

# 三八译码器实验

设计代码：

```
module decoder_3to8 (  
    input wire [2:0] A, // 3-bit input  
    output reg [7:0] Y // 8-bit output  
);  
  
always @(*) begin  
    Y = 8'b00000000;  
  
    // 根据输入A的值设置对应的输出Y  
    case (A)  
        3'b000: Y[0] = 1'b1;  
        3'b001: Y[1] = 1'b1;  
        3'b010: Y[2] = 1'b1;  
        3'b011: Y[3] = 1'b1;  
        3'b100: Y[4] = 1'b1;  
        3'b101: Y[5] = 1'b1;  
        3'b110: Y[6] = 1'b1;  
        3'b111: Y[7] = 1'b1;  
        default: Y = 8'b00000000;  
    endcase  
end  
  
endmodule
```

仿真代码：

```
module testbench;  
    reg [2:0] A; // 3-bit input  
    wire [7:0] Y; // 8-bit output  
  
    // 实例化三八译码器  
    decoder_3to8 uut (  
        .A(A),  
        .Y(Y)  
    );  
  
    initial begin  
        // 初始化输入  
        A = 3'b000;  
        #10; // 等待10时间单位  
        A = 3'b001;  
        #10;  
        A = 3'b010;  
        #10;  
        A = 3'b011;  
        #10;  
    end  
endmodule
```

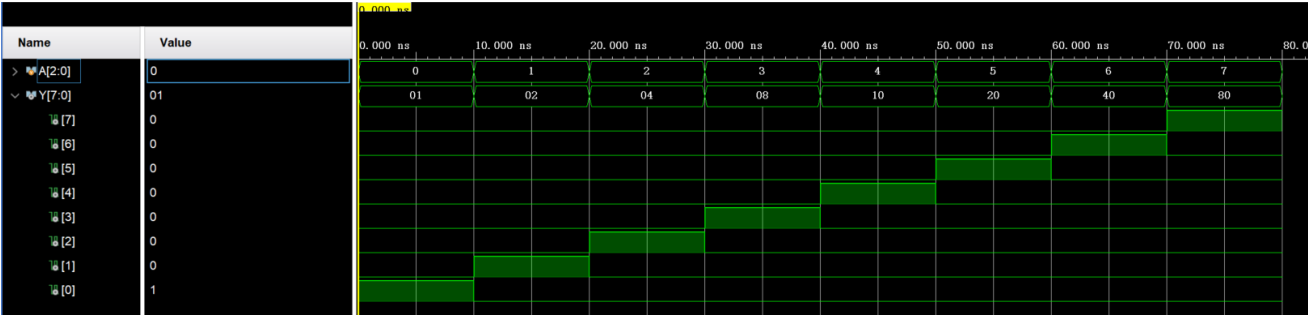
```
A = 3'b100;
#10;
A = 3'b101;
#10;
A = 3'b110;
#10;
A = 3'b111;
#10;

// 结束仿真
$finish;

end

initial begin
    $monitor("At time %t, A = %b, Y = %b", $time, A, Y);
end
endmodule
```

仿真结果：



控制台输出：

