

# Xilinx Tools Lab

Tom Kelliher, CS 240

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## 1 Administrivia

### Announcements

### Assignment

Read 6.1–2.

### From Last Time

Dataflow, hierarchical, behavioral VHDL design styles.

### Outline

1. Introduction.
2. Lab.

### Coming Up

Introduction to sequential circuits. Latches.

## 2 Introduction

For EXOR3 circuit demonstrate:

1. Library tab and set-up.
2. Syntax checking.
3. Synthesis.
4. Testbench waveform.
5. Behavioral simulation and zooming.

## 3 Lab

1. Implement and simulate EXOR3.

The source and library VHDL are on the class Web site. There are syntax errors in the source VHDL which you'll need to find and fix.

2. Implement:

(a) A 4-1 mux.

(b) A hierarchical four-bit adder, using the fa component (see class Web site).

(c) An eight-input priority encoder. This circuit has eight one bit inputs, one three bit output (the encoded value of the prioritized input), and a one bit valid output.

Hint: a judicious use of don't cares will make this quite easy to implement. The brute force approach requires a function table with  $2^8$  entries!