```
 1
 2   module drawStuff (clk,
 3                     drM, drML, erM, jump, jumpL, jumping, falling, drStage1,
 4                     drM2, drML2, erM2, jump2, jumpL2, jumping2, falling2, drStage2,
 5                     drM3, drML3, erM3, jump3, jumpL3, jumping3, falling3, drStage3,
 6                     done, jumpCounter, address, fall,
 7                     Mariox, Marioy, Jumpx, Jumpy, lvl1bkgx, lvl1bkgy,
 8                     px, py, draw);
 9
10      output reg [4:0] jumpCounter;
11      initial jumpCounter = 0;
12      reg [4:0] jumpCounterReg;
13      initial jumpCounterReg = 0;
14
15      input clk, drM, drML, erM, jump, jumpL, jumping, falling, drStage1, draw;
16      input drM2, drML2, erM2, jump2, jumpL2, jumping2, falling2, drStage2;
17      input drM3, drML3, erM3, jump3, jumpL3, jumping3, falling3, drStage3;
18      output reg [14:0] address;
19      reg [7:0] ycountMario, xcountMario;
20      reg [7:0] ybkg1, xbkg1;
21      reg [7:0] ycountJump, xcountJump;
22      output reg done, fall;
23      output reg [7:0] Mariox, Marioy, Jumpx, Jumpy, lvl1bkgx, lvl1bkgy;
24
25      input [7:0] px, py;
26      initial address = 0;
27      initial done = 0;
28
29      always @(posedge clk) begin
30
31          //reset
32          if (done) begin
33             done <= 0;
34          end
35
36          // 12 x 16 size
37          else if ((drM || drML || jump || jumpL) || (drM2 || drML2 || jump2 || jumpL2) || (drM3
     || drML3 || jump3 || jumpL3)) begin
38              if (ycountMario < 10'd16 && xcountMario == 10'd11) begin
39                 ycountMario <= ycountMario + 1;
40                 xcountMario <= 0;
41              end
42              else if (xcountMario < 10'd12) begin
43                 xcountMario <= xcountMario + 1;
44              end
45
46              if ((xcountMario != 12) && (ycountMario != 16) && !done) begin
47                 Mariox <= xcountMario + px;
48                 Marioy <= ycountMario + py;
49                 address <= address + 1;
50                 //done <= 0;
51              end
52
53              if(ycountMario == 10'd15 && xcountMario == 10'd11) begin
54                 done <= 1;
55                 address <= 0;
56                 ycountMario <= 0;
57                 xcountMario <= 0;
58              end
59              if (drM || drML || drM2 || drML2 || drM3 || drML3)
60                 fall <= 0;
61           end
62
63          //120 x 160 size
64          else if ((drStage1 || erM || jumping || falling) || draw || (drStage2 || erM2 ||
    jumping2 || falling2) || (drStage3 || erM3 || jumping3 || falling3)) begin
65              if (ybkg1 < 10'd120 && xbkg1 == 10'd159) begin
66                 ybkg1 <= ybkg1 +1;
67                 xbkg1 <= 0;
68              end
69              else if (xbkg1 < 10'd160) begin
70                 xbkg1 <= xbkg1 + 1;
71              end
```

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72
73              if((ybkg1 != 10'd121) && (xbkg1 != 10'd160) && !done) begin
74                 address <= address + 1;
75                 lvl1bkgx <= xbkg1;
76                 lvl1bkgy <= ybkg1;
77              end
78
79              if(ybkg1 == 10'd120 && xbkg1 == 10'd0) begin
80                 done <= 1;
81                 address <= 0;
82                 ybkg1 <= 0;
83                 xbkg1 <= 0;
84              end
85
86              if ((jumping || jumping2 || jumping3) && ybkg1 == 10'd119 && xbkg1 == 10'd159) begin
87                 jumpCounter <= jumpCounterReg;
88                 jumpCounterReg <= jumpCounterReg + 1;
89              end
90              if (erM || erM2 || erM3) begin
91                 jumpCounter <= jumpCounterReg;
92                 jumpCounterReg <= 0;
93              end
94              if (falling || falling2 || falling3) begin
95                 fall <= 1;
96              end
97              else if (erM || erM2 || erM3) begin
98                 fall <= 0;
99              end
100          end
101       end
102
103
104    endmodule
```