

課題8-5(1)

真理値表

| x_1 | x_2 | x_3 | z |
|-----|-----|-----|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 |

プログラム

circuit.v

```
module circuit (  
    input x1, x2, x3,  
    output z  
);  
wire w1;  
    and a(w1,x3,x2);  
    or(z,x1,w1);  
endmodule
```

main.v

```
`timescale 1ns/1ns  
module circuit_test;  
    reg x1, x2, x3;  
    wire z;  
    circuit f(x1,x2,x3,z);  
    initial begin  
        x1 = 0; x2 = 0; x3 = 0;  
        $dumpfile("main.vcd");  
        $dumpvars(0, circuit_test);  
        $monitor("x1=%b x2=%b x3=%b z=%b", x1, x2, x3, z);  
  
        // Test cases  
        #10;    x1 = 0; x2 = 0; x3 = 0;  
        #10;    x1 = 0; x2 = 0; x3 = 1;  
        #10;    x1 = 0; x2 = 1; x3 = 0;  
        #10;    x1 = 0; x2 = 1; x3 = 1;  
        #10;    x1 = 1; x2 = 0; x3 = 0;
```

```

#10;      x1 = 1; x2 = 0; x3 = 1;
#10;      x1 = 1; x2 = 1; x3 = 0;
#10;      x1 = 1; x2 = 1; x3 = 1;

$finish;

end
endmodule

```

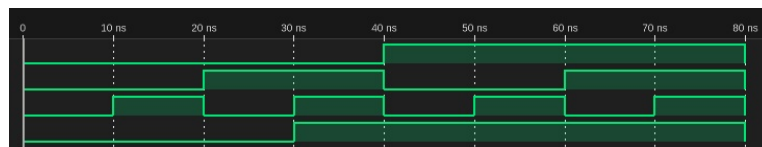
実行結果

```

x1=0 x2=0 x3=0 z=0
x1=0 x2=0 x3=1 z=0
x1=0 x2=1 x3=0 z=0
x1=0 x2=1 x3=1 z=1
x1=1 x2=0 x3=0 z=1
x1=1 x2=0 x3=1 z=1
x1=1 x2=1 x3=0 z=1
x1=1 x2=1 x3=1 z=1

```

波形



シミュレーション波形