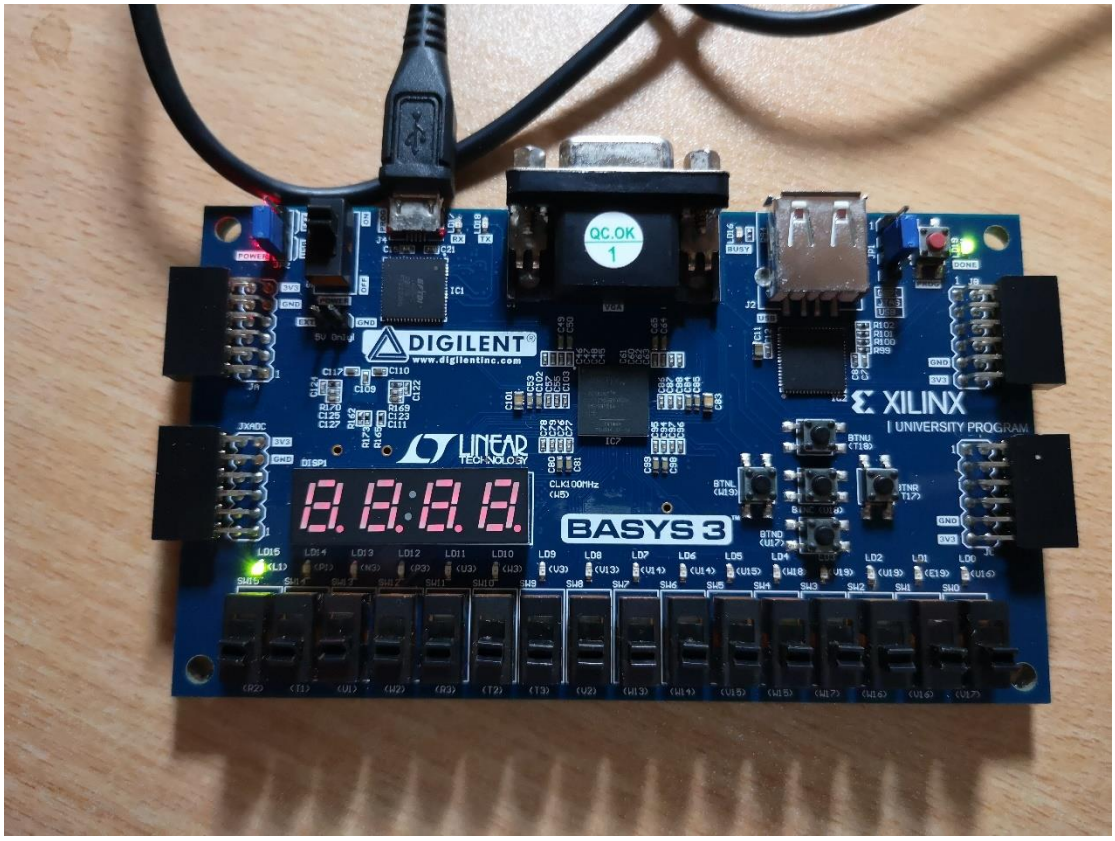
QC.OK
1
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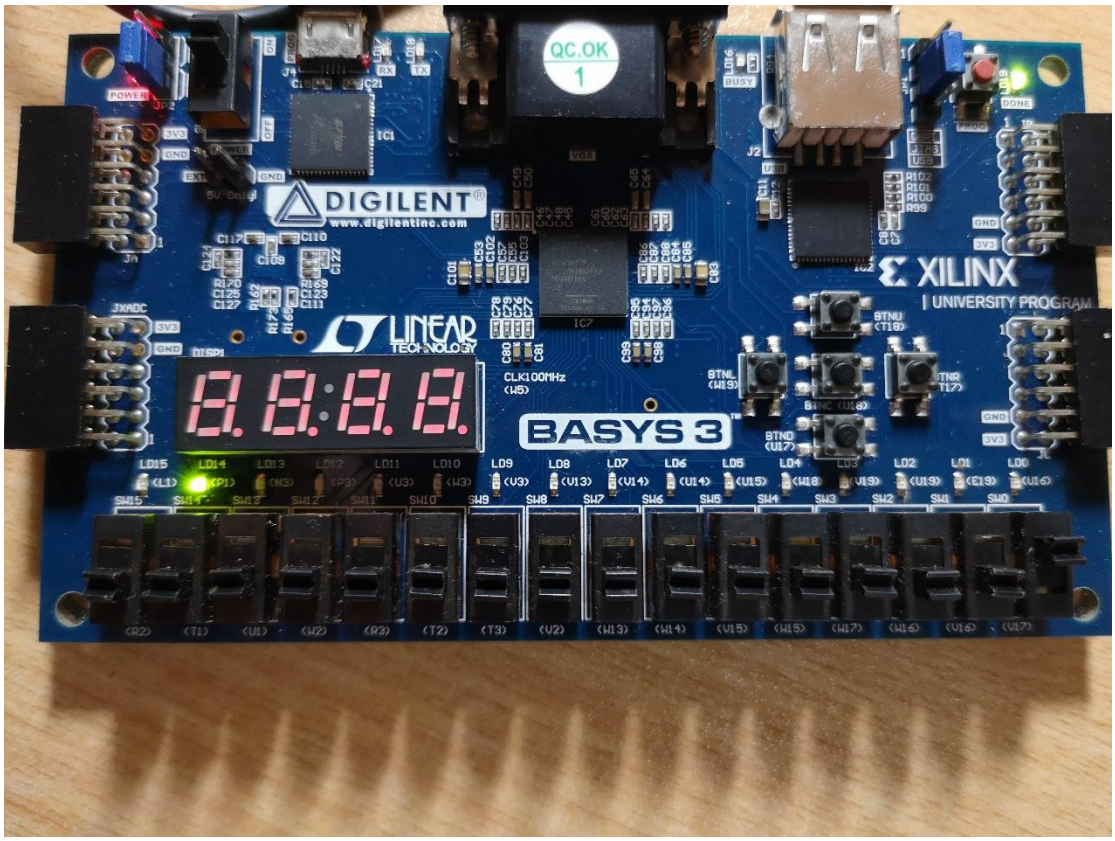
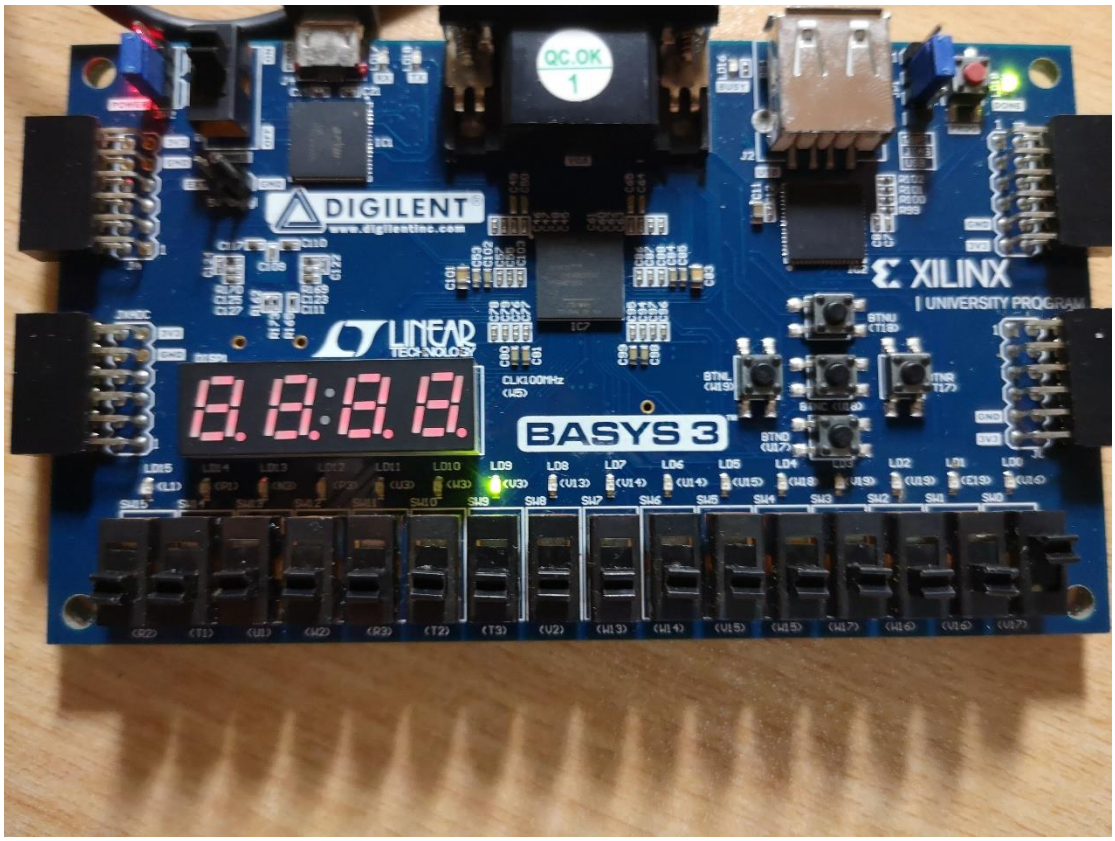
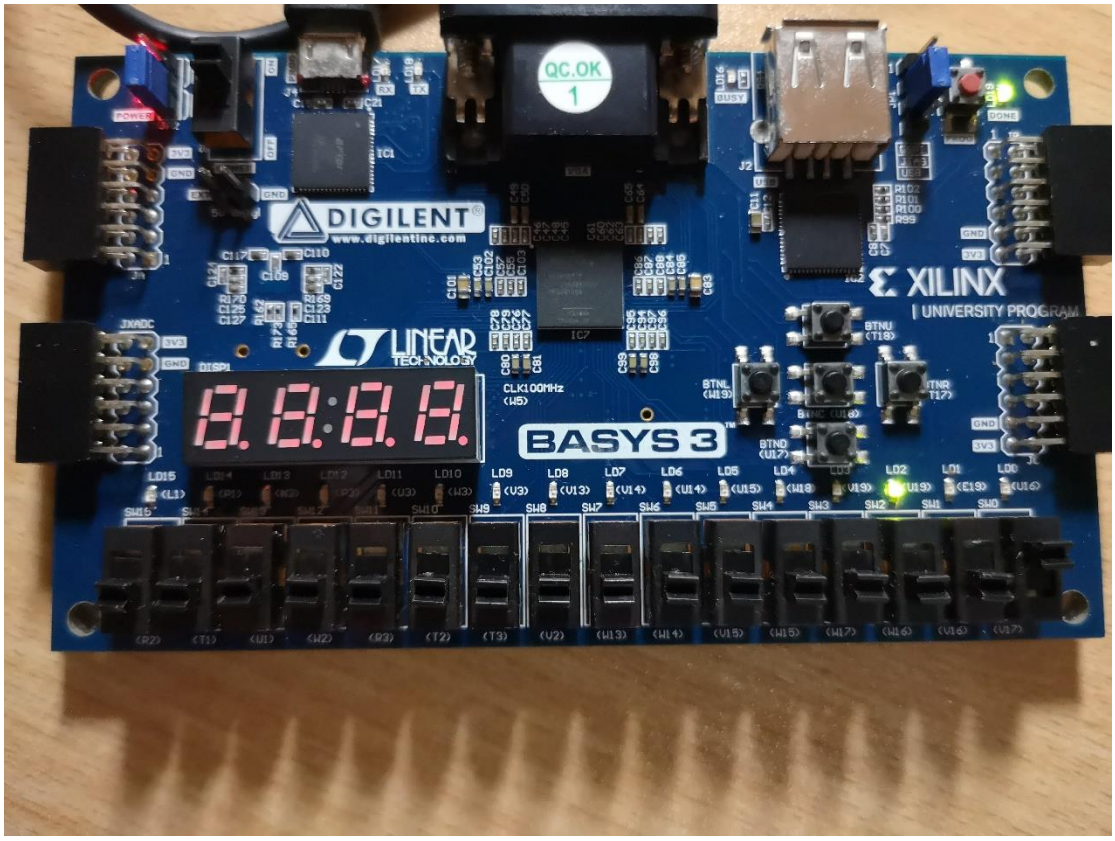
SW0=1 灯从左向右亮起






QC.OK
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CLK100MHz
(W5)
BTNU
(T18)
BTNL
(W19)
BTNR
(T17)
BTND
(U17)
DISP1
JXADC
LD15
LD14
LD13
LD12
LD11
LD10
LD9
LD8
LD7
LD6
LD5
LD4
LD3
LD2
LD1
LD0
SW15
SW14
SW13
SW12
SW11
SW10
SW9
SW8
SW7
SW6
SW5
SW4
SW3
SW2
SW1
SW0