```
module top(clk,rst,a,b);
 input clk;
    input rst;
//a is input matrix of 8x8 size
 input [0:63]a;
//b is output matrix of 8x8 size
output [0:63]b;

// erosion(clk,rst,i,y);

//First ROW of Ouput matrix 8 values

//assign b[0]=compare(a0,a1,a2,a8,a9,a10,a16,a17,a18);
erosion e0(clk,rst,({a[0:2],a[8:10],a[16:18]}),b[0]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e1(clk,rst,({a[1:3],a[9:11],a[17:19]}),b[1]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e2(clk,rst,({a[2:4],a[10:12],a[18:20]}),b[2]);

//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e3(clk,rst,({a[3:5],a[11:13],a[19:21]}),b[3]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e4(clk,rst,({a[4:6],a[12:14],a[20:22]}),b[4]);
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e5(clk,rst,({a[5:7],a[13:15],a[21:23]}),b[5]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e6(clk,rst,({a[6:7],1'b0,a[14:15],1'b0,a[22:23],1'b0}),b[6]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
erosion e7(clk,rst,({a[7],1'b0,1'b0,a[15],1'b0,1'b0,a[23],1'b0,1'b0}),b[7]);


//Second ROW of Ouput matrix 8 values

//assign b[8]=compare(a8,a9,a10,a16,a17,a18,a24,a25,a26);
erosion e8(clk,rst,({a[8:10],a[16:18],a[24:26]}),b[8]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e9(clk,rst,({a[9:11],a[17:19],a[25:27]}),b[9]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e10(clk,rst,({a[10:12],a[18:20],a[26:28]}),b[10]);
//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e11(clk,rst,({a[11:13],a[19:21],a[27:29]}),b[11]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e12(clk,rst,({a[12:14],a[20:22],a[28:30]}),b[12]);
```

```
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e13(clk,rst,({a[13:15],a[21:23],a[29:31]}),b[13]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e14(clk,rst,({a[14:15],1'b0,a[22:23],1'b0,a[30:31],1'b0}),b[14]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
erosion e15(clk,rst,({a[15],1'b0,1'b0,a[23],1'b0,1'b0,a[31],1'b0,1'b0}),b[15]);

//Third ROW of Ouput matrix 8 values

//assign b[8]=compare(a8,a9,a10,a16,a17,a18,a24,a25,a26);
erosion e16(clk,rst,({a[16:18],a[24:26],a[32:34]}),b[16]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e17(clk,rst,({a[17:19],a[25:27],a[33:35]}),b[17]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e18(clk,rst,({a[18:20],a[26:28],a[34:36]}),b[18]);
//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e19(clk,rst,({a[19:21],a[27:29],a[35:37]}),b[19]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e20(clk,rst,({a[20:22],a[28:30],a[36:38]}),b[20]);
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e21(clk,rst,({a[21:23],a[29:31],a[37:39]}),b[21]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e22(clk,rst,({a[22:23],1'b0,a[30:31],1'b0,a[38:39],1'b0}),b[22]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
erosion e23(clk,rst,({a[23],1'b0,1'b0,a[31],1'b0,1'b0,a[39],1'b0,1'b0}),b[23]);

//Fourth ROW of Ouput matrix 8 values

//assign b[8]=compare(a8,a9,a10,a16,a17,a18,a24,a25,a26);
erosion e24(clk,rst,({a[24:26],a[32:34],a[40:42]}),b[24]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e25(clk,rst,({a[25:27],a[33:35],a[41:43]}),b[25]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e26(clk,rst,({a[26:28],a[34:36],a[42:44]}),b[26]);
//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e27(clk,rst,({a[27:29],a[35:37],a[43:45]}),b[27]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e28(clk,rst,({a[28:30],a[36:38],a[44:46]}),b[28]);
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e29(clk,rst,({a[29:31],a[37:39],a[45:47]}),b[29]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e30(clk,rst,({a[30:31],1'b0,a[38:39],1'b0,a[46:47],1'b0}),b[30]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
```

```
erosion e31(clk,rst,({a[31],1'b0,1'b0,a[39],1'b0,1'b0,a[47],1'b0,1'b0}),b[31]);


//Fifth ROW of Ouput matrix 8 values

//assign b[8]=compare(a8,a9,a10,a16,a17,a18,a24,a25,a26);
erosion e32(clk,rst,({a[32:34],a[40:42],a[48:50]}),b[32]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e33(clk,rst,({a[33:35],a[41:43],a[49:51]}),b[33]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e34(clk,rst,({a[34:36],a[42:44],a[50:52]}),b[34]);
//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e35(clk,rst,({a[35:37],a[43:45],a[51:53]}),b[35]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e36(clk,rst,({a[36:38],a[44:46],a[52:54]}),b[36]);
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e37(clk,rst,({a[37:39],a[45:47],a[53:55]}),b[37]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e38(clk,rst,({a[38:39],1'b0,a[46:47],1'b0,a[54:55],1'b0}),b[38]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
erosion e39(clk,rst,({a[39],1'b0,1'b0,a[47],1'b0,1'b0,a[55],1'b0,1'b0}),b[39]);

//Sixth ROW of Ouput matrix 8 values

//assign b[8]=compare(a8,a9,a10,a16,a17,a18,a24,a25,a26);
erosion e40(clk,rst,({a[40:42],a[48:50],a[56:58]}),b[40]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e41(clk,rst,({a[41:43],a[49:51],a[57:59]}),b[41]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e42(clk,rst,({a[42:44],a[50:52],a[58:60]}),b[42]);
//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e43(clk,rst,({a[43:45],a[51:53],a[59:61]}),b[43]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e44(clk,rst,({a[44:46],a[52:54],a[60:62]}),b[44]);
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e45(clk,rst,({a[45:47],a[53:55],a[61:63]}),b[45]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e46(clk,rst,({a[46:47],1'b0,a[54:55],1'b0,a[62:63],1'b0}),b[46]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
erosion e47(clk,rst,({a[47],1'b0,1'b0,a[55],1'b0,1'b0,a[63],1'b0,1'b0}),b[47]);


//Seventh ROW of Ouput matrix 8 values
```

```
//assign b[8]=compare(a8,a9,a10,a16,a17,a18,a24,a25,a26);
erosion e48(clk,rst,({a[48:50],a[56:58],1'b0,1'b0,1'b0}),b[48]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e49(clk,rst,({a[49:51],a[57:59],1'b0,1'b0,1'b0}),b[49]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e50(clk,rst,({a[50:52],a[58:60],1'b0,1'b0,1'b0}),b[50]);
//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e51(clk,rst,({a[51:53],a[59:61],1'b0,1'b0,1'b0}),b[51]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e52(clk,rst,({a[52:54],a[60:62],1'b0,1'b0,1'b0}),b[52]);
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e53(clk,rst,({a[53:55],a[61:63],1'b0,1'b0,1'b0}),b[53]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e54(clk,rst,({a[54:55],1'b0,a[62:63],1'b0,1'b0,1'b0,1'b0}),b[54]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
erosion e55(clk,rst,({a[55],1'b0,1'b0,a[63],1'b0,1'b0,1'b0,1'b0,1'b0}),b[55]);


//Eigth ROW of Ouput matrix 8 values

//assign b[8]=compare(a8,a9,a10,a16,a17,a18,a24,a25,a26);
erosion e56(clk,rst,({a[56:58],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[56]);
//assign b[1]=compare(a1,a2,a3,a9,a10,a11,a17,a18,a19);
erosion e57(clk,rst,({a[57:59],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[57]);
//assign b[2]=compare(a2,a3,a4,a10,a11,a12,a18,a19,a20);
erosion e58(clk,rst,({a[58:60],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[58]);
//assign b[3]=compare(a3,a4,a5,a11,a12,a13,a19,a20,a21);
erosion e59(clk,rst,({a[59:61],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[59]);
//assign b[4]=compare(a4,a5,a6,a12,a13,a14,a20,a21,a22);
erosion e60(clk,rst,({a[60:62],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[60]);
//assign b[5]=compare(a5,a6,a7,a13,a14,a15,a21,a22,a23);
erosion e61(clk,rst,({a[61:63],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[61]);
//assign b[6]=compare(a6,a7,0,a14,a15,0,a22,a23,0);
erosion e62(clk,rst,({a[62:63],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[62]);
//assign b[7]=compare(a7,0,0,a15,0,0,a23,0,0);
erosion e63(clk,rst,({a[63],1'b0,1'b0,1'b0,1'b0,1'b0,1'b0,1'b0,1'b0}),b[63]);

endmodule
```