The purpose of this laboratory project is to give each graduate student the opportunity to develop a more open ended design which will augment in some way what the student has learned in his/her previous design experiences.

The student will be expected to formulate a design, implement it, and demonstrate it to the laboratory instructor on the Altera UP 1. Students will be expected to turn in a hard copy of the documented design that will include a short summary of how the design experience realized the design objectives associated with the design category that was selected. One category focuses upon design reuse -- utilizing modules of previous designs as building blocks for the current design. The other category focuses on utilizing other design techniques to create equivalent designs. Example projects include:

**Category I: Design Reuse:**

1) **Keypad Display:** Combining the designs from Laboratory Assignments 2 and 3 to create a design that will display the characters that are entered on the keypad on the EGA monitor. (Could also combine Assignments 2 and 4 in the similar manner.)
2) **PS-2 Mouse Display:** Utilizing Assignments 2 in a manner that allows a rectangular dot to be moved around on the screen in response to the movement of a PS-2 mouse that is connected to the same port that the PS-2 keyboard was connected to in Assignment 1.

*Students who decide to pursue designs that fall into this category must describe in this design how previous portions of their designs were re-used in their hard copy material.*

**Category II: Networks for Arithmetic Operations**

Develop a VHDL description of a network for arithmetic operations (e.g., Floating-point Adder, Integer or Floating Point Divider, Integer or Floating Point Multiplier).

*Students who decide to pursue designs that fall into this category should discuss details with lab instructor before start.*

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Project Due Date: **4/27/04**, Project Report Date: **4/28/04**