

GEORGIA INSTITUTE OF TECHNOLOGY  
SCHOOL of ELECTRICAL and COMPUTER ENGINEERING  
**ECE 8813A    Spring 2017**  
**Problem Set #5**

Assigned: 3-March-17  
Due Date: 10-March-17

**PROBLEM 5.1:**

**Given:** A block diagram (shown in Figure 1) is given for the file hw5\_tb.v. This file reads a file and converts that Bitmat file to VGA format. VGA is defined by periods of Horizontal Sync and Vertical Sync as shown in Figures 2 and 3.

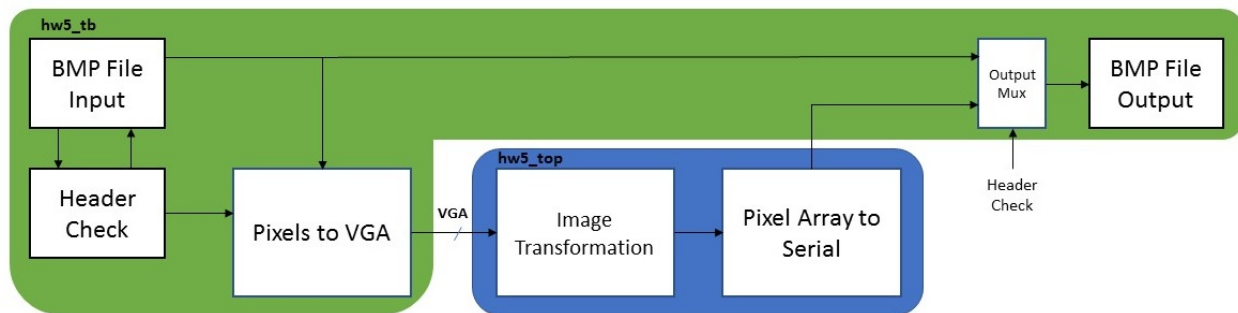


Figure 1: Top Level Block Diagram for Testbed

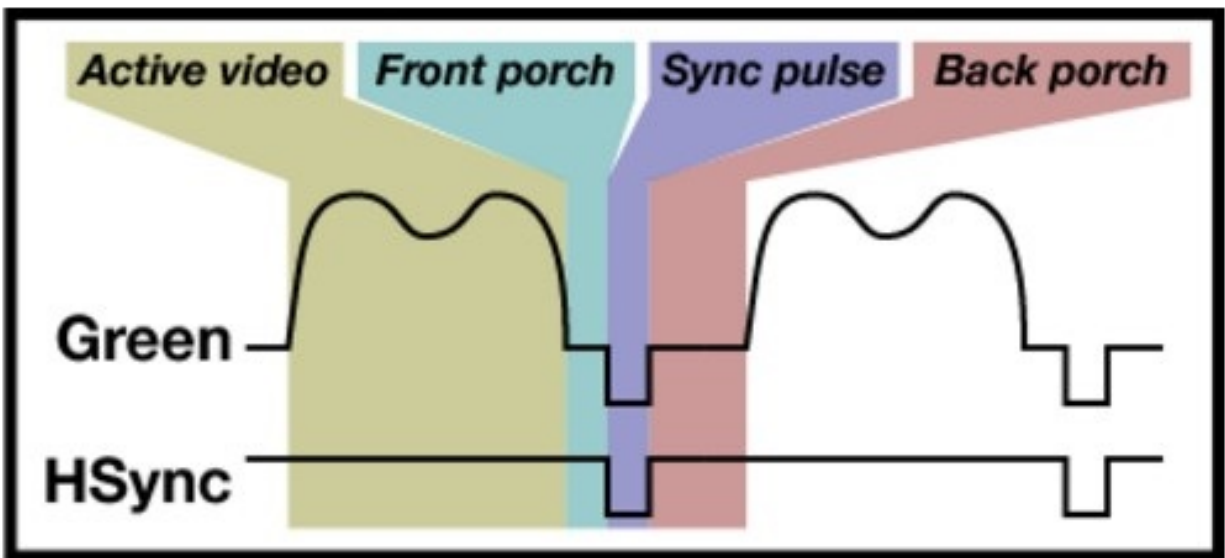


Figure 2: VGA Horizontal Sync.

**Find:** Research and understand the VGA display standard. Then create a detailed block diagram and ASM diagram for the testbench provided in the HW5\_tb.v file. This will be due at the start of class on Thursday the 9th.

Modify the code in the HW5\_top.v to read the pixels in from the VGA signals and then output the pixels, row first, one byte at a time. Ensure that the output file is the same as the original file.

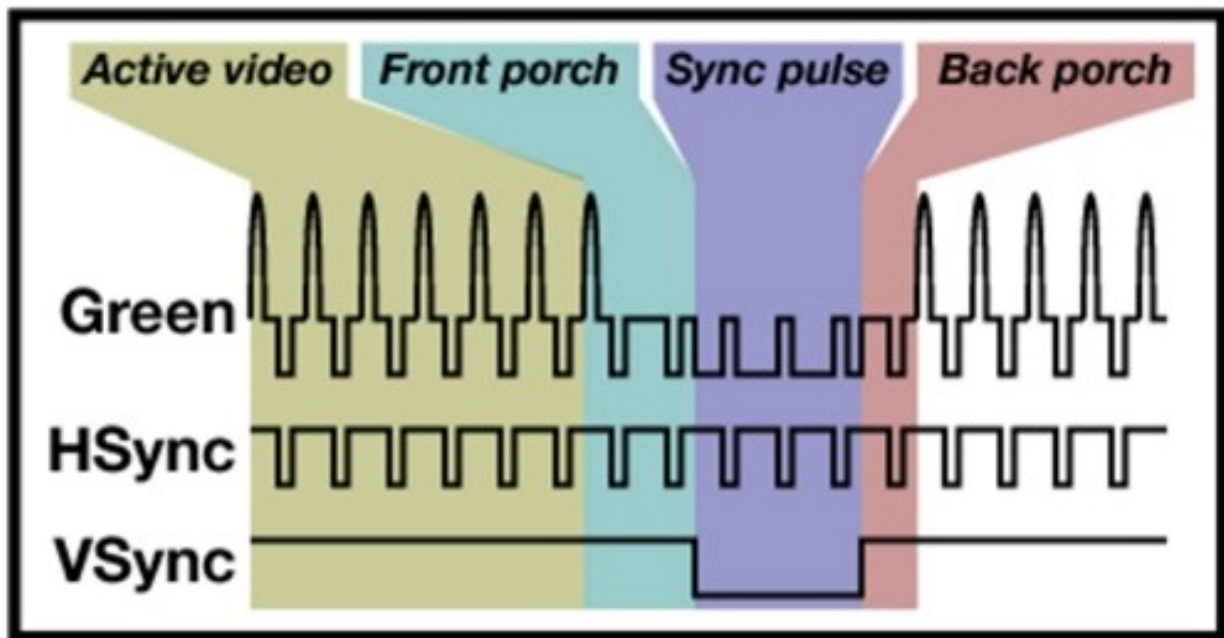


Figure 3: VGA Vertical Sync.