```
1   `timescale 1ns / 1ps
2   /**********************************************************************
3    * File Name: vga_controller.v
4    * Project: VGA Sync
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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                        input [11:0] sw,
24                        output hsync , vsync,
25                        output [11:0] rgb);
26
27
28     wire video_on; //wire for the 2 to 1 mux
29
30     vga_sync
31     m0( .clk(clk), .rst(rst), .hsync(hsync), .vsync(vsync), .video_on(video_on));
32
33     assign rgb = video_on ? sw : 12'b0; // 2 to 1 mux
34                                         // if video on then rgb gets sw
35                                         // else rgb gets zero
36
37  endmodule
38
```