CMPE 140 Lab 0 Assignments

Created by Dr. Donald Hung and updated by Dr. Haonan Wang
Computer Engineering Department, San Jose State University

EDA Tool Downloading and Installation

CMPE140 labs require the use of Xilinx's Vivado design tool suite for hardware description and functional verification (simulation), as well as synthesis and implementation targeted to FPGA devices. A restricted version of the Vivado suite can be obtained for free by downloading Vivado from Xilinx's website (Xilinx download page). As the first assignment, you will follow the instructions below to download and install the Vivado design tool suite on your computer.

1. **The Download Procedure**

Step 1: Open the Xilinx web page at http://www.xilinx.com/support/download.html.

On this page, go to Vivado Archive (above image) and ensure version "**2019.1**" of the software has been selected. This version contains the WebPACK that is free.

For Windows users, choose "**Vivado HLx 2019.1: WebPACK and Editions - Windows Self Extracting Web Installer**" (above image).

Step 2: Create an account for Xilinx. After you have finished, use your username and password to log in.
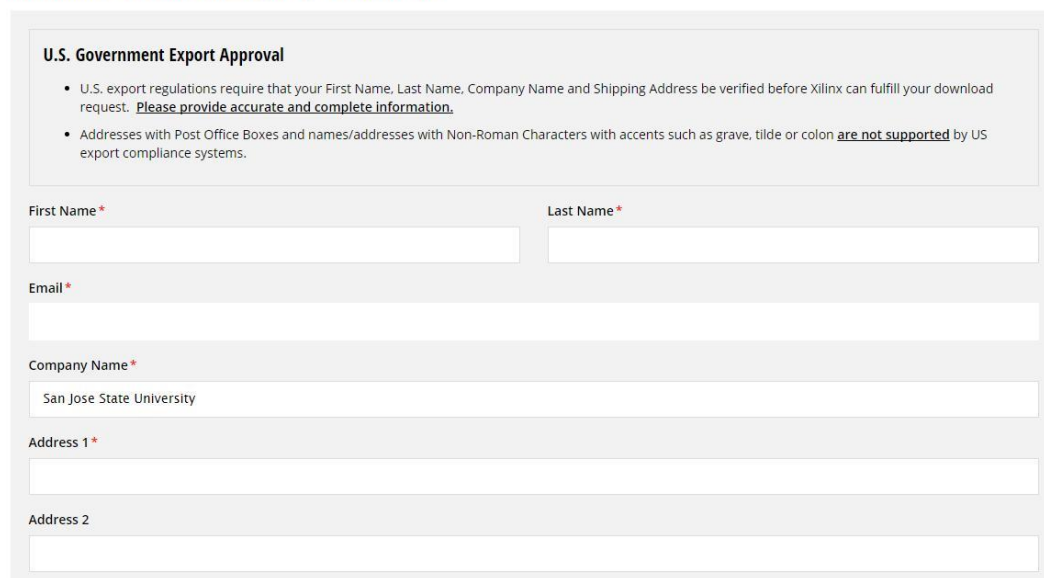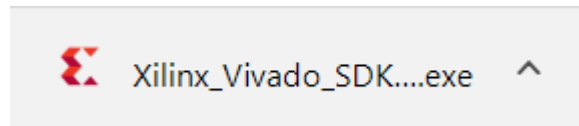

At the Download Center page, fill out the following form.

For "**Company/Organization**" you can use "**San Jose State University**".

For "**Job Function**" pick "**Student**".

For "**Primary Market**" pick "**Consumer**"

Step 3: After clicking "Next" your download will automatically begin.

Step 4 (OPTIONAL):

If the download fails to start you can download the software manually.

Return to the download page (http://www.xilinx.com/support/download.html) and scroll down to the "**Vivado HLx 2019.1: All OS Installer Single-File Download**" link and click it, as shown below.

**Mac users**

Some students have had success using the Windows version of Vivado through virtualization software, as well as dual-booting into a native Windows environment. Please note that you are responsible for working around any issues that may come up using Vivado in this way. Use the Discussion Forums on Canvas to share your solutions with other students that are using similar environments.

2. The Installation Procedure

Step 1: Double-click the installer file you downloaded, which is called
"**Xilinx_Vivado_SDK_Web_2019.1_0524_1430_Win64.exe**".

You may be prompted to confirm if you want to run the file. Click "**Run**" to confirm.

Afterwards the installer will decompress the installation files.
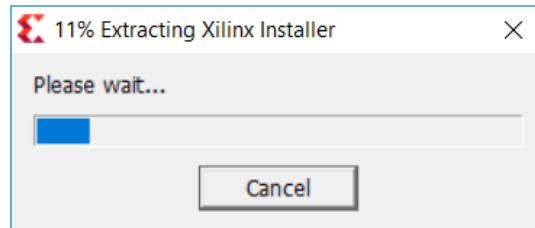
You may be prompted once again during installation. Click "**Yes**" to continue installation.

During installation you may be prompted to give permission for the Vivado software components or Java components to access the Internet or local network. You should permit access in these cases (choose to unblock).

The installer will start up next. This may take a while, so please be patient.
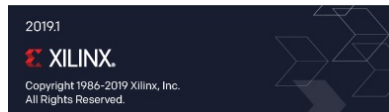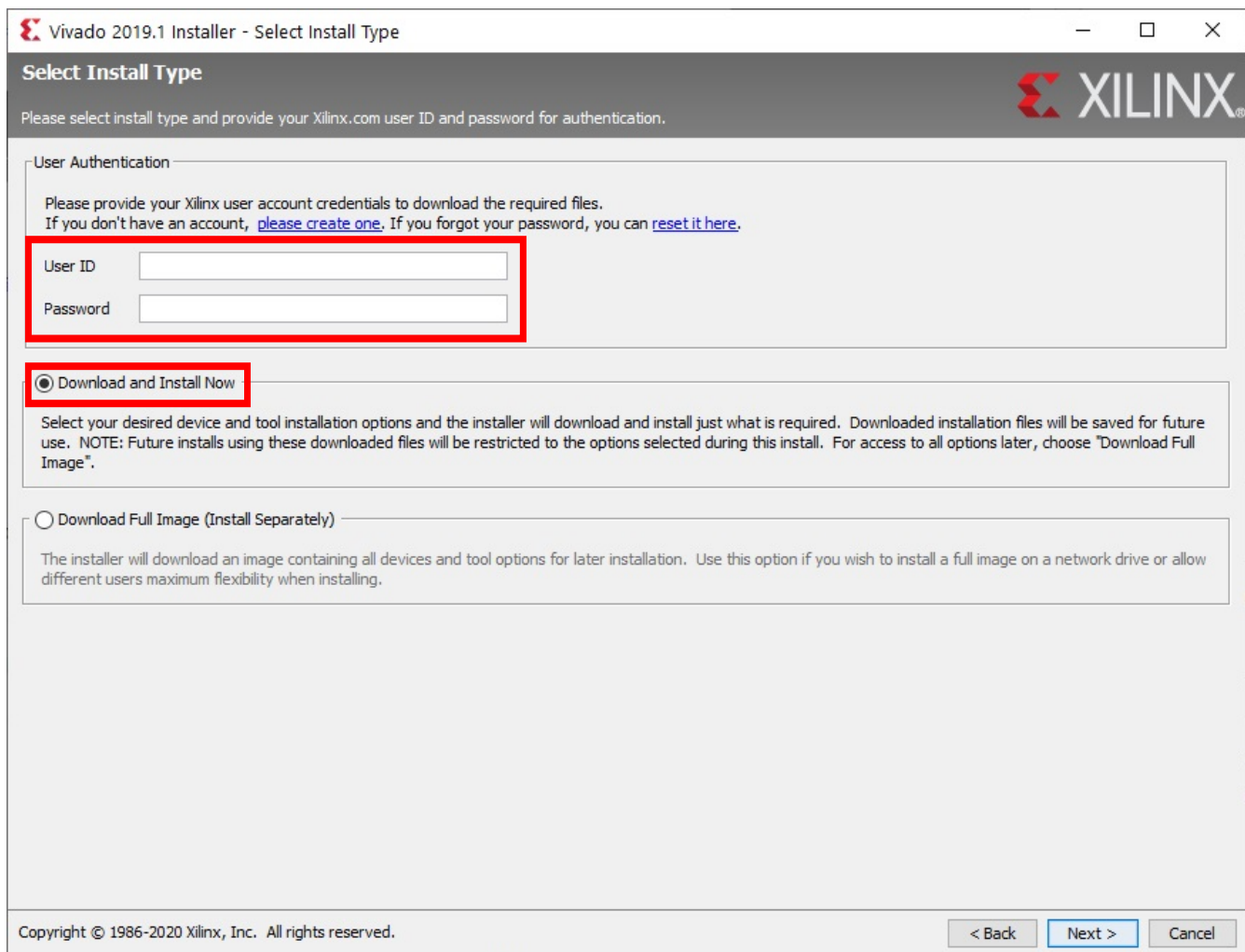

The installer will present you with a welcome screen. Click "**Next**" to proceed.

Note: At this point you may choose to disable anti-virus software to speed up installation. However doing that is ***not*** required.
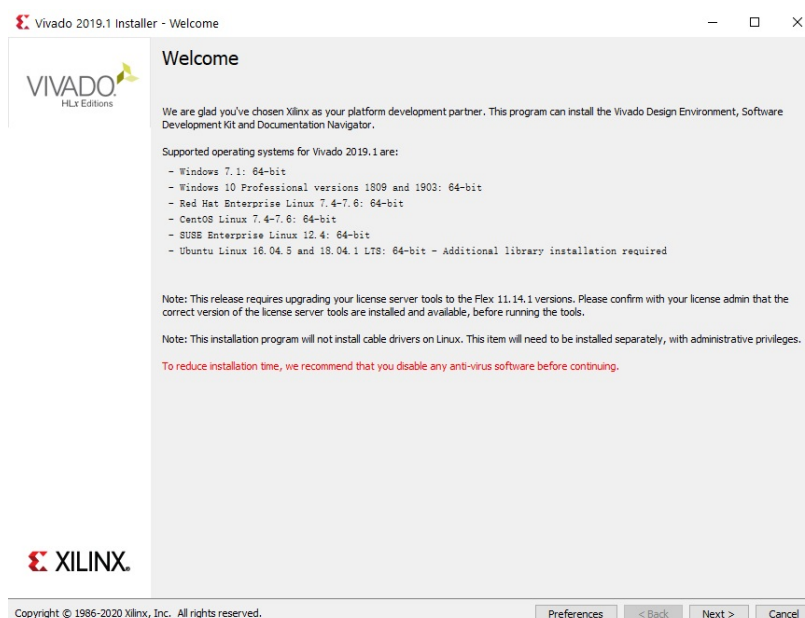
Step 2: Enter the User ID and Password you created when you registered an account with Xilinx.

Choose "**Download and Install Now**" and click "**Next**".

Click "**I Agree**" for all license agreements and click "**Next**".

Step 3: Select "**Vivado HL WebPACK**" and then click "**Next**".
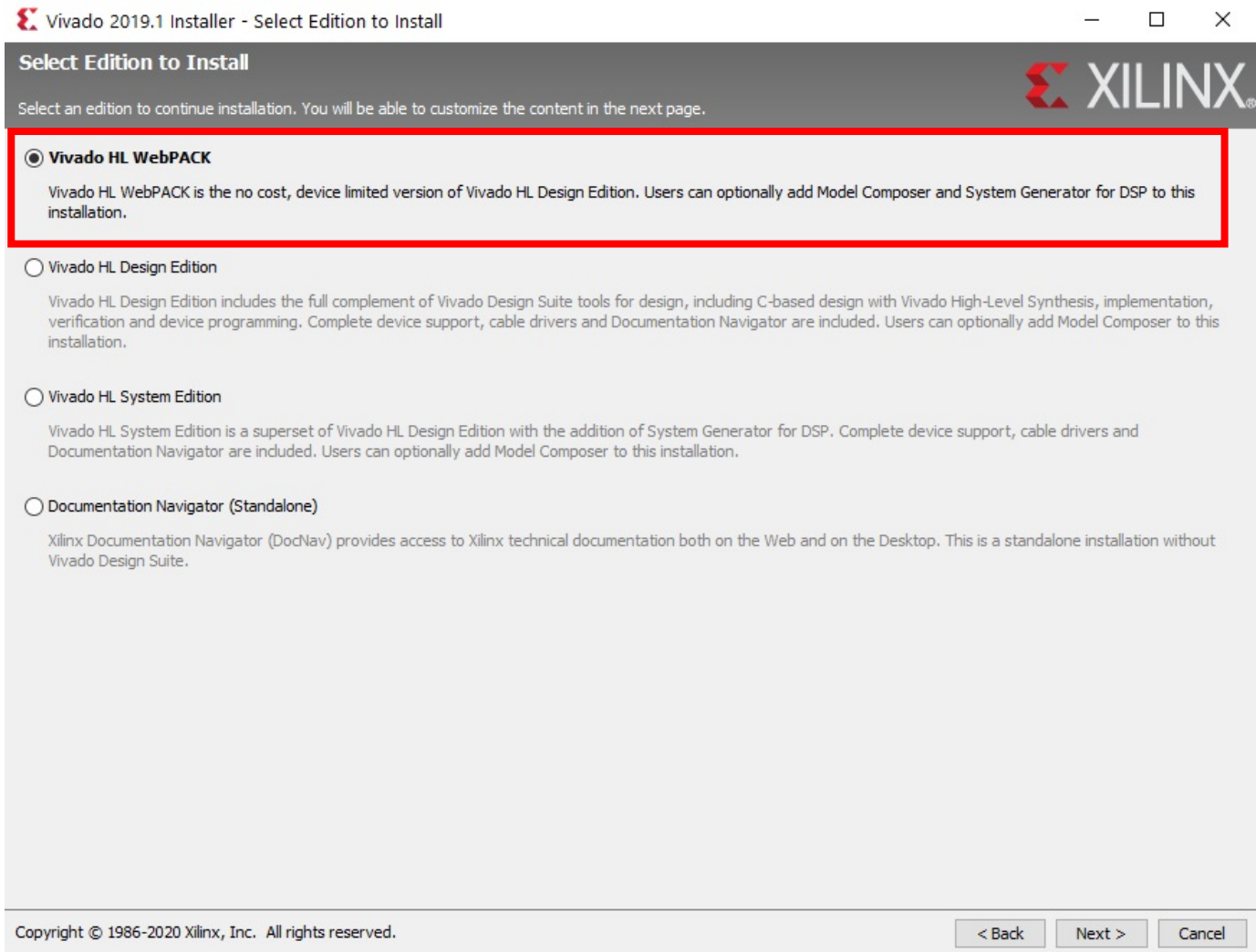
Step 4: You may use the default settings. Click "**Next**" to continue.

If you decide to customize the installation, ensure the following options are selected:

- Design Tools: **Vivado Design Suite.**

- Devices: Within "**7 Series**" select "**Artix-7".**

- Installation Options: "**Install Cable Drivers"**

By only selecting these options, the installation size should decrease considerably.
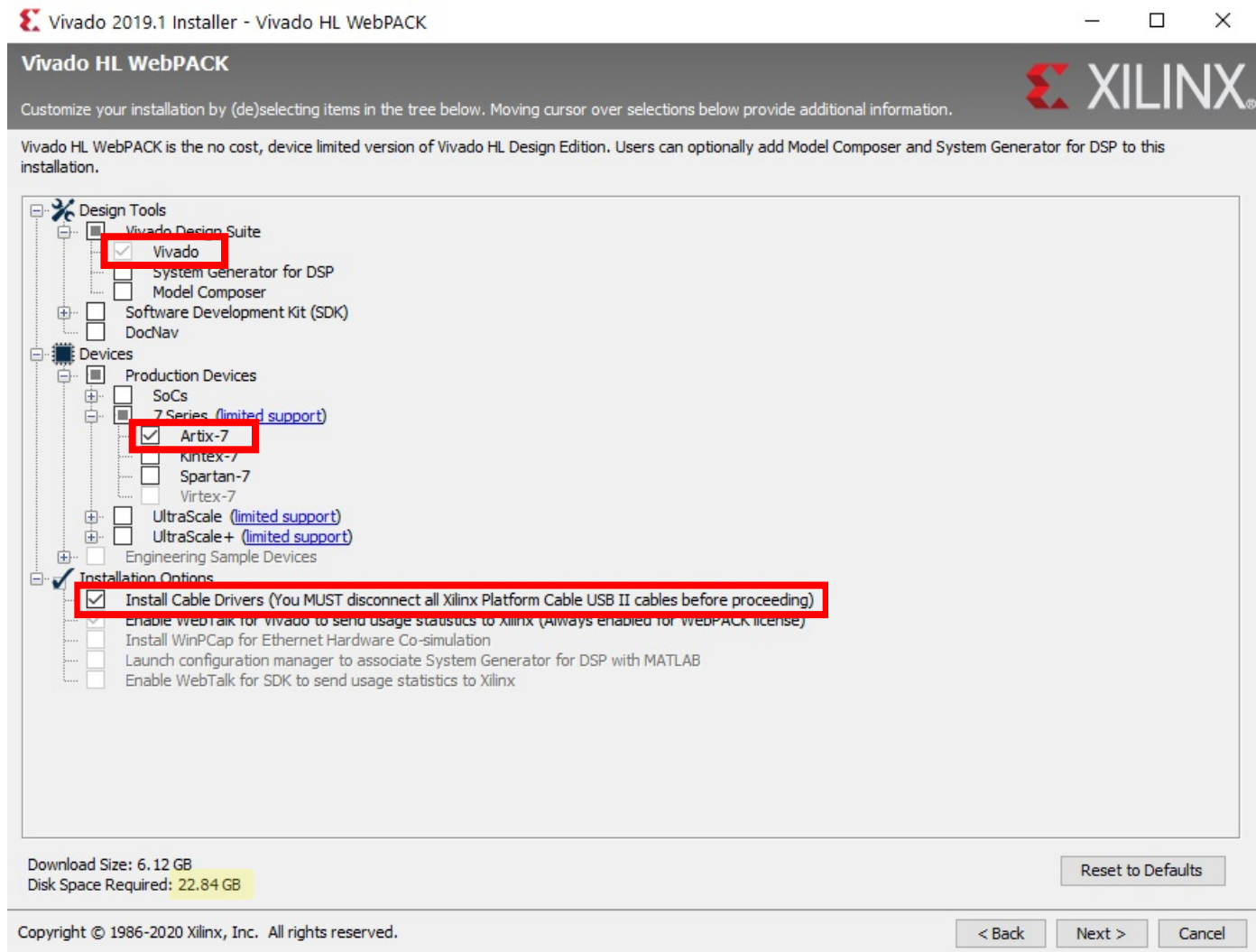
Step 5: Select the directory where Vivado will be installed.

For example you may use "**C:\CMPE140\Xilinx**" as the destination directory.
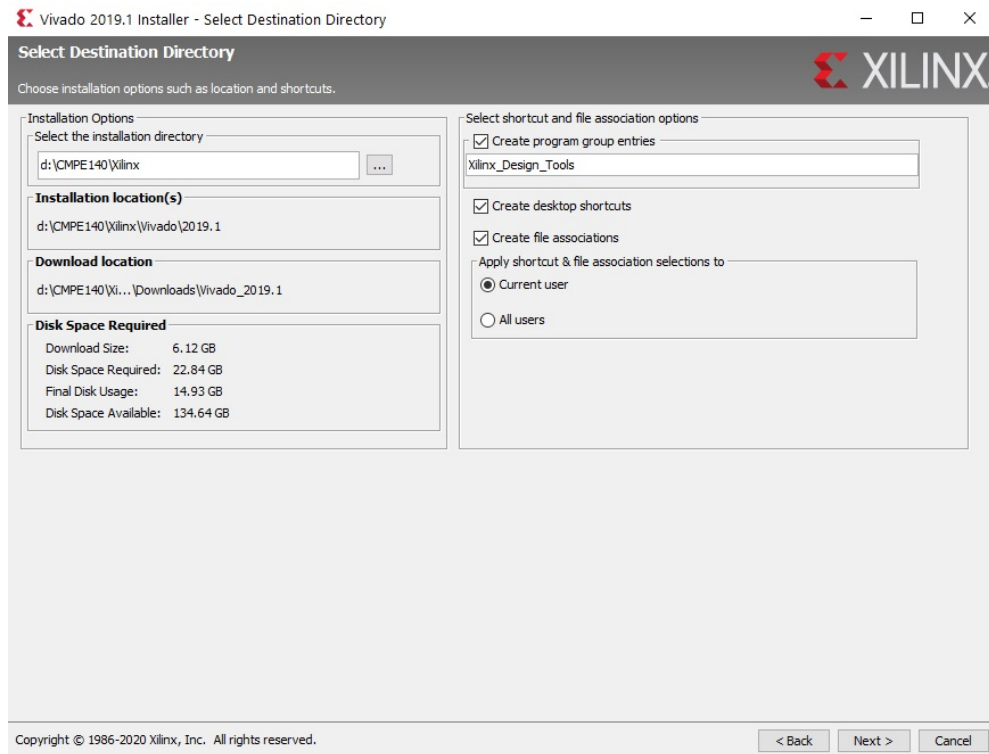
You will be presented with a summary of the options you have selected so far. If you've customized your installation the summary may look different. Click "**Install**" to begin installation.

The software will begin to install. This may take a long time to complete.

Possible Bugs During Installation:

During installation you may get a message about internet connectivity. This happens on slow connections because the installer will not throttle download speeds and will completely saturate your internet connection. It is strongly recommended to download where you have access to a fast and reliable internet connection.

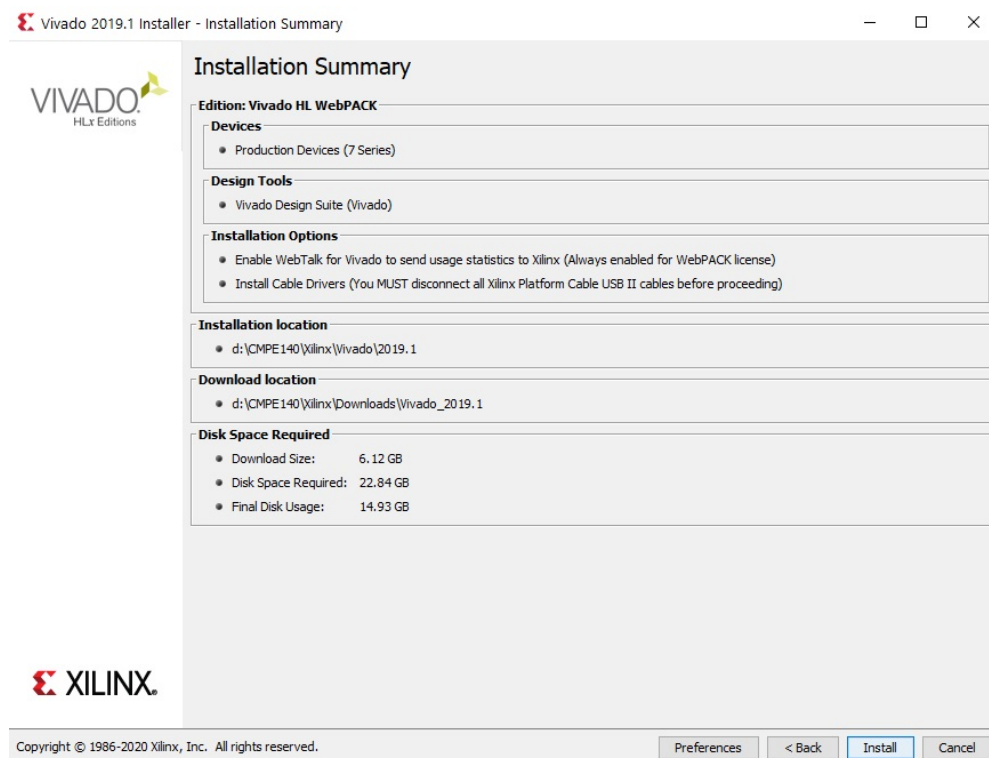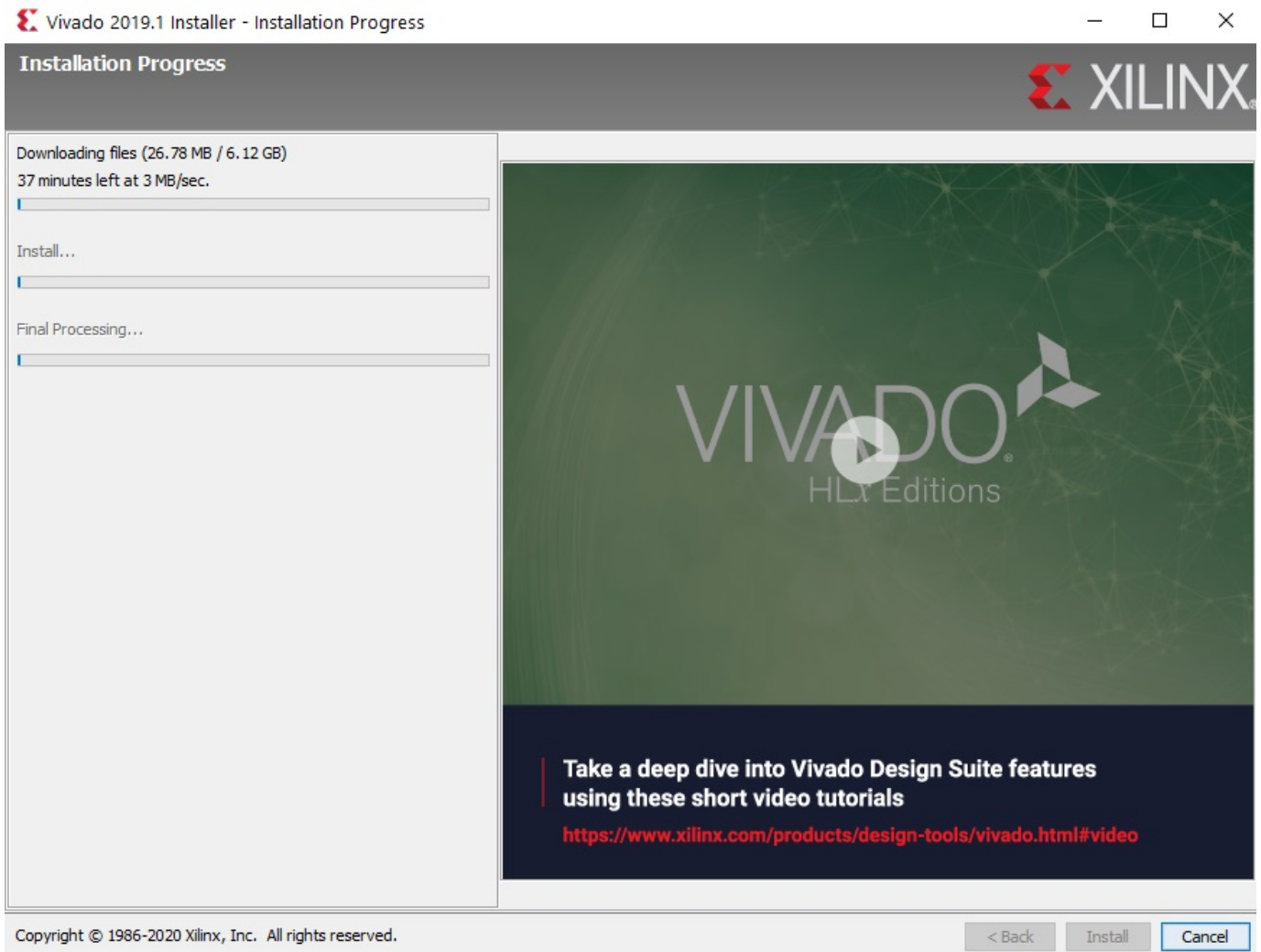When you see an error message about **Internet Connectivity**, you may have to repeatedly click "**Retry**" until the download resumes. This prompt may not go away even after internet connectivity is restored. If that should happen you can simply ignore the message while the download continues.

Near the end, sometimes the installer will warn about incomplete downloads. In this case you need to keep clicking "**Yes**" until the download finishes.

Eventually the download and installation procedure will start. This also takes a considerable amount of time to finish. If you get a message about unplugging cable drivers to install the software, make sure you haven't already plugged your Nexys4 DDR board's USB cable into your PC.

Furthermore Vivado may erroneously report an installation bug which you can ignore. Just click "OK".

Finally, Vivado will indicate that installation was successful
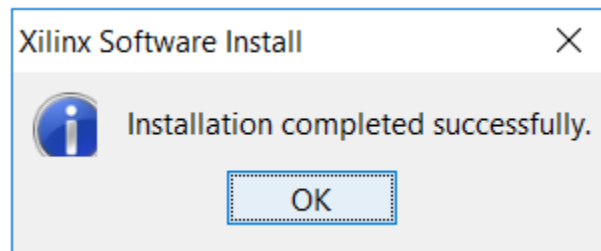
At this point Vivado has been successfully installed.

Step 6: Once the installation is completed, the Vivado 2019.1 icon will be on your desktop.