Guidance on download and install Quartus Prime and Questa Intel FPGA

Introduction

This document provides the guidance on how to download and install software for your practical exercises of Digital Electronics unit.

The unit will use two separate software, namely Quartus Prime from Intel, and Questa from Siemens. Quartus Prime is an Electronic Design Automation (EDA) tool to design, validate and programme Intel Field Programmable Gate Array (FPGA) devises.

One of the most important validation methods is to use a software called simulator to simulate the behaviour of logic circuits. Quartus used to have its own built-in simulator. But the performance is inferior to other commercial simulators, so Quartus Prime now use third party simulators, including Questa from Siemens.

The version of Questa we are using is called Questa Intel FPGA. It's a free version to be used with Quartus Prime. In other words, customers who have a license (paid or non-paid) of Quartus Prime can use it for free. Questa Intel FPGA contains the compiled models of Intel FPGA components for simulation, so that customers don't need to compile these components.

By now, you should have realised that although we say two pieces of software are needed for this unit, they are actually used hand-in-hand. However because they come from two separate companies, there are some extra steps to make them work together, especially regarding the license.

The following sections describe how to download, install these two pieces of software.

Quartus Prime Lite:

Download Quartus Prime Lite edition from Intel FPGA software download centre. Make sure you download the Lite version, for example the 21.1.1. version can be found:

https://www.intel.com/content/www/us/en/software-kit/736572/intel-quartus-prime-lite-edition-design-software-version-21-1-1-for-windows.html

The easiest way to download is to use "Multiple Download", this download one compressed file (a big one of 5.5 G) that contains all the files needed, as shown in Figure 1
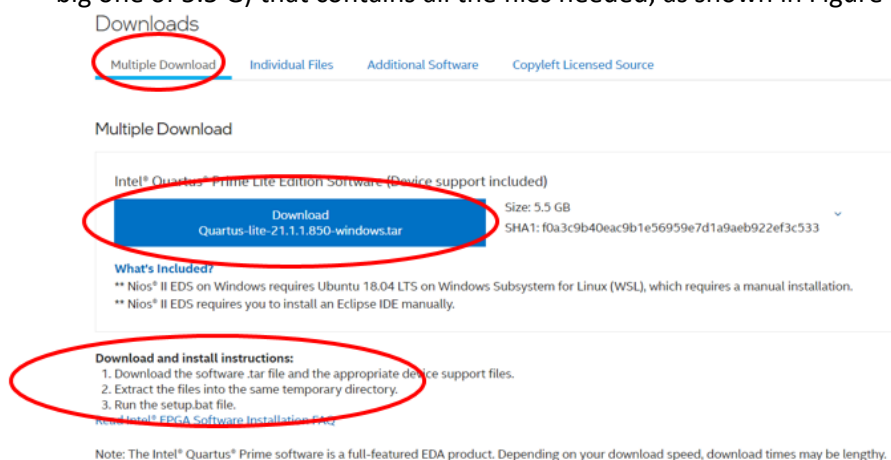

Figure 1: Download Quartus Prime by choosing Multiple Download

If it's too big for your PC, or too slow to download, you can download individual files that are required for your work. You will need to download Intel Quartus Software (QuartusLitSetup-21.1.xxx-windows.exe, Questa-Intel FPGA Edition), and For Devices, you will need Intel MAX 10 FPGA device support, as shown in Figure 2.

Figure 2: Download Quartus Prime by choosing individual files

After downloading, you follow the instruction on the website to install Quartus. This should also install Questa Intel FPGA as well.

Generating and Install Intel FPGA Questa License

This section comes from Intel's online document. It is copied here for your convenience:

Quartus Prime Lite is free, so is Intel Questa. However, you will have to request and generate a free 1-year license to run Intel Questa.

Generating License:

You can obtain a license from the Intel FPGA Self Service Licensing Centre (SSLC). If you do not have access to SSLC, you must first complete registering to SSLC and create an account by visiting Register for Intel FPGA Self Service Licensing Center (SSLC).

Follow these steps to generate the license:

1. Go to the Intel FPGA Self-Service Licensing Center (SSLC).
2. Select the **Sign up for Evaluation or Free Licenses** option on the menu bar.
3. In the list of products displayed, select the **Questa*-Intel® FPGA Starter Edition SW-QUESTA** option.
4. Under the **# of Seats** column, enter the number of seats you require. For your individual usage, the number should be 1.
5. Click Next
6. Click **Create a New Computer** if you want to assign the license to a new computer. You must provide information about the required hardware and license type. For information about the license type, refer to Intel® FPGA Software License Types. For information about how to extract information about your computer hardware, refer to Hardware Information Required When You Request a License.

   (For Computer Name, enter a name you give to your computer; For License Type: choose Fixed; For Computer Type, choose NIC ID; For Primary Computer ID, find out the NIC number as mentioned below:

Network Interface Card (NIC) Number: Your NIC number is a 12-digit hexadecimal number. Most licenses use your NIC. You can find the NIC number for your card by typing ipconfig /all at a command prompt. Your NIC number is the number on the physical address line, minus the dashes. An example is shown below:)

```
ipconfig /all
```

The command prints network information. The NIC Address appears as **Physical Address**.

Figure 7. NIC ID in Output of ipconfig Command

If the system has more than one network card, you can use the NIC ID of any network card connected to the computer.

7. Read the license terms of use.
8. Select the "I have read and agree to the terms of use of this license as listed below" check box.
9. Click **Generate**.
10. A license will be emailed to you.

Setting Up the Questa*-Intel® FPGA Starter Edition Software License

After you receive and save the license.dat (It might be called a different name) file on your computer, follow these instructions:

On Windows System

1. Go to **This PC**, right-click, and select **Properties**.
2. Click **Advanced System Setting**.
3. In the **Advanced** tab, select **Environment Variable**.
4. Under **System variables**, create a new variable with the name as LM_LICENSE_FILE and value as <license.dat file path>.
5. Click **OK** and restart the Questa* software.

Alternatively, open a command prompt and run the following command to set up the LM_LICENSE_FILE environment variable:

setx LM_LICENSE_FILE <path_to_license_file>;%LM_LICENSE_FILE%

For example: setx LM_LICENSE_FILE C:\intelFPGA\license.dat;%LM_LICENSE_FILE%