```
 FUNCTION mc3_d (wire_in[3..0],clk,reset) RETURNS (cnt_out[2..0]);
 FUNCTION nm3_d (a[2..0],b[2..0],c[2..0],clk,reset) RETURNS (pixel_hit);
 INCLUDE "lpm_or" ;

 SUBDESIGN masksl1
 (
    clk, reset : INPUT ;
B0_in : INPUT ;
W0_in : INPUT ;
ER_FLAG_in : INPUT ;
w_in[45..0]       : INPUT ;
B0_out : OUTPUT;
W0_out : OUTPUT;
ER_FLAG_out : OUTPUT;
    pixel[11..0]      : OUTPUT;
 )
 VARIABLE
B0_out :dff;
B0_temp :dff;
W0_out :dff;
W0_temp :dff;
ER_FLAG_out :dff;
ER_FLAG_temp :dff;

 % wire names %
    w0_101                        : NODE;

    w0_102                        : NODE;

    w0_1                          : NODE;

    w0_2                          : NODE;

    w1_1                          : NODE;

    w1_101                        : NODE;

    w1_102                        : NODE;

    w1_100                        : NODE;

    w2_101                        : NODE;

    w2_1                          : NODE;

    w2_100                        : NODE;
```

```
w3_100                          : NODE;
w3_1                            : NODE;
w3_101                          : NODE;
w3_0                            : NODE;
w4_100                          : NODE;
w4_101                          : NODE;
w4_0                            : NODE;
w4_1                            : NODE;
w5_0                            : NODE;
w5_101                          : NODE;
w5_100                          : NODE;
w6_100                          : NODE;
w6_0                            : NODE;
w6_99                           : NODE;
w7_99                           : NODE;
w7_0                            : NODE;
w7_100                          : NODE;
w7_n1                           : NODE;
w8_99                           : NODE;
w8_100                          : NODE;
w8_n1                           : NODE;
w8_0                            : NODE;
w9_n1                           : NODE;
```

```
   w9_100                          : NODE;

   w9_99                           : NODE;

   w9_0                            : NODE;

   w10_99                          : NODE;

   w10_n1                          : NODE;

   w10_100                         : NODE;

   w10_98                          : NODE;

   w11_99                          : NODE;

   w11_n1                          : NODE;

   w11_n2                          : NODE;

   w11_98                          : NODE;

   w11_100                         : NODE;

% the following nodes represent the count of the 4 lsb wires (w0-w3) %
   a_101_1_101_100[2..0]           : NODE;

   a_102_101_101_1[2..0]           : NODE;

   a_102_101_1_1[2..0]             : NODE;

   a_1_1_101_100[2..0]             : NODE;

   a_1_101_100_100[2..0]           : NODE;

   a_101_1_101_101[2..0]           : NODE;

   a_101_1_1_101[2..0]             : NODE;

   a_1_101_101_100[2..0]           : NODE;

   a_101_101_1_101[2..0]           : NODE;

   a_102_101_1_101[2..0]           : NODE;
```

```
   a_1_101_100_0[2..0]            : NODE;

   a_101_101_100_0[2..0]          : NODE;

   a_102_102_101_1[2..0]          : NODE;

   a_2_102_101_1[2..0]            : NODE;

   a_101_100_100_0[2..0]          : NODE;

   a_1_1_101_101[2..0]            : NODE;

   a_101_101_1_1[2..0]            : NODE;

   a_101_101_100_100[2..0]        : NODE;

% the following nodes represent the count of the 4 middle wires (w4-w7) %
   b_100_0_100_99[2..0]           : NODE;

   b_101_101_100_0[2..0]          : NODE;

   b_101_100_100_0[2..0]          : NODE;

   b_0_0_100_99[2..0]             : NODE;

   b_0_100_100_99[2..0]           : NODE;

   b_100_0_100_100[2..0]          : NODE;

   b_100_100_0_100[2..0]          : NODE;

   b_100_0_0_100[2..0]            : NODE;

   b_101_100_0_0[2..0]            : NODE;

   b_0_100_99_99[2..0]            : NODE;

   b_101_101_100_100[2..0]        : NODE;

   b_101_100_0_100[2..0]          : NODE;

   b_100_100_99_99[2..0]          : NODE;

   b_100_100_0_0[2..0]            : NODE;
```

```
   b_0_0_100_100[2..0]            : NODE;

   b_0_100_99_n1[2..0]            : NODE;

   b_1_101_100_0[2..0]            : NODE;

   b_1_101_100_100[2..0]          : NODE;

% the following nodes represent the count of the 4 msb wires (w8-w11) %
   c_99_n1_99_99[2..0]            : NODE;

   c_100_100_99_99[2..0]          : NODE;

   c_100_99_99_n1[2..0]           : NODE;

   c_n1_n1_99_99[2..0]            : NODE;

   c_99_99_n1_99[2..0]            : NODE;

   c_99_n1_n1_99[2..0]            : NODE;

   c_n1_n1_99_98[2..0]            : NODE;

   c_0_100_99_99[2..0]            : NODE;

   c_99_99_n1_n1[2..0]            : NODE;

   c_n1_99_99_98[2..0]            : NODE;

   c_100_99_n1_n1[2..0]           : NODE;

   c_0_100_100_99[2..0]           : NODE;

   c_100_100_99_n1[2..0]          : NODE;

   c_n1_99_98_98[2..0]            : NODE;

   c_100_99_n1_99[2..0]           : NODE;

   c_99_n1_99_98[2..0]            : NODE;

   c_100_99_99_99[2..0]           : NODE;

   c_100_100_100_99[2..0]         : NODE;
```

```
    c_99_99_99_n1[2..0]            : NODE;

    c_0_100_100_100[2..0]          : NODE;

    c_0_0_100_100[2..0]            : NODE;

    c_n1_99_99_99[2..0]            : NODE;

    c_0_0_100_99[2..0]             : NODE;

 %  the following nodes are the result of a mask for a given pixel %

    p0_m[13..1]:NODE;

    p1_m[16..1]:NODE;

    p2_m[12..1]:NODE;

    p3_m[14..1]:NODE;

    p4_m[9..1]:NODE;

    p5_m[16..1]:NODE;

    p6_m[14..1]:NODE;

    p7_m[15..1]:NODE;

    p8_m[13..1]:NODE;

    p9_m[14..1]:NODE;

    p10_m[13..1]:NODE;

    p11_m[17..1]:NODE;

 BEGIN
B0_out.clk = clk;
B0_out.clrn = reset;
B0_temp.clk = clk;
B0_temp.clrn = reset;
B0_temp.d = B0_in;
B0_out.d = B0_temp.q;
W0_out.clk = clk;
W0_out.clrn = reset;
W0_temp.clk = clk;
```

```
W0_temp.clrn = reset;
W0_temp.d = W0_in;
W0_out.d = W0_temp.q;
ER_FLAG_out.clk = clk;
ER_FLAG_out.clrn = reset;
ER_FLAG_temp.clk = clk;
ER_FLAG_temp.clrn = reset;
ER_FLAG_temp.d = ER_FLAG_in;
ER_FLAG_out.d = ER_FLAG_temp.q;

% set the input wires to the correct wire %

    w3_0=w_in0;
    w4_0=w_in1;
    w5_0=w_in2;
    w0_1=w_in3;
    w1_1=w_in4;
    w2_1=w_in5;
    w3_1=w_in6;
    w4_1=w_in7;
    w0_2=w_in8;
    w11_n2=w_in9;
    w7_n1=w_in10;
    w8_n1=w_in11;
    w9_n1=w_in12;
    w10_n1=w_in13;
    w11_n1=w_in14;
    w6_0=w_in15;
    w7_0=w_in16;
    w8_0=w_in17;
    w9_0=w_in18;
    w1_100=w_in19;
    w2_100=w_in20;
    w3_100=w_in21;
    w4_100=w_in22;
    w5_100=w_in23;
    w0_101=w_in24;
    w1_101=w_in25;
    w2_101=w_in26;
    w3_101=w_in27;
    w4_101=w_in28;
    w5_101=w_in29;
    w0_102=w_in30;
    w1_102=w_in31;
    w10_98=w_in32;
    w11_98=w_in33;
    w6_99=w_in34;
    w7_99=w_in35;
```

```
   w8_99=w_in36;
   w9_99=w_in37;
   w10_99=w_in38;
   w11_99=w_in39;
   w6_100=w_in40;
   w7_100=w_in41;
   w8_100=w_in42;
   w9_100=w_in43;
   w10_100=w_in44;
   w11_100=w_in45;

% count the number of misses in the 4 lsb wires %
   a_101_1_101_100[2..0] = mc3_d(w0_101,w1_1,w2_101,w3_100,clk,reset);

   a_102_101_101_1[2..0] = mc3_d(w0_102,w1_101,w2_101,w3_1,clk,reset);

   a_102_101_1_1[2..0] = mc3_d(w0_102,w1_101,w2_1,w3_1,clk,reset);

   a_1_1_101_100[2..0] = mc3_d(w0_1,w1_1,w2_101,w3_100,clk,reset);

   a_1_101_100_100[2..0] = mc3_d(w0_1,w1_101,w2_100,w3_100,clk,reset);

   a_101_1_101_101[2..0] = mc3_d(w0_101,w1_1,w2_101,w3_101,clk,reset);

   a_101_1_1_101[2..0] = mc3_d(w0_101,w1_1,w2_1,w3_101,clk,reset);

   a_1_101_101_100[2..0] = mc3_d(w0_1,w1_101,w2_101,w3_100,clk,reset);

   a_101_101_1_101[2..0] = mc3_d(w0_101,w1_101,w2_1,w3_101,clk,reset);

   a_102_101_1_101[2..0] = mc3_d(w0_102,w1_101,w2_1,w3_101,clk,reset);

   a_1_101_100_0[2..0] = mc3_d(w0_1,w1_101,w2_100,w3_0,clk,reset);

   a_101_101_100_0[2..0] = mc3_d(w0_101,w1_101,w2_100,w3_0,clk,reset);

   a_102_102_101_1[2..0] = mc3_d(w0_102,w1_102,w2_101,w3_1,clk,reset);

   a_2_102_101_1[2..0] = mc3_d(w0_2,w1_102,w2_101,w3_1,clk,reset);

   a_101_100_100_0[2..0] = mc3_d(w0_101,w1_100,w2_100,w3_0,clk,reset);

   a_1_1_101_101[2..0] = mc3_d(w0_1,w1_1,w2_101,w3_101,clk,reset);

   a_101_101_1_1[2..0] = mc3_d(w0_101,w1_101,w2_1,w3_1,clk,reset);
```

```
   a_101_101_100_100[2..0] = mc3_d(w0_101,w1_101,w2_100,w3_100,clk,reset);

% count the number of misses in the 4 middle wires %
   b_100_0_100_99[2..0] = mc3_d(w4_100,w5_0,w6_100,w7_99,clk,reset);

   b_101_101_100_0[2..0] = mc3_d(w4_101,w5_101,w6_100,w7_0,clk,reset);

   b_101_100_100_0[2..0] = mc3_d(w4_101,w5_100,w6_100,w7_0,clk,reset);

   b_0_0_100_99[2..0] = mc3_d(w4_0,w5_0,w6_100,w7_99,clk,reset);

   b_0_100_100_99[2..0] = mc3_d(w4_0,w5_100,w6_100,w7_99,clk,reset);

   b_100_0_100_100[2..0] = mc3_d(w4_100,w5_0,w6_100,w7_100,clk,reset);

   b_100_100_0_100[2..0] = mc3_d(w4_100,w5_100,w6_0,w7_100,clk,reset);

   b_100_0_0_100[2..0] = mc3_d(w4_100,w5_0,w6_0,w7_100,clk,reset);

   b_101_100_0_0[2..0] = mc3_d(w4_101,w5_100,w6_0,w7_0,clk,reset);

   b_0_100_99_99[2..0] = mc3_d(w4_0,w5_100,w6_99,w7_99,clk,reset);

   b_101_101_100_100[2..0] = mc3_d(w4_101,w5_101,w6_100,w7_100,clk,reset);

   b_101_100_0_100[2..0] = mc3_d(w4_101,w5_100,w6_0,w7_100,clk,reset);

   b_100_100_99_99[2..0] = mc3_d(w4_100,w5_100,w6_99,w7_99,clk,reset);

   b_100_100_0_0[2..0] = mc3_d(w4_100,w5_100,w6_0,w7_0,clk,reset);

   b_0_0_100_100[2..0] = mc3_d(w4_0,w5_0,w6_100,w7_100,clk,reset);

   b_0_100_99_n1[2..0] = mc3_d(w4_0,w5_100,w6_99,w7_n1,clk,reset);

   b_1_101_100_0[2..0] = mc3_d(w4_1,w5_101,w6_100,w7_0,clk,reset);

   b_1_101_100_100[2..0] = mc3_d(w4_1,w5_101,w6_100,w7_100,clk,reset);

% count the number of misses in the 4 msb wires %
   c_99_n1_99_99[2..0] = mc3_d(w8_99,w9_n1,w10_99,w11_99,clk,reset);

   c_100_100_99_99[2..0] = mc3_d(w8_100,w9_100,w10_99,w11_99,clk,reset);
```

```
c_100_99_99_n1[2..0] = mc3_d(w8_100,w9_99,w10_99,w11_n1,clk,reset);
c_n1_n1_99_99[2..0] = mc3_d(w8_n1,w9_n1,w10_99,w11_99,clk,reset);
c_99_99_n1_99[2..0] = mc3_d(w8_99,w9_99,w10_n1,w11_99,clk,reset);
c_99_n1_n1_99[2..0] = mc3_d(w8_99,w9_n1,w10_n1,w11_99,clk,reset);
c_n1_n1_99_98[2..0] = mc3_d(w8_n1,w9_n1,w10_99,w11_98,clk,reset);
c_0_100_99_99[2..0] = mc3_d(w8_0,w9_100,w10_99,w11_99,clk,reset);
c_99_99_n1_n1[2..0] = mc3_d(w8_99,w9_99,w10_n1,w11_n1,clk,reset);
c_n1_99_99_98[2..0] = mc3_d(w8_n1,w9_99,w10_99,w11_98,clk,reset);
c_100_99_n1_n1[2..0] = mc3_d(w8_100,w9_99,w10_n1,w11_n1,clk,reset);
c_0_100_100_99[2..0] = mc3_d(w8_0,w9_100,w10_100,w11_99,clk,reset);
c_100_100_99_n1[2..0] = mc3_d(w8_100,w9_100,w10_99,w11_n1,clk,reset);
c_n1_99_98_98[2..0] = mc3_d(w8_n1,w9_99,w10_98,w11_98,clk,reset);
c_100_99_n1_99[2..0] = mc3_d(w8_100,w9_99,w10_n1,w11_99,clk,reset);
c_99_n1_99_98[2..0] = mc3_d(w8_99,w9_n1,w10_99,w11_98,clk,reset);
c_100_99_99_99[2..0] = mc3_d(w8_100,w9_99,w10_99,w11_99,clk,reset);
c_100_100_100_99[2..0] = mc3_d(w8_100,w9_100,w10_100,w11_99,clk,reset);
c_99_99_99_n1[2..0] = mc3_d(w8_99,w9_99,w10_99,w11_n1,clk,reset);
c_0_100_100_100[2..0] = mc3_d(w8_0,w9_100,w10_100,w11_100,clk,reset);
c_0_0_100_100[2..0] = mc3_d(w8_0,w9_0,w10_100,w11_100,clk,reset);
c_n1_99_99_99[2..0] = mc3_d(w8_n1,w9_99,w10_99,w11_99,clk,reset);
c_0_0_100_99[2..0] = mc3_d(w8_0,w9_0,w10_100,w11_99,clk,reset);

%  look at the following masks to check
for more than misses, if 3 or less set pixel %
```

```
p3_m1=nm3_d(a_101_1_101_100[],b_100_0_100_99[],c_99_n1_99_99[],clk,reset);
p10_m1=nm3_d(a_102_101_101_1[],b_101_101_100_0[],c_100_100_99_99[],clk,reset);
p9_m1=nm3_d(a_102_101_1_1[],b_101_100_100_0[],c_100_99_99_n1[],clk,reset);
p3_m2=nm3_d(a_1_1_101_100[],b_0_0_100_99[],c_99_n1_99_99[],clk,reset);
p1_m1=nm3_d(a_1_101_100_100[],b_0_100_100_99[],c_n1_n1_99_99[],clk,reset);
p10_m2=nm3_d(a_102_101_101_1[],b_101_100_100_0[],c_100_100_99_99[],clk,reset);
p5_m1=nm3_d(a_101_1_101_101[],b_100_0_100_100[],c_99_99_n1_99[],clk,reset);
p7_m1=nm3_d(a_101_1_1_101[],b_100_100_0_100[],c_100_99_99_n1[],clk,reset);
p5_m2=nm3_d(a_101_1_101_101[],b_100_0_0_100[],c_99_99_n1_99[],clk,reset);
p3_m3=nm3_d(a_1_101_101_100[],b_0_0_100_99[],c_99_n1_99_99[],clk,reset);
p4_m1=nm3_d(a_101_1_101_100[],b_100_0_100_100[],c_99_n1_n1_99[],clk,reset);
p1_m2=nm3_d(a_1_101_100_100[],b_0_100_100_99[],c_n1_n1_99_98[],clk,reset);
p8_m1=nm3_d(a_101_101_1_101[],b_101_100_0_0[],c_100_99_99_n1[],clk,reset);
p9_m2=nm3_d(a_102_101_1_101[],b_101_100_100_0[],c_100_100_99_99[],clk,reset);
p4_m2=nm3_d(a_1_1_101_100[],b_100_0_100_100[],c_99_99_n1_99[],clk,reset);
p2_m1=nm3_d(a_1_101_100_100[],b_0_100_100_99[],c_99_n1_99_99[],clk,reset);
p9_m3=nm3_d(a_102_101_1_1[],b_101_100_100_0[],c_100_100_99_99[],clk,reset);
p10_m3=nm3_d(a_102_101_101_1[],b_101_101_100_0[],c_0_100_99_99[],clk,reset);
p5_m3=nm3_d(a_101_1_101_101[],b_100_0_0_100[],c_99_99_n1_n1[],clk,reset);
p4_m3=nm3_d(a_1_1_101_100[],b_100_0_100_100[],c_99_n1_n1_99[],clk,reset);
p0_m1=nm3_d(a_1_101_100_0[],b_0_100_99_99[],c_n1_99_99_98[],clk,reset);
p0_m2=nm3_d(a_101_101_100_0[],b_0_100_99_99[],c_n1_99_99_98[],clk,reset);
p6_m1=nm3_d(a_101_1_1_101[],b_100_100_0_100[],c_99_99_n1_99[],clk,reset);
```

```
p8_m2=nm3_d(a_102_101_1_101[],b_101_100_0_0[],c_100_99_99_n1[],clk,reset);
p2_m2=nm3_d(a_1_101_101_100[],b_0_100_100_99[],c_n1_n1_99_98[],clk,reset);
p2_m3=nm3_d(a_1_101_101_100[],b_0_100_100_99[],c_99_n1_99_99[],clk,reset);
p1_m3=nm3_d(a_1_101_100_100[],b_0_100_99_99[],c_n1_99_99_98[],clk,reset);
p6_m2=nm3_d(a_101_1_101_101[],b_100_0_0_100[],c_100_99_n1_n1[],clk,reset);
p7_m2=nm3_d(a_101_101_1_101[],b_100_100_0_100[],c_100_99_99_n1[],clk,reset);
p11_m1=nm3_d(a_102_101_101_1[],b_101_101_100_0[],c_0_100_100_99[],clk,reset);
p3_m4=nm3_d(a_1_101_101_100[],b_0_0_100_99[],c_99_n1_n1_99[],clk,reset);
p5_m4=nm3_d(a_101_1_101_100[],b_100_0_100_100[],c_99_99_n1_99[],clk,reset);
p11_m2=nm3_d(a_102_102_101_1[],b_101_101_100_100[],c_0_100_100_99[],clk,reset);
p6_m3=nm3_d(a_101_1_1_101[],b_100_100_0_100[],c_100_99_n1_n1[],clk,reset);
p8_m3=nm3_d(a_101_101_1_101[],b_101_100_0_100[],c_100_99_99_n1[],clk,reset);
p7_m3=nm3_d(a_101_101_1_101[],b_100_100_0_100[],c_100_99_n1_n1[],clk,reset);
p8_m4=nm3_d(a_101_101_1_101[],b_101_100_0_0[],c_100_100_99_n1[],clk,reset);
p9_m4=nm3_d(a_102_101_1_1[],b_101_100_100_0[],c_100_100_99_n1[],clk,reset);
p11_m3=nm3_d(a_102_102_101_1[],b_101_101_100_0[],c_0_100_100_99[],clk,reset);
p8_m5=nm3_d(a_102_101_1_101[],b_101_100_0_100[],c_100_99_99_n1[],clk,reset);
p6_m4=nm3_d(a_101_1_1_101[],b_100_0_0_100[],c_99_99_n1_99[],clk,reset);
p11_m4=nm3_d(a_102_102_101_1[],b_101_101_100_0[],c_0_100_99_99[],clk,reset);
p9_m5=nm3_d(a_102_101_1_101[],b_101_100_0_0[],c_100_100_99_n1[],clk,reset);
p11_m5=nm3_d(a_102_101_101_1[],b_101_101_100_100[],c_0_100_100_99[],clk,reset);
p0_m3=nm3_d(a_1_101_100_0[],b_0_100_99_99[],c_n1_99_98_98[],clk,reset);
p10_m4=nm3_d(a_102_101_101_1[],b_101_100_100_0[],c_0_100_99_99[],clk,reset);
```

```
p0_m4=nm3_d(a_101_101_100_0[],b_100_100_99_99[],c_n1_99_99_98[],clk,reset);
p1_m4=nm3_d(a_1_101_100_100[],b_0_100_99_99[],c_n1_n1_99_98[],clk,reset);
p0_m5=nm3_d(a_101_101_100_0[],b_0_100_99_99[],c_n1_n1_99_98[],clk,reset);
p3_m5=nm3_d(a_1_1_101_100[],b_100_0_100_99[],c_99_n1_99_99[],clk,reset);
p2_m4=nm3_d(a_1_101_101_100[],b_0_100_100_99[],c_n1_n1_99_99[],clk,reset);
p9_m6=nm3_d(a_102_101_1_1[],b_101_100_0_0[],c_100_99_99_n1[],clk,reset);
p11_m6=nm3_d(a_102_102_101_1[],b_101_101_100_100[],c_0_100_99_99[],clk,reset);
p9_m7=nm3_d(a_102_101_1_101[],b_101_100_100_0[],c_100_100_99_n1[],clk,reset);
p1_m5=nm3_d(a_1_101_100_0[],b_0_100_99_99[],c_n1_n1_99_98[],clk,reset);
p8_m6=nm3_d(a_101_101_1_101[],b_100_100_0_0[],c_100_99_99_n1[],clk,reset);
p10_m5=nm3_d(a_102_101_101_1[],b_101_100_100_0[],c_100_100_99_n1[],clk,reset);
p6_m5=nm3_d(a_101_1_101_101[],b_100_100_0_100[],c_100_99_n1_n1[],clk,reset);
p6_m6=nm3_d(a_101_101_1_101[],b_100_100_0_100[],c_99_99_n1_99[],clk,reset);
p10_m6=nm3_d(a_102_102_101_1[],b_101_101_100_0[],c_100_100_99_99[],clk,reset);
p4_m4=nm3_d(a_1_101_101_100[],b_100_0_100_100[],c_99_n1_n1_99[],clk,reset);
p1_m6=nm3_d(a_1_101_100_100[],b_0_100_100_99[],c_n1_99_99_98[],clk,reset);
p3_m6=nm3_d(a_1_101_101_100[],b_0_0_100_100[],c_99_n1_n1_99[],clk,reset);
p7_m4=nm3_d(a_101_101_1_101[],b_100_100_0_100[],c_100_99_n1_99[],clk,reset);
p5_m5=nm3_d(a_101_1_101_101[],b_100_0_100_100[],c_99_n1_n1_99[],clk,reset);
p1_m7=nm3_d(a_1_101_100_0[],b_0_100_100_99[],c_n1_n1_99_98[],clk,reset);
p3_m7=nm3_d(a_1_1_101_100[],b_0_0_100_99[],c_99_n1_n1_99[],clk,reset);
p7_m5=nm3_d(a_101_101_1_101[],b_101_100_0_100[],c_100_99_n1_n1[],clk,reset);
p4_m5=nm3_d(a_101_1_101_100[],b_100_0_100_100[],c_99_n1_99_99[],clk,reset);
```

```
p9_m8=nm3_d(a_102_101_1_1[],b_101_100_0_0[],c_100_100_99_n1[],clk,reset);
p6_m7=nm3_d(a_101_1_1_101[],b_100_0_0_100[],c_100_99_n1_n1[],clk,reset);
p10_m7=nm3_d(a_102_101_1_1[],b_101_100_100_0[],c_0_100_99_99[],clk,reset);
p0_m6=nm3_d(a_1_101_100_0[],b_0_100_99_n1[],c_n1_99_98_98[],clk,reset);
p7_m6=nm3_d(a_102_101_1_101[],b_101_100_0_100[],c_100_99_n1_n1[],clk,reset);
p7_m7=nm3_d(a_102_101_1_101[],b_100_100_0_100[],c_100_99_n1_n1[],clk,reset);
p3_m8=nm3_d(a_1_1_101_100[],b_100_0_100_99[],c_99_n1_n1_99[],clk,reset);
p6_m8=nm3_d(a_101_1_1_101[],b_100_100_0_100[],c_100_99_n1_99[],clk,reset);
p9_m9=nm3_d(a_102_101_101_1[],b_101_100_100_0[],c_100_99_99_n1[],clk,reset);
p1_m8=nm3_d(a_1_101_101_100[],b_0_100_100_99[],c_n1_99_99_98[],clk,reset);
p11_m7=nm3_d(a_2_102_101_1[],b_1_101_100_0[],c_0_100_99_99[],clk,reset);
p11_m8=nm3_d(a_2_102_101_1[],b_101_101_100_0[],c_0_100_99_99[],clk,reset);
p2_m5=nm3_d(a_1_101_101_100[],b_0_100_100_99[],c_99_n1_99_98[],clk,reset);
p6_m9=nm3_d(a_101_1_1_101[],b_100_100_0_100[],c_99_99_n1_n1[],clk,reset);
p6_m10=nm3_d(a_101_1_101_101[],b_100_100_0_100[],c_100_99_99_n1[],clk,reset);
p9_m10=nm3_d(a_102_101_1_101[],b_101_100_100_0[],c_100_99_99_n1[],clk,reset);
p3_m9=nm3_d(a_1_1_101_100[],b_0_0_100_100[],c_99_n1_n1_99[],clk,reset);
p11_m9=nm3_d(a_102_102_101_1[],b_1_101_100_100[],c_0_100_100_99[],clk,reset);
p2_m6=nm3_d(a_1_1_101_100[],b_0_0_100_99[],c_99_n1_99_98[],clk,reset);
p6_m11=nm3_d(a_101_1_1_101[],b_100_0_0_100[],c_99_99_n1_n1[],clk,reset);
p2_m7=nm3_d(a_1_1_101_100[],b_0_0_100_99[],c_n1_n1_99_98[],clk,reset);
p11_m10=nm3_d(a_102_102_101_1[],b_1_101_100_0[],c_0_100_99_99[],clk,reset);
p3_m10=nm3_d(a_1_101_101_100[],b_100_0_100_99[],c_99_n1_n1_99[],clk,reset);
```

```
p4_m6=nm3_d(a_1_1_101_100[],b_100_0_100_100[],c_99_n1_99_99[],clk,reset);
p11_m11=nm3_d(a_2_102_101_1[],b_101_101_100_100[],c_0_100_99_99[],clk,reset);
p8_m7=nm3_d(a_101_101_1_101[],b_101_100_0_0[],c_100_100_99_99[],clk,reset);
p6_m12=nm3_d(a_101_1_101_101[],b_100_100_0_100[],c_99_99_n1_n1[],clk,reset);
p9_m11=nm3_d(a_101_101_1_101[],b_101_100_100_0[],c_100_100_99_99[],clk,reset);
p11_m12=nm3_d(a_102_102_101_1[],b_1_101_100_100[],c_0_100_99_99[],clk,reset);
p2_m8=nm3_d(a_1_101_101_100[],b_0_0_100_99[],c_n1_n1_99_98[],clk,reset);
p11_m13=nm3_d(a_2_102_101_1[],b_1_101_100_100[],c_0_100_99_99[],clk,reset);
p8_m8=nm3_d(a_101_1_1_101[],b_101_100_0_0[],c_100_100_99_99[],clk,reset);
p4_m7=nm3_d(a_1_101_101_100[],b_100_0_100_100[],c_99_99_n1_99[],clk,reset);
p4_m8=nm3_d(a_1_101_101_100[],b_100_0_100_100[],c_99_99_n1_n1[],clk,reset);
p8_m9=nm3_d(a_101_1_1_101[],b_100_100_0_0[],c_100_100_99_99[],clk,reset);
p0_m7=nm3_d(a_101_100_100_0[],b_100_100_99_99[],c_n1_99_99_98[],clk,reset);
p1_m9=nm3_d(a_101_101_100_0[],b_0_100_100_99[],c_n1_n1_99_99[],clk,reset);
p6_m13=nm3_d(a_101_1_101_101[],b_100_0_0_100[],c_100_99_99_n1[],clk,reset);
p5_m6=nm3_d(a_1_1_101_100[],b_100_0_100_100[],c_99_99_n1_n1[],clk,reset);
p5_m7=nm3_d(a_1_1_101_101[],b_100_0_0_100[],c_99_99_n1_n1[],clk,reset);
p10_m8=nm3_d(a_102_101_1_1[],b_101_100_100_0[],c_0_100_100_99[],clk,reset);
p2_m9=nm3_d(a_1_101_100_100[],b_0_100_100_99[],c_99_n1_n1_99[],clk,reset);
p0_m8=nm3_d(a_101_100_100_0[],b_0_100_99_99[],c_n1_n1_99_99[],clk,reset);
p10_m9=nm3_d(a_101_101_1_1[],b_101_100_100_0[],c_0_100_100_99[],clk,reset);
p11_m14=nm3_d(a_102_101_1_1[],b_101_101_100_100[],c_0_100_100_99[],clk,reset);
p3_m11=nm3_d(a_1_101_100_100[],b_0_0_100_99[],c_99_n1_n1_99[],clk,reset);
```

```
p7_m8=nm3_d(a_101_1_1_101[],b_100_100_0_0[],c_100_99_99_n1[],clk,reset);
p8_m10=nm3_d(a_101_1_1_101[],b_101_100_0_0[],c_100_100_99_n1[],clk,reset);
p1_m10=nm3_d(a_101_101_100_0[],b_0_100_99_99[],c_n1_n1_99_99[],clk,reset);
p7_m9=nm3_d(a_101_1_1_101[],b_100_100_0_0[],c_100_99_99_99[],clk,reset);
p3_m12=nm3_d(a_1_101_101_100[],b_0_0_100_100[],c_99_99_n1_99[],clk,reset);
p0_m9=nm3_d(a_101_100_100_0[],b_100_100_99_99[],c_n1_n1_99_99[],clk,reset);
p7_m10=nm3_d(a_101_1_101_101[],b_100_100_0_0[],c_100_100_99_99[],clk,reset);
p5_m8=nm3_d(a_1_1_101_101[],b_100_0_0_100[],c_100_99_n1_n1[],clk,reset);
p5_m9=nm3_d(a_101_1_101_100[],b_100_0_0_100[],c_99_99_n1_n1[],clk,reset);
p10_m10=nm3_d(a_102_101_1_1[],b_101_101_100_0[],c_0_100_100_99[],clk,reset);
p6_m14=nm3_d(a_1_1_101_101[],b_100_0_0_100[],c_100_99_99_n1[],clk,reset);
p5_m10=nm3_d(a_1_1_101_100[],b_100_0_0_100[],c_99_99_n1_n1[],clk,reset);
p3_m13=nm3_d(a_1_101_100_100[],b_0_0_100_100[],c_99_99_n1_99[],clk,reset);
p7_m11=nm3_d(a_101_1_101_101[],b_100_100_0_0[],c_100_99_99_99[],clk,reset);
p1_m11=nm3_d(a_101_101_100_100[],b_0_100_100_99[],c_99_n1_99_99[],clk,reset);
p7_m12=nm3_d(a_101_1_101_101[],b_100_100_0_0[],c_100_99_99_n1[],clk,reset);
p8_m11=nm3_d(a_101_1_1_101[],b_100_100_0_0[],c_100_100_99_n1[],clk,reset);
p1_m12=nm3_d(a_101_101_100_0[],b_0_100_100_99[],c_99_n1_99_99[],clk,reset);
p4_m9=nm3_d(a_1_101_101_100[],b_0_0_100_100[],c_99_99_n1_n1[],clk,reset);
p5_m11=nm3_d(a_1_1_101_100[],b_100_0_0_100[],c_100_99_n1_n1[],clk,reset);
p2_m10=nm3_d(a_101_101_100_100[],b_0_100_100_99[],c_99_n1_n1_99[],clk,reset);
p8_m12=nm3_d(a_101_1_1_101[],b_101_100_100_0[],c_100_100_99_99[],clk,reset);
p5_m12=nm3_d(a_1_1_101_100[],b_100_0_0_100[],c_100_99_99_n1[],clk,reset);
```

```
p0_m10=nm3_d(a_101_100_100_0[],b_0_100_99_99[],c_n1_n1_99_98[],clk,reset);
p10_m11=nm3_d(a_101_101_1_101[],b_101_100_100_0[],c_0_100_100_99[],clk,reset);
p9_m12=nm3_d(a_101_101_1_101[],b_101_100_100_0[],c_100_100_100_99[],clk,reset);
p1_m13=nm3_d(a_1_101_100_0[],b_0_100_100_99[],c_n1_n1_99_99[],clk,reset);
p0_m11=nm3_d(a_101_100_100_0[],b_0_100_99_99[],c_n1_99_99_98[],clk,reset);
p1_m14=nm3_d(a_101_101_100_100[],b_0_100_100_99[],c_n1_n1_99_99[],clk,reset);
p10_m12=nm3_d(a_102_101_1_1[],b_101_101_100_0[],c_0_100_99_99[],clk,reset);
p2_m11=nm3_d(a_1_101_100_100[],b_0_0_100_99[],c_99_n1_99_99[],clk,reset);
p3_m14=nm3_d(a_1_101_100_100[],b_0_0_100_100[],c_99_n1_n1_99[],clk,reset);
p10_m13=nm3_d(a_101_101_1_1[],b_101_100_100_0[],c_0_100_99_99[],clk,reset);
p5_m13=nm3_d(a_1_1_101_100[],b_100_0_0_100[],c_99_99_99_n1[],clk,reset);
p5_m14=nm3_d(a_101_1_101_100[],b_100_0_0_100[],c_99_99_n1_99[],clk,reset);
p5_m15=nm3_d(a_101_1_101_100[],b_100_0_100_100[],c_99_99_n1_n1[],clk,reset);
p11_m15=nm3_d(a_102_101_101_1[],b_101_101_100_100[],c_0_100_100_100[],clk,reset);
p7_m13=nm3_d(a_101_1_101_101[],b_100_100_0_100[],c_100_99_99_99[],clk,reset);
p0_m12=nm3_d(a_101_100_100_0[],b_100_100_99_99[],c_n1_n1_99_98[],clk,reset);
p7_m14=nm3_d(a_101_1_101_101[],b_100_100_0_100[],c_100_100_99_99[],clk,reset);
p8_m13=nm3_d(a_101_1_1_101[],b_101_100_0_0[],c_100_99_99_n1[],clk,reset);
p9_m13=nm3_d(a_101_101_1_101[],b_101_100_100_0[],c_0_100_99_99[],clk,reset);
p2_m12=nm3_d(a_101_101_100_0[],b_0_100_100_99[],c_99_n1_n1_99[],clk,reset);
p1_m15=nm3_d(a_101_100_100_0[],b_0_100_100_99[],c_n1_n1_99_99[],clk,reset);
p9_m14=nm3_d(a_101_101_1_1[],b_101_100_100_0[],c_100_100_99_99[],clk,reset);
p11_m16=nm3_d(a_102_101_101_1[],b_101_101_100_100[],c_0_0_100_100[],clk,reset);
```

```
   p0_m13=nm3_d(a_101_100_100_0[],b_100_100_99_99[],c_n1_99_99_99[],clk,reset);
   p5_m16=nm3_d(a_1_101_101_100[],b_100_0_0_100[],c_99_99_n1_n1[],clk,reset);
   p7_m15=nm3_d(a_101_1_1_101[],b_100_100_0_100[],c_100_99_99_99[],clk,reset);
   p11_m17=nm3_d(a_102_101_101_1[],b_101_101_100_100[],c_0_0_100_99[],clk,reset);
   p1_m16=nm3_d(a_101_100_100_0[],b_0_100_100_99[],c_99_n1_99_99[],clk,reset);

%  OR the results of the above "number of misses" %
   pixel0=lpm_or(p0_m[])
   with (LPM_WIDTH=1,LPM_SIZE=13);

%  OR the results of the above "number of misses" %
   pixel1=lpm_or(p1_m[])
   with (LPM_WIDTH=1,LPM_SIZE=16);

%  OR the results of the above "number of misses" %
   pixel2=lpm_or(p2_m[])
   with (LPM_WIDTH=1,LPM_SIZE=12);

%  OR the results of the above "number of misses" %
   pixel3=lpm_or(p3_m[])
   with (LPM_WIDTH=1,LPM_SIZE=14);

%  OR the results of the above "number of misses" %
   pixel4=lpm_or(p4_m[])
```

```
   with (LPM_WIDTH=1,LPM_SIZE= 9);

%  OR the results of the above "number of misses" %
   pixel5=lpm_or(p5_m[])
   with (LPM_WIDTH=1,LPM_SIZE=16);

%  OR the results of the above "number of misses" %
   pixel6=lpm_or(p6_m[])
   with (LPM_WIDTH=1,LPM_SIZE=14);

%  OR the results of the above "number of misses" %
   pixel7=lpm_or(p7_m[])
   with (LPM_WIDTH=1,LPM_SIZE=15);

%  OR the results of the above "number of misses" %
   pixel8=lpm_or(p8_m[])
   with (LPM_WIDTH=1,LPM_SIZE=13);

%  OR the results of the above "number of misses" %
   pixel9=lpm_or(p9_m[])
   with (LPM_WIDTH=1,LPM_SIZE=14);

%  OR the results of the above "number of misses" %
```

```
   pixel10=lpm_or(p10_m[])
   with (LPM_WIDTH=1,LPM_SIZE=13);

%  OR the results of the above "number of misses" %
   pixel11=lpm_or(p11_m[])
   with (LPM_WIDTH=1,LPM_SIZE=17);

END;
```