

F15 18-545 Lab 1 Report (09/16/2015)

Team M-x butterfly

Xilinx Forum Usernames: htay (Hui Jun), firadin (Ashish), lord_pi (Peter)

Xilinx Forum Question Links:

<https://forums.xilinx.com/t5/Timing-Analysis/Specify-time-scale-in-XDC-with-create-clock/td-p/655153>

<https://forums.xilinx.com/t5/7-Series-FPGAs/Nexys4-HDMI/td-p/655154>

Lab Summary:

We chose the Nexys4 since we did not require the ARM processor or memory power of the larger boards. Since it shares similar specifications to the Virtex5, which past groups have used to program Arcade games successfully, we believe it has sufficient memory and power to meet our needs.

We met the day before the Lab to read the documentation and setup our board for the lab. After some administrative issues with the lab computers, we ended up running our program from a personal computer. For most part we had one member focused on writing the code while the other two worked on the AVG and IO components. We then planned to convene and explain our respective areas to at least 1 other member, ensuring with have 1 expert in each project area/tool and a backup expert.

Our choice of program was a simple 'Christmas Lights' sequence, where switch[0] could start/stop a pattern of oscillating lights on the FPGA LEDs. Switch[2:1] chose between 1 of 4 different patterns, while the SevenSegment display is used to display our current 'pattern' number and the 'stage' the pattern was at. We chose this exercise since it let us familiarize ourselves with programming the I/O and clocks on the Nexys4. In particular, the SevenSegment displays on the Nexys4 are clock-triggered, where a single seg[6:0] cathode output is used for all eight displays. Switching the anode with a ~15ms period allows us to display different digits on different displays.

For our project toolchains, we decided to use Git for version control. We set up an organization with our group name on GitHub with all members as admins. As one of our members is unable to use drive effectively on his computer, we decided to keep both documentation and code on GitHub, organized in separate folders. For documentation, we have Word/text documents for items still being edited, and PDFs for complete ('frozen') files. We are in the process of determining a common style guide for our code, to ease handovers. Peter Pearson has volunteered to be the "keeper of the schedule", and will keep an updated table with our current schedule, goals and met targets.