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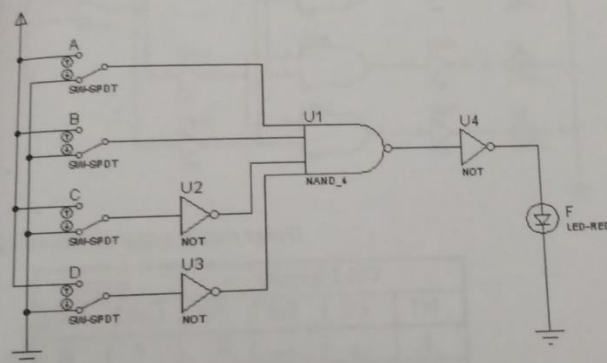
Tabel 3. Tabel kebenaran "High-Low" IC 4511 dan outputnya

| Decimal Digit | Input | | | | | Output | | | | | | | Display Output |
|---------------|-------|---|---|---|---|--------|---|---|---|---|---|---|----------------|
| | LT | D | C | B | A | a | b | c | d | e | f | g | |
| 0 | H | L | L | L | L | H | H | H | H | H | L | L | 0 |
| 1 | H | L | L | L | H | L | H | H | L | L | L | L | 1 |
| 2 | H | L | L | H | L | H | H | L | H | H | L | H | 2 |
| 3 | H | L | L | H | H | H | H | H | L | L | L | H | 3 |
| 4 | H | L | H | L | L | L | H | H | L | L | H | H | 4 |
| 5 | H | L | H | L | H | H | L | H | H | L | H | H | 5 |
| 6 | H | L | H | H | L | L | L | H | H | H | H | H | 6 |
| 7 | H | L | H | H | H | H | H | L | L | L | L | L | 7 |
| 8 | H | H | L | L | L | H | H | H | H | H | H | H | 8 |
| 9 | H | H | L | L | H | H | H | L | L | L | H | H | 9 |
| LT | L | X | X | X | X | H | H | H | H | H | H | H | 8 |

KEGIATAN PRAKTIKUM

Percobaan 1. Membuat Rangkaian Decoder Sederhana

a) Buat decoder seperti pada gambar berikut!



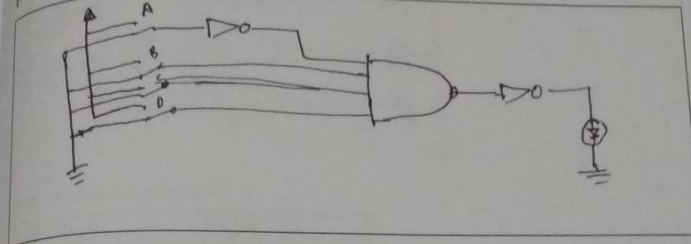
b) Isi kolom kosong pada tabel!

| A | B | C | D | F |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 | 1 |
| 0 | 0 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 0 | 0 |

| A | B | C | D | F |
|---|---|---|---|---|
| 0 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 1 | 0 |
| 0 | 0 | 1 | 1 | 0 |
| 1 | 0 | 1 | 1 | 0 |
| 0 | 1 | 1 | 1 | 0 |
| 1 | 1 | 1 | 1 | 0 |

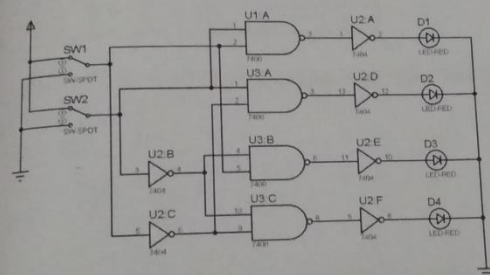
c) Decoder (F) hanya bekerja (ON) ketika : A = 1, B = 1, C = 0 dan D = 0

Berdasarkan rangkaian dan tabel diatas, coba buat decoder yang mempunyai output sebagaimana fungsi decoder berikut :
 $F = 1$; jika kondisi $A = 0, B = 1, C = 1, D = 1$. ($F = A^*BCD$)



Percobaan 2

1. Buat kombinasi gerbang logika seperti pada gambar!



2. Isi kolom kosong dalam tabel!

| Input | | Output LED | | | |
|-------|-----|------------|----|----|----|
| SW1 | SW2 | D1 | D2 | D3 | D4 |
| 0 | 0 | 0 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 | 0 |
| 1 | 1 | 1 | 0 | 0 | 0 |

3. Masing-masing dioda(LED) menunjukkan hasil output dari rangkaian kombinasi :

$$D1 = SW1 \cdot SW2$$

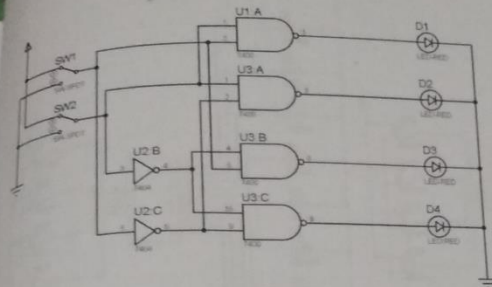
$$D2 = \overline{SW2} \cdot SW1$$

$$D3 = SW1 \cdot \overline{SW2}$$

$$D4 = \overline{SW1} \cdot \overline{SW2}$$

Percobaan 3

1. Buat kombinasi gerbang logika seperti pada gambar!



Isi kolom kosong pada tabel

| Input | | Output LED | | | |
|-------|-----|------------|----|----|----|
| SW1 | SW2 | D1 | D2 | D3 | D4 |
| 0 | 0 | 1 | 1 | 1 | 0 |
| 0 | 1 | 1 | 0 | 1 | 1 |
| 1 | 0 | 1 | 1 | 0 | 1 |
| 1 | 1 | 0 | 1 | 1 | 1 |

3. Masing-masing dioda(LED) menunjukkan hasil output dari rangkaian kombinasi :

$$D1 = SW1 \cdot SW2$$

$$D2 = SW1 \cdot SW2$$

$$D3 = SW1 \cdot SW2$$

$$D4 = SW1 \cdot SW2$$

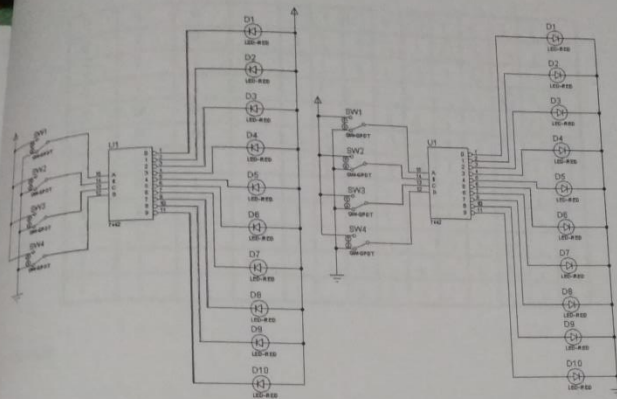
4. Bandingkan hasil tabel kebenaran padapercobaan 2 dan percobaan 3! Buat kesimpulan dari percobaan 2 and 3.

Menarik karena menghasilkan hasil LED-RED

akan menghasilkan output eksklusif

Percobaan 4. IC 7442 Decoder BCD-to-decimal

1. Buat rangkaian sebagaimana terlihat pada gambar!gunakan IC 7442 (BCD to decimal decoder)



Decoder 7442 : Common anode LED circuit

Common Cathode LED circuit

2. Isi kolom kosong pada tabel kebenaran decoder 7442 dibawah ini :

a. Rangkaian common anode LED

| Input | | | | Output | | | | | | | | | |
|-------|-----|-----|-----|--------|---|---|---|---|---|---|---|---|---|
| SW4 | SW3 | SW2 | SW1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

b. Rangkaian common cathode LED

| Input | | | | Output | | | | | | | | | |
|-------|-----|-----|-----|--------|---|---|---|---|---|---|---|---|---|
| SW4 | SW3 | SW2 | SW1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

1. TUGAS

1. Cari datasheet dari IC 7442! cari schematic yang menunjukkan gerbang logika penyusun IC 7442 !