King Saud University
College of Computer and Information Sciences
Department of Computer Science

CSC 220: Computer Organization

Labwork-4

Experiment # 1

Simplify the Boolean function F together with the don't-care conditions d in (1) sum-of-products form and (2) product-of-sums form.

$$F(w,x,y,z) = \sum (0,1,2,3,7,8,10)$$
$$d(w,x,y,z) = \sum (5,6,11,15)$$

Draw the digital circuit for both simplified Boolean function

Experiment # 2

A majority function is generated in a combinational circuit when the output is equal to 1 if the input variables have more 1's than 0's. The output is 0 otherwise. Design a three-input majority function.

Experiment # 3

Design a combinational circuit with three inputs x, y, z and three outputs A, B, C. When the binary input is 0, 1, 2, or 3, the binary output is one greater than the input. When the binary input is 4, 5, 6, or 7, the binary output is one less than the input.