

Lab 08 Home Task

3x8 decoder using 2x4 decoder

inputs			outputs							
x	y	z	D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0
0	1	1	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	0	0	0
1	0	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0
1	1	1	0	0	0	0	0	0	0	1

$$D_0 = \bar{x} \bar{y} \bar{z}$$

$$D_1 = \bar{x} \bar{y} z$$

$$D_2 = \bar{x} y \bar{z}$$

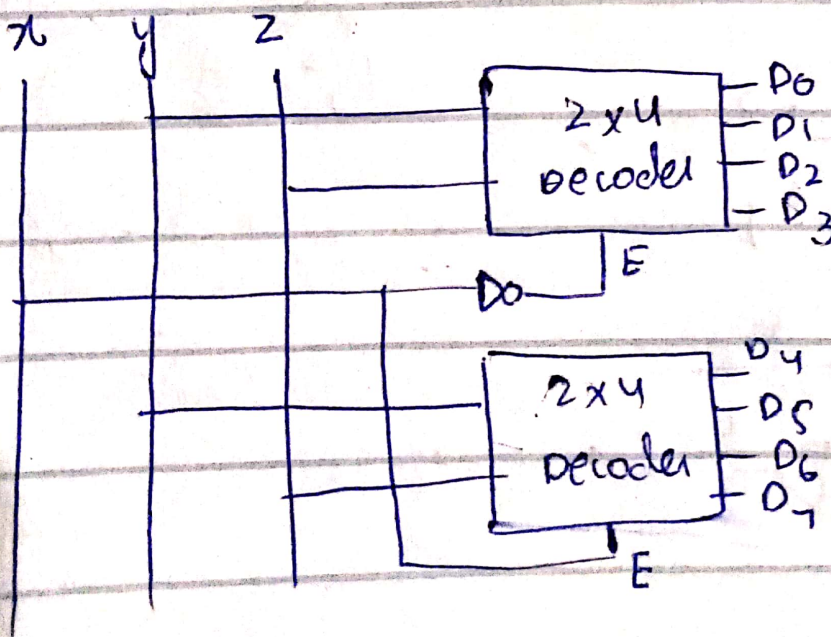
$$D_3 = \bar{x} y z$$

$$D_4 = x \bar{y} \bar{z}$$

$$D_5 = x \bar{y} z$$

$$D_6 = x y \bar{z}$$

$$D_7 = x y z$$



4x16 using 2x4

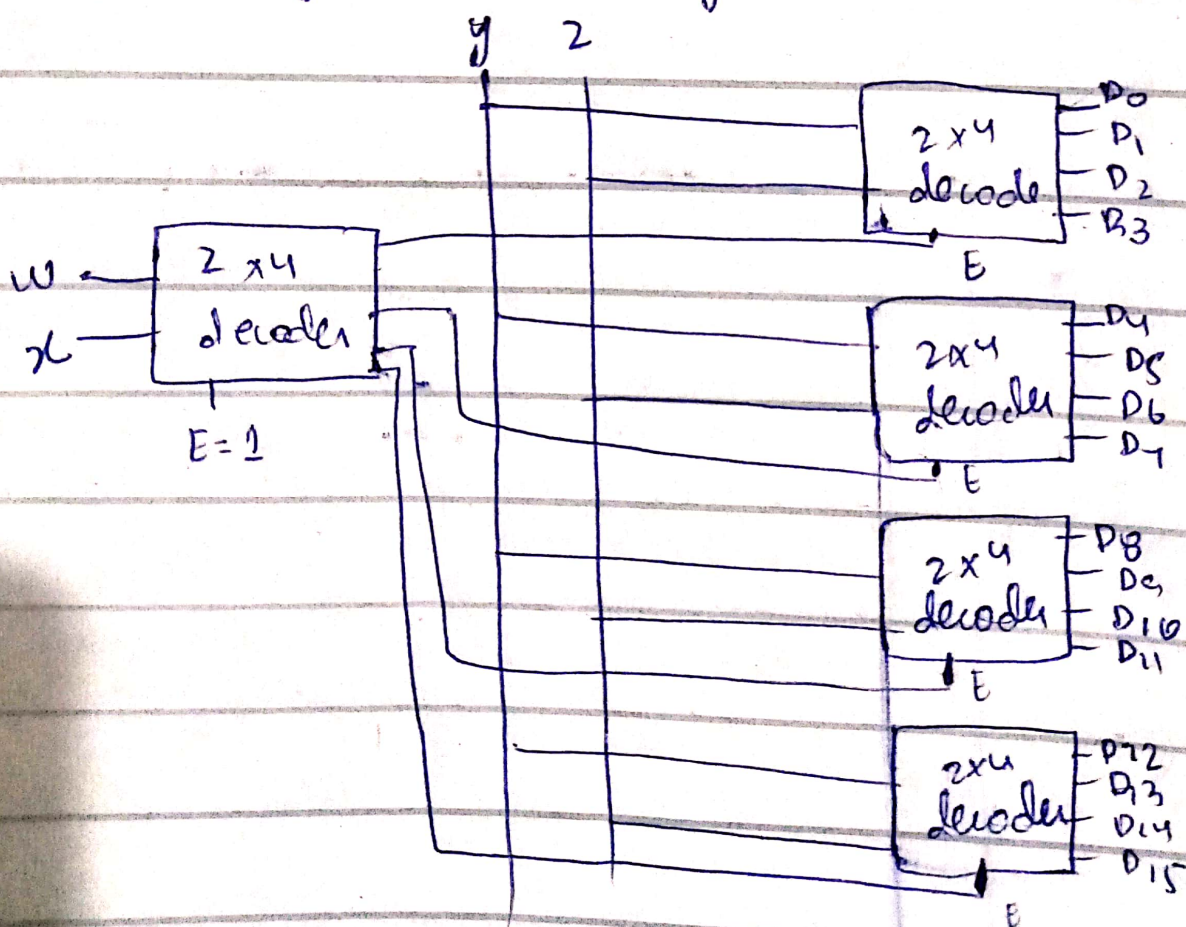
w	x	y	z
0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	1
0	1	0	0
0	1	0	1
0	1	1	0
0	1	1	1
1	0	0	0
1	0	0	1
1	0	1	0
1	0	1	1
1	1	0	0
1	1	0	1
1	1	1	0
1	1	1	1

D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃	D ₁₄	D ₁₅
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$$\begin{aligned} D_0 &= \bar{w} \bar{x} \bar{y} \bar{z} \\ D_1 &= \bar{w} \bar{x} \bar{y} z \\ D_2 &= \bar{w} \bar{x} y \bar{z} \\ D_3 &= \bar{w} \bar{x} y z \end{aligned}$$

$$\begin{aligned} D_4 &= \bar{w} x \bar{y} \bar{z} \\ D_5 &= \bar{w} x \bar{y} z \\ D_6 &= \bar{w} x y \bar{z} \\ D_7 &= \bar{w} x y z \end{aligned}$$

$$\begin{aligned} D_8 &= w \bar{x} \bar{y} \bar{z} & D_{12} &= w x \bar{y} \bar{z} \\ D_9 &= w \bar{x} \bar{y} z & D_{13} &= w x \bar{y} z \\ D_{10} &= w \bar{x} y \bar{z} & D_{14} &= w x y \bar{z} \\ D_{11} &= w \bar{x} y z & D_{15} &= w x y z \end{aligned}$$



4x16 using 3x8

