

Jackson Ludwig

CSE 222 Final

Truth Table:

Binary				7-Segment Code						
w	x	y	z	a	b	c	d	e	f	g
0	0	0	0	1	1	1	1	1	1	0
0	0	0	1	0	1	1	0	0	0	0
0	0	1	0	1	1	0	1	1	0	1
0	0	1	1	1	1	1	1	0	0	1
0	1	0	0	0	1	1	0	0	1	1
0	1	0	1	1	0	1	1	0	1	1
0	1	1	0	0	0	1	1	1	1	1
0	1	1	1	1	1	1	0	0	0	0
1	0	0	0	1	1	1	1	1	1	1
1	0	0	1	1	1	1	0	0	1	1
1	0	1	0	1	1	1	0	1	1	1
1	0	1	1	1	1	1	1	1	1	1
1	1	0	0	1	0	0	1	1	1	0
1	1	0	1	1	1	1	1	1	1	0
1	1	1	0	1	0	0	1	1	1	1
1	1	1	1	1	0	0	0	1	1	1

Un-simplified Boolean Equations:

A:

- $\overline{W}\overline{X}\overline{Y}\overline{Z} + \overline{W}\overline{X}Y\overline{Z} + \overline{W}\overline{X}YZ + \overline{W}X\overline{Y}\overline{Z} + \overline{W}X\overline{Y}Z + W\overline{X}\overline{Y}\overline{Z} + W\overline{X}\overline{Y}Z + W\overline{X}Y\overline{Z} + W\overline{X}YZ + WX\overline{Y}\overline{Z} + WX\overline{Y}Z + WXY\overline{Z} + WXYZ$

B:

- $\overline{W}\overline{X}\overline{Y}\overline{Z} + \overline{W}\overline{X}\overline{Y}Z + \overline{W}\overline{X}Y\overline{Z} + \overline{W}\overline{X}YZ + \overline{W}X\overline{Y}\overline{Z} + \overline{W}X\overline{Y}Z + W\overline{X}\overline{Y}\overline{Z} + W\overline{X}\overline{Y}Z + W\overline{X}Y\overline{Z} + W\overline{X}YZ + WX\overline{Y}\overline{Z}$

C:

- $\overline{W}\overline{X}\overline{Y}\overline{Z} + \overline{W}\overline{X}\overline{Y}Z + \overline{W}\overline{X}Y\overline{Z} + \overline{W}X\overline{Y}\overline{Z} + \overline{W}X\overline{Y}Z + \overline{W}XY\overline{Z} + \overline{W}XYZ + W\overline{X}\overline{Y}\overline{Z} + W\overline{X}\overline{Y}Z + W\overline{X}Y\overline{Z} + W\overline{X}YZ + WX\overline{Y}\overline{Z}$

D:

- $\overline{W}\overline{X}\overline{Y}\overline{Z} + \overline{W}\overline{X}Y\overline{Z} + \overline{W}\overline{X}YZ + \overline{W}X\overline{Y}\overline{Z} + \overline{W}X\overline{Y}Z + W\overline{X}\overline{Y}\overline{Z} + W\overline{X}\overline{Y}Z + WX\overline{Y}\overline{Z} + WX\overline{Y}Z + WXY\overline{Z}$

E:

- $\overline{W}\overline{X}\overline{Y}\overline{Z} + \overline{W}\overline{X}Y\overline{Z} + \overline{W}\overline{X}YZ + \overline{W}XY\overline{Z} + W\overline{X}\overline{Y}\overline{Z} + W\overline{X}YZ + WX\overline{Y}\overline{Z} + WX\overline{Y}Z + WX$
 $Y\overline{Z} + WXYZ$

F:

- $\overline{W}\overline{X}\overline{Y}\overline{Z} + \overline{W}X\overline{Y}\overline{Z} + \overline{W}X\overline{Y}Z + \overline{W}XY\overline{Z} + W\overline{X}\overline{Y}\overline{Z} + W\overline{X}\overline{Y}Z + W\overline{X}Y\overline{Z} + W\overline{X}YZ + W$
 $X\overline{Y}\overline{Z} + WX\overline{Y}Z + WXY\overline{Z} + WXYZ$

G:

- $\overline{W}\overline{X}Y\overline{Z} + \overline{W}\overline{X}YZ + \overline{W}X\overline{Y}\overline{Z} + \overline{W}X\overline{Y}Z + \overline{W}XY\overline{Z} + W\overline{X}\overline{Y}\overline{Z} + W\overline{X}\overline{Y}Z + W\overline{X}Y\overline{Z} +$
 $W\overline{X}YZ + WXY\overline{Z} + WXYZ$

Simplified circuits:





