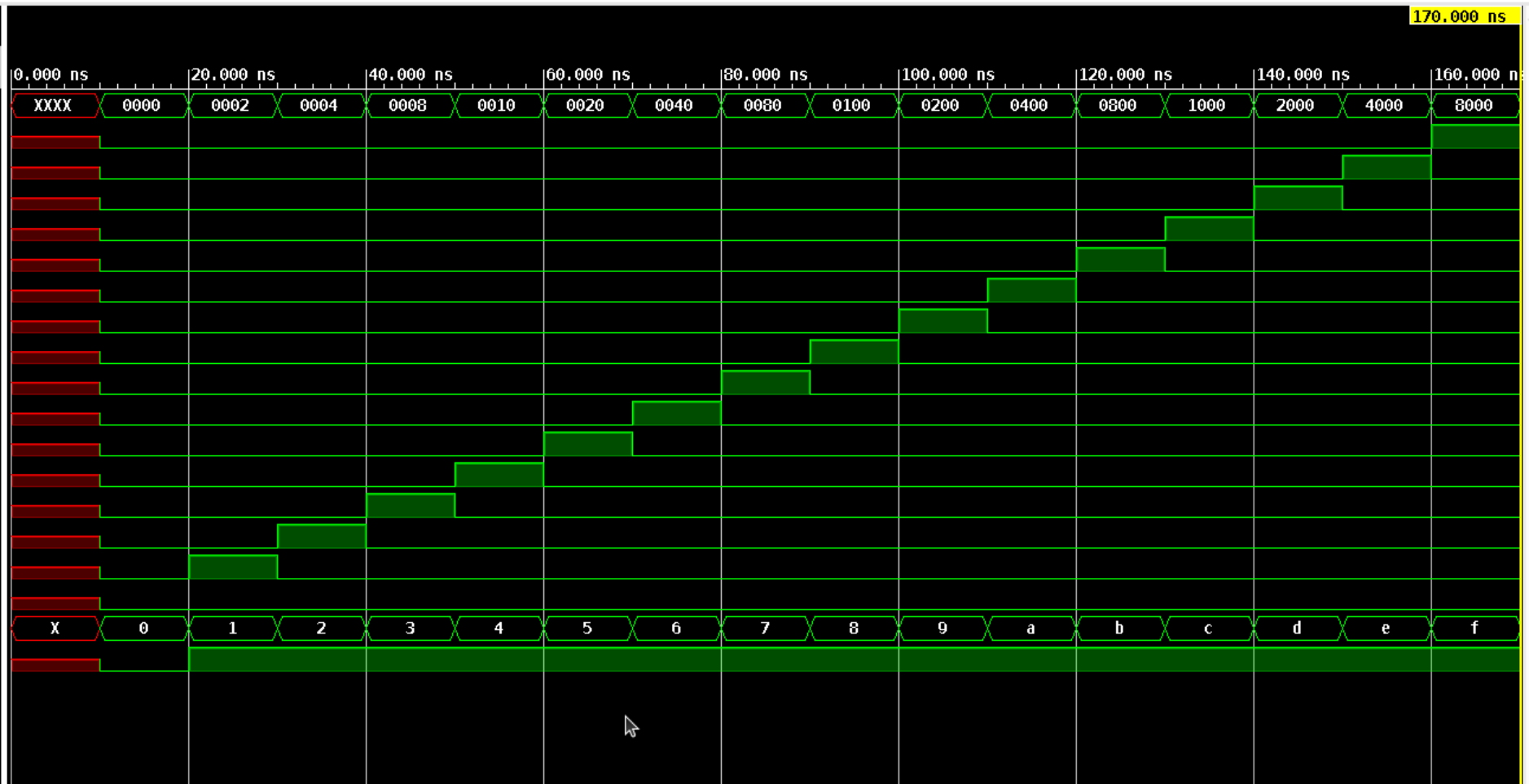




Name	Value
▼ a[15:0]	8000
a[15]	1
a[14]	0
a[13]	0
a[12]	0
a[11]	0
a[10]	0
a[9]	0
a[8]	0
a[7]	0
a[6]	0
a[5]	0
a[4]	0
a[3]	0
a[2]	0
a[1]	0
a[0]	0
> sel[3:0]	f
y	1





```
# run 1000ns
```

```
The value of y is x when a =      x (xxxxxxxxxxxxxxxxxxx) & sel = x
```

```
The value of y is 0 when a =      0 (00000000000000000) & sel = 0
```

```
The value of y is 1 when a =      2 (00000000000000010) & sel = 1
```

```
The value of y is 1 when a =      4 (00000000000000100) & sel = 2
```

```
The value of y is 1 when a =      8 (00000000000001000) & sel = 3
```

```
The value of y is 1 when a =     16 (00000000000010000) & sel = 4
```

```
The value of y is 1 when a =     32 (00000000000100000) & sel = 5
```

```
The value of y is 1 when a =     64 (00000000001000000) & sel = 6
```

```
The value of y is 1 when a =    128 (00000000010000000) & sel = 7
```

```
The value of y is 1 when a =    256 (00000000100000000) & sel = 8
```

```
The value of y is 1 when a =    512 (00000001000000000) & sel = 9
```

```
The value of y is 1 when a =   1024 (00000100000000000) & sel = 10
```

```
The value of y is 1 when a =   2048 (00001000000000000) & sel = 11
```

```
The value of y is 1 when a =   4096 (00010000000000000) & sel = 12
```

```
The value of y is 1 when a =   8192 (00100000000000000) & sel = 13
```

```
The value of y is 1 when a =  16384 (01000000000000000) & sel = 14
```

```
The value of y is 1 when a =  32768 (10000000000000000) & sel = 15
```

```
$finish called at time : 170 ns : File "/home/itzzinfinity/Cozy Drive/100daysofRTL/day_024/proje
```





```
1 `timescale 1ns / 1ps
2 ///////////////////////////////////////////////////////////////////
3 // Engineer: Anjan Prasad
4 // Create Date: 10/15/2024 08:26:12 AM
5 // Module Name: mux_16_to_1
6 ///////////////////////////////////////////////////////////////////
7
8 module mux_16_to_1(
9     input [15:0] a,
10    input [3:0] sel,
11    output y);
12
13    wire [7:0] w;
14    //level 1
15    mux_2_to_1 mux_1(a[0],a[1],sel[0],w[0]);
16    mux_2_to_1 mux_2(a[2],a[3],sel[0],w[1]);
17    mux_2_to_1 mux_3(a[4],a[5],sel[0],w[2]);
18    mux_2_to_1 mux_4(a[6],a[7],sel[0],w[3]);
19    mux_2_to_1 mux_5(a[8],a[9],sel[0],w[4]);
20    mux_2_to_1 mux_6(a[10],a[11],sel[0],w[5]);
21    mux_2_to_1 mux_7(a[12],a[13],sel[0],w[6]);
22    mux_2_to_1 mux_8(a[14],a[15],sel[0],w[7]);
23
24    //level 2
25    wire [3:0] x;
26    mux_2_to_1 mux_9(w[0],w[1],sel[1],x[0]);
27    mux_2_to_1 mux_10(w[2],w[3],sel[1],x[1]);
28    mux_2_to_1 mux_11(w[4],w[5],sel[1],x[2]);
29    mux_2_to_1 mux_12(w[6],w[7],sel[1],x[3]);
30
31    //level 3
32    wire [1:0] z;
33    mux_2_to_1 mux_13(x[0],x[1],sel[2],z[0]);
34    mux_2_to_1 mux_14(x[2],x[3],sel[2],z[1]);
35
36    //level 4
37    mux_2_to_1 mux_15(z[0],z[1],sel[3],y);
38 endmodule
39
```

/home/itzzinfinity/Cozy Drive/100daysofRTL/day_024/project_1/project_1.srscs/sim_1/new/mux_16_tb.v



```
1 `timescale 1ns / 1ps
2 //////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
3 // Engineer: Anjan Prasad
4 // Create Date: 10/15/2024 08:27:52 AM
5 // Module Name: mux_16_tb
6 //////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
7 module mux_16_tb;
8     reg [15:0] a;
9     reg [3:0] sel;
10    wire y;
11
12    mux_16_to_1 uut (
13        .a(a), .sel(sel), .y(y)
14    );
15
16    initial begin
17        $monitor("The value of y is %b when a = %d (%b) & sel = %d",y,a,a,sel);
18        #10;
19        a = 16'b0000000000000000; sel = 4'b0000; #10; // Select a[0]
20        a = 16'b0000000000000010; sel = 4'b0001; #10; // Select a[1]
21        a = 16'b0000000000000100; sel = 4'b0010; #10; // Select a[2]
22        a = 16'b0000000000001000; sel = 4'b0011; #10; // Select a[3]
23        a = 16'b0000000000010000; sel = 4'b0100; #10; // Select a[4]
24        a = 16'b0000000000100000; sel = 4'b0101; #10; // Select a[5]
25        a = 16'b0000000001000000; sel = 4'b0110; #10; // Select a[6]
26        a = 16'b0000000010000000; sel = 4'b0111; #10; // Select a[7]
27        a = 16'b0000000100000000; sel = 4'b1000; #10; // Select a[8]
28        a = 16'b0000001000000000; sel = 4'b1001; #10; // Select a[9]
29        a = 16'b0000010000000000; sel = 4'b1010; #10; // Select a[10]
30        a = 16'b0000100000000000; sel = 4'b1011; #10; // Select a[11]
31        a = 16'b0001000000000000; sel = 4'b1100; #10; // Select a[12]
32        a = 16'b0010000000000000; sel = 4'b1101; #10; // Select a[13]
33        a = 16'b0100000000000000; sel = 4'b1110; #10; // Select a[14]
34        a = 16'b1000000000000000; sel = 4'b1111; #10; // Select a[15]
35
36        $finish;
37    end
38 endmodule
39
```