Full Adder using MUX

LECTURE 26
A decoder is a combinational circuit that

Recalls:

Families of LSI ICs

Note: $2^n \geq m$

Example: 4-to-16 Line Decoder

Input lines into m output lines where $2^n \geq m$
Outputs 

Outputs # Active low Enable

EX 2-to-4 Line Decoder / Active Low

---

EX 2-to-4 Line Decoder / Active Low

EX 2-to-4 Line Decoder / Active Low

EX 2-to-4 Line Decoder / Active Low
A Minterm is called A

or in Vanjules

implementation

Any function

can be used to

So a n-to-2 decoder

Matrix (all 2^n)

For each and every

consists of one output

A n-to-2 decoder

Note:

\[
\begin{align*}
\overline{m_0} & = m_0 \\
\overline{m_1} & = m_1 + \overline{1} + E \cdot I \\
\overline{m_2} & = \overline{m_2} + \overline{1} + E \\
\overline{m_3} & = \overline{m_3} + \overline{1} + E \\
\end{align*}
\]

\[
\overline{y_0} = m_0 \cdot \overline{y_1} = m_1 \cdot \overline{y_2} = m_2 \cdot \overline{y_3} = \overline{y_4}
\]
\[ F = \sum \ \text{m} \ \text{imp}
\]
\[ F = \\text{m}_1 \ \text{m}_2 \cdot \text{m}_3
\]
\[ F = \text{m}_1 + \text{m}_3
\]
\[ F(A, B, C) = \sum \text{m}(1, 3)
\]
\[ f(A', B) = \overline{w_1'w_2'w_3} \]
Count = Σm(3, 5, 6, 7)

Sum = Σm(1, 2, 4, 7)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C'</th>
<th>Sum</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Using decoders

Full Address decoder