

CoE/EE460 Switching Theory

Lecture 12

Washington University
Spring 2001

<http://www.arl.wustl.edu/~lockwood/class/coe460/>

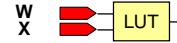
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Announcements : Homework

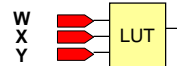
- Review NAND Logic
- LUT Function Generation
- Decomposition

Examples: Lookup table function mapping

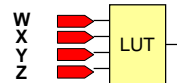
- $F(w,x) = w'x + wx'$
 $= \{01, 10\}$
 $= \{1,2\}$



- $F(w,x,y) = w'x'y + w'xy' + wx'y' + wxy$
 $= \{001, 010, 100, 111\}$
 $= \{1,2,4,7\}$



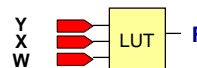
- $F(w,x,y,z) = wxyz + wx' + w'xy'$
 $= \{1111, 10--, 010-\}$
 $= \{1111, 1000, 1001, 1010, 1011, 0100, 0101\}$
 $= \{4,5,8,9,10,11,15\}$



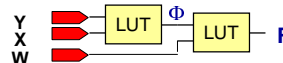
Decomposition

- $F(w,x,y) = \{1,2,4,7\}$

| | | | | | |
|------------|---|---|---|---|---------|
| W=0 | 0 | 1 | 2 | 3 | Φ |
| W=1 | 4 | 5 | 6 | 7 | Φ' |

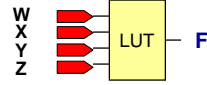


- $F(w,x,y) = F(w, \Phi(x,y))$

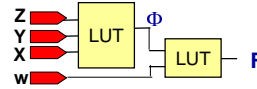


Decomposition (cont)

- $F(w,x,y,z)$



- $F(w,x,y,z) = F(w, \Phi(x,y,z))$



- $F(v,w,x,y,z) = F(v,w, \Phi(x,y,z))$

