

Laboratory 9  
CSE 3381  
Combinational Building Blocks

This experiment will demonstrate the use of multiplexer and decoder combinational building blocks to implement logic functions.

PART 1: Design and implement a 4-bit odd-prime number detector circuit using a 74151 chip (and possibly some inverters) only.

PRELAB: Show your circuit diagram based on the 74151 to the lab instructor.

LAB INSTRUCTOR'S INITIALS: \_\_\_\_\_

LAB DEMONSTRATION: Show the lab instructor that your circuit is functioning properly.

LAB INSTRUCTOR'S INITIALS: \_\_\_\_\_

PART 2: Design and implement a circuit using the 74157 chip that has two inputs,  $x$  and  $y$ , and four outputs that yield:

$$xy \qquad x + y \qquad \overline{xy} \qquad x \oplus y$$

PRELAB: Show your circuit diagram based on the 74157 to the lab instructor.

LAB INSTRUCTOR'S INITIALS: \_\_\_\_\_

LAB DEMONSTRATION: Show the lab instructor that your circuit is functioning properly.

LAB INSTRUCTOR'S INITIALS: \_\_\_\_\_

POST LAB REPORT: Include your neatly drawn circuit diagrams, all design data (eg. tables), and your PRELAB sheet with the instructor's initial.