

```

module matrix(y1,y2,x1,x2);
input[31:0] x1;
input [31:0] x2;
output[31:0] y1;
output[31:0] y2;
reg[31:0]c;
reg[31:0]a;
reg[31:0]b;
always @(x1,x2) begin
    /*
        | y1 | |21  39 | | x1 | |
        |   | |=|   | |   |
        | y2 | |11   5 | | x2 |

    */

    //here c=(3x1 + 7x2)

    c=((x1<<1)+x1)+((x2<<2)+x2);
    //y1=a= 7(3x1 + 5x2) + 4x2= 7c + 4x2
    //y2=b= 3x1 + 5x2 +8x1=c + 8x1
    a=((c<<2)+(c<<1)+c)+(x2<<2);

    b=(c+(x1<<3));
end
assign y1=a;
assign y2=b;

endmodule

```

*/