# CSEE W4823 ADVANCED LOGIC DESIGN

## Quartus II Tool Setup

Quartus is a CAD tool produced by Altera for analysis, synthesis and simulation of HDL designs. It enables the developer to model their digital design, perform timing and functional simulations, synthesize the design to measure the design's maximum operational frequency, and implement the design for a target device such as FPGA. This document presents a brief description of how to obtain and access the software locally or remotely.

**How to obtain and access Quartus II software?**

**From CD:** The book **Stephen Brown and Zvonko Vranesic, "Fundamentals of Digital Logic with VHDL Design"** comes with Quartus II 7.1 installation CD which is compatible with Windows XP/VISTA only.

**From Altera's website:** The latest version of the software can be obtained from Altera's website https://www.altera.com/support/software/download/altera_design/quartus_we/dnl-quartus_we.jsp . Please choose the first option (Quartus® II Web Edition Software v9.0 Service Pack 2) to download the setup. Students are required to register in order to download the software. The free web-edition of Quartus II is compatible with only Windows XP/VISTA.

**From Embedded Systems Lab:** The Quartus software is available on machines (micro2.ilab.columbia.edu … micro17.ilab.columbia.edu) at Embedded Systems Lab (Mudd 1235). These machines can be accessed in following ways.

**(i)** **Locally -** The students are required to have swipe access in order to enter the lab and an individual account to login to the machine. The professor has already forwarded the student CUID's and UNI's, so all the students in the class shortly should have both swipe access to the room and accounts on the lab machines. For any issues related to swipe access, please contact John Kazana (kazana@ee.columbia.edu). For all account/disk-quota/machine/software related issues, please contact Bill McCabe (wmccabe@ee.columbia.edu) or trouble@ee.columbia.edu.

**(ii)** **Remotely –** Students can also access the Embedded Systems Lab machines remotely in following principal ways.

**a.** **Windows –** Windows users need to install Nxclient (with Nx fonts installed) in their local machine with the key set as the contents of `ilab.key` file present in the home directory. The advantage of Nxclient is it allows the users to save their work across multiple machines, and resume it with successive logins. Please follow http://www.ee.columbia.edu/pages/resources/systems_group/connecting_remotely.html#nxclient for detailed instructions on nxclient installation. Windows users can also

install linux emulator like cygwin or Linux VMWARE workstation to access these machines by typing the commands mentioned in Linux-Mac section.

b. **Linux or Mac:** Linux or Mac users need to type following commands into their terminal in order to access the lab-machines. If a user with UNI `hdp2111` intends to login to `micro7.ilab.columbia.edu`, he or she needs to type following commands in their terminal.

```
xhost +micro7.ilab.columbia.edu    /* To enable the X11 or graphics support */
ssh –X hdp2111@micro7.ilab.columbia.edu /* To remotely login to the machine */
```

For detailed instructions on how to connect remotely, please follow http://www.ee.columbia.edu/pages/resources/systems_group/connecting_remotely.html

**How to use Quartus II software?**

Windows users can follow Start -> All Programs -> Altera -> Quartus II <version> -> Quartus <version> to launch the tool. Linux and Mac users need to type `quartus` command in the terminal to run the software. Please follow the Quartus tutorial in Appendix B (page number 833-862) of **Stephen Brown and Zvonko Vranesic, "Fundamentals of Digital Logic with VHDL Design"** for a basic tool usage**.** For a brief VHDL tutorial, please follow section B/V 2.10 (page number 60-65).

For any issues on Quartus installation, VHDL usage or remote connection, please contact Harsh Parekh (hdp2111@columbia.edu).