MIT WORLD PEACE UNIVERSITY

Digital Electronics and Computer Architecture
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4 BIT CODE CONVERSION BETWEEN BINARY AND GRAY CODE USING BASIC LOGIC GATES

PRACTICAL REPORT

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Contents

1   Problem Statement

Design and Implementation of 4 Bit code convertors using Basic Logic Gates.

1. 4 Bit Binary to Gray Code

2. 4 Bit Gray to Binary Code

2   ICs Used

74LS86 (Quad 2-Input Exclusive - OR Gates)

3   Platform Used

Digital Trainer Kit

4   Theory

Binary Code				Gray Code			
0	0	0	0	0	0	0	0
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

5   Procedure

1. Design Combinational logic circuits as per given problem statement.

2. connect the IC 7486 and other basic logic gate ICs as per diagram.

3. Give V_{cc} supply and ground connection to each IC.

4. Give variaous combinations to select lines.

5. Observe the output and verify the truth table.

6. Switch off the power supply off the trainer kit.

Gray Code				Binary Code			
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

6 Conclusion

We have learned the Implementation of Binary to Gray and Gray to Binary code converter using logic gates.