

Introduction to Quartus

Where to get Quartus:

- Google "Quartus II Web Edition"

What version to download:

- Quartus II Web Edition software (1.08 GB)

Starting a New Project:

- **File > New Project Wizard**
 - o Enter in a name and location
- **File > New > Block Diagram/Schematic File**
 - o This is where you lay down your logic design by clicking on **symbol tool** in the tool bar on the left hand side.
 - o Once clicked expand the library and select **primitives**.
 - o Once in **primitives**, **logic** and **pin** will contain the symbols you need.

Setting up the Compilation:

- There is a 'play button' at the top which will start the Compilation
- Also, under processing there is a button for start compilation

Setting up the Waveform:

- Create a waveform file **File > New > (other files) > vector waveform**
 - o Now add your inputs to the waveform file:
 - Right click under name in the waveform, select **insert > insert node or bus**
 - Click on Node Finder
 - Under the drop down menu for Filter select **Pins: all**
 - Add those nodes to the selected node list and click **ok**
- Now set values to the input pins by either:
 - o Highlighting and using the tool bar to the left
 - o Highlighting, right clicking, and selecting **value > arbitrary value** (or some other option such as clock, high, or low).

Setting up the Simulation:

- **Processing > Simulation Tool**
- Set the simulation mode to **Functional**
 - o This is done to avoid dealing with timing issues on the chip
- Once a simulation is complete the output will pop up.

Creating Symbols:

- When working on a project you may find it useful to condense some of your work into a symbol for organization and/or space
- **File > Create/Update > Create Symbol File**
- This file can now be inserted the way you would insert a logic gate.

Making an input/output into a BUS:

- This is useful when using symbols so that you don't have to connect some ridiculous number of wires to input and output
- Name the input/output in the following fashion: **y[n..0]** where **n** is one less than the total number of inputs/outputs (e.g. for 8 lines in **y[7..0]** would be the correct name for the pin). Naming can be done by right clicking on the pin and selecting **properties**.
- The bus line is then used to connect lines

Connecting bus/wires without drawing:

- By labeling the bus/wire in the same manner as above; right clicking, selecting **properties** and then naming the line, it is possible to simply draw a small line out and label both ends.