BINARY HALF SUBTRACTOR

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Abstract

This manual shows how to execute Binary-half-Subtractor having two inputs A and B.

1 COMPONENTS

component	value	quantity
Breadboard		1
Resistor	220ohm	1
Arduino	Uno	1
Sevensegment display	Common anode	1
Jumper wires		20

2 BINARY HALF SUBTRACTOR WITH TWO INPUTS

Half subtractor is a combination circuit with two inputs and two outputs which is difference and borrow. It produces the difference between the two binary bits at the input and also produces an output (Borrow) to indicate if a 1 has been borrowed. In the subtraction (A-B), A is called a Minuend bit and B is called as Subtrahend bit.

A — | HS | — Difference
B — | | — Borrow

Half Subtractor

g   f   COM   a   b

a
f   b
g
e   c
d

dot ○

e   d   COM   c   dot
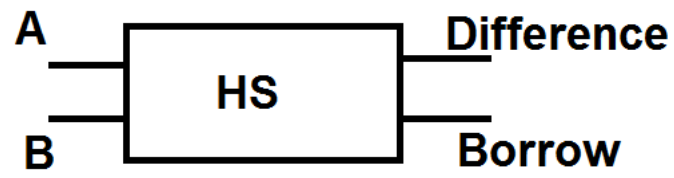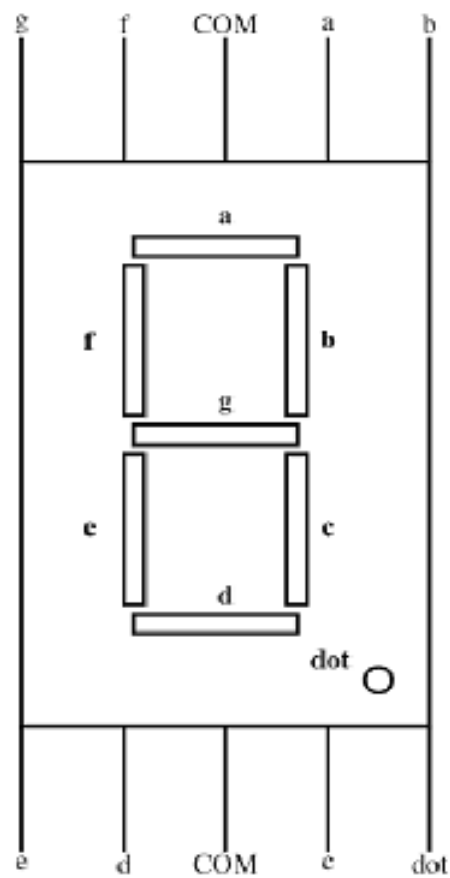
3 TRUTH TABLE

A	B	D	X
0	0	0	0
0	1	1	1
1	0	1	0
1	1	0	0

Equations :-

Equation for D is

$$D = A'B + AB' \tag{1}$$

Equation for X is

$$X = A'B \tag{2}$$

Arduino	2	3
Display	a	b

Table-1

Problem: Make the connections as per Table-1 and execute the following program.

https://github.com/RupaSaiSreshta/FWC/blob/main/Assignment1-IDE/Code/src/main.cpp