Design of 4-BIT comparator

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Contents

Abstract

Design a sequential circuit that take(A3,A2,A1,A0) and (B3,B2,B1,B0) compares both A and B.The o/p should be either one of the (A¡B),(A¿B),(A=B) and it will be displayed by LED's.

1 Introduction

A comparator is an electronic circuit, which compares the two 4-bit inputs that are applied to it and produces an output. The output value of the comparator indicates which of the inputs is greater,lesser or equal.

2 Components

Component	value	quantity
LED	5V	1
Arduino	UNO	1
Jumper wires	M-M	20
Bread board		1

Table 1:

3 Hardware

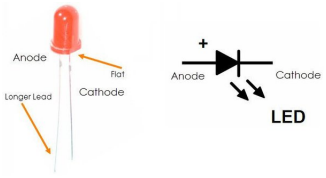

Figure 1: LED.

arduino	2	3	4	5	6	7	8	9	10	11	12
input	a	b	c	d	e	f	g	h			
output									x	y	z

Table 2:

3.2 connection of pins to the Arduino according to Table 2 and connecting VCC,GND of jumper wires to 5V,GND of Arduino respectively.
3.3 Finally, give connections to the arduino and inputs based on table 3.

Input	a	b	c	d	e	f	g	h
Arduino	2	3	4	5	6	7	8	9

Table 3:

4 Implementation

4.1 By making Logic circuit based on 4-bit comparator logic we get the circuit as in figure 2.

4.2 The code below realizes the 4-bit comparator.

https://github.com/mukeshchinta/FWC_module1/blob/main/avrgcc/codes/main.c

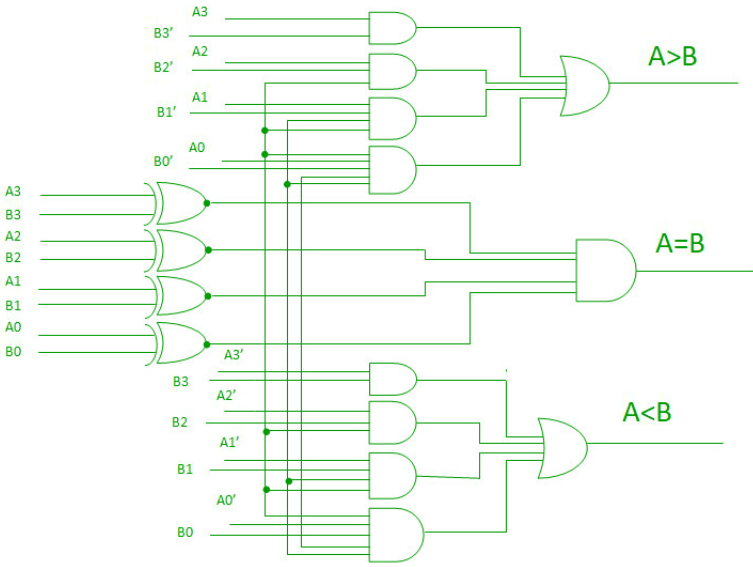

Figure 2