```
1   `timescale 1ns / 1ps
2   /*************************************************************************
3    * File Name: vga_controller.v
4    * Project: VGA Sync
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6    * Email: marcdominic011@gmail.com
7    * Rev. Date: 11 October, 2017
8    *
9    * Purpose: This project introduces the use of vga(video graphics array)
10   *          display. The design will have 640 x 480 resolution.
11   *          The color of the screen will be determined by the onboard
12   *          switches 0-11. The vga sync is then verified through
13   *          simulation with the use of test fixtures. The code will
14   *          then be programmed to the board with the use of a vga monitor.
15   *
16   *
17   * Notes:   -  This is the top level module for this project
18   *          -  This module has an asynchronous reset input.
19   *          -  switches 0-11 drive vga_rgb 0-11 respectively.
20   *          -  Reset is button up
21   *************************************************************************/
22  module vga_controller(input clk, rst,
23                        output hsync , vsync,
24                        output [11:0] rgb);
25
26
27     wire video_on; //wire for the 2 to 1 mux
28     wire rst_out;  //wire for aiso to vga sync reset
29     wire[9:0] pixel_x, pixel_y;
30
31     aiso
32     m0(.clk(clk), .rst(rst), .rst_out(rst_out));
33
34     vga_sync
35     m1( .clk(clk), .rst(rst_out),.pixel_x(pixel_x), .pixel_y(pixel_y),
36         .hsync(hsync), .vsync(vsync), .video_on(video_on));
37
38     pixel_generator
39     m2( .video_on(video_on), .pixel_x(pixel_x), .pixel_y(pixel_y),.rgb(rgb));
40
41  endmodule
42
```