University of Colorado Boulder

Expanded FPGA Training with NIOS II: Traffic Light Design Project

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May of 2020

1 Loading the Design

After unzipping the design, you will find a file called "DE10_LITE.qar". This file contains the archived project of the traffic lights to be used in Quartus. This project was created using the DE10-Lite board configurations using Quartus 18.3 on an Arch Linux environment.

The "DE10_Lite_Project" directory is merely to show the expected content of the project after compilation and elaboration, but opening the project file directly may cause errors due to environment incompatibilities.

The "DE0_NANO" directory is the same project but built for a DE0-NANO board. Due to equipment availability this is the only setup that went through actual board programming. Screenshots from signal Tap Analyzer came from this version of the project. However, all other stages were completed with the DE10_LITE project and thus no problems should arise from it.

Open Quartus Prime. Go to the "Project" menu and click on "Restore Archived Project" and select the "DE10_LITE.qar" file. Choose a destination directory and click ok.

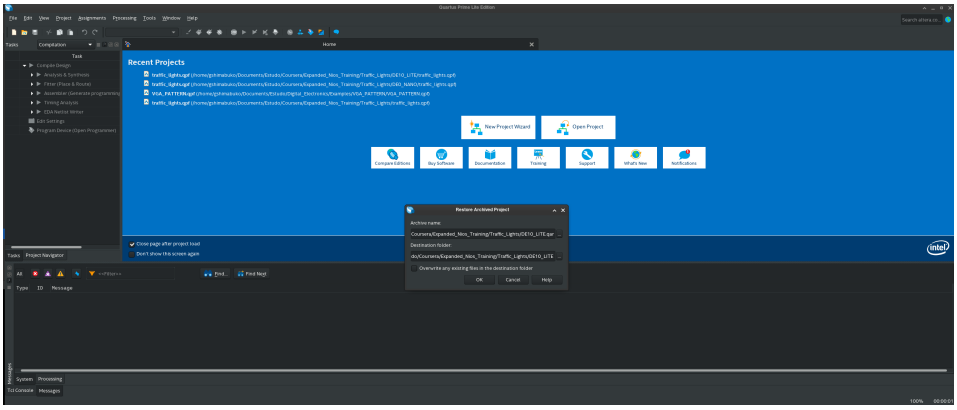

Figure 1: How to Load an Archived Project

Click on "start compilation" and wait for it to finish. By the end of it, your project will be ready to be loaded onto your FPGA board.

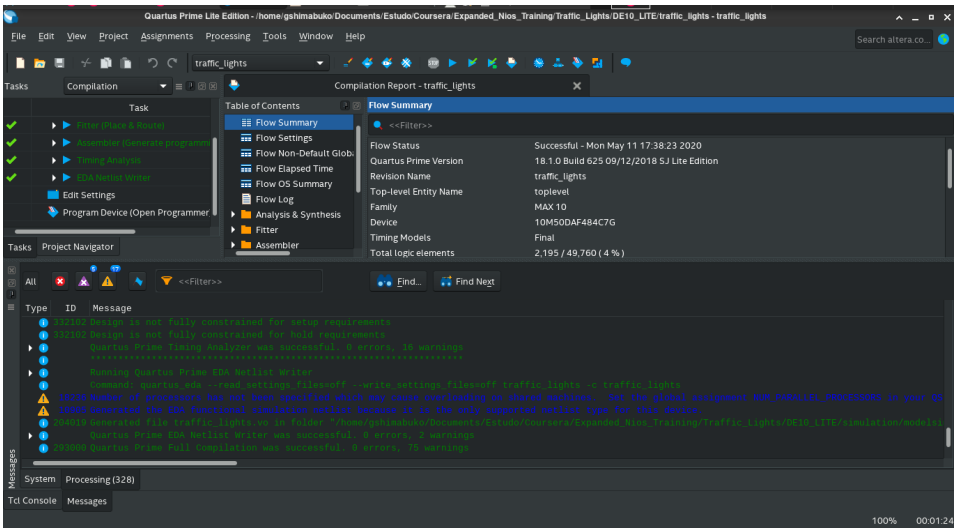

Figure 2: Compilation Results

Click on the "Tools" menu and navigate to programmer. If your board is not immediately recognised, click on "Hardware Setup" on the top left corner to configure your JTAG cable.

The Auto Detect Button can then be used to identify your board. You can use the Add File button to select the ".sof" file created on compilation.

Check that the "Program/Configure" box is checked and click on "start" wait for it to finish.

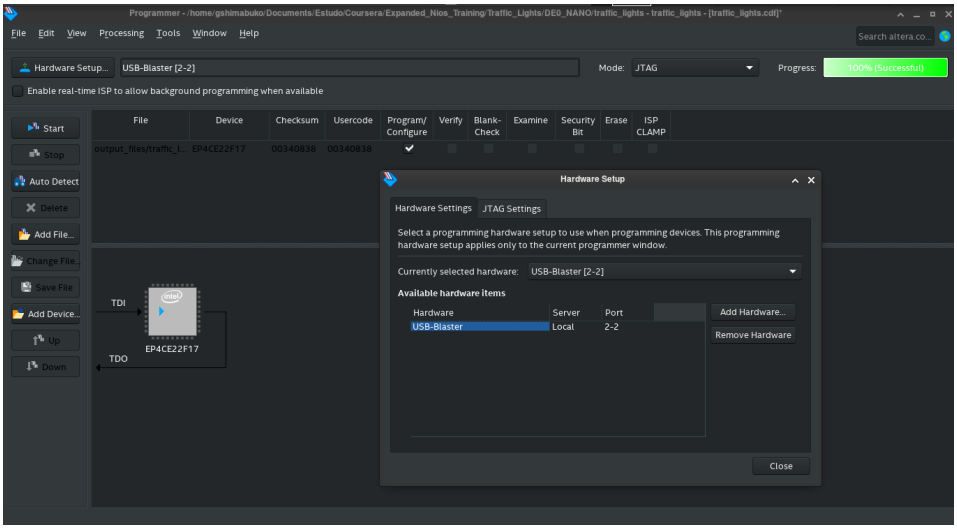

Figure 3: How to use ".sof" file to program your board