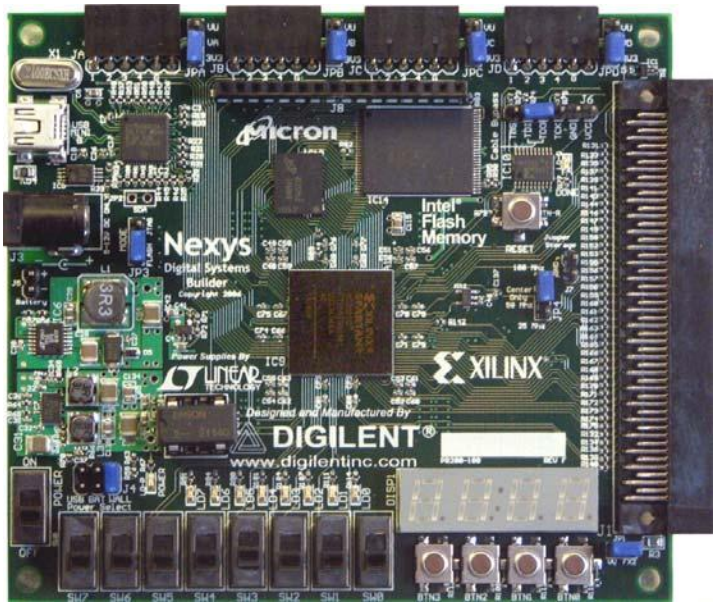
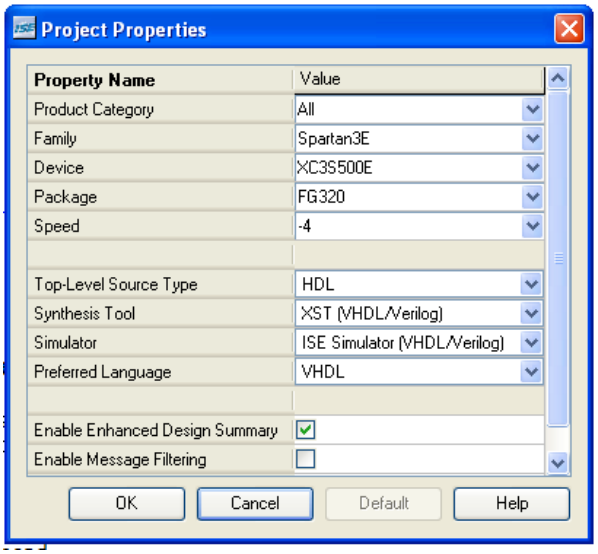
Tutorial
Xilinx ISE Download to NEXYS 2 Board
<Release Version: 10.1>

Department of Electrical and Computer Engineering
State University of New York – New Paltz

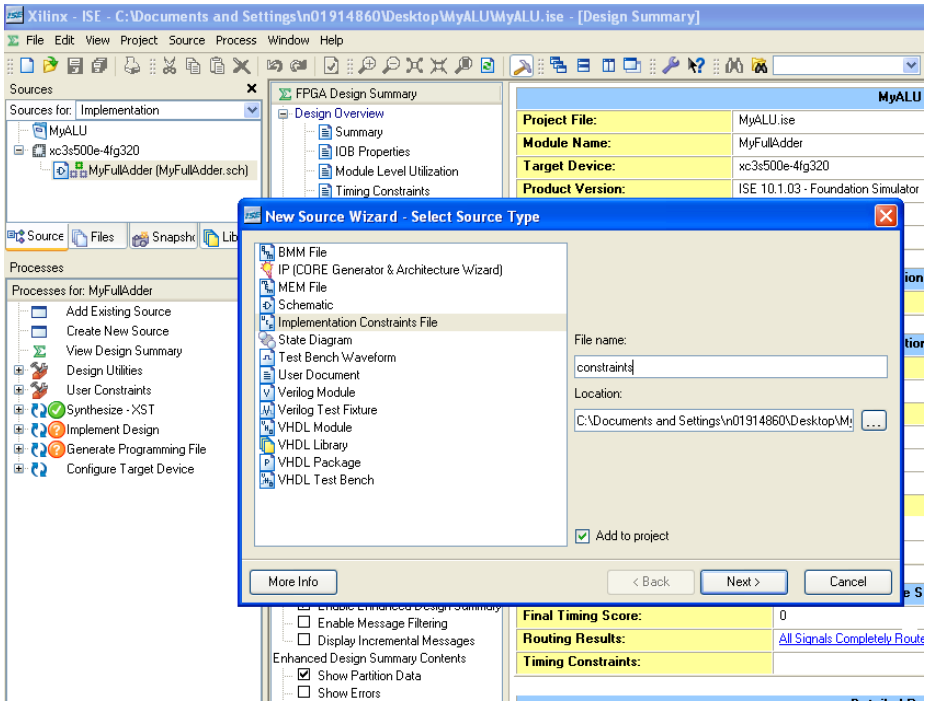


Baback Izadi

Now that through simulation you have verified that your design is working, the next step is to download your design into the FPGA (Field Programmable Gate Array) of the NEXYS 2 Board. Save your schematic and return to the Project Navigator. Before proceeding, once again make sure that the FPGA device under sources is listed as XC3S50e-4fg320. If not double click on the device and make corrections as follows

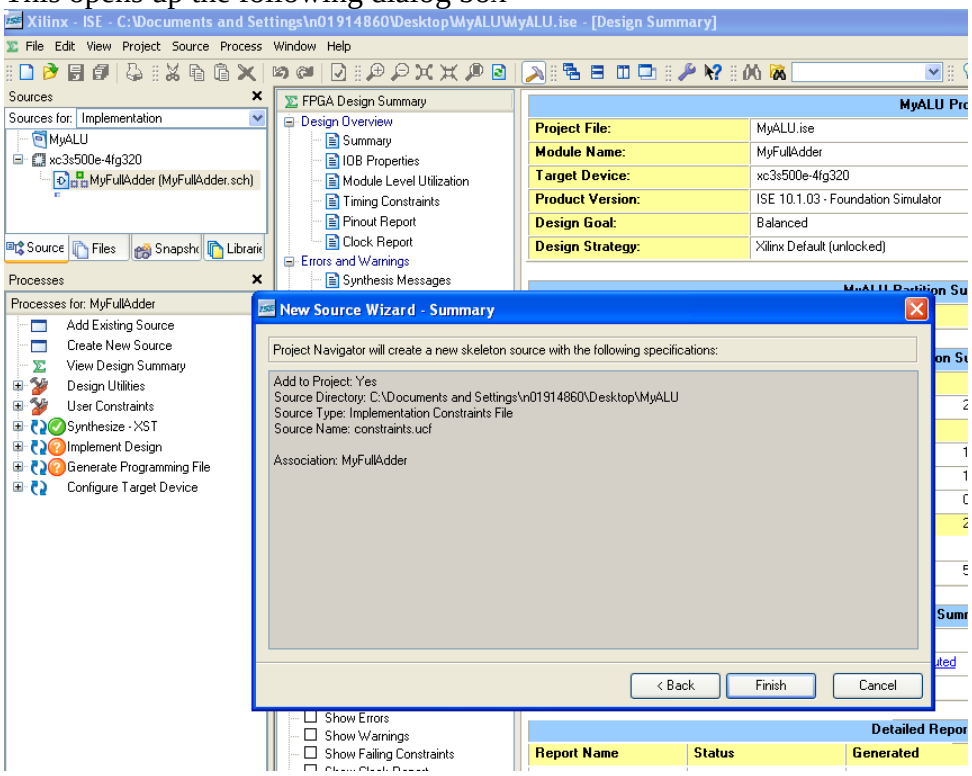


Now under Sources window, use the drop box to select Synthesis/Implementation. Then, select the schematic to be downloaded and double click on Create New Source under Processes. This will open a dialog box. Select Implementation Constraints File, enter a file name and click Next.



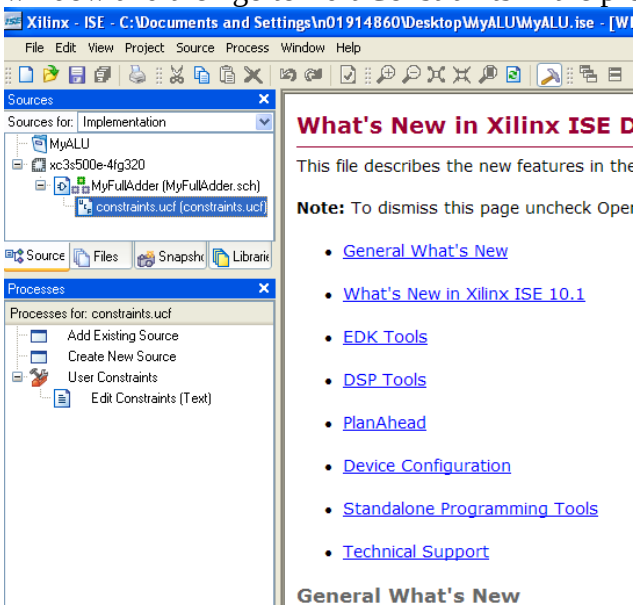
Click Next

This opens up the following dialog box

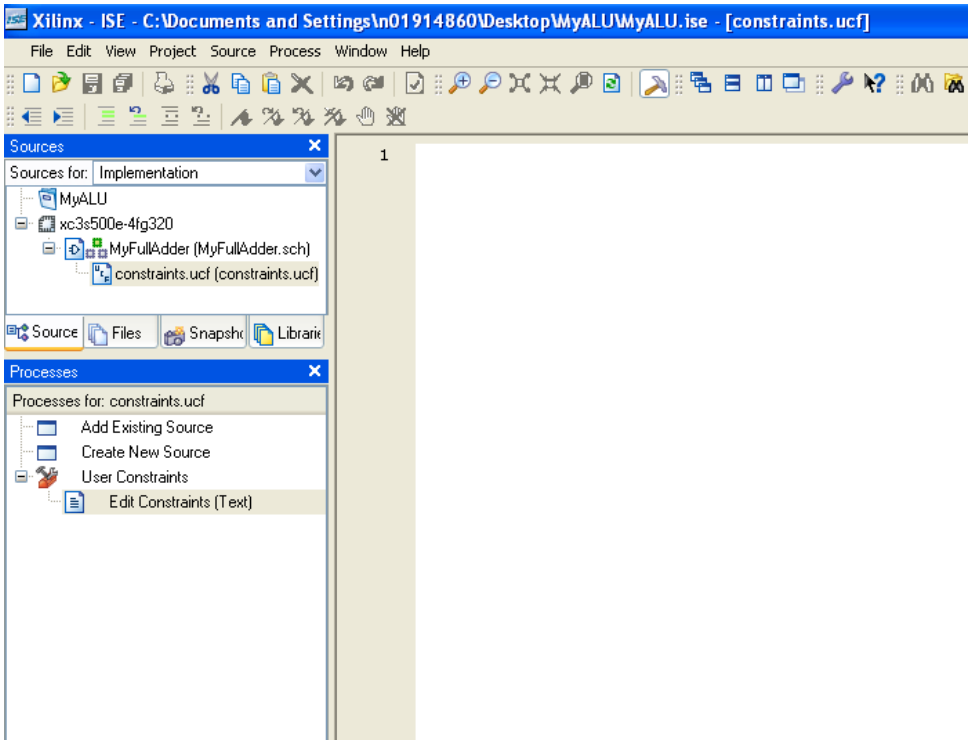


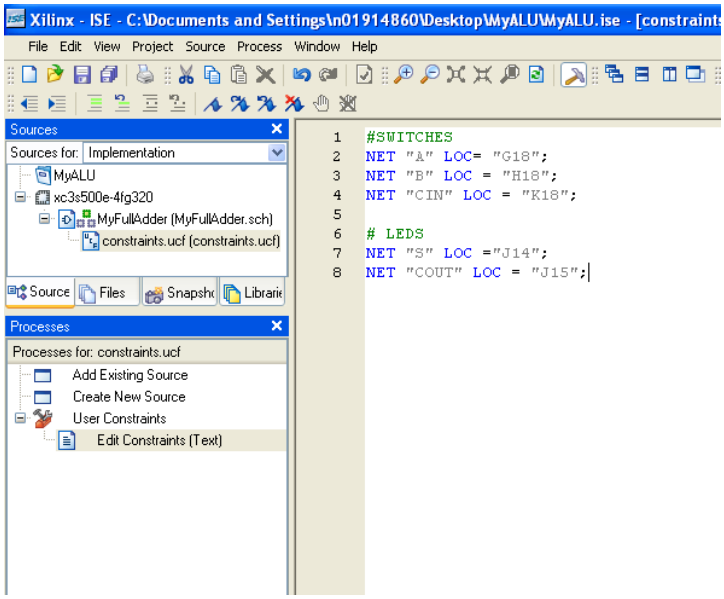
Click Finish!

The constraints file, constraints.ucf has been created. Select constraints.ucf in the source window and then go to Edit Constraints in the process window.



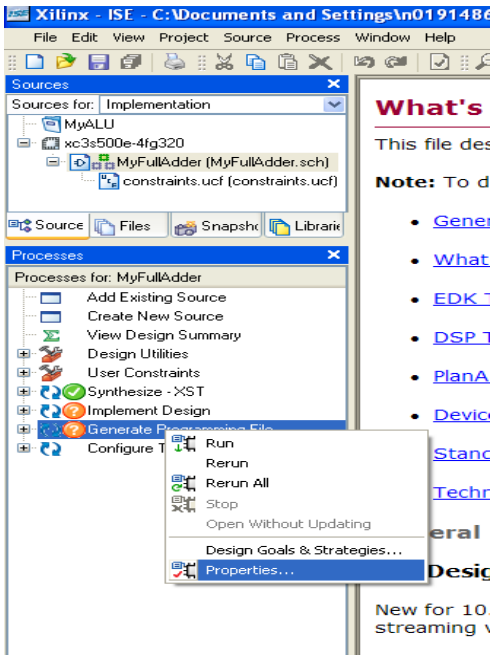
This opens a window to edit constraints, where you can assign inputs and outputs to appropriate switches and LEDs in the FPGA chip.



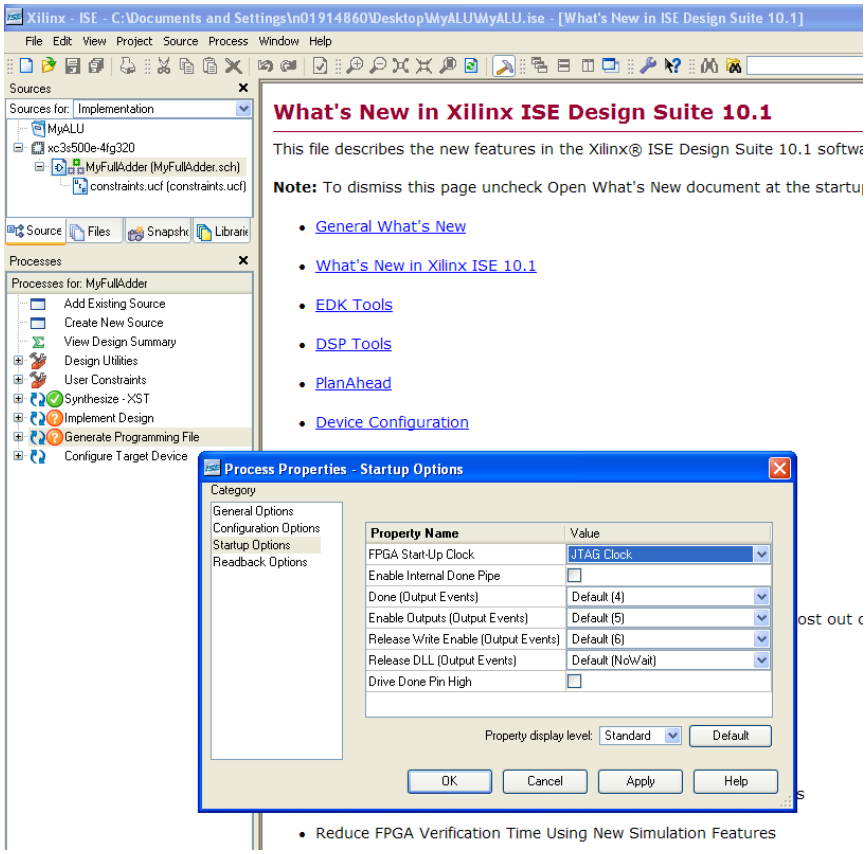


After writing the constraints save it.

Next, select MyFullAdder.sch in the source window and then right click on Generate Programming File and click on Properties

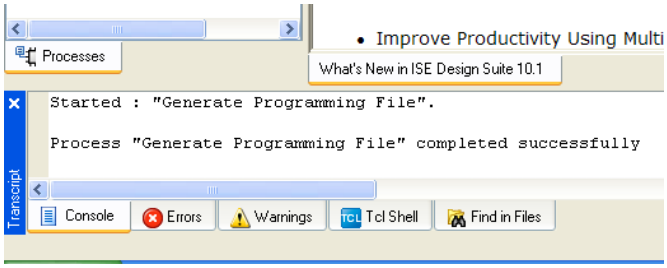


Go to Startup options in the properties and select JTAG clock and click ok.



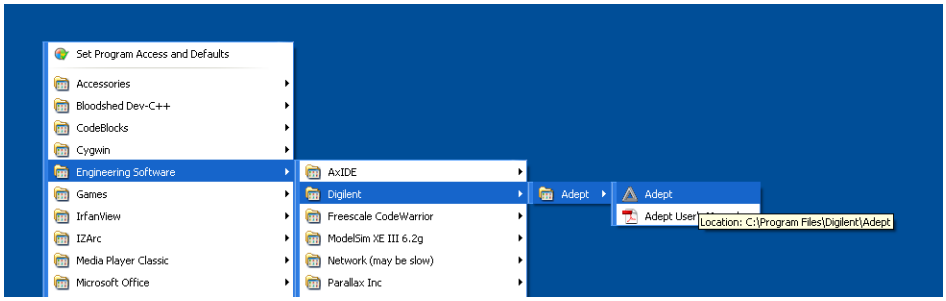
Double click on Generate Programming File. Check the transcript window. If it shows

Process "Generate Programming File" completed successfully, it means bit file is created. If there are errors, correct them and repeat the process.

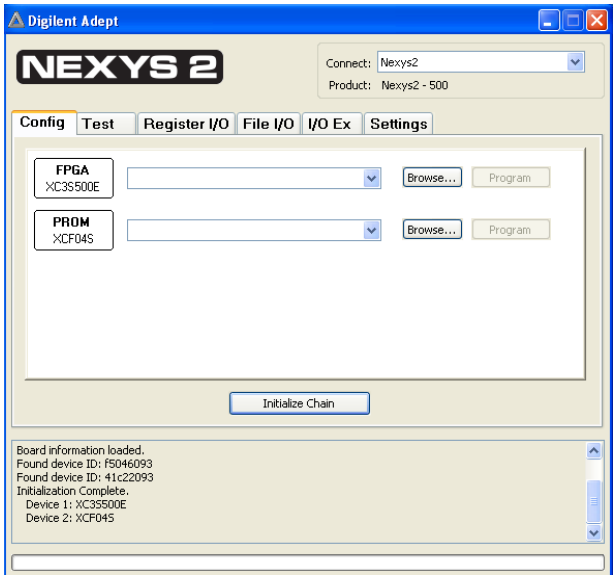


Now, your BIT file is ready to be downloaded to the Digilent NEXYS 2 board.

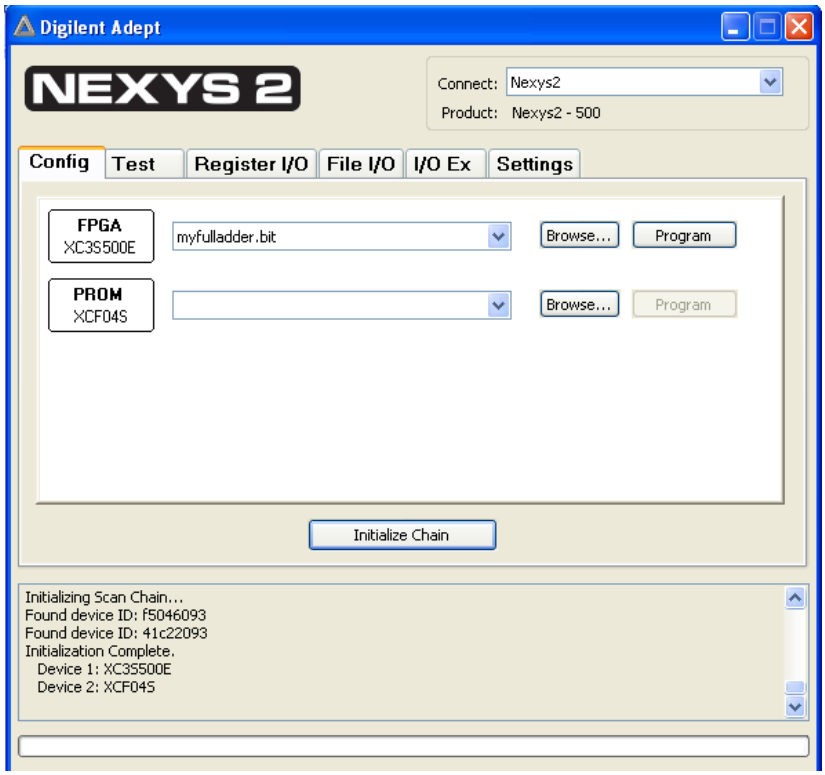
In Desktop, under Programs, go to Engineering Software → Digilent → Adept → Adept and click on it



The following window should open.

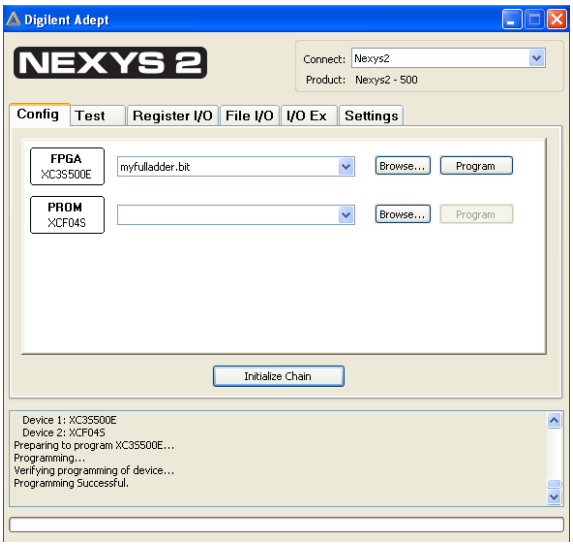


Click on Initialize Chain, which loads the board's information. Open your bit file using FPGA (XC3S500E) and click on Program.



This downloads your bit file into the NEXYS 2's FPGA chip.

If everything is successful, you will get the following message "programming successful".



Now flip the switches on the board and see your design come to life!

Additional Information of NEXYS 2 board

The Nexys2 board includes several input devices, output devices, and data ports, allowing many designs to be implemented without the need for any other components.

Four pushbuttons and eight slide switches are provided for circuit inputs. Pushbutton inputs are normally low, and they are driven high only when the pushbutton is pressed. Slide switches generate constant high or low inputs depending on their position. Pushbutton and slide switch inputs use a series resistor for protection against short circuits (a short circuit would occur if an FPGA pin assigned to a pushbutton or slide switch was inadvertently defined as an output). The Nexys2 board contains a four digit common anode seven segment LED display. Each of the four digits is composed of seven segments arranged in a "figure 8" pattern, with an LED embedded in each segment.

PIN ASSIGNMENT: