Downloading & Installing Intel® Quartus Prime® Lite

Intel® Quartus Prime® design software has multiple editions and versions. This document describes downloading and installing the free Quartus Prime Lite and USB Blaster device driver. It also shows what to do in the event the USB Blaster device driver appears to be not working. This document was written by Robert Dunne in September, 2020, to assist students working from home on Terasic DE10-Lite and DE2-115 development boards.

- Intel has three editions: Pro, Standard, and Lite. Only the Lite edition is free.
- Multiple versions within each edition are available for download. This document describes downloading and installing version 18.1 which supports both the MAX 10 and Cyclone IV E Intel FPGAs used in the Terasic DE10-Lite and DE2-115, respectively.

Download Quartus Prime Lite 18.1

Intel provides a huge amount of information on the Internet, so I recommend the following for getting to the right starting point:

- Use Google or another search engine to search for: **Download Quartus Prime Lite**
- Choose: **Quartus Prime Lite Edition - Download Center for FPGAs - Intel**

You should then get the following screen. It defaults to the latest version (which does support the DE10-Lite, but not the DE2-115), but I recommend version 18.1. Make sure **Individual Files** is selected. You could download the whole Quartus along with ModelSim and all devices, but that is huge, and you don't need it all.

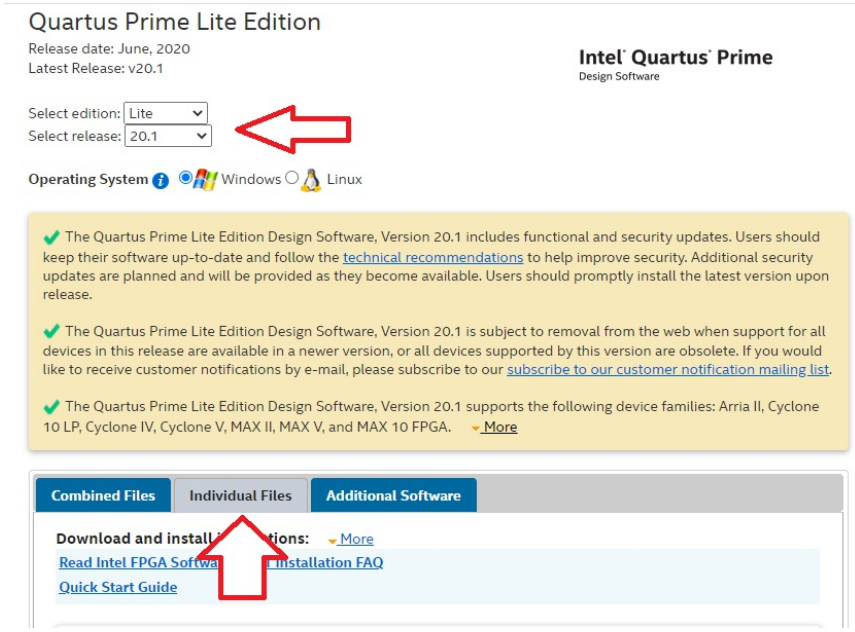

Figure DL.1: Intel FPGA software download center

The main software needed is **Quartus Prime Lite Edition (Free)** so click on **Quartus Prime (includes Nios II EDS)** as shown below.

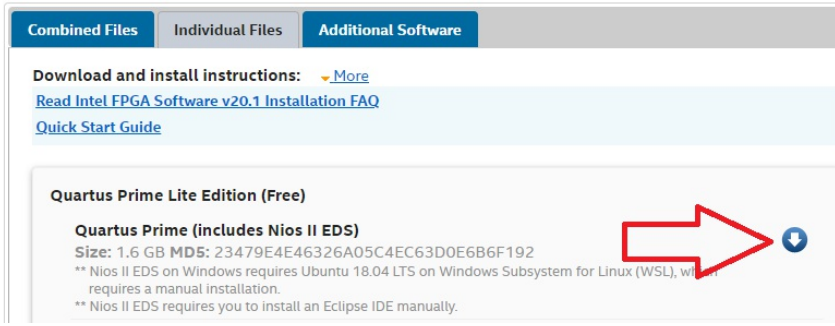

Figure DL.2: Select indicvidual files to download and install

You should then be taken to a sign-in screen as shown next. If you already have an Intel FPGA account, then put in your user name and password. If not, then click **Register now for an individual account**. Note: This is Intel Corporation (a very reputable company), and I have had an account with Intel for many years with no problems (i.e., no promo emails every day, etc.).

Figure DL.3: An Intel account (free) is needed to download the Quartus Prime software

The following figure shows the top of the registration page. Register as an individual, not your school or employer.

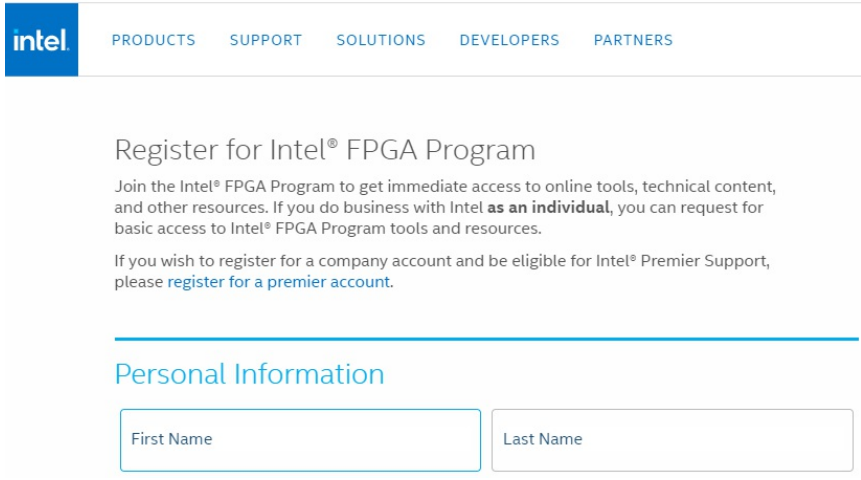

Figure DL.4: Top of page to register for Intel account

Once you have signed in, you will be returned to the download page. Be sure to select the "Lite" edition and release (version) 18.1. I recommend only downloading "Individual Files," not the whole site of combined files.

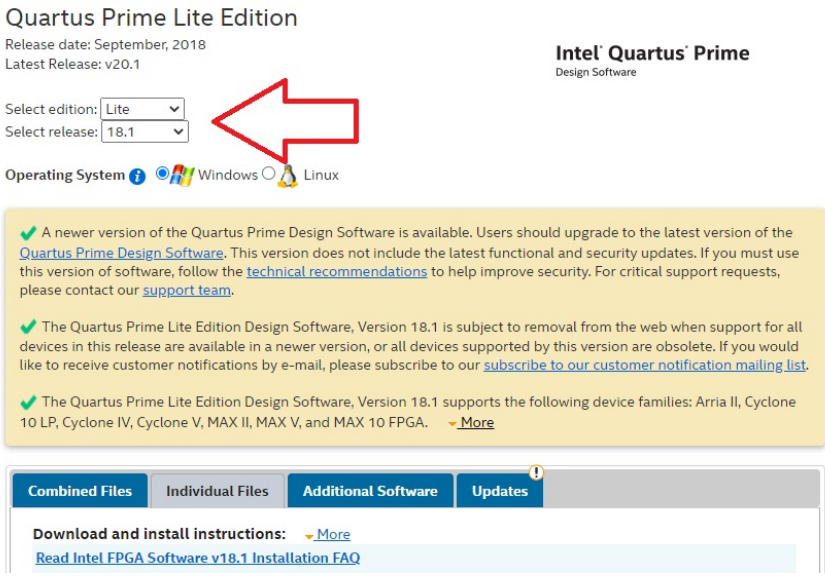

Figure DL.5: Version 18.1 supports both the MAX 10 and Cyclone IV FPGAs.

You will need two or three files to be downloaded. First click on **MAX 10 FPGA device support** (it downloads the special information needed for the DE10-Lite board). If you also plan to be able to run the DE2-115, then click **Cyclone IV device support**. Finally, click on the **Quartus Prime (Includes Nios II EDS)** arrow. The download time varies a lot. It could be anywhere between 5 and 45 minutes, depending on your computer speed and Internet speed.

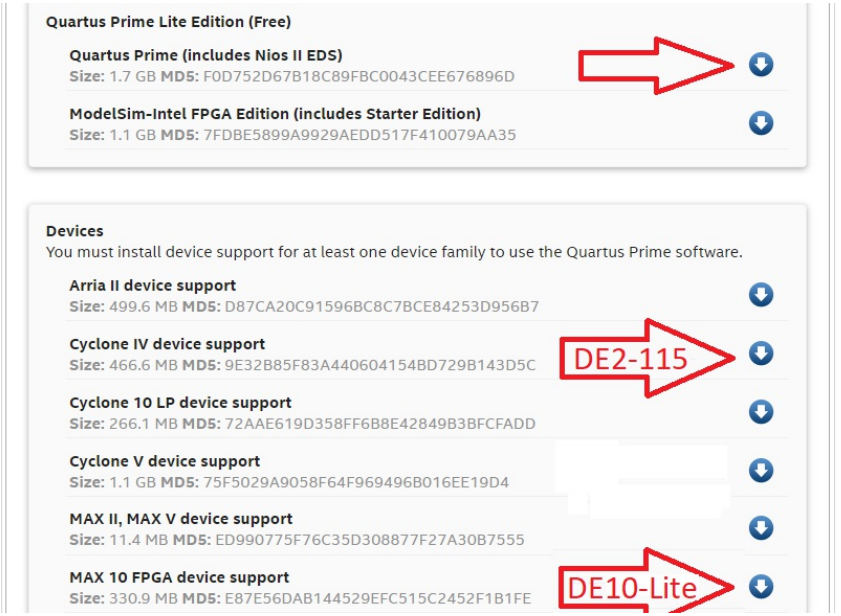

Figure DL.6: Quartus Prime requires at least one device to be downloaded, too.

Your downloads directory should now contain the following files. The cyclone-18.1.0.625.qdz file will only be present for those who need to run the DE2-115 with the Cyclone IV FPGA. Note the sizes of the files.

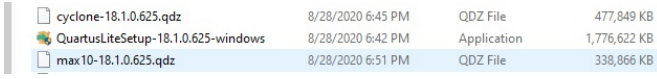

Figure DL.7: Files that should now be in your “downloads” directory

Install Quartus Prime Lite

Start the installation by double clicking the **QuartusLiteSetup-18.1.0.625-windows** application. This file will read the other one or two files (or as many QDZ files as are present in the directory).

Figure DL.8: This example shows both the Cyclone IV and MAX 10 downloaded.

The installation will take about 30 minutes, depending upon the computer being used.

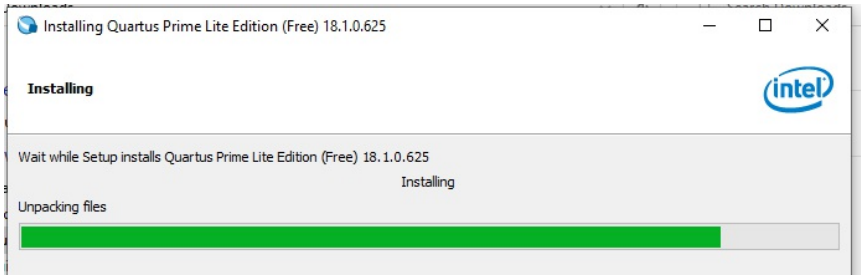

Figure DL.9: The installation make take up to 30 minutes.

At the end of the Quartus Prime installation, the following screen will appear. Be sure to **Launch USB Blaster II driver installation** (checked as show in the figure below).

Figure DL.10: The USB Blaster must also be installed.

Installing the device driver is not necessary if you are sure it is already present, but it won't hurt to re-instal it in the event it is not.

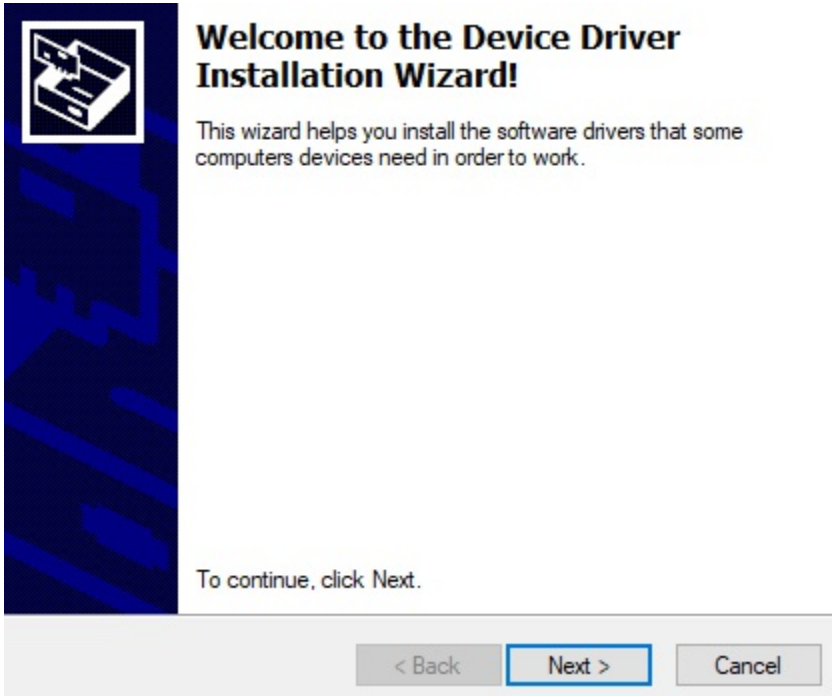

Figure DL.11: Opening page of USB Blaster installation

The USB Blaster is installed very quickly and completes as shown below.

Figure DL.12: USB Blaster is now ready to download netlists into the FPGAs.

Finally, you get the following screen, and if you want to run it now, do so. Otherwise, start it up from your desktop at a later time.

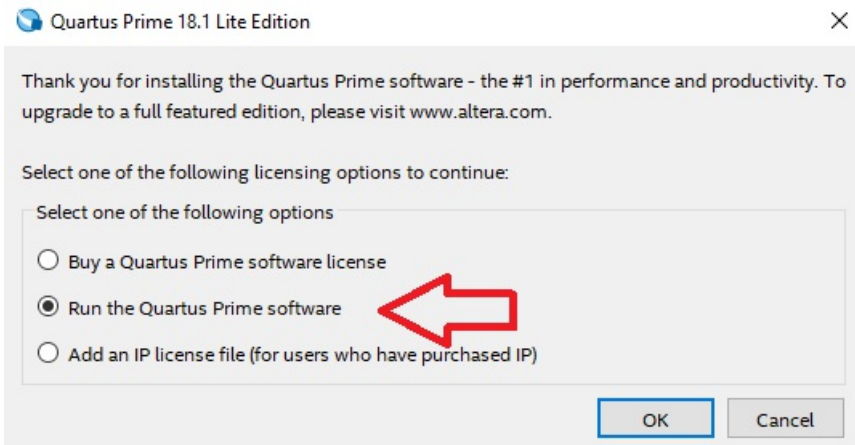

Figure DL.13: You can start Quartus Prime now or wait until later.

Quartus Cannot Find "Hardware" (i.e., the USB Blaster)

The above procedure should have installed both Quartus Prime Lite and the USB Blaster. However, some students cannot download their projects into their FPGA boards. The designs compile successfully, but they get a "No Hardware" message when they try to download (a.k.a, program) the FPGA. This is almost always caused by one of two possible problems:

1. The FPGA board is not plugged into the computer. Windows needs to see the board before it will load the device driver.
2. The USB Blaster has not been installed. Sometimes the device driver does not get installed in the above procedure.

To manually install the driver, go to the directory shown in the figure below. Then double click on the DPInst application to start the installation of the USB Blaster.

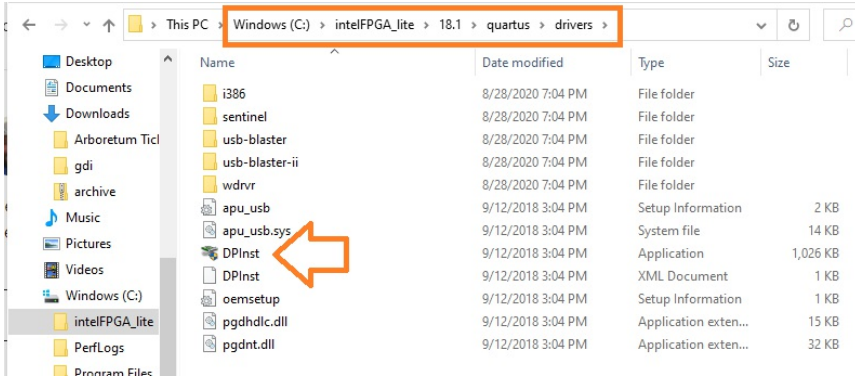

Figure DL.14: Location of USB Blaster installation program

After running for a few seconds, it will finish and give the following screen. Note: The oemsetup.inf file is not needed.

Figure DL.15: USB Blaster is successfully installed.