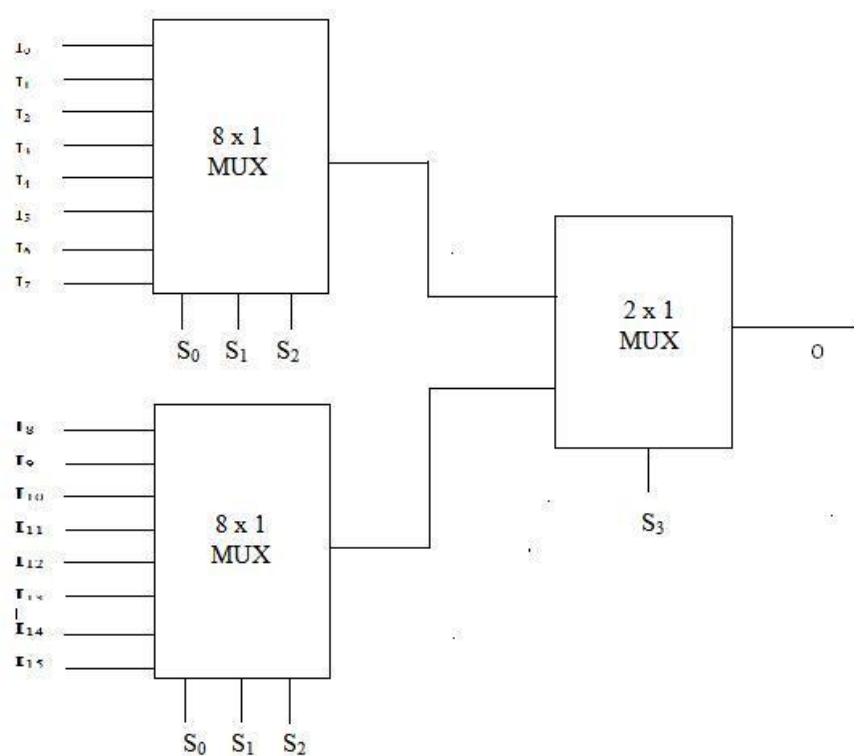


16X1 MUX USING 8X1 AND 2X1 MUX

The diagram will be same as of the block diagram of 16-to-1 line multiplexer in which 8-to-1 line multiplexer **Selection lines** will be $S_0 - S_2$ and S_3 will be connected to 2-to-1 line multiplexer Selection and First 8-to-1 line multiplexer **Input lines** will be $I_0 - I_7$ and Second 8-to-1 line multiplexer **Input lines** will be $I_8 - I_{15}$



RTL CODE:

```
module mux(input i1,input i2,input s,output y);
```

```
    assign y=s?i2:i1;
```

```
endmodule
```

```

module mux1(input [7:0]i,input [2:0]s,output reg y);
  always @( * ) begin
    case(s)
      3'b000: y=i[0];
      3'b001: y=i[1];
      3'b010: y=i[2];
      3'b011: y=i[3];
      3'b100: y=i[4];
      3'b101: y=i[5];
      3'b110: y=i[6];
      3'b111: y=i[7];

    endcase
  end
endmodule

```

```

module mux_2(input [15:0]i,input [3:0]s,output y);
  wire y1,y2;
  mux1 m1(i[15:8],s[2:0],y1);
  mux1 m2(i[7:0],s[2:0],y2);
  mux m3(y1,y2,s[3],y);
endmodule

```

TESTBENCH:

```

module test;

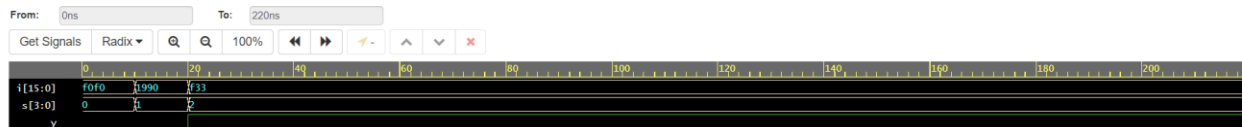
```

```

reg [15:0]i;
reg [3:0]s;
wire y;
mux_2 h1(i,s,y);
initial begin
    $dumpfile("dump.vcd");
    $dumpvars(1);
end
initial begin
    i=16'b1111000011110000;
    s=4'b0000;
    #10 s=4'b0001;i=16'b0001100110010000;
    #10 s=4'b0010;i=16'b0000111100110011;

    #200 $finish();
end
endmodule

```



Note: To revert to EPWave opening in a new browser window, set that option on your user page.