DIGITAL LOGIC SYSTEMS : ASSIGNMENT 7

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Exercise 1.
Design a combinational circuit that implements the following specification.

Input	$X[2^k - 1 : 0] \in \{0,1\}^{2^k}$
Output	$L, R \in \{0,1\}^k$
Functionality	$wt(X) = 2 \implies X[\langle L \rangle] = X[\langle R \rangle] = 1$

Solution 1.

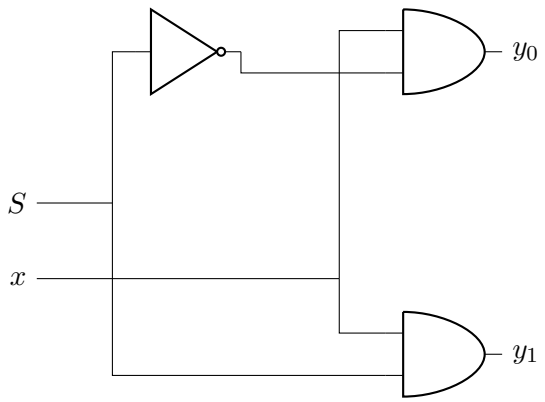

FIGURE 1. DEMUX

Date: Sunday 7th June, 2015.

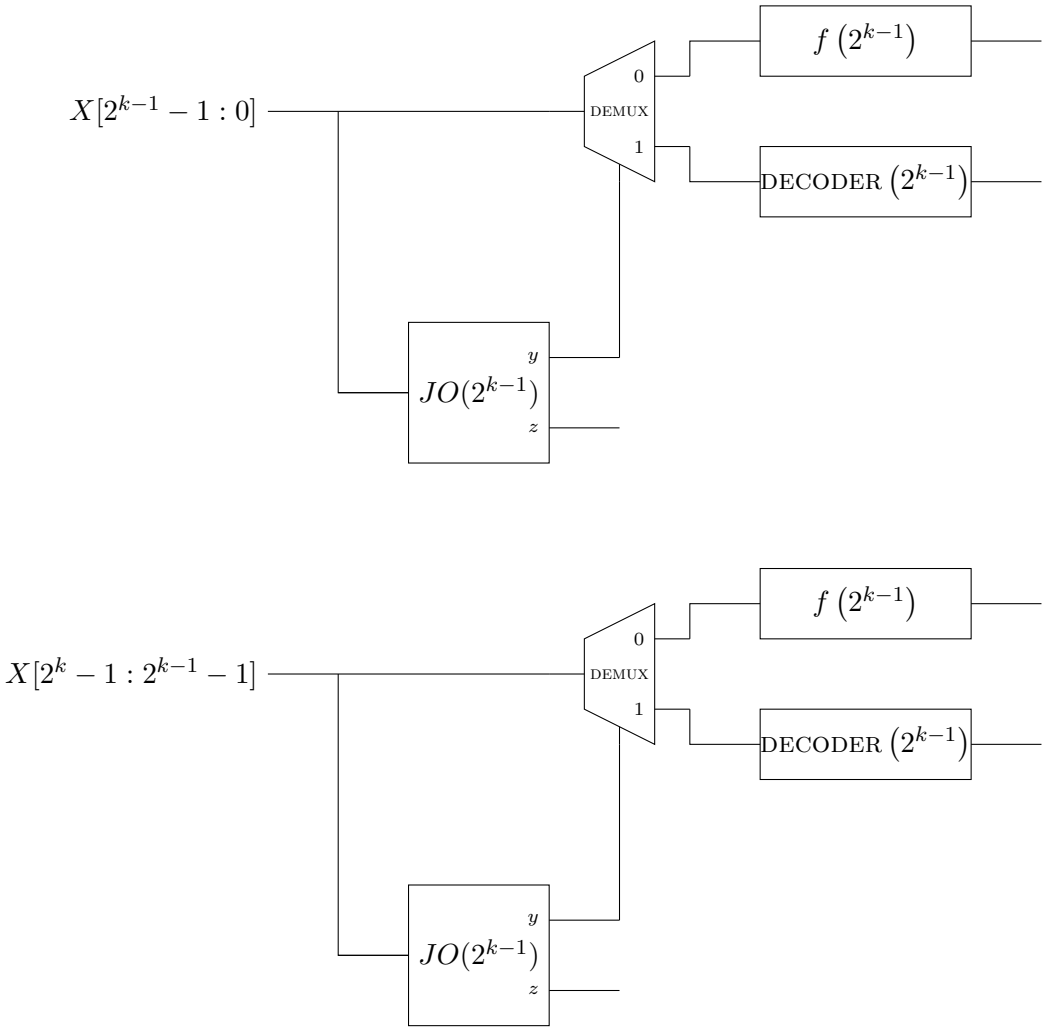
$X[2^{k-1}-1:0]$
0
DEMUX
1
$f\left(2^{k-1}\right)$
DECODER $\left(2^{k-1}\right)$
y
$JO(2^{k-1})$
z
$X[2^{k}-1:2^{k-1}-1]$
0
DEMUX
1
$f\left(2^{k-1}\right)$
DECODER $\left(2^{k-1}\right)$
y
$JO(2^{k-1})$
z

FIGURE 2. $f(2^k)$