Experiment Name: Gray to Binary and Binary to Gray conversion.

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Experiment: Gray to Binary conversion.

Theory: Gray to Binary conversion is a number conversion system by which we can convert a gray code to equivalent binary. In 4-bit gray to binary conversion we have to take four saperate inputs as MSB to LSB corresponding. Then we have to draw a circuit to get 4 outputs as 4 binary digit. Inputs and outputs will be verified while the binary will be same to equivalent gray code.

Instruments: wire, bread-board, power source and IC-7486.

circuit:

$$B_3 = G_3$$
$$B_2 = G_2 \oplus B_3$$
$$B_1 = G_1 \oplus B_2$$
$$B_0 = G_0 \oplus B_1$$
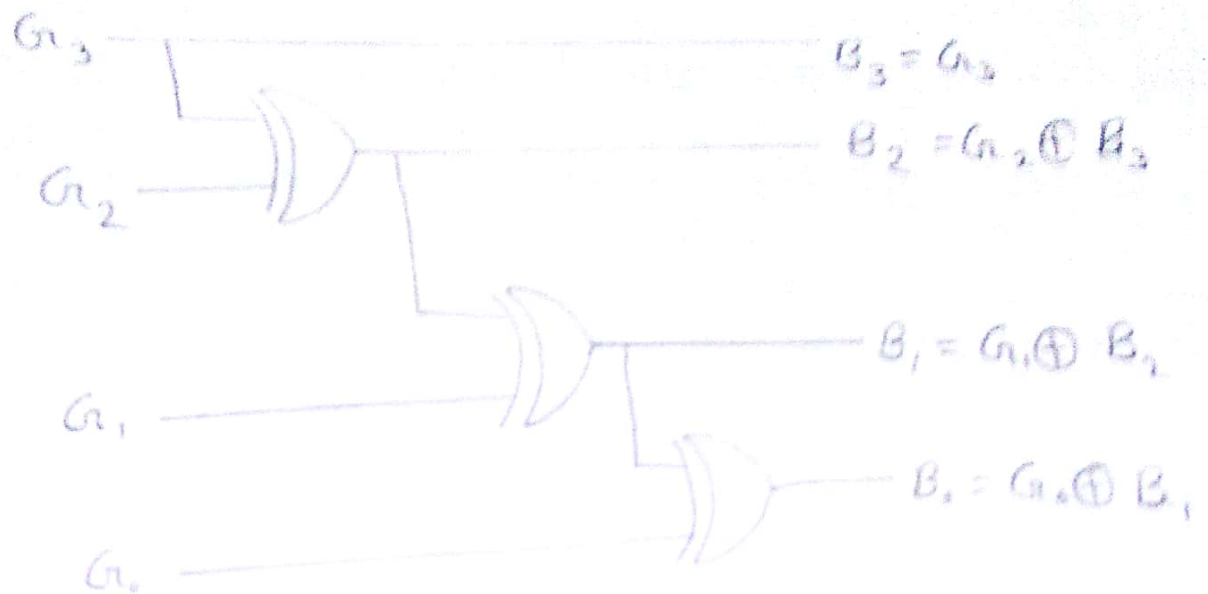
Truth Table:

G_3	G_2	G_1	G_0	Verification	B_3	B_2	B_1	B_0
0	0	0	0	✓	0	0	0	0
0	0	0	1	✓	0	0	0	1
0	0	1	1	✓	0	0	1	0
0	0	1	0	✓	0	0	1	1
0	1	1	0	✓	0	1	0	0
0	1	1	1	✓	0	1	0	1
0	1	0	1	✓	0	1	1	0
0	1	0	0	✓	0	1	1	1
1	1	0	0	✓	1	0	0	0
1	1	0	1	✓	1	0	0	1
1	1	1	1	✓	1	0	1	0
1	1	1	0	✓	1	0	1	1
1	0	1	0	✓	1	1	0	0
1	0	1	1	✓	1	1	0	1
1	0	0	1	✓	1	1	1	0
1	0	0	0	✓	1	1	1	1

Result and discussion: From the circuit we have designed the results we got is similar to equivalent binary of the given gray code. So the circuit and equations are ~~right~~. right.

pre-coustion:

1. connect the circuit when design is complete.

2. Please cheack the circuit befor connecting.

3. Ware shoes in the lab.

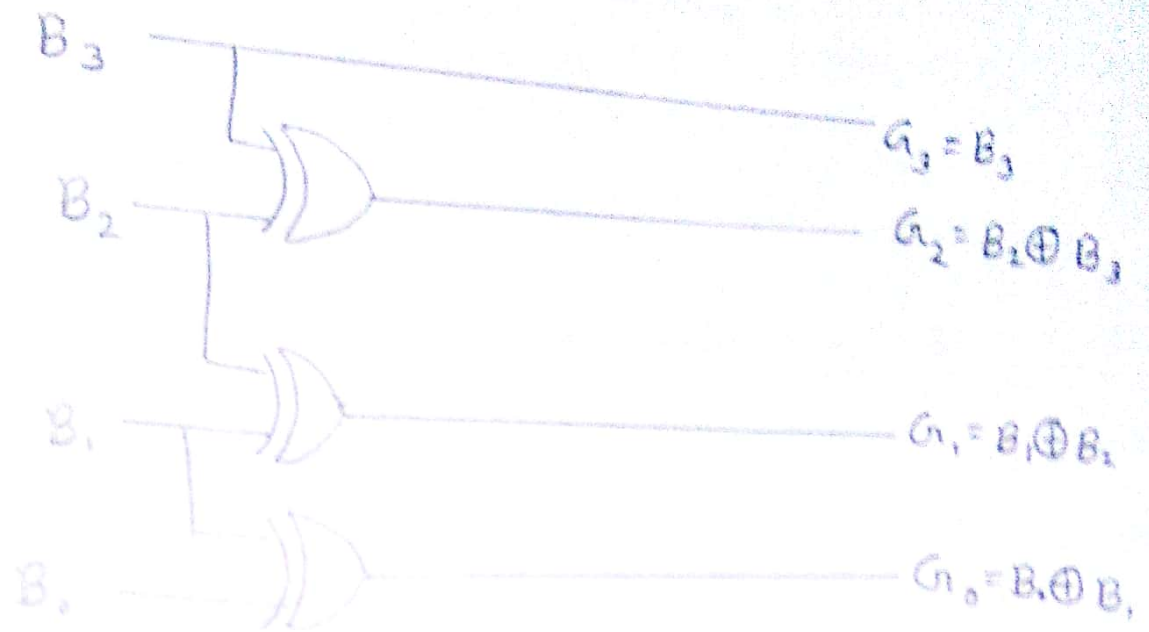4. After finishing erperiment switch off the power source.

Experiment: Binary to Gray conversion.

Theory: Binary to Gray conversion opose to gray to binary conversion. By binary to gray conversion we can get equivalent equivalent gray code of given binary.

In 4-bit g binary to gray conversion we have to take 4 separate inputs as MSB to LSB corresponding. Then we have to see if the results are equivalent.

Instruments: wire, bread-board, power source and IC-7486.

Circuit:

B_3 — — — — — — — $G_3 = B_3$

B_2 — — — — — — — $G_2 = B_2 \oplus B_3$

B_1 — — — — — — — $G_1 = B_1 \oplus B_2$

B_0 — — — — — — — $G_0 = B_0 \oplus B_1$

Truth Table:

B_3	B_3	B_1	B_0	Verification	G_3	G_2	G_1	G_0
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0	0	0	1	✓	0	0	0	1
0	0	1	0	✓	0	0	1	1
0	0	1	1	✓	0	0	1	0
0	1	0	0	✓	0	1	1	0
0	1	0	1	✓	0	1	1	1
0	1	1	0	✓	0	1	0	1
0	1	1	1	✓	0	1	0	0
1	0	0	0	✓	1	1	0	0
1	0	0	1	✓	1	1	0	1
1	0	1	0	✓	1	1	1	1
1	0	1	1	✓	1	1	1	0
1	1	0	0	✓	1	0	1	0
1	1	0	1	✓	1	0	1	1
1	1	1	0	✓	1	0	0	1
1	1	1	1	✓	1	0	0	0

Result and discussion:

From the circuit we have designed the results we got is similar to equivalent gray code of given binary. So the circuit and equations are all right.

Pre-coustion:

1. Connect the circuit when design is complete.

2. Please cheack the circuit before connecting.

3. Ware shoes in the lab.

4. After finishing experiment swithh off the power source.